

Program Title: Environmental Science Program, Bachelor of Science Degree

Program Colleges: College of Arts & Sciences and College of Health & Human Sciences
Administrative Home: Geoscience and Natural Resources Department
Environmental Science Program Office: 331 Stillwell

Year of Review: 2016

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Executive Summary

The Environmental Science (ES) program supports students in developing the expertise, skills, and techniques necessary for sustainable use of, and evaluation and remediation of human effects on, the environment. Our intentional interdisciplinary learning model prepares graduates with the ability to integrate content knowledge and skills from the biological, physical, and human sciences to address environmental problems from multiple perspectives. The ES program is administered using an interdisciplinary group of 8 faculty who represent the disciplines that provide most of the coursework for the Bachelor of Science in ES. The program began in 2004 and was last reviewed in 2011. Since the previous review, the ES program has developed a strategic plan that aligns with College and WCU strategic planning efforts, worked on governance policies, more clearly articulated its program and curriculum learning outcomes (LOs), and revised its curriculum and developed assessment tools based on the LOs. The four ES courses where majors meet as a cohort include a freshman gateway course, senior capstone, and sophomore and junior level seminars. The “real life” capstone sustainability projects have won awards at the UNC system-wide annual energy summit. ES enrollment has increased over time and with more alumni, the program has been able to gather meaningful program and employment assessment data. Based on these data, the ES program appears to be providing broad, interdisciplinary training that teaches concepts and methods of environmental science effectively and enables graduates to be successful in environmental careers. Students are taking, and being successful in, a broad range of courses, and they believe these courses are providing essential skills. After graduating from WCU, they are able to find employment, volunteer, or continue on in graduate school in an area of their expertise. Therefore, we feel our learning outcomes are being achieved. As an interdisciplinary program, ES relies on faculty whose appointments are in other departments who teach ES courses, advise ES students, or serve on the ES Program Council (ESPC). Only one faculty member has an appointment dedicated (1/2 FTE) to ES. Although these faculty are dedicated and of high quality, their capacity to contribute to ES is limited because their lines and evaluations are fully within their respective programs. This makes it difficult to staff ES courses and leaves the ES program vulnerable to faculty turnover; replacement hires in other departments may or may not be interested in contributing to the ES program. Because SCH generation is often used to prioritize faculty hires, the ES program, which generates SCH for other degree programs, struggles to be competitive for new faculty lines. Lack of faculty with ES appointments limits the program’s growth and potentially its long-term sustainability.

Introduction

Western Carolina University (WCU) is a campus of the University of North Carolina system and enrolls over 10,000 students in some 115 undergraduate and 60 graduate programs of study. The Environmental Science (ES) program offers an interdisciplinary Bachelor of Science degree in ES. There are no concentrations, certificates, or minors within the degree. The budget and administrative support is within the Geoscience and Natural Resources (GNR) Department, but planning, oversight, and implementation of the degree program is accomplished by an interdisciplinary Environmental Science Program Council (ESPC) representing seven degree programs which offer courses that most ES majors take.

Standard 1 The purpose of the Program reflects and supports the mission and strategic vision of Western Carolina University and the mission of its Colleges

Environmental Science Program Mission: The purpose of the ES program is to support students in their pursuit of developing the expertise, skills, and techniques necessary for sustainable use of, and evaluation and remediation of human effects on, the environment, and to reinforce WCU's role as a center for environmental research and teaching. Using intentional interdisciplinary learning experiences, we prepare students with the ability to integrate content knowledge and skills from the biological, physical, and human sciences to address environmental problems from multiple perspectives in an interdisciplinary way. The BS in ES includes experiences where students are regionally engaged, have global opportunities, and have ownership in developing their pathways of learning within the flexible degree program.

The integrative educational approach, service learning capstone, focus on environmental sustainability, and promotion of critical thinking and communication in the ES program are closely aligned with the College of Arts and Sciences' and WCU's missions. For example, Goal 1.1 of the WCU 2020 Strategic Plan (App. 1.1) includes leadership in environmental sustainability on campus and regionally. Initiative 1.1.4 of the College of Arts and Sciences' Strategic Plan (App. 1.2) encourages programs "to integrate student research and inquiry into all levels of the curriculum," and Initiative 2.1.4 encourages programs to "include cross-curricular, experiential, applied, state, regional, and global learning opportunities." The ES degree does not duplicate existing programs at WCU, and the deliberate integration across many diverse disciplines makes our ES majors distinct from graduates of other ES programs at regional peer institutions and across the UNC system. Distinctive characteristics and strengths

of the ES program include:

- 1) *Highly flexible, truly interdisciplinary degree program that helps students gain knowledge and skills needed to address complex environmental sustainability problems*

There are only four ES-prefix courses (ES150, 250, 350, 495); all other coursework is completed with customized selections from throughout the sciences. The ES program differs from disciplinary programs with environmental content at WCU through the high proportion of junior (300-level) and senior (400-level) courses from different disciplines that form unique ES student driven curricula based on a student's career goals and ES interdisciplinary goals (see Standard 3). The flexible curriculum easily accommodates the completion of minors and dual degrees, and participation in specialized opportunities such as international and research experiences, and internships.

- 2) *Interdisciplinary Council who oversees the program*

The ES Program Council (ESPC) consists of faculty from departments whose courses make up a large portion of the ES curriculum. This interdisciplinary council includes representatives from the Geology, Natural Resource Conservation & Management, Biology, Chemistry, Philosophy and Religion, Political Science and Public Policy, Environmental Health, and Environmental Science programs. The diversity of perspectives on the council helps protect and promote the interdisciplinary goals of the BS in ES.

- 3) *Young program but steady growth*

Steady growth to averaging 60-85 students since program began Fall 2004
First graduates in May 2007, current average graduates/year 10-15

- 4) *Service-learning capstone*

ES495 students work as a group to address a sustainability problem on campus or in the regional community. Recent projects have included sustainability assessments for WCU (energy, transportation, institutional purchasing practices, recycling), the Highlands Biological Station (NC), businesses in Dillsboro (NC), Rabun Gap-Nacoochee School (GA), and Camp Buc (Sapphire, NC).

- 5) *Student engagement*

Many juniors and seniors are involved in activities that enrich their academic experience including participation in WCU's Eco-Cats club; volunteer or paid work for the WCU Sustainability Office; volunteer work with a variety of regional non-profit groups such as the

Watershed Association of the Tuckasegee River; research opportunities through the Biology and GNR Departments; and international experiences such as study in New Zealand and Australia, double-majors with the International Program, and an Honor's student with International Experience.

Areas where the ES program is not as strong:

- 1) Social aspects of environmental sustainability are not represented as strongly in the curriculum compared to the biological and physical sciences;
- 2) Because ES majors develop their own upper level curricula they get spread out across other degree programs on campus, making it difficult for students to maintain a sense of identity or community associated with ES;
- 3) Other than one ES faculty member (Laura DeWald), ESPC faculty who administer the ES program have no formally designated responsibilities or evaluation with regard to their contributions to the ES program (their primary obligations and responsibilities are to their own Academic Departments);
- 4) The ES program struggles to maintain visibility to students and peers within WCU (a problem common to interdisciplinary programs);
- 5) Faculty and programming changes occurring across two colleges and multiple degree programs throughout WCU makes curriculum monitoring difficult.

Standard 2. The program engages in ongoing, systematic planning reflective of the University's strategic priorities

The ESPC engages in systematic planning and assessment. Since the 2011 program review, planning has included development of the following documents: program prioritization (App. 2.1), strategic plan (App. 2.2), governance By Laws (App. 2.3), and an assessment of learning outcomes plan (App. 2.4).

The strategic ends in our ten-year strategic plan are to:

1. Contribute to environmental sustainability leadership on campus and regionally
2. Develop instructional capacity to address enrollment growth in the ES degree program
3. Improve visibility of the ES program
4. Increase the number of majors to 75-100 within the strategic plan time period

Specific connections of these strategic ends to the 2020 WCU Strategic Plan, as well as descriptions of the ways and means to achieve the strategic ends are described in the ES Strategic Plan (App. 2.2). The ESPC also developed and uses learning outcomes (see Standard 3) to inform and guide curricular changes and for programmatic activities. An ongoing challenge for the ES program is visibility to students and peers within WCU. For example, the ES program is difficult to find on the College webpage and in the course catalogue, and no office door is labeled as “Environmental Science”. However, some progress has been made on this front. As a part of implementing the strategic plan, the ES program was moved from the Chemistry and Physics Department (CHPH, its original home) to the Geosciences and Natural Resources Department (GNR), which is a more natural fit relative to the goals and teaching philosophy and applied nature of the degrees in GNR. The ES program received institutional and administrative visibility from its designation as a Priority 1 program (= one which has room for growth, and the University sees necessary in which to invest) after the University’s most recent program prioritization initiative. External and professional visibility of the program has also increased through research and project presentations by ES students at the annual WCU undergraduate research expo, the National Conference for Undergraduate Research, and the UNC System-wide Energy Summit. Increased visibility helps recruitment and retention efforts toward a target of 10-15 students graduating per year (proportional to University targets). Recruiting materials are distributed throughout campus and high schools in Western North Carolina, and the ESPC hopes to publish a newsletter to send to alumni and friends of the ES program. One newly created endowed scholarship (Steven Hodges Becker Scholarship) for ES will be awarded during the 2016-17 academic year. This scholarship aids the visibility of the ES program greatly, as well as assists in making the cost of a WCU ES education more easily managed.

With the exception of the Program Director, members of ESPC are volunteers, with no formal ES appointment. ESPC and other faculty contributions to the ES program generally fall under the service component of faculty appointments. Both visibility of the ES program and commitment to the ES program would be strengthened by having the work loads of ESPC members in their home departments officially include their roles in management and implementation of the ES program. A major priority for the ES program going forward is adding a faculty member who has an official appointment in ES. Currently, only ½ FTE of one faculty member is dedicated to the ES program.

The ES program relies heavily on courses in the Biology, Chemistry, Environmental Health, Geology, Natural Resource Conservation & Management, Political Science, and

Philosophy and Religion programs. It is important that these programs remain viable in their own right so that they can (1) contribute effectively to the curriculum of the ES program, and (2) support the additional demands the growing number of ES students places on them. As enrollment in the ES program increases, we anticipate that there will be a real need to augment teaching resources of classes taken by ES students, to prevent ES from becoming a burden on the contributing programs.

Standard 3. The ES program provides and evaluates a high quality curriculum that emphasizes student learning as its primary purpose

The curriculum is based on learning outcomes (LO) developed during the 2011 program review. ES Learning Outcomes are that students will:

1. Gain basic science knowledge and technical skills
2. Gain understanding of the basic relationships between the environment and people through studying (a) impacts humans have on environmental sustainability, (b) impacts the environment has on humans, and (c) policies that affect environmental sustainability
3. Be able to analyze and interpret basic environmental data
4. Develop competencies in the field by gaining (a) knowledge about the natural world in a field setting and (b) skills using field equipment and sampling techniques.
5. Develop competencies in the laboratory through use of instruments and techniques to quantify chemicals applicable to environmental problems
6. Develop effective skills in critical thinking; reading; writing, and oral & written communication
7. Develop skills to solve complex problems
8. Gain an interdisciplinary perspective toward environmental sustainability through integrating information from a variety of contexts
9. Clarify purpose and values through designing a student-specific curriculum plan of upper level courses that relates to their career goals.

Following the 2011 program review, every course in the ES curriculum (App. 3.1) along with other courses across campus were evaluated to determine if they contributed toward these learning outcomes, and changes (additions/deletions) were made based on this assessment. Alignment of curriculum with program learning outcomes is listed below.

Science and Technical Foundation:

- ✓ 36 credits of introductory Science Courses (Biology, Chemistry, Geology, Environmental Science, Geospatial Analysis and Mathematics) align with LO #1
- ✓ 9 credits of coursework examining the relationship between environment and people (Environmental Health, Environmental Policy, Environment and Society) align with LO #2

Advanced Study in Environmental Science:

- ✓ 3 credits of Quantitative Methods Courses align with LO #3
- ✓ 6-8 credits of field-based and laboratory-based courses align with LOs #4 and #5, respectively, and LOs 6, 7, 8
- ✓ 16 credits of upper level electives align with LOs #6, 7, 8
- ✓ 3 credits of the ES Capstone and two 1-credit ES seminar courses align with LOs #6, 7, 8

Foundation courses provide requisite knowledge for advanced courses while advanced study competencies and 16 credits of elective courses provide greater depth in understanding and measuring environmental sustainability. In addition to the 72 credit hours required within the degree program, students must complete 42 credits in Liberal Studies (WCU general education, most ES students can waive 9 of these credits in math and science). The total credit requirement for the degree is 120, which allows students 6 credits of electives. Other than 100-200 level courses in the Foundations Category required for all majors, there is significant flexibility in course selection. This deliberate design allows students to create individualized curricula to achieve their educational and career goals, while still meeting the interdisciplinary and program goals of the ES BS degree. Critical thinking, reading, and writing skills; effective communication (oral and written) skills; and skills to solve complex problems (LOs # 6 and 7) are reinforced throughout the curriculum. The WCU Liberal Studies (General Education) program ensures that ES majors are exposed to arts and music, humanities, history, social sciences, foreign culture and other disciplines that enrich their education and provide practice in critical reading, writing, and communication and math skills. The ES program does not directly contribute to the Liberal Studies program. However, all faculty on ESPC teach or have taught courses in their respective disciplines that are part of the Liberal Studies program.

Upper level elective courses most commonly taken by ES majors are listed on the curriculum check sheet (App. 3.1, 3.2). However, students are free to select any 300- or 400-level course at WCU as long as they can justify how particular courses will help achieve career

goals. Students prepare a 2-year plan (App. 3.2) that is due during ES250 (aligns with LO #9). In this document (a graduation requirement for ES), the student identifies career goal(s) and describes what is needed (qualifications and experiences) to attain those career goals based on actual job descriptions. The student lists upper level courses they plan to take and describes how these courses will help achieve career goal(s). Finally, the student must describe how their suite of courses meets interdisciplinary goals of the ES program. The 2-year plans are approved by the student's advisor in consultation with the ESPC when needed, but are designed to be flexible and students are encouraged to revise their plans as their awareness of career options changes throughout their junior and senior years. Copies of the 2-year plans are kept by the student's advisor and the ES program director. In addition to achieving LO #9, the plans help students design a curriculum around when courses are offered (many upper level courses are offered only once per academic year or only every other year), help balance student course loads, and provide a mechanism of quality control within a highly flexible curriculum. The plans are scrutinized to ensure they do not represent a less rigorous version of another degree. Often students accumulate enough credits to minor in another discipline. The diversity of curricula among ES majors thus reflects the diversity of the discipline of environmental science. Student curricula have focused on monitoring (especially water quality), communication, conservation, built and natural environmental sustainability, disaster response, spatial analysis, sustainable agriculture, and engineering, among many others.

Some ES majors have fulfilled most of their upper level electives through special programs including the University of North Carolina at Chapel Hill's Institute for the Environment (IE) semester, special programs within the Honors College, and studies abroad through the WCU International Program. The IE program is an 18-credit hour intensive resident field experience located at the Highlands Biological Field Station, where students take field-based environmental ecology courses and conduct environmental research projects. International experiences have included New Zealand and Australia.

All but four courses in the ES curriculum are provided by other degree programs throughout WCU. The two "bookend" courses are the gateway freshman Introduction and Approaches to Environmental Science (ES150 = 4 credits including a 2-hour lab once per week) and the capstone Senior Seminar in Environmental Problems (ES495 = 3 credits). ES150 is team-taught by representatives of each of the major disciplines contributing to the ES program. Students in ES150 practice critical thinking, problem solving, thinking in an interdisciplinary way, and technical report writing throughout the course. The ES495 capstone is an open-ended

environmental sustainability problem selected in advance by the instructor and that serves as the basis for a problem-based learning project for the entire class. Projects have a real client (inside or outside WCU) and meets WCU service-learning goals; students must use multiple perspectives and problem-solving skills to define and address a problem they have not encountered in previous coursework. They determine what data to collect and how to analyze it, and develop recommendations to improve environmental sustainability for the client. Indications of quality are that recommendations made by the student teams are being implemented by the clients, capstone projects have won first place awards at the UNC-system wide Appalachian Energy Summit for three of the five years the summit has taken place, and graduates have received jobs as a result of their capstone experience. The WCU Sustainability Officer noted after the Fall 2016 capstone presentation that capstone projects have gotten more complex over time, yet the students continue to complete them successfully.

The remaining ES courses (ES250 and ES350) are 1-credit seminar courses which were developed as a response to the 2011 program review. ES majors indicated they wanted to meet together as a group more often and the program review team felt these two seminars would help provide common experiences that would build a sense of community among majors. Anecdotal observation of interaction among students in the capstone indicates a greater sense of community has been created and the students are ready and excited to get to work together on their capstone. In fact, ES alumni identify themselves as belonging to a particular capstone project group.

Periodic analysis by the ESPC of grades achieved in all upper level courses (see assessment section below) is used to determine which courses need discipline-specific prerequisites and those in which ES majors can be successful without the prerequisites. Many faculty allow ES majors to take their courses without discipline-specific prerequisites. Our anecdotal experience is that faculty enjoy the interdisciplinary perspective that ES students bring to their courses, and many faculty across campus work with ES students to find pathways to ensure success in their upper level courses. For example, an ES student intending to pursue a Master of Environmental Engineering has been allowed to take Engineering courses out of sequence from the engineering cohort. As enrollment grows at WCU, however, some faculty have had to limit the number of ES majors they will accept into their upper level discipline specific courses.

Analysis of the number of semesters for completion of the ES degree shows it is easily accomplished by students entering the ES program as freshman within eight semesters, and

students transferring into the ES program (> 60% of the majors come from other degree programs at WCU or from community colleges) can finish within 4 semesters if they have taken appropriate foundation courses. Failure of students to complete the degree during these time periods is related to student performance and not to limitation of course offerings. Several students have completed double majors (International Studies, Environmental Health [ENVH], Geology, Natural Resources Conservation and Management [NRCM], Engineering, Communications) and many complete a minor. Minors typically include Biology, Geology, NRCM, ENVH, Chemistry, Geography, Philosophy, Political Science, and Professional Writing.

Program Assessment

Assessment has been ongoing since the program began in 2004, with full programmatic assessment of desired student learning outcomes occurring regularly as students began to graduate in 2007. The ES program Assessment Plan (App. 2.4) describes a variety of assessment tools used such as a directed final journal assignment in the capstone course where students reflect on what they have learned and achieved in the ES program. In addition, student data are compiled from their degree audits. For students who completed their degree between 2011 and 2015 (57 majors), average GPA's ranged from 2.8 to 3.25, both within the ES major and overall. Transfer students (students with ≤ 2 years between ES150 and graduation, and/or students in ES150 with ≥ 30 hours of transfer credit) end up finishing with similar (although slightly higher) GPAs to their 4 year counterparts.

Status	Overall Ave. GPA	Within Major Ave. GPA
≤ 2 yrs. between ES150 and graduation	3.09	3.13
>2 yrs. between ES150 and graduation	2.94	2.93
≥ 30 hrs. transfer credit	2.91	2.98
< 30 hrs. transfer credit	3.05	3.05

Assessment of ES interdisciplinary goals is achieved by examining composition of the suite of courses taken by ES majors. The distribution of courses taken by ES majors reflects broad, interdisciplinary training; students finishing between 2011 and 2012 took courses from 21 separate degree programs to fulfill major requirements. Only three out of 57 students had more than 50% of major classes in a single discipline (ENVH) and these were double majors. ENVH is the most common program that students take courses from to fulfill major requirements. The

average percentage of courses taken in each of the disciplines to fulfill ES major requirements are ENVH = 25%, followed by Chemistry (CHEM=15%), Geology (GEOL=14%), Natural Resources Conservation and Management (NRM=14%), Biology (BIOL=10%), and then a wide variety of other disciplines (=22%). Environmental Science students generally do well in the courses within the various disciplines that are used to fill major requirements. In courses taken by 5 or more ES majors, only 4 of 42 courses had more than 10% of the ES students finish with a D or an F and there were no courses where more than 20% of ES students finished with a D or an F. Courses where ES majors struggle the most include NRM320, GEOL405, ENVH457, and NRM472.

Other than assessment using student reflections (see below), mechanisms for assessing whether ES learning outcomes are being achieved within courses taken by ES majors have been difficult to develop because the faculty teaching the courses are not a part of the ES program. This is a common assessment problem for all interdisciplinary programs. It is also unclear if ES majors understand what interdisciplinary means. However, the outgoing ES Program Director (DeWald) got several ideas and possible approaches while attending the June 2016 AALHE (Association of Assessment of Learning in Higher Education) conference which will be discussed by the ESPC in the upcoming year. One possibility is to expand use of the ES495 (the capstone) as an assessment tool by including feedback from clients (external review), and faculty review of student presentations and reports. Currently, at the end of ES495, students are asked to reflect on whether their coursework provided them essential skills they will need post-graduation. Overwhelmingly, students felt the ES program had exceeded/met expectations in fostering effective oral and scholarly communication, defining and assessing a problem, using quantitative methods and literature to support decisions, conducting independent and team research, and using knowledge in an interdisciplinary way. Only a few students felt their expectations were not met. Most courses taken by ES majors were commended, in different combinations, for providing these skills. Thus, regardless of the course choices the students make, they appear to be achieving program learning outcomes.

All students earning a BS in ES between Spring 2007 and Fall 2014 (n=75) were sought out via Facebook and asked to give an update on their current employment/graduate school status. Fifty two (69%) graduates responded. Of the 52 respondents, only one was unemployed (2%) and it was unclear what two of the other former students were doing (4%). Six of the former students (12%) were working in a profession unrelated to their major. The remaining graduates (n=43, 83%) were either in a graduate program, or were volunteering or employed in

their area of expertise. Of these 43 graduates working in some capacity within their discipline, the largest proportion (n=12, 28%) were working as environmental consultants for an environmental company, or were employed within the environmental division of a larger company. Two additional former students (5%) responded that they were “techs”, but did not elaborate further. Seven of the 43 (16%) were attending graduate school. Four of the 43 (11%) were working within education, either as school teachers or in outdoor classrooms. Three of the 43 (7%) were employed by universities, one as a sustainability officer, one as a lab technician, and one with a biological field station. Six of the 43 (14%) were working as environmental officers within local municipalities (either town or county) and an additional graduate was working with Duke Energy. Three of the 43 (7%) were working in some capacity with non-profit organizations and one additional graduate was working with the Peace Corps. Four of the 43 graduates (9%) were serving as volunteers and listed no other employment.

Based on our 5-year assessment, the ES program appears to be providing broad, interdisciplinary training that teaches concepts and methods of environmental science effectively and enables graduates to be successful in environmental careers. Students are taking, and are successful in, a broad range of courses, and they believe these courses are providing essential skills. After graduating from WCU, they are able to find employment, volunteer, or continue on in graduate school in an area of their expertise. Therefore, we feel our learning outcomes are being achieved.

Standard 4. The Program has sufficient faculty resources to meet its mission and goals

As an interdisciplinary program, ES relies on faculty whose appointments are in other departments. Although only one faculty member has an appointment dedicated even partially (50%) to ES, there are a number of faculty committed to the program who teach in ES courses, advise ES students or serve on the ESPC. The ESPC includes a faculty member from Geology, NRCM, Biology, ENVH, Philosophy and Religion, Political Science and Policy, and Environmental Science (App. 4.1). All individuals participating directly in the ES program are full time and except for Lauren Bishop (WCU Chief Sustainability Officer), who is staff, and Andy Coburn, who is staff/adjunct faculty, these individuals are tenured or tenure-track with credentials consistent with SACS standards in terms of degrees, work experience, honors and awards, and achievements that promote effective teaching and productive scholarship. Faculty who have contributed to the ES program include three Full Professors, 11 Associate Professors, and one Assistant Professor. Lauren Bishop, Director of the Office of Sustainability and Energy

Management, is part of the team who teaches ES350, and she works closely with students in the capstone projects. She is also the advisor for the environmental club on campus (Eco-CATS) where many ES students are members. David King, the energy manager for WCU also works closely with students in many of the capstone projects. The entire faculty list includes 12 male and 5 female members, and all but one are Caucasian. Although faculty are not very diverse from a demographic standpoint, they represent a great diversity of academic backgrounds that ES students benefit from. The CV's (App. 4.1.) of these faculty clearly show that the individuals helping deliver the ES program are highly productive scholars, effective teachers, and committed to service. The dedication of these faculty and staff to the ES program has allowed it to grow and thrive. It is expected that membership on ESPC will rotate over time as faculty time and interests change or faculty retire.

The ES Program functions much like a department in terms of service and advising loads which are taken on by ESPC faculty in addition to the service and advising expectations of their home departments. DeWald, as the only faculty member with a portion of her FTE in ES (1/2 FTE), is the primary teacher for ES150 (4 cr) and teaches ES495 (3 cr). ES 150 includes modules taught on a volunteer basis from faculty of the various disciplines comprising the ES curriculum. ES250 (1 cr) and ES350 (1 cr) are co-taught in the spring by teams of two or three as an overload to their regular teaching schedules. In exchange for helping deliver the ES program, contributing faculty can apply to the ESPC for support from the ES budget for scholarly travel and faculty development. Faculty home departments and WCU also provide professional, research, and pedagogical development opportunities for faculty through a variety of opportunities. Other than Laura DeWald who has a partial appointment (50%) in ES, annual and promotion/tenure evaluations for faculty serving on ESPC occur fully within their home departments. Because Laura DeWald has an interdisciplinary appointment, her evaluations are conducted by an interdisciplinary committee representing members of ESPC and her home departments (NRCM and BIOL). There is a separate Collegial Review Document (App. 4.2) for faculty with an appointment in ES (currently only DeWald), and the responsibilities of the ES Program Director are also described in this document.

In our judgment, the faculty resources available to the ES program are precarious. The faculty who contribute to ES are dedicated and of high quality, but their capacity is limited because, other than DeWald, their lines and evaluations are fully within their respective programs. This leaves the ES program vulnerable to turnover among the contributing faculty, changes in their program curriculum or demands, and changes in their research agendas, all of

which make it sometimes difficult to staff ES250 and 350. Replacement hires of faculty teaching the courses ES students take in other departments may or may not be interested in contributing to the ES program. In addition, the ES program generates SCH for other degree programs; this makes it difficult to be competitive for new faculty, as SCH generation is often used to prioritize new lines. Lack of faculty with appointments in ES will limit the program's continued growth.

Standard 5. The program attracts, retains, and graduates high quality students

The program grew steadily from the time it started with zero students in 2004 to 45 at the time of the 2011 program review; since then it has fluctuated between 60 and 75 students (App. 5.1). Because a majority of majors are transfer students, trends in numbers reflect the trends in the transfer student population at WCU. The capstone (ES495) has averaged 17 students the past three years (App. 5.2). Enrollment in ES150 is currently (Fall 2016) 50% female. Since the 2011 program review, on average 37% of the majors are female and fewer than 10% identify as ethnic minority (App. 5.1). These numbers are lower than the general student body at WCU but slightly higher than most of the STEM majors. Students are assigned an advisor from ESPC by the Program Director, Additional advising is provided by the WCU advising center and Honors College advisors. WCU also has an advising day once per semester when classes are cancelled for students to meet with their academic advisors. In addition to individualized advising on this day, the ES program offers group sessions that teach students how to monitor their progress toward graduation using their degree audits and hosts a jobs panel of juniors and seniors who talk about their summer work experiences and how they obtained employment. The ES student ambassadors also help with peer advising throughout the year. Finally, the 2-year plans (previously described) created by ES majors are used by the students to guide course selection. ES majors are welcome in any of the disciplinary student-clubs on campus, and many ES students become involved with sustainability efforts on campus through the ECO-Cats club and working with the WCU Sustainability Office. Since the 2011 program review, the ESPC has also been working to find ways to encourage students to become more involved in research.

Standard 6. The ES program has an administrative structure that facilitates achievement of program goals and objectives

Decision-making, planning, and implementation of the ES program is conducted by the ESPC who meets monthly throughout the year, with more frequent meetings when the workload is higher. The council endeavors to work by consensus, and handles all curriculum and budget

issues as a committee of the whole where all members have an equal voice and vote. The role of the program director (defined in the ES collegial review document, App. 4.2) is to handle administrative matters, coordinate all activities such as organizing ESPC meetings, assigning advisors, recruitment, and managing the budget. The program director is supposed to receive a 3-credit course release per semester but rarely does this actually happen due to teaching demand needs in other departments and programs. The diversity of program representation within ESPC provides the necessary awareness of happenings and changes in the degree programs on which the ES curriculum relies.

The 2011 program review site visit report expressed concern that the ES program was too reliant on the program director who was the only person with a formal appointment in ES. Subsequently, the ESPC developed governance By-Laws (App. 2.3) which also outlined a rotating program director model (3 year, no more than 2 consecutively, elected from among the ESPC, conditional upon the approval of the Dean of Arts & Sciences). The goal was to develop greater ES program institutional knowledge among ESPC members. The By-Laws also describe who ES faculty are, and provide guidelines for who can apply to the ESPC for professional development support.

Standard 7. The program has adequate resources to meet its goals and objectives

Budget: The ES program is highly efficient and extremely cost effective relative to the number of majors. The program maintains an annual operating budget separate from their administrative home (CHPH 2004-2013, GNR 2014 – present). It is overseen by the Program Director in consultation with the ESPC. The 2004 budget was \$10,000; it was cut to \$9,500 for six years, and has rebounded to \$11,428 in 2015. The budget is used to support professional development travel of students, faculty, and staff who contribute to ES (34% in 2015), course supplies (27% in 2015), and student ambassador salaries (14% in 2005). Any year-end balance is used for supply or equipment needs for the home department. Based on end-of-year budget discussions in the ESPC, current budget resources appear adequate. However, this may be due to contributing departments' support such as photocopying costs and course supplies.

Equipment and Facilities: ES has access to facilities in their home department, and faculty who teach courses taken by ES students take have access to facilities in their departments to support these courses. WCU has the standard field, laboratory, analytical, computing, and instructional equipment and facilities commonly associated with STEM programs. The ES

program contributes funds to support some repair and replacement costs of equipment in their home department. Lists of facilities and equipment for all of the departments who offer courses for ES students are in Standard 7 of their program review self-study documents, which can be found on the Office of Institutional Planning and Effectiveness website (<http://www.wcu.edu/learn/office-of-the-provost/oipe/unitreview/index.asp>). In general, equipment and facilities are good and current. All faculty who teach ES courses are located in the Stillwell Science (ST) Building, the Natural Science (NS) Building and the Health and Human Sciences (HHS) building. The ST building is the current ES administrative home and underwent a complete renovation completed in January 2008. The HHS building is new. The NS building is very old but a new building has been funded and will be built over the next 5 years. Faculty have research spaces in their home departments, although many of these spaces are increasingly burdened as they are also used to support course-based projects. At this point most research space is fully utilized, and any growth will be problematic.

Our campus property is an excellent, heavily used resource for student education and research. The main and west campus cover about 350 acres each and include streams, soils, outcrops, wetlands, and varying forest ecotypes. On any given year, over 1000 students will conduct a field exercise or project on WCU's property. In addition, the Western Carolina Hydrological Research Station (wchrs.wcu.edu), provides students ongoing research opportunities in and out of classes. Other nearby facilities provide off-campus sites for class trips and student research; these include the Helen Patton Environmental Center (WCU-owned), Highlands Biological Station, Coweeta Hydrologic Lab, and USFS Bent Creek Experimental Station.

Library Resources: We have good resources and access for our type of university. Our access to journals increased significantly as journals shifted to electronic formats. The library is also responsive to specific needs of our programs.

Program Staffing: The Administrative Support Associate (ASA) for the home department of ES (currently Laura McFalls in GNR) provides assistance to the ES program director, faculty teaching in the ES program, and ES majors. This includes help ordering supplies, travel paperwork, scheduling the four courses each year, and answering questions from students.

Other University Offices: No department is an island, and ours is no exception. We rely heavily on other university offices, such as Motor pool and Information Technology. The Office of Sustainability and Energy Management has been especially critical to the success of the ES program by providing expertise and work experience for ES majors.

Appendix 1 -- Standard 1

A1.1. WCU 2020 Strategic Plan

A1.2. College of Arts and Sciences Strategic Plan

Note: ES Strategic Plan and Bylaws are in Standard 2 Appendix



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VISION

FOCUSING OUR FUTURE





THE STRATEGIC PLAN

ENDORSED BY THE WESTERN CAROLINA UNIVERSITY BOARD OF TRUSTEES

JUNE 8, 2012

OUR MISSION

(WHO WE ARE)

To improve individual lives and enhance economic and community development in our region, state, and nation through engaged learning opportunities in our academic programs, educational outreach, research, and creative and cultural activities.

OUR CORE VALUES AND GUIDING PRINCIPLES

(WHAT GUIDES AND INSPIRES US)

- Excellence in scholarship, teaching, and learning
- Collaboration with and respect for our communities
- Free and open interchange of ideas
- Responsible stewardship and organizational effectiveness
- Organizational and environmental sustainability
- Cultural diversity and equal opportunity

OUR VISION STATEMENT

(WHO WE WANT TO BE)

To be a national model for student learning and engagement that embraces its responsibilities as a regionally engaged university.



2020 VISION: FOCUSING OUR FUTURE

At the opening of the 2011 fall semester, I announced that development of a new strategic plan would be a top priority for the first year of my administration as chancellor of Western Carolina University. In the 10 months that followed, the 2020 Commission, with 36 representatives from across the campus and from the broader external community, guided the process of formulating a strategic plan that articulates a shared vision for the University, one that reaffirms our collective commitment to excellence, student success, and external focus and engagement.

The 2020 Commission solicited input at seven open community forums from Asheville to Murphy; during numerous campus conversations with faculty, staff, and students; and through an online form on the strategic planning website. With those campus and community ideas providing a solid foundation, the Commission drafted six overall strategic directions for the campus and oversaw the work of six subcommittees charged with proposing specific goals and initiatives for each direction.

After additional fine-tuning and further public input, the Commission distilled a core vision and a final set of strategic directions, goals, and initiatives into Western Carolina's strategic plan, 2020 Vision: Focusing Our Future, which will serve as our road map for the coming years. This report includes a summary of that road map, as well as the plan in its entirety.

The course charted by our strategic plan is ambitious, but it is achievable. The plan, while built upon the institution's strengths and traditions, is forward-looking. 2020 Vision: Focusing Our Future will guide the entire Western Carolina University community as, together, we define our future in pursuit of distinction.

David O. Belcher

David O. Belcher
Chancellor



WCU'S FACULTY, STAFF, AND STUDENTS TOGETHER MAKE THE UNIVERSITY'S ACADEMIC MISSION PARAMOUNT.

Western Carolina University will provide each student a rigorous, relevant curriculum with learning experiences that emphasize knowledge and skills that are durable, flexible, and transferable. WCU will offer educational opportunities that result in graduates who are equipped with the skills necessary for success; who are ready to compete in a challenging, changing, and global environment; and who are prepared to contribute to the intellectual, cultural, and economic development of our region and state.

By 2020, WCU will be acknowledged as the regional educational leader in the creative arts, education of teachers and school personnel, environment and environmental policy, health professions, innovation and technology, and recreation and tourism. All WCU students, regardless of chosen academic program, will be able to integrate information from a variety of sources, solve complex problems, communicate effectively and responsibly, and be engaged citizens in their community and the world.

Recognizing the vital role higher education plays in the region's economy, the University will increase its number of graduates by 25 percent by 2020. WCU will eliminate barriers to student access and success by improving cooperation with public school and community college partners and by securing significant private gifts for merit- and need-based scholarships and financial aid. The University will increase its first-year retention rate to 80 percent and its six-year graduation rate to 60 percent.

FULFILL THE EDUCATIONAL
NEEDS OF OUR STATE AND REGION

2020 PLAN STRATEGIC DIRECTION 1





ENRICH THE
TOTAL STUDENT EXPERIENCE

2020 PLAN STRATEGIC DIRECTION 2

EVERY WCU STUDENT'S EXPERIENCE REINFORCES HIGH STANDARDS AND EXPECTATIONS. INCORPORATES MEANINGFUL EXTERNAL ENGAGEMENT. AND INSTILLS PRIDE IN THE UNIVERSITY.

WCU is committed to the education of its students as citizens who are prepared to contribute to the welfare of our region and state. Our pursuit encompasses both curricular and co-curricular elements to prepare students to be active participants in a vibrant, intellectually, culturally, and economically thriving world.

The University will foster a student-centered campus culture where every academic support and student service unit embraces academic excellence as a point of emphasis. Formal mentoring programs will help students develop a sense of personal, intellectual, and professional identity, while expanded leadership and experiential learning opportunities at the local, regional, national, and international levels for all WCU students will result in graduates poised to become the next generation of leaders.

Western Carolina pledges to build and sustain a high-quality athletics program that excites and instills pride among students, faculty, staff, alumni, and friends of the University. Western Carolina will create and sustain campus traditions that strengthen students' connections to their University and its surrounding communities, including its Cherokee neighbors.



ENHANCE OUR EXTERNAL PARTNERSHIPS

2020 PLAN STRATEGIC DIRECTION 3

WCU IS RECOGNIZED AS AN ACTIVE PARTNER WITH THE WESTERN NORTH CAROLINA REGION, ITS COMMUNITIES, ORGANIZATIONS, AND BUSINESSES.

Partnerships with regional businesses and industries, nonprofit and civic organizations, government agencies, communities, and municipalities represent an integral part of WCU's core mission as a regionally engaged institution of higher education. The University's commitment to enhancing external partnerships is demonstrated by its emphasis on integrated learning experiences, commitment to engaged scholarship, and embrace of its role as both a steward of the unique place that is Western North Carolina and as a catalyst for economic and community development.

To position itself as a leader in those efforts, the University will establish an annual leadership tour of the Western North Carolina region and will facilitate an annual conference for regional leaders from the public and private sectors to focus attention and action on strategies for economic and community development.

The University pledges to develop its West Campus, with its unique Millennial Initiative designation, as a national model for building public-private partnerships that are integrated into the academic enterprise and that support the community and the economy. Expansion of academic programs at Biltmore Park will position WCU as a key provider of graduate and professional programs in the Asheville-Hendersonville area. Closer to home, WCU will collaborate with external partners to help Cullowhee and Jackson County grow in ways that preserve their natural beauty and enhance their sense of community.



WCU IS RECOGNIZED AS ONE OF THE MOST HIGHLY COMPETITIVE AND DESIRABLE EMPLOYERS IN THE REGION.

Excellent faculty and staff are a necessity for the fulfillment of Western Carolina University's mission. In order for the University to succeed, it must take care of its most important resource – its people.

The University will make it an institutional priority to attract, reward, and retain the highest quality employees through measures that positively affect not only compensation, but also other issues that shape the campus work-life environment.

The University will advocate for competitive salary and total compensation packages for its employees and will facilitate professional development for faculty and staff. WCU will embrace leadership development, succession, and stability, and as appropriate, will rally support for issues related to quality of life, all of which will enhance the recruitment, development, and retention of qualified and satisfied faculty and staff.

Western Carolina will focus on developing an environment for faculty and staff members that enhances their personal and professional lives by encouraging opportunities for spousal or partner hiring by regional businesses and institutions; by seeking affordable child care, health care, and housing options; and by cultivating an inclusive and diverse campus community. In addition, the University will partner with appropriate civic leaders in the development and revitalization of Cullowhee and Jackson County to foster a community core around the campus aimed at improving the place that most WCU faculty, staff, and students call home.

INVEST IN OUR PEOPLE

2020 PLAN STRATEGIC DIRECTION 4





WCU'S CORE INFRASTRUCTURE IS SUSTAINABLE AND POSITIONED TO SUPPORT ITS STRATEGIC PRIORITIES.

It is critical that Western Carolina University have sufficient and constantly updated infrastructure to support its mission and vision. Infrastructure is more than bricks and mortar, wires and fiber, water and sewer, and streets and sidewalks. Infrastructure also includes sustainable fiscal practices and enhanced business processes and procedures necessary to ensure the fiscal stability of the University.

WCU will develop a new comprehensive master plan that incorporates anticipated growth in enrollment and that considers the impact that growth may have on our mountain environment and our community neighbors. Sustainability, energy efficiency, green space, and campus safety and security will be as important as location of new buildings, renovation of older facilities, solutions to transportation problems, and meeting the University's backlog of information technology infrastructure needs.

The University will consistently pursue increased effectiveness and efficiency of its campus business processes and, where appropriate and in the best interests of the institution, will implement organizational realignment.

INVEST IN OUR CORE RESOURCES
2020 PLAN STRATEGIC DIRECTION 5





WCU DEVELOPS THE RESOURCES
AND MARKETS THE VISION TO
ENSURE ACHIEVEMENT OF ITS
STRATEGIC PRIORITIES.

Western Carolina's continued emergence as an ambitious institution dedicated to the economic and community development of the region depends on the availability of consistent and robust sources of funding. A critical element of that effort is an ongoing communications strategy designed to ensure that internal and external stakeholders alike are informed about the people, programs, priorities, and progress of the University.

The University will embark upon a comprehensive fundraising campaign with a special emphasis on securing the endowed merit- and need-based scholarships necessary for WCU to consistently recruit and retain strong academically qualified students and to support WCU's commitment to both student access and student success. By 2020, the University will increase the number of research grant and contract applications by 100 percent, the number of grants and contracts received by 50 percent, and the total annual dollar figure awarded by 25 percent.

Enrollment growth also provides new resources for the University. Toward that end, WCU will develop and implement a comprehensive enrollment management program. The University will advocate for tuition policy flexibility for students in bordering states that surround Western Carolina's regional service area, differential tuition rates for high-demand/high-expense programs, and modification or elimination of differential treatment of distance education in the UNC system's funding formula.



2020 VISION: FOCUSING OUR FUTURE

THE STRATEGIC PLAN

STRATEGIC DIRECTION #1 FULFILL THE EDUCATIONAL NEEDS OF OUR STATE AND REGION

WCU's faculty, staff, and students together make the University's academic mission paramount.

STRATEGIC DIRECTION #2 ENRICH THE TOTAL STUDENT EXPERIENCE

Every WCU student's experience reinforces high standards and expectations, incorporates meaningful external engagement, and instills pride in the University.

STRATEGIC DIRECTION #3 ENHANCE OUR EXTERNAL PARTNERSHIPS

WCU is recognized as an active partner within the Western North Carolina region, its communities, organizations, and businesses.

STRATEGIC DIRECTION #4 INVEST IN OUR PEOPLE

WCU is recognized as one of the most highly competitive and desirable employers in the region.

STRATEGIC DIRECTION #5 INVEST IN OUR CORE RESOURCES

WCU's core infrastructure is sustainable and positioned to support its strategic priorities.

STRATEGIC DIRECTION #6 GARNER SUPPORT FOR THE VISION

WCU develops the resources and markets the vision to ensure achievement of its strategic priorities.

STRATEGIC DIRECTION #1 FULFILL THE EDUCATIONAL NEEDS OF OUR STATE AND REGION

WCU'S FACULTY, STAFF, AND STUDENTS TOGETHER MAKE THE UNIVERSITY'S ACADEMIC MISSION PARAMOUNT.

Western Carolina University is committed, first and foremost, to fulfilling its academic mission of providing each student a rigorous and relevant curriculum with learning experiences that emphasize knowledge and skills that are durable, flexible, and transferable. WCU is committed to providing an education grounded in a strong set of foundational knowledge and skills combined with specific practical knowledge in content degree areas, the outcome of which is personal, intellectual, and economic enrichment for each student. WCU seeks to ensure educational opportunities that result in graduates who are prepared for success; who are ready to compete in a challenging, changing, and global environment; and who are committed to contributing to the intellectual, cultural, and economic development of our region and state.

GOAL 1.1: *Deliver high-quality academic programs (undergraduate, graduate, and professional) designed to promote regional economic and community development.*

INITIATIVE 1.1.1: Undertake a rigorous and inclusive process to prioritize all undergraduate and graduate programs based on universally applied criteria, including quality, regional need, demand, enrollment trends, retention and graduation rates, and alignment with the University mission and the following integrated curricular focus areas: creative arts, education, environment, health, innovation and technology, and recreation and tourism.

INITIATIVE 1.1.2: Develop visionary strategic plans for each of the curricular focus areas through inclusive processes to accomplish the following:

- Position and market WCU as the cultural heart of Western North Carolina in the creative arts
- Fulfill WCU's historic and continuing commitment to be the regional leader in teacher education
- Assume regional leadership in the study of the environment and environmental policy
- Position WCU as the premier regional provider of baccalaureate and graduate education in the health professions with an emphasis on culturally sensitive, integrative, and inter-generational health care
- Establish WCU as a hub of innovation, facilitating interdisciplinary connections among academic programs in such disciplines as business, the sciences, engineering, technology, and entrepreneurship and external collaboration with industry, start-up companies, research institutes, nonprofit organizations, and government agencies
- Advance the recreation and tourism industries of Western North Carolina

INITIATIVE 1.1.3: Position WCU as a preferred provider of graduate and professional programs in the greater Asheville-Hendersonville area in fulfillment of its historic commitment to this vital part of the Western North Carolina region.

INITIATIVE 1.1.4: Provide access to academic programs at off-campus sites in Western North Carolina within available resources and as dictated by data-based needs analyses.

INITIATIVE 1.1.5: Align departments, colleges, and divisions, as appropriate, to support the strategic vision of the University.

INITIATIVE 1.1.6: Identify and develop integrated, cross-disciplinary centers/institutes of study and outreach, where appropriate, based on the curricular focus areas.

INITIATIVE 1.1.7: Increase the total number of WCU graduates by 25 percent by 2020 to meet the regional need for an educated work force.

GOAL 1.2: *Fully integrate into the general education program and into each major and minor at both undergraduate and graduate levels an emphasis on those core abilities expected of all WCU students: to integrate information from a variety of contexts; to solve complex problems; to communicate effectively and responsibly; to practice civic engagement; and to clarify and act on purpose and values.*

INITIATIVE 1.2.1: Hire faculty and staff who understand and will contribute to WCU's core educational values, its holistic academic mission, its commitment to outreach and engagement, and the achievement of the institution's strategic priorities.

INITIATIVE 1.2.2: Develop and implement effective, faculty-led mentoring programs for students, aided and reinforced by advising and course scheduling in the support units and designed to reinforce the University's core values.

INITIATIVE 1.2.3: Incorporate writing and research into all levels of the curricula.

INITIATIVE 1.2.4: Ensure that all academic programs incorporate the core abilities detailed in Goal 1.2.

INITIATIVE 1.2.5: Incorporate into the formal evaluation of faculty work a consideration of how curricula, pedagogies, and scholarship successfully advance the University learning outcomes.

GOAL 1.3: *Ensure that all programs include cross-curricular, experiential, applied, and international/global awareness opportunities for all students.*

INITIATIVE 1.3.1: Reduce, and where possible eliminate, bureaucratic and financial barriers to cross-curricular design and team-teaching.

INITIATIVE 1.3.2: Incorporate expectations for experiential and applied learning opportunities, including undergraduate research opportunities, in the curricular review process.

INITIATIVE 1.3.3: Ensure that meaningful international/global experience opportunities are available to every student, regardless of major, including options to study with international scholars on WCU's faculty, to participate in faculty-led international travel courses, and to study abroad. (See Initiative 2.1.6)

GOAL 1.4: *Eliminate barriers to student access through coordinated endeavors with Birth-12 (B-12) and community college partners.*

INITIATIVE 1.4.1: Establish a network of regional advisory committees to enhance communication and collaboration among B-12, community college, and WCU faculty and administrators in the areas of 1) curriculum goals and transferability; 2) the benefits of higher education and the best strategies for marketing and recruiting; and 3) admissions and financial aid.

INITIATIVE 1.4.2: Review, revise where appropriate, and electronically automate all articulation agreements between WCU and community colleges in the WCU service area with the goal of maintaining high academic standards and facilitating curricular transfer; develop a standard review protocol and timeline.

INITIATIVE 1.4.3: Expand opportunities for WCU staff, faculty, and students to visit with B-12 students and community college students (both on- and off-campus) to share information regarding the importance of higher education and the pathways, processes, and programs at WCU.

INITIATIVE 1.4.4: Expand coordinated communications and recruiting efforts among B-12, community colleges, and WCU regarding the value of education and affordable avenues for all individuals to access and benefit from it.

GOAL 1.5: *Make WCU (the Cullowhee campus and the off-campus site at Biltmore Park in the Asheville-Hendersonville area) a destination for short-term, educationally based programs, activities, and events, including summer school, continuing education, camps, conferences, and personal enrichment opportunities.*

INITIATIVE 1.5.1: Pursue a cohesive, consistent, and efficient organizational and policy structure to facilitate short-term, educationally based programs, activities, and events, including review of facilities use policies, University organization, and virtual format possibilities.

INITIATIVE 1.5.2: Expand the number of resident and distance summer school offerings for a wide variety of learners, including WCU students, guest students, senior citizens, B-12 students, and the general public; expand summer school enrollment by 25 percent by 2020.

INITIATIVE 1.5.3: Expand the number of camps and conferences that WCU offers by 50 percent by 2020.

INITIATIVE 1.5.4: Develop and implement a coordinated marketing plan to promote WCU's Cullowhee campus and its programs in Asheville at Biltmore Park as conference destinations. (See Initiative 6.2.1)

GOAL 1.6: *Attain a student population that balances the University's commitment to access, its responsibility for student success, and ensures the sustainability of University funding. (See Initiative 6.3.2)*

INITIATIVE 1.6.1: Develop data-driven admission strategies (for first-time freshmen, transfer, graduate, and distance students) that

balance the University's aim to increase the academic profile of entering students while continuing to serve the educational role of access as a regional comprehensive university.

INITIATIVE 1.6.2: Conduct ongoing program assessment and prioritization and allocate resources to positively affect enrollment.

INITIATIVE 1.6.3: Expand efforts to recruit students in programs associated with the curricular focus areas.

INITIATIVE 1.6.4: Make the securing of endowed merit and need-based financial aid an institutional fundraising priority. (See Initiative 6.3.6)

INITIATIVE 1.6.5: Enhance support for scholarships, graduate assistantships, and student research to attract and retain students who are prepared for the rigors of a Western Carolina educational experience.

INITIATIVE 1.6.6: Increase the diversity of the student body and ensure campus resources necessary to support a diverse student body in order to serve the needs of the changing demographics of the region and state and to enhance the educational experience of all students.

INITIATIVE 1.6.7: Increase WCU's freshman-to-sophomore retention rate to 80 percent by 2020.

INITIATIVE 1.6.8: Increase WCU's six-year graduation rate to 60 percent by 2020.

STRATEGIC DIRECTION #2 ENRICH THE TOTAL STUDENT EXPERIENCE

EVERY WCU STUDENT'S EXPERIENCE REINFORCES HIGH STANDARDS AND EXPECTATIONS, INCORPORATES MEANINGFUL EXTERNAL ENGAGEMENT, AND INSTILLS PRIDE IN THE UNIVERSITY.

WCU is committed to working toward the best interests of the region and state through deliberately and consciously considering what it means to educate citizens, a pursuit that encompasses both curricular and co-curricular elements that serve to prepare students to participate in and help create a vibrant, intellectually, culturally, and economically thriving region, state, nation, and world.

GOAL 2.1: Foster a student-centered campus culture that emphasizes academic excellence, personal growth, networking opportunities, and global and social awareness.

INITIATIVE 2.1.1: Ensure that the mission of every academic support and student services unit espouses academic excellence as a primary emphasis.

INITIATIVE 2.1.2: Review, and where necessary modify, all student recruitment and promotional materials to include expectations related to academic rigor and standards.

INITIATIVE 2.1.3: Align, and where appropriate consolidate, academic support and experiential learning services to ensure consistent, interconnected, and efficiently provided assistance to students.

INITIATIVE 2.1.4: Develop and/or formalize mentoring programs that help students develop a sense of personal, intellectual, and professional identity.

INITIATIVE 2.1.5: Create leadership and experiential opportunities at the local, regional, national, and international levels, ensuring that all students participate in such opportunities and can document how these learning experiences are interconnected with their program of study. (See Initiative 2.2.4)

INITIATIVE 2.1.6: Expand international experiences for all Western Carolina University students through such strategies as increasing study abroad opportunities, developing exchange programs with international universities, recruiting a sizable international student population to WCU, and enhancing global awareness components of existing curricula. (See Initiative 1.3.3)

GOAL 2.2: Foster active citizenship among WCU students.

INITIATIVE 2.2.1: Integrate the elements of the Western Carolina University "Community Creed" into institutionally affiliated programs and services.

INITIATIVE 2.2.2: As appropriate, include students as full, voting members on campus decision-making committees.

INITIATIVE 2.2.3: Increase the number of academic living-learning communities that integrate active, collaborative, and interdisciplinary learning experiences with curricular goals, ensuring necessary logistical and administrative support.

INITIATIVE 2.2.4: Provide every student with an opportunity to participate in student-led outreach projects that focus on civic engagement. (See Initiative 2.1.5)

INITIATIVE 2.2.5: Create a culture of participating in the democratic process as demonstrated by large percentages of students who are registered to vote and who vote.

INITIATIVE 2.2.6: Provide opportunities for students to explore all points of view on various issues and to understand the perspectives of others through civil and informed discourse and debate.

GOAL 2.3: Instill pride in the University through more visible recognition and celebration of institutional achievements and traditions.

INITIATIVE 2.3.1: Build and sustain a high-quality athletics program that excites and instills pride among students, faculty, staff, alumni, and friends of the University.

INITIATIVE 2.3.2: Create and sustain campus traditions that strengthen students' connection to their University and its surrounding communities.

INITIATIVE 2.3.3: Build and sustain consistent celebrations of Cherokee history, culture, and traditions.

INITIATIVE 2.3.4: Include in the University's comprehensive communications plan a focused strategy to celebrate with the institution's internal and external audiences the accomplishments and achievements of students, faculty, and staff. (See Initiative 6.2.1)

INITIATIVE 2.3.5: Ensure that University events are consistently well-advertised to external audiences.

STRATEGIC DIRECTION #3 ENHANCE OUR EXTERNAL PARTNERSHIPS

WCU IS RECOGNIZED AS AN ACTIVE PARTNER WITHIN THE WESTERN NORTH CAROLINA REGION, ITS COMMUNITIES, ORGANIZATIONS, AND BUSINESSES.

Partnerships with regional businesses and industries, nonprofits, civic organizations, government agencies, communities, and cities are an integral part of WCU's core mission as a recognized, regionally engaged university. The University's emphasis on integrated learning experiences, its commitment to engaged scholarship, and its embrace of the institution's role as both a steward of this unique and special place and a catalyst for economic and community development all demonstrate and reinforce WCU's commitment to enhancing engagement with external partners.

GOAL 3.1: Strengthen relationships and communication between the University and its external partners.

INITIATIVE 3.1.1: Senior campus leadership will model the institution's commitment to community outreach and involvement.

INITIATIVE 3.1.2: Establish an annual leadership tour of the Western North Carolina region designed to reinforce WCU's connection with its external constituents and to update University leadership consistently about regional and local priorities.

INITIATIVE 3.1.3: Establish the appropriate leadership and organizational structure at WCU to support, coordinate, and facilitate external partnerships and collaborations.

INITIATIVE 3.1.4: Create an institutional council with representatives from each division and college to enhance internal communication about external partnerships and engagement, including the sponsorship of an annual inventory of such activities.

INITIATIVE 3.1.5: Develop and implement a communications plan that informs Western Carolina University's external community about University resources (inventoried annually), such as programs, services, facilities, and faculty/staff expertise that are available to the public. (See Initiative 6.2.1)

GOAL 3.2: Position the University as a key leader in regional economic and community development efforts.

INITIATIVE 3.2.1: Facilitate an annual conference for regional government, nonprofit, community, education, and business leaders to focus attention and action on regional strategies for economic and community development.

INITIATIVE 3.2.2: Develop the West Campus, with its Millennial Initiative designation, as a national model for building, in a rural context, public-private partnerships that are integrated into the academic enterprise and which support community and economic development.

INITIATIVE 3.2.3: Develop the programs at Biltmore Park to position WCU as a key provider of graduate and professional programs in the greater Asheville-Hendersonville area along the I-26 growth corridor.

INITIATIVE 3.2.4: Work with external partners to facilitate economic and community development in Cullowhee and Jackson County, which form the University's backyard, and participate in the formation of formalized community leadership for Cullowhee that can serve as the voice of the community as it anticipates growth and development. (See Initiative 4.3.2)

INITIATIVE 3.2.5: Seek out and implement internal synergies among outreach efforts and potential partnerships that are focused on economic and community development and consistent with the curricular focus areas identified by the 2020 Commission.

INITIATIVE 3.2.6: Facilitate collaborative research and development efforts between WCU and external partners.

GOAL 3.3: Align internal processes and reward systems to foster external engagement.

INITIATIVE 3.3.1: Develop models and strategies to formally recognize and reward faculty and staff participation in educationally based external engagement.

INITIATIVE 3.3.2: Ensure that all division and departmental personnel processes, including those related to annual faculty evaluation, tenure, promotion, and review, provide faculty and staff the formal opportunity to detail and describe educationally based external engagement activities.

INITIATIVE 3.3.3: Promote the University's support of staff-initiated community service.

STRATEGIC DIRECTION #4 INVEST IN OUR PEOPLE

WCU IS RECOGNIZED AS ONE OF THE MOST HIGHLY COMPETITIVE AND DESIRABLE EMPLOYERS IN THE REGION.

Excellent faculty and staff are prerequisites for the fulfillment of Western Carolina University's mission. Western Carolina University must therefore advocate for competitive compensation for its employees and facilitate professional development; leadership development, succession, and stability; and, as appropriate, support for issues related to quality of life, all of which will enhance the recruitment, development, and retention of qualified and satisfied faculty and staff.

GOAL 4.1: *Make salary and total compensation packages an institutional priority in order to attract, reward, and retain the highest quality employees.*

INITIATIVE 4.1.1: Advocate for the financial resources necessary to offer competitive salaries and compensation packages.

INITIATIVE 4.1.2: Develop a regular and recurring process for employee salary review.

INITIATIVE 4.1.3: Develop and implement strategies for retaining high-performing employees with competitive salary adjustments and compensation packages within existing policies.

INITIATIVE 4.1.4: Develop and implement a program of competitive summer grants to support innovative faculty pursuits within the context of Western Carolina's mission and values.

INITIATIVE 4.1.5: Advocate with other UNC system institutions for a competitive and attractive health benefits plan that is cost-effective for employees and their families.

GOAL 4.2: *Ensure professional development opportunities for all employees.*

INITIATIVE 4.2.1: Make support for professional development for all employees a fiscal priority at WCU.

INITIATIVE 4.2.2: Include in each supervisor's performance evaluation an assessment of his/her support for and his/her unit's progress in professional development.

INITIATIVE 4.2.3: Ensure appropriate orientation and annual refresher updates for all staff and faculty, as appropriate.

INITIATIVE 4.2.4: Ensure that all faculty and staff understand performance evaluation processes and criteria.

INITIATIVE 4.2.5: Establish a campus leadership academy to cultivate faculty and staff leaders.

GOAL 4.3: *Work to develop a work-life environment for Western Carolina University employees that enhances their personal and professional lives.*

INITIATIVE 4.3.1: Develop a network within the University and with regional businesses and institutions to enhance employment opportunities for spousal and partner hiring.

INITIATIVE 4.3.2: Partner with appropriate civic leaders in the development and revitalization of Cullowhee and Jackson County, with specific emphasis on developing a community core around the campus aimed at improving the quality of life for faculty, staff, students, and the community. (See Initiative 3.2.4)

INITIATIVE 4.3.3: Accommodate flexible work arrangements for staff, where appropriate and possible.

INITIATIVE 4.3.4: Facilitate a network of opportunities, where possible, for affordable child care, health care, and housing options for faculty, staff, and students.

INITIATIVE 4.3.5: Increase diversity among faculty and staff.

GOAL 4.4: *Adequately support for scholarship and creative activities in support of Western Carolina University's mission as a regional comprehensive university.*

INITIATIVE 4.4.1: Establish an organizational structure to accommodate the research, Graduate School, and Millennial Initiative ambitions of the University.

INITIATIVE 4.4.2: Ensure appropriate institutional infrastructure to support scholarship and research.

INITIATIVE 4.4.3: Increase support for scholarship and creative activities, including funding for reassigned time for scholarship, library support, graduate research assistantships, summer research grants, seed funding, start-up support where appropriate, equipment replacement, and travel for conference presentations.

GOAL 4.5: *Create an environment in which the primary role of faculty as teacher-scholars is recognized and valued.*

INITIATIVE 4.5.1: Develop and implement integrated faculty workload expectations and policies that facilitate exemplary teaching, scholarly productivity, and public service in alignment with Western Carolina's commitment to external engagement.

INITIATIVE 4.5.2: Provide department heads and deans flexibility within the parameters of fiscal realities in assigning workload to faculty to accommodate significant contributions for such out-of-classroom responsibilities as advising, undergraduate and graduate research supervision and mentoring, and student career development.

INITIATIVE 4.5.3: Eliminate redundant and ineffective service obligations and committees across campus.

GOAL 4.6: *Foster an inclusive University community where the contributions of all employees are recognized and valued.*

INITIATIVE 4.6.1: Establish opportunities that give University staff access to University administration in the governance process.

INITIATIVE 4.6.2: Develop a forum that facilitates collaboration among members of the Faculty Senate, Staff Senate, and the Student Government Association on university-wide issues and projects.

STRATEGIC DIRECTION #5 INVEST IN OUR CORE RESOURCES

WCU'S CORE INFRASTRUCTURE IS SUSTAINABLE AND POSITIONED TO SUPPORT ITS STRATEGIC PRIORITIES.

Western Carolina University will ensure a consistently updated infrastructure in support of its mission and vision. Infrastructure is interpreted broadly to include facilities, technology, fiscal practices, and business processes and procedures.

GOAL 5.1: *Implement sustainable funding models to ensure fiscal stability.*

INITIATIVE 5.1.1: Eliminate operational dependence on one-time funding for core functions and services.

INITIATIVE 5.1.2: Maintain a favorable bond rating.

INITIATIVE 5.1.3: Develop and implement processes to identify resources for reallocation and reallocate such resources to areas with demonstrated/potential growth, capacity for revenue generation, and critical strategic need.

GOAL 5.2: *Develop a comprehensive University master plan.*

INITIATIVE 5.2.1: Charge a task force consisting of representatives of internal and external constituents and supported by an external consultant to develop a comprehensive campus master plan that takes into account such factors as anticipated enrollment growth, the environment, sustainability, energy efficiency, core infrastructure needs, building priority needs, departmental/unit consolidation, technology infrastructure, campus safety and security, green space, transportation, campus design standards, and the integration of the campus with the surrounding community. The comprehensive plan will include the following components:

- A comprehensive facility condition assessment for existing buildings
- A campus sustainability plan that aligns with the UNC Sustainability Policy
- An assessment and prioritization of core infrastructure needs in light of emerging technologies
- An assessment and prioritization of new building needs
- A prioritized plan for addressing repair and renovation needs
- Incorporation of green space throughout the campus
- A plan to consolidate like parts of individual units/colleges where possible
- A campus parking and transportation plan that facilitates access to education sites and includes investment in multimodal options such as bike lanes, greenways, etc.
- A process for allocating and budgeting space as a core resource to maximize space utilization
- A plan to ensure the integration of campus development with the community surrounding the University

GOAL 5.3: *Improve the effectiveness and efficiency of campus business processes to ensure continuous improvement and to realize financial savings.*

INITIATIVE 5.3.1: Review the use of expendables, including printed documentation, and where reasonable, reduce such usage and transition to digital alternatives.

INITIATIVE 5.3.2: Conduct business-flow analyses of all key functions and revise or eliminate unnecessary or redundant business processes and leverage existing enterprise solutions (e.g., Banner, Blackboard, R25, SharePoint, etc.).

INITIATIVE 5.3.3: Consolidate and centralize similar operations across campus.

GOAL 5.4: *Sustain and increase information technology capabilities and capacity required to meet the goals of the University.*

INITIATIVE 5.4.1: Establish and systematize a sustainable funding model for information technology that accommodates operational support, replacements and upgrades, University growth, and strategic initiatives.

INITIATIVE 5.4.2: Establish capacity planning, management, and implementation processes to ensure accommodation of mandatory and anticipated information technology needs, including both human resources and technologies (e.g., bandwidth, storage, servers, digital media, software licenses, wireless networking, wired networking, cloud services, etc.).

INITIATIVE 5.4.3: Establish a multiyear technology capability planning process that is revisited annually.

INITIATIVE 5.4.4: Assess periodically and revise, where necessary, the information technology disaster recovery plan.

GOAL 5.5: *Maintain and improve campus safety systems, capabilities, and infrastructure in support of the University's strategic priorities.*

INITIATIVE 5.5.1: Complete and maintain updated emergency response plans and business continuity plans for critical functions of the University.

INITIATIVE 5.5.2: Implement sustainable funding models in support of campus safety systems and infrastructure.

INITIATIVE 5.5.3: Enhance campus-wide emergency preparedness with ongoing communication and training.

INITIATIVE 5.5.4: Sustain and enhance partnerships (e.g., mutual aid agreements, EMS service provision, etc.) with local governments, regional public safety agencies, and health organizations in support of campus and community safety priorities.

INITIATIVE 5.5.5: Systematically assess and upgrade technologies (e.g., radio systems, access controls, cameras, etc.) in support of campus safety objectives.

STRATEGIC DIRECTION #6 GARNER SUPPORT FOR THE VISION

WCU DEVELOPS THE RESOURCES AND MARKETS THE VISION TO ENSURE ACHIEVEMENT OF ITS STRATEGIC PRIORITIES

WCU's continued emergence as an ambitious institution of higher education dedicated to the economic and community development of Western North Carolina depends on the development and cultivation of consistent and robust funding sources and an ongoing communications strategy designed to ensure that internal and external stakeholders are consistently informed about the University and its progress in achieving strategic goals.

GOAL 6.1: Facilitate a shared understanding of and commitment to the institution's strategic vision among WCU faculty, staff, and students.

INITIATIVE 6.1.1: Create or modify existing orientation messages for new faculty, staff, and students to ensure early introduction to and understanding of the University's strategic vision.

INITIATIVE 6.1.2: Align all internal budgeting and annual reporting processes to reflect and reinforce the strategic vision and priorities of the University.

INITIATIVE 6.1.3: Ensure consistency among vision messages from all internal sources.

GOAL 6.2: Facilitate a shared understanding of the institution's strategic vision among the University's external communities.

INITIATIVE 6.2.1: Develop and implement comprehensive and consistent communications and marketing plans designed to fulfill the University's strategic priorities. (See Initiatives 1.5.4, 2.3.4, and 3.1.5)

INITIATIVE 6.2.2: Ensure the appropriate leadership and organizational structure necessary to develop and implement comprehensive communication and marketing plans designed to communicate Western Carolina University's strategic vision effectively, concisely, and consistently to all external stakeholders.

INITIATIVE 6.2.3: Create a network for regional engagement and statewide advocacy through a mobilized and informed alumni base.

INITIATIVE 6.2.4: Develop a process to review periodically the University brand and tailor the marketing message accordingly.

GOAL 6.3: Maximize and target a balanced and diverse mix of financial resources that will enable achievement of Western Carolina University's strategic vision.

INITIATIVE 6.3.1: Develop and implement a comprehensive enrollment management process that maximizes state appropriations per the formula funding system in a manner consistent with the University's strategic priorities related to access and success, including incremental increases in admission standards.

INITIATIVE 6.3.2: Revisit the organizational structure of all campus offices and functions related to enrollment management to ensure lean, robust, and efficient operations. (See Goal 1.6)

INITIATIVE 6.3.3: Explore innovative possibilities for revenue generation such as summer revenue opportunities, the initiation of certificate/executive programs, and cooperative education opportunities to reduce dependency on state funding and tuition and fee increases.

INITIATIVE 6.3.4: Develop and implement a comprehensive plan to increase significantly WCU's advocacy efforts among elected officials on behalf of University and system priorities.

INITIATIVE 6.3.5: Develop and implement an advocacy plan for state/system action on three key market-based issues:

- Tuition policy flexibility (in-state or surcharge) for students in bordering states
- Differential tuition in high-demand/high-expense programs
- Modification/elimination of differential treatment of distance education in the UNC system's funding formula

INITIATIVE 6.3.6: Pursue a comprehensive development campaign targeting (See Initiative 1.6.4):

- Gifts at all levels in support of WCU's strategic goals and initiatives
- Particular philanthropic support for endowed merit- and need-based scholarships to enable WCU to recruit and retain the best academically qualified students and to support WCU's commitments to student access and student success
- An increase in the participation and engagement of WCU alumni in University activities and in the number of alumni donors by 50 percent by 2020
- Adequate development and alumni staffing to ensure the campaign's success

INITIATIVE 6.3.7: Develop infrastructure for research and sponsored programs, technology transfer, and commercialization consistent with strategic priorities to achieve the following by 2020:

- Increase in the number of research grant and contract applications by 100 percent
- Increase in the number of grants and contracts received by 50 percent
- Increase in the total annual amount of awards received by 25 percent

INITIATIVE 6.3.8: Pursue funding resources for development of the West Campus/Millennial Initiative.





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A1.2. College of Arts and Sciences Strategic Plan

Western Carolina University
College of Arts and Sciences
Strategic Plan
18 December 2013

Mission

The College of Arts and Sciences provides students with a liberal arts foundation where they are taught to think critically, grow academically, and communicate effectively. We prepare our students to be intellectually, socially, culturally, and professionally engaged citizens and leaders who contribute to and promote the sustainability of local and global communities.

Vision

The College of Arts and Sciences will be a national model among colleges of arts and sciences for student-centered teaching and learning, engagement, and collaboration.

Core Values

The faculty, staff, and administration of the College of Arts and Sciences value:

- An intellectually stimulating environment
- Academic excellence
- Interdisciplinary collaboration
- Committed and effective teacher-scholars
- Diversity of ideas, perspectives, and cultures
- Engagement
- Our communities
- Sense of place
- Student success

Strategic Direction #1: Fulfill the Educational Needs of Our State and Region

Western Carolina University is committed, first and foremost, to fulfilling its academic mission of providing each student a rigorous and relevant curriculum with learning experiences that emphasize knowledge and skills that are durable, flexible, and transferable. WCU is committed to providing an education grounded in a strong set of foundational knowledge and skills combined with specific practical knowledge in content degree areas, the outcome of which is personal, intellectual, and economic enrichment for each student. WCU seeks to ensure educational opportunities that result in graduates who are prepared for success, who are ready to compete in a challenging, changing, and global environment, and who are committed to contributing to the intellectual, cultural, and economic development of our region and state.

The College of Arts and Sciences will support Strategic Direction #1 of the 2020 Vision through the following goals and initiatives:

Goal 1.1 By 2020, the College of Arts and Sciences will increase educational and research opportunities for faculty and students that will enhance our current programs and offer avenues

for exploration into new courses, programs, and degree offerings that are consistent with the needs of our state and region.

Initiative 1.1.1 Seek outside funding opportunities for educational and research programs that support students, collaborative ventures between students and faculty, and multidisciplinary research opportunities for faculty and students across the College and University.

Initiative 1.1.2 Increase the use of the Biltmore Park campus by providing additional courses in A&S disciplines at that location.

Initiative 1.1.3 Increase internal funding of faculty research projects that include heavy involvement of students through the use of a portion of the indirect costs returned to A&S.

Initiative 1.1.4 Encourage programs to integrate student research and inquiry into all levels of the curriculum.

Initiative 1.1.5 Seek competitive grant funding for course improvement to improve student success, especially in major and gateway courses.

Initiative 1.1.6 Recognize and reward faculty who excel in advising and mentoring students and seek ways to improve advising and mentoring in all departments.

Initiative 1.1.7 Increase online program and course offerings, where appropriate, to meet the needs of the state and region.

Initiative 1.1.8 Continue to foster the development of courses, curricula, and programming that explores the history, culture, socioeconomic conditions, and environment of southern Appalachia.

Goal 1.2 Increase graduation and retention rates for students in all College undergraduate and graduate programs.

Initiative 1.2.1: Enhance and expand College efforts to develop effective and focused advising and mentorship opportunities.

Initiative 1.2.2 By 2014, develop a strategic plan to enhance College recruiting and retention efforts.

Initiative 1.2.3 Develop plans and initiatives to increase and enhance student access through coordinated endeavors with Birth-16 and community college partners.

Goal 1.3 Ensure that each WCU student receives a strong foundation in liberal studies by maintaining a strong general education program.

Initiative 1.3.1 The College will advocate for a liberal arts foundation for all WCU students and will remain at the core of the general education program.

Initiative 1.3.2 Encourage departments to regularly review general education course offerings and ensure that they are meeting the current needs of students in state, regional, and global communities.

Strategic Direction #2: Enrich the Total Student Experience

WCU is committed to working toward the best interests of all students by deliberately and consciously considering what it means to educate citizens, a pursuit that encompasses both curricular and co-curricular elements that serve to prepare students to participate in and help create a vibrant, intellectually, culturally, and economically thriving region, state, nation, and world.

The College of Arts and Sciences will support Strategic Direction #2 of the 2020 Vision through the following goals and initiatives:

Goal 2.1 Provide all students a rigorous, well-rounded educational experience that emphasizes the liberal arts and sciences, essential skills, and disciplinary expertise.

Initiative 2.1.1 Because students learn in a variety of different ways, the College will provide a secure environment for faculty to explore pedagogies that foster student success.

Initiative 2.1.2 Encourage programs to integrate student research and inquiry into all levels of the curriculum.

Initiative 2.1.3 Appoint a liaison in each department to report to the College on current student involvement in undergraduate and graduate research and to meet with counterparts in other departments to develop best practices for encouraging meaningful student research and collaborative opportunities to be distributed college wide.

Initiative 2.1.4 Ensure that all programs include cross-curricular, experiential, applied, state, regional, and global learning opportunities.

Goal 2.2 The College of Arts and Sciences will increase student engagement opportunities that prepare them more fully for their future endeavors.

Initiative 2.2.1 By 2020, College of Arts and Sciences students will increase participation in local, state, national, and international internships by 15% from 2013 levels.

Initiative 2.2.2 Working with campus partners in Academic Affairs and Student Affairs, develop and implement focused departmental professional development experiences for students to provide information on careers, the job search process, graduate and professional schools, and related topics by 2015.

Initiative 2.2.3 Integrate engagement, where appropriate, into each department's QEP.

Goal 2.3 Foster active citizenship among students in the College of Arts and Sciences.

Initiative 2.3.1 By 2020, each department in the College will have an active, locally engaged student organization.

Initiative 2.3.2 In order to promote diversity and global citizenship, the College of Arts and Sciences will increase opportunities for study abroad and exchange programs.

Initiative 2.3.3 Increase opportunities to engage in meaningful service learning that extends beyond community service, is clearly connected to respective curricula, and assessed for its academic value.

Goal 2.4 Encourage the development of College and departmental identities and traditions.

Initiative 2.4.1 Review and expand avenues for recognition of academic achievement of A&S students

Initiative 2.4.2 Enhance and reinforce the intellectual climate for A&S students, faculty, and staff, as well as other members of the university and the local community, through lectures, symposia, and other academic programming.

Strategic Direction #3: Enhance Our External Partnerships

Partnerships with regional businesses and industries, nonprofits, civic organizations, government agencies, communities, and cities are an integral part of WCU's core mission as a recognized, regionally engaged university. The University's emphasis on integrated learning experiences, its commitment to engaged scholarship, and its embrace of the institution's role as both a steward of this unique and special place and a catalyst for economic and community development all demonstrate and reinforce WCU's commitment to enhancing engagement with external partners.

The College of Arts and Sciences will support Strategic Direction #3 of the 2020 Vision through the following goals and initiatives:

Goal 3.1 By 2020, the College of Arts and Sciences will increase our partnerships with local, state, national, and international entities that support our mission and values.

Initiative 3.1.1: By 2020, increase faculty and student exchange programs, especially in the international arena, by 20% over 2013 levels.

Initiative 3.1.2: The College of Arts and Sciences administration, faculty, and students will provide professional support for community organizations and businesses (e.g., offer professional development training or courses that are business specific or open community forums).

Initiative 3.1.3 Establish an administrative structure within the College to identify possible external partners, coordinate, and assess engagement activities.

Initiative 3.1.4 Encourage each department to develop an engagement strategy that includes current and potential community partners.

Initiative 3.1.5 Provide open house opportunities for regional partners and residents to show the work of our students, faculty, and staff, and to make the region more aware of our quality and capabilities.

Initiative 3.1.6 Increase ties with regional and national external entities by hosting more multidisciplinary, regional, and national events, such as conferences, meetings, professional development activities, and workshops.

Goal 3.2 Align internal processes and reward system to foster external engagement.

Initiative 3.2.1 Establish a mechanism by which members of the College of Arts and Sciences are rewarded for work with external partners.

Initiative 3.2.2 Establish a small competitive grant program to encourage faculty to develop coursework that includes interaction with the community.

Strategic Direction #4: Invest in Our People

Excellent faculty and staff are prerequisites for the fulfillment of Western Carolina University's mission. Western Carolina University must therefore advocate for competitive compensation for its employees and facilitate professional development; leadership development, succession, and stability; and, as appropriate, support for issues related to quality of life, all of which will enhance the recruitment, development, and retention of qualified and satisfied faculty and staff.

The College of Arts and Sciences will support Strategic Direction #4 of the 2020 Vision through the following goals and initiatives:

Goal 4.1. The College of Arts and Sciences will value and reward those professors who are highly committed, and effective, in enhancing student success.

Initiative 4.1.1 Provide resources to professors to attend professional development opportunities aimed at enhancing effective teaching and learning opportunities.

Initiative 4.1.2 Identify new ways to recognize, reward, and encourage innovative and highly successful teaching.

Initiative 4.1.3 By the 2014-2015 academic year, develop and implement a grants program to support faculty research.

Initiative 4.1.4 Organize formal venues for teachers and scholars to discuss their best practices.

Goal 4.2 Recruit, retain, and develop outstanding faculty and staff who are committed to our mission.

Initiative 4.2.1 Develop and implement effective mechanisms for retaining high-performing employees with competitive salaries within existing policies and in accordance with national salary data.

Initiative 4.2.2 Assist faculty and staff in securing employment for spouses, and support efforts for WCU to offer cost effective child-care for employees.

Initiative 4.2.3 Promote diversity in hiring throughout the College.

Initiative 4.2.4 Examine ways to address salary inequity, compression, and inversion at the department and college levels.

Initiative 4.2.5 Support and appropriately compensate faculty for curriculum development, especially in the area of online courses and programs.

Initiative 4.2.6 Support a professional and expert faculty and advocate for tenured and tenure-track positions to match the growing enrollment at WCU and in the College.

Initiative 4.2.7 Link program growth to tenure-track faculty requests, operating budget increases, and other budget request in the College budget process.

Goal 4.3 Create an environment in which the primary role of faculty as teacher-scholar is recognized and valued.

Initiative 4.3.1 Create an environment in which teaching and scholarship can be balanced ensuring both can be effectively pursued and rewarded.

Initiative 4.3.2 Ensure that faculty receiving grant support can present evidence regarding the prestige of the funding in their Collegial Review Document.

Initiative 4.3.3 Encourage departments to review and clarify expectations for teaching, scholarship, and service in their Collegial Review Documents.

Initiative 4.3.4 Review committee commitments at the department and college levels to identify opportunities for consolidation and/or elimination.

Initiative 4.3.5 Ensure that all faculty members are aware of college-level committee openings to ensure full faculty representation and balanced workloads.

Initiative 4.3.6 By 2020, increase the number of sponsored research submissions by 25% and the number of successful awards by 15% through college incentive programs.

Initiative 4.3.7 Identify and implement a system of best practices for class size that is based on discipline-specific student learning concerns, resource limitations, and retention and graduation rates.

Goal 4.4 Recognize and reward achievements by faculty and staff.

Initiative 4.4.1 Review and enhance non-monetary recognition, rewards, and incentives for outstanding teaching, research, and service for the faculty and for exceptional job performance for staff.

Goal 4.5 Provide professional development, mentoring, and advocacy for staff members.

Initiative 4.5.1 Advocate for salary increases for college staff members to recognize and reward them for their contributions to student success.

Initiative 4.5.2 Support staff members taking courses through WCU's tuition remission program.

Initiative 4.5.3 The Dean's Office will develop and implement a program of regular professional development for College staff members and an orientation program for new staff members.

Strategic Direction #5: Invest in Our Core Resources

Western Carolina University will ensure a consistently updated infrastructure in support of its mission and vision. Infrastructure is interpreted broadly to include facilities, technology, fiscal practices, and business processes and procedures.

The College of Arts and Sciences will support Strategic Direction #5 of the 2020 Vision through the following goals and initiatives:

Goal 5.1 Sustain and increase instruction and research technology capabilities and capacity required to meet the goals of the College of Arts and Sciences.

Initiative 5.1.1 Develop plans to invest in instrumentation, updating older existing equipment and acquiring new capabilities in order to meet the advancing technological and scientific demands of the 21st century.

Initiative 5.1.2 Continue to invest in outdoor labs and classrooms in order to take advantage of our unique geographic setting and provide engagement opportunities for students.

Initiative 5.1.3 Review service contract expenditures and develop a plan for cyclical replacement of some equipment where economically feasible, and reinvest the savings in equipment purchases, replacement, and sustainment.

Goal 5.2 Develop a comprehensive College of Arts and Sciences master plan.

Initiative 5.2.1 Coordinate all science departments in the design of the new science building.

Initiative 5.2.2 Develop an interim plan to maximize effective space utilization for classrooms, labs, and offices in order to better accomplish our instructional mission.

Initiative 5.2.3 Advocate for space allocation and renovation to better accomplish our instructional and research missions.

Initiative 5.2.4 Identify classrooms and labs for renovation to better address issues of pedagogy and class size.

Strategic Direction # 6: Garner Support for the Vision

WCU's continued emergence as an ambitious institution of higher education dedicated to the economic and community development of Western North Carolina depends on the development and cultivation of consistent and robust funding sources and an ongoing communications strategy designed to ensure that internal and external stakeholders are consistently informed about the University and its progress in achieving strategic goals.

The College of Arts and Sciences will support Strategic Direction #6 of the 2020 Vision through the following goals and initiatives:

Goal 6.1 Promote and celebrate the accomplishments of its students, faculty, and staff.

Initiative 6.1.1 During the 2014-15 academic year, the College will develop and implement an effective communications strategy that will include traditional media and social media.

Initiative 6.1.2 The College will develop and publish a semi-annual media package to highlight the achievements of our students, faculty, and staff.

Goal 6.2 Strengthen and expand connections with College alumni, friends, and community partners.

Initiative 6.2.1 Foster relationships with A&S alumni and encourage their continued involvement in the College through strategic communications that highlight each of the College's departments and their accomplishments with students

Initiative 6.2.2 By 2020, increase alumni annual donation rates by 25% from current 2013 levels.

Goal 6.3 Strengthen and expand development initiatives within the College.

Initiative 6.3.1 By 2020, establish at least one endowed scholarship in all departments and programs.

Initiative 6.3.2 By 2020, increase the amount of departmental scholarship donations by 20% annually over 2013 levels.

Initiative 6.3.3 Establish an endowed fund to support student engagement activities.

Initiative 6.3.4 Establish an endowed scholarship to support student international experiences.

Initiative 6.3.5 Establish an endowed fund to support faculty scholarship.

Appendix Standard 2

A2.1. Environmental Science Program Review and Prioritization Report

Overview: The Environmental Science Program offers an interdisciplinary BS degree in Environmental Science. There are no concentrations, or certificates, or minors within the degree. The budget and minor administrative support is housed in the Chemistry & Physics Dept., but all planning, oversight and implementation of the degree program is accomplished by Executive Committee representing faculty from the disciplines that contribute significantly to the degree program: Biology, Chemistry, Geology, Natural Resources Conservation and Management (NRCM), and Environmental Health (ENVH, College of Health & Human Sciences).

The ES program is highly efficient and extremely cost effective. The ES program chair is the only faculty with a formal appointment in the program (50%), with the remaining percentage of her appointment split in an interdisciplinary way between the Biology Dept. (25%) and the NRCM program (25%) (Geoscience & Natural Resources [GNR] Dept.). There are 13 “Associated Faculty” with the ES program. These faculty are based on individuals who serve on the ES Executive Committee, and/or are part of the ES150 teaching team (an interdisciplinary core course), and/or who teach disciplinary courses that a majority of the ES majors take. Associated ES Faculty include 3 NRCM, 2 Geology, 2 Chemistry, 2 Biology, and 4 ENVH faculty.

Other than a small budget and the Program Director with a partial appointment in ES who receives a 3-credit release per semester for overseeing the program, there are no additional faculty or staff resources specifically allocated to the ES program, nor are there dedicated laboratories, work spaces, etc. The strength of the highly successful ES program is a function of its dedicated majors, high quality disciplinary faculty, and the rigorous degree programs that contribute to ES. Environmental Science majors benefit from the high scholarly productivity, teacher-scholar models and highly diverse collective expertise of the associated faculty, along with the diverse QEPs, physical resources and opportunities embedded within the different degree programs that contribute to the interdisciplinary ES program. These contributing programs in turn benefit from the diversity (and SCHs) that ES students bring to their upper level, discipline-specific courses.

The ES program has grown steadily since accepting majors starting Fall 2004. It is unique within WCU and the UNC system and is supplying ES graduates needed to meet a critical demand from the workforce that is expected to increase 28% during the decade 2008-2018 (Bureau Labor Statistics [BLS] 2010-2011). In addition, the ES program is strongly aligned with WCU’s Strategic Plan and UNC-T environmental sustainability goals, and is consistent with QEP goals. Learning outcomes of the ES curriculum are that students will: (1) gain knowledge and practice technology and skills needed to address human impacts on environmental sustainability; (2) gain knowledge and practice technology and skills needed to address impacts of the environment on humans; (3) gain knowledge and understanding about policies that affect environmental sustainability; (4) be able to analyze and interpret environmental data; (5) gain knowledge about the natural world in a field setting, and will gain skills using field equipment and sampling techniques; (6) gain knowledge and skills using laboratory instruments and

techniques to quantify chemicals applicable to environmental problems; (7) gain advanced knowledge and skills to address environmental sustainability in an interdisciplinary way.

Mission Critical

The learning outcomes of the ES program (see Overview above) are aligned directly with WCU's mission, UNC-Tomorrow initiatives and QEP goals through the ES program's integrative educational approach, student engagement, community outreach, and strong focus on environmental sustainability. Direction #6 of WCU's Strategic Plan (Jan. 2009) states that WCU will expand its focus on education and research tied to environmental sustainability with particular emphasis on biodiversity and land use. UNC-T Recommendation 4.6 states UNC should assume a leadership role in addressing the state's energy and environmental challenges by embracing environmental sustainability as a core value, using existing research expertise to address critical environmental and energy issues, and increasing community awareness of environmental and sustainability issues. Biology and NRCM courses that ES majors take directly address biodiversity and land use issues. The ES program director teaches a 400/500-level biodiversity conservation course. Courses ES majors take in Geology, Chemistry and ENVH also address environmental sustainability. The program director and Associated ES Faculty have the disciplinary expertise to create a strong interdisciplinary environmental sustainability program.

With a BS in ES, students have the fundamental liberal arts skills and knowledge, that combined with a strong advanced science education make them uniquely skilled at integrating biogeochemical and human sciences to address complex environmental sustainability problems. Students can effectively promote environmental stewardship and sustainability through their technical and communication skills, both as professionals and citizens. In addition to addressing WCU and UNC-T environmental sustainability mission and goals, the ES capstone (ES495) is consistent with all of the QEP goals: students are presented with an open-ended environmental sustainability problem that requires them to solve a complex problem, communicate effectively and responsibly, integrate information from a variety of contexts, and practice civic engagement. The capstone projects have resulted in improved environmental sustainability at WCU and in the regional community. ES students have developed plans resulting in improved energy use at UNC Highlands Biological Station and Dillsboro businesses, reduction of the carbon footprint of Rabun Gap -Nacoochee School in north Georgia, implementation of the Sustainability Tracking and Assessment Ranking System (STARS) for WCU (a specific goal in UNC-T and in Direction #6 of WCU's Strategic Plan), and have improved recycling efforts at WCU. Recommendations made by the ES495 students are being implemented in all these projects. Thus, ES students are not just "talking about" environmental sustainability, they are taking leadership roles in making it happen.

Internal Demand

There are only three ES courses: 101 [1 credit], 150 [4 credits] and 495 [3 credits]. These courses are required for majors and taught by the ES program director. Only ES101 has a service component to it. This course through its exploration of environmental careers and

issues, helps students identify an environmental degree program at WCU that best fits their educational and career goals. In general, approximately 70% of the enrolled students in ES101 are declared ES majors, with the remainder undeclared or representing a variety of science and non-science majors on campus. By the end of the semester, students desiring an interdisciplinary focus are ES majors. Students interested in a more disciplinary focus on the environment gain the knowledge needed to transfer to a different science degree program that is a better match for their needs and interests.

ES majors do contribute SCHs to other degree programs. For example, the 23 total students who have graduated or expect to graduate in May 2011 have contributed the following SCH's to 300 and 400-level courses: ENVH = , BIOL = , CHEM = , GEOL = , GEOG = , NRCM = , PAR = , ANTH = , and SOC = .

ES majors also contribute to non-instructional campus initiatives that support environmental sustainability. They participate in the ECO-CATS Club, Environmental Stewardship Club, and/or Environmental Health Club where they lend their environmental science expertise to the service activities of these clubs. ES majors volunteer as "student ambassadors" and promote the ES program through development of recruiting materials, and working at Open House events, the Regional Science Fair and environmental events such as Earth Day. Finally, the ES Program Director through her teaching assignments in Biology and NRCM contributes to delivering service courses these programs offer.

Productivity

The BS degree in ES accepted majors beginning Fall 2004 with zero recruiting efforts prior to that time. The program had 26 majors in 2007, 33 majors in 2008, 41 majors in 2009 and 43 majors in 2010. A total of 23 students have graduated or expect to in May 2011. There is no ES minor, nor are there concentrations or certificates within the ES program. Majors who desire depth in addition to interdisciplinary breadth do so by minoring in any one of the plethora of minors available on campus. In the Fall 2010 and Spring 2008, ES495 enrollments were 8 and 6 students, respectively. A total of 16 students have earned a BS in ES with the first graduates in May 2007 (2 students). One student each graduated Dec. 2007 and May 2008. Eight students graduated during 2009 and four in 2010. Seven students are expected to graduate May 2011.

Although the ES program is small, it is growing. However, its relatively small size is not unlike many ES programs throughout the US where High School teachers, students and their parents focus on disciplinary careers and college degrees because they are unaware of interdisciplinary options. Until recently, even employers did not appreciate the value of interdisciplinary degrees. This attitude and lack of awareness is changing rapidly and enrollment in WCU's ES program will benefit from the increased attention and recognition that interdisciplinary programs are now getting.

Trend data on total SCH generated: 2006-2007 = 88, 2007-2008 = 63, 2008-2009 = 129, 2009-2010 = 124. Ratio SCH generated/faculty FTE for 2009-2010 = $124/0.50 = 248$

Quality

The Bureau of Labor Statistics (2010-2011) description of educational qualifications needed for Environmental Scientists includes an interdisciplinary approach in the natural sciences and knowledge of environmental policy, and data analyses, and computer and GIS skills.

Environmental scientists are expected to work in teams, write technical reports, and strong written and oral communication skills relative to working with scientists and the public are essential. Even though the WCU ES curriculum is individualized for each student and offers a high degree of flexibility, the degree requirements are structured in such a way that students graduating with a BS in ES have taken courses qualifying them for the BLS description for Environmental Scientists.

The QEP document for ES is under development and the program is being formally reviewed in the Spring 2011. However, as described earlier in the Mission Critical section, the ES program is strongly aligned with QEP goals and learning outcomes. In addition, annual program assessments and the self study being done as part of the ES Program Review indicates students are achieving the learning outcomes and interdisciplinary goals of the program. The overall average GPA for ES students who have graduated with a BS is 2.92 (range = 2.08-3.98).

The high quality of the programs and faculty contributing to the ES program are summarized in their program prioritization reviews and thus will not be reiterated here. In summary, ES majors gain experience with a wide variety of state-of-the art equipment and instruments through coursework in five different disciplines, and benefit from the collective expertise of the diverse faculty. In addition, the ES Program Director contributes to the productivity and quality of the Biology and GNR Departments through her scholarship and engagement with students and national service. Since 2007 she has had 3 manuscripts published [2 with students], 2 manuscripts in review [2 with students], 5 abstracts published [all with students], 25 research presentations [22 with students], 4 teaching presentations, \$300,000 external + internal funding raised, 12 grants submitted [not funded]. Peer review service since 2007 includes approximately 6 manuscript per year and 3 book reviews, 4 research program reviews, service as an external program reviewer for 4 forestry programs throughout the US, and she was a facilitator and/or planner for 8 workshops/conferences. The ES Program Director has collaborators with UNCA faculty, Northern Arizona University faculty, US Forest Service National Forest system and Research Stations, and the National Park Service. She has supervised 9 MS students, 1 PhD student, and 15 undergraduate research projects since 2007. Finally, her many service contributions include serving as Chair of the National Committee on Accreditation for the Society of American Foresters. Her prominence is indicated through her award as Fellow in the SAF.

Although not required, over 25% of ES majors engage in research. Projects have been mentored by WCU faculty and throughout the country or globally. Projects included energy research at the Jackson County Green Energy Park and DOE laboratories in Washington and Tennessee, and

environmental research in Jackson; Haywood; Macon counties, and in New Zealand and Australia. Two of the 16 graduates have gone to graduate school and other graduates have found employment with environmental consulting firms and federal and state agencies.

In the UNC system, five universities offer a BS in ES, one offers a BS in Environmental *Studies*, and two offer ES as an option within another degree. Only three (ASU, WCU, UNCA) are considered regional and located in the mountains. None of the other ES programs offer the same degree of interdisciplinary study as WCU. Most achieve “interdisciplinary” by requiring introductory courses in biological, physical, and social sciences, but then require a disciplinary specialization thus defeating interdisciplinary goals. WCU’s program is built around developing skills and content knowledge in seven competency areas across science disciplines and does not require specialization. WCU students create individualized course plans that are approved by the ES Executive Committee. None of the other UNC system ES programs offer this degree of flexibility in coursework or allow a personalized degree program to be developed to best match each student’s career goals such as WCU’s program does. Finally, the WCU ES program provides a unique opportunity for majors to gain both perspectives of how humans affect and are affected by the environment through combined ENVH and other science coursework. Only NC Central has both ES and ENVH programs but their two programs do not interact, and their ES program is focused on environmental problems associated with communities of color.

Cost-Effectiveness

The ratio of instructional salary generated versus paid per SCH-based formula is not being reported per Dr. Wendy Ford’s January 25, 2011 instructions for interdisciplinary programs.

Similar to most other ES programs, the curriculum at WCU requires foundation courses in biology, chemistry, geology, mathematics. We also require GIS. All of these courses are regularly offered and are not difficult for ES students to enroll in. There are only three ES required courses and they are offered every year. ES101 and 150 have strong enrollments and ES495 is scheduled to accommodate all of the students’ schedules who are enrolled so that low enrolled “special sections” do not have to be generated to accommodate graduation requirements of our majors. The structure of the WCU ES capstone is relatively unique to WCU compared to peers. Some of the early ES495 sections were small as the first seniors moved through the ES program. Lately, the course has been fully enrolled.

The remainder of the ES curriculum is structured around competency areas with multiple offerings within each area. Majors are required to create individualized interdisciplinary upper-level course plans that are approved by the ES Committee. The overall ES curriculum is unique to WCU (see details above in Quality section). The ES curriculum is streamlined, highly efficient, and has significant flexibility in it. Students spend more than 8 semesters completing their ES degrees only when they want to complete something “extra” such as multiple minors or double majors. Low enrolled courses do NOT have to be offered for ES students to complete their BS degrees.

Review Self-Evaluation**Table of Review Ratings and Priority Recommendations**

Program: BS Degree, Environmental Science

	Mission Critical	Internal Demand	Productivity	Quality	Cost- Effectiveness	<u>Priority Recommendation</u>
Department	High	Low	Moderate	High	High	High
Task Force						
Dean						

Closing

The interdisciplinary ES program is high quality, flexible, and extremely cost effective. It is producing graduates with the environmental sustainability knowledge and skills needed in the workforce, consistent with WCU, UNC-T and QEP goals. Finally, because of the flexibility in the ES curriculum, the program can accommodate a variety of changes and options with respect to participating disciplines and courses while still maintaining high rigor and achieving its learning outcomes.

A2.2. Environmental Science Strategic Planning Summary

The ES strategic plan builds on feedback from the 2011 program review and its initiatives focus on

- 1) Raising visibility of the ES program
 - 2) Developing a sense of community among the majors and faculty who participate in the program
 - 3) Connection to the WCU 2020 Vision
- ✓ Niche statement defines goals for ES program and its majors with links to the WCU 2020 Vision
 - ✓ Administrative Placement
 - Move should include primary focus described above and thus is more than just a question of administrative placement
 - All programs contributing to the ES program (Biology, GNR, ENVH, Chemistry/Physics) were visited to discuss the “fit” of the ES program with each unit with best fit including unit name change to also reflect ES in the name
 - Best fit appears to be GNR
 - Bigger Picture: general consensus and excitement from all programs visited (except Biology where time ran out to discuss) for creating a “School of the Environment” that includes
 - Geology, Natural Resources, Environmental Science undergraduate programs
 - Institutes and centers associated with studying the environment
 - Faculty outside of GNR & ES who would be affiliated/associated with the school
 - MS and/or professional Master’s degree in the Environment with couple core courses that all graduate students would take with thesis or professional masters concentrations in
 - History, political science, policy, ecology, natural resources, geology, environmental science, environmental health, chemistry, (other?) where faculty from these disciplines could advise graduate students in the School.
 - Very strong link with 2020 Initiative 1.1.2 #3
 - ✓ Faculty and teaching roles and responsibilities
 - ES faculty designation defined as
 - Any faculty who serves 2 years out of 8 on the ESEC (current and former ESEC members would advise ES majors)
 - AND team teaches in at least 1 ES courses (150, 250, 350, 495) every two years, or conducts research that involves ES majors
 - 3-credit course release for faculty participating in the ES program (timing to be negotiated with faculty’s home DH):
 - ¼ course release for each year served on ESEC
 - ¼ cumulative course release for involvement in ES150, 250, 350
 - Teaching in ES495 = 1 course release divided among the instructors
 - Letter provided to all ES faculty from ES Director for their AFE/TPR documents

- ✓ Outcomes of the proposed initiatives
 - Greater number of faculty throughout A&S (and HHS) participate in ES program over time thus raising visibility and spreading out current and future increasing work load
 - Increased visibility will help recruit students
 - Rewards participating faculty in the form of a course release
 - Fosters interdisciplinary collaboration
 - Helps achieve regional leadership in the study of the environment and environmental policy

A2.3. Bylaws of the Environmental Science Program

Adopted November 16, 2015

Environmental Science (ES) Program defined in the ES CRD:

The environmental science (ES) program is interdisciplinary; the degree program represents a deliberate blending of courses and faculty expertise across several science disciplines within the College of Arts and Sciences (Biology, Chemistry, Geology, Natural Resource Conservation and Management, Philosophy and Religion, Political Science and Public Affairs), and one program in the College of Health and Human Sciences (Environmental Health). The ES program is governed by a Program Director and an Executive Committee consisting of faculty from the disciplines listed above.

ES "Faculty"

As part of the strategic plan (attached) adopted in January 2013, ES Faculty were defined as having the following teaching roles and responsibilities:

1. Any faculty who serves 2 years out of 8 on the ESEC (current and former ESEC members would advise ES majors)
AND
2. Team teaches in at least 1 ES courses (150, 250, 350, 495) every two years, or conducts research that involves ES majors

To support participation in the ES program, faculty can apply to ESEC for funds to support travel associated with professional development. The typical amount awarded is \$500 with the expectation that the home department of the faculty member and other funding sources on campus would also be used to support the travel.

A letter written by the ES Program Director that documents participation with the ES program will be provided to all ES faculty for their AFE/TPR documents

Environmental Science Program Council:

The Environmental Science Executive Committee (ESEC) has changed its name to the Environmental Science Program Council (ESPC). This name change is to better reflect the work and role of the group governs the Environmental Science Program.

Members of the ESPC shall be solicited from among faculty whose degree programs have significant instructional contribution to the Environmental Science curriculum. Ideally, ESPC members teach courses in their respective disciplines that are included as components in the ES curriculum (a course listed directly in the ES curriculum or a course many majors take as program electives) or they teach one of the four ES courses (150, 250, 350, 495). Appointment to the ESPC shall be made with the approval of the ES Program Director, ESPC and the respective faculty member's department head and dean. Effort should be made to keep representation on the Council from all the major contributing departments. Any faculty whose academic position includes FTEs in ES (currently 1 faculty) are automatically members of the council.

The ES Program Director shall chair the council, and the council will select a secretary from among its members.

The ESPC shall endeavor to work by consensus, although the Program Director may call a vote on matters where expediency is paramount or where consensus can't be reached. The ESPC shall make decisions regarding the following:

- ES curriculum, program planning, assessment
- ES governance and budget

ESPC members also advise ES students, contribute regularly to ES prefixed courses, may request funding from the ES budget for professional development or instruction

Environmental Science Program Director

From the ES CRD: Responsibilities of the Director of the Environmental Science Program

In addition to teaching and scholarship, primary responsibilities of the ES Program Director are to provide leadership and coordination for the ES program including (1) recruiting, retention and job placement, (2) curriculum, (3) advising, (4) ES Executive Committee, and (5) equipment and budget.

Recruitment/retention/job placement leadership includes overseeing the development and updating of open house and other promotional materials such as FAQ sheets, brochures, etc.; coordinating participation in open house and majors fairs, coordinating participation in summer orientation programs, coordinating oversight of the ES website, coordinating development and maintenance of career opportunity resources and career advising; assisting WCU with relations with alumni who have a BS degree in ES from WCU.

Curriculum leadership includes coordination with participating disciplines; coordinating ongoing evaluation of courses for inclusion in the program; coordinating degree audit revisions.

Leadership in advising includes working with the ES Executive Committee on advising procedures and assignment of advisees; providing oversight for ES student graduation paperwork; coordinating junior/senior course plans and presenting these plans to the ES Executive Committee for approval; coordinating advising for the Environmental Stewardship club; coordinating development of advising materials such as progress check sheets, etc.

Leadership with the ES Executive Committee includes organizing and chairing committee meetings and providing leadership for ES-related issues and administrative activities.

Leadership with the equipment and budget includes making sure ES supplies and equipment needed to run the program are ordered and maintained within the budget.

Selection of ES Program Director (ESPD)

The ESPD shall be chosen by the ESPC with the approval of the Department Head of GNR and the faculty member's respective department head, and in consultation with both the Deans of Arts & Science and Health & Human Sciences. The program director should be a tenured faculty member with demonstrated familiarity with the ES program (such as serving on ESPC for at least one year, advising ES majors and/or teaching in ES courses), or an equivalent interdisciplinary environmental program.

The Program Director may be from any of the major contributing departments but he or she must not be concurrently an administrator in another program.

The appointment shall be for a three-year term, and no one should serve more than two consecutive terms. The ESPC shall choose a "director in waiting" by the end of the end of the 4th semester of the current director's term. The director in waiting can be the current director if s/he is selected and chooses to serve a second consecutive 3-year term.

Environmental Science Program Strategic Plan (Adopted January 2013)

<u>2020 Vision Link</u>	<u>Strategic Ends</u>	<u>Ways</u>	<u>Means</u>
<u>Goal 1.1</u> Initiatives 1, 2 [# 3 & # 5], 5, 6 <u>Goal 1.2</u> Initiative 3 <u>Goal 1.3</u> Initiatives 1, 2, 3 <u>Goal 2.1</u> Initiatives 5, 6 <u>Goal 2.2</u> Initiatives 4, 6 <u>Goal 3.1</u> Initiative 3 <u>Goal 3.2</u> Initiative 6	Contribute to environmental sustainability leadership on campus and regionally	<ul style="list-style-type: none"> • Greater participation in WCU sustainability council • Create a plan to promote student engagement in research and outreach opportunities; EcoCats club; study abroad • Initiate planning for interdisciplinary environmental sciences graduate program • Create College-level task force to study creation of an administrative unit on campus that is inclusive of environmental efforts (e.g., "School for the Environment" with environmentally-related undergraduate and graduate programs, institutes and centers) • Continue engagement focus of capstone course on regional or campus sustainability problems and ES 250/350 course focus on multiple perspectives 	<ul style="list-style-type: none"> • Administrative support to encourage participation in these activities • Use ES budget to develop promotional materials • WCU achieves Initiatives 3.1.3, 4.4.1, 4.4.2, 6.3.7
<u>Goal 1.1</u> Initiatives 2 [#3 & #5], 5, 6 <u>Goal 1.2</u> Initiative 1 <u>Goal 1.3</u> Initiative 3	Develop instructional capacity to address enrollment growth in the degree program	<ul style="list-style-type: none"> • Create a campus-wide group of faculty who teach in ES courses (150/250/350/495) thus facilitating interdisciplinary connections among academic programs • Create new ½ FTE faculty line in ES • Develop course release policy for faculty teaching and serving the in ES program 	<ul style="list-style-type: none"> • Course release for faculty who teach ES courses • Administrative support for ½ FTE faculty line in ES • WCU achieves initiatives 4.5.1, 4.5.2
<u>Goal 1.1</u> Initiatives 1, 2 (#3 & # 5), 5, 6 <u>Goal 1.2</u> Initiatives 3, 5 <u>Goal 1.3</u> Initiatives 1, 2	Improve visibility of ES program	<ul style="list-style-type: none"> • Explore move of ES program to GNR Department and consider inclusive name • Create Environmental Science appointment designation for faculty who participate in the ES program (teaching ES courses, serving on ESEC and 	<ul style="list-style-type: none"> • WCU achieves Initiatives 2.2.3, 4.4.1, 4.4.2, 4.5.2, 6.3.7

<p><u>Goal 2.1</u> Initiative 4</p>	<p>Improve visibility of ES program (continued from previous page)</p>	<p>doing research with ES majors)</p> <ul style="list-style-type: none"> • Develop a plan to create a stronger sense of community among faculty and students in the ES program • Develop a plan to encourage interdisciplinary collaboration in environmental outreach and research among ES majors and ES faculty • Include contribution of ES participation by faculty in AFE/TPR portfolios 	
<p><u>Goal 1.1</u> Initiative 7 <u>Goal 1.4</u> Initiative 2 <u>Goal 1.6</u> Initiatives 3, 4, 5, 7, 8</p>	<p>Increase number of majors to 75-100 within next 5 years</p>	<ul style="list-style-type: none"> • Targeted recruiting to NC High Schools with ES courses • Create Advising Day activities to advertise ES program to undeclared students • Develop relationships with local community colleges • Develop recruitment and retention plan • Work with development to find donors for ES Scholarships 	<ul style="list-style-type: none"> • WCU achieves initiative 6.3.1 • Use ES budget to develop promotional materials

Unit Name	Environmental Science	Contact Name	Laura E. DeWald
Department	CHPH (Through Spring 2014), GNR (Fall 2014 to present)	& Phone	227-2478
College/Division	Arts and Sciences	Plan Effective Dates	Fall 2011-Fall 2016
Accreditor		Next Accreditation or Program Review Date	Originally Spring 2017, moved to Fall 2016

Unit Mission Statement (brief, concise statement of the unit's purpose)

The purpose of the Environmental Science (ES) program is to support students in pursuit of developing the expertise, skills and techniques necessary for sustainable use of, and evaluation and remediation of human effects on the environment, and to reinforce WCU's role as a center for environmental research and teaching. Using intentional interdisciplinary learning experiences, we prepared graduates with the ability to integrate content knowledge and skills from the biological, physical, and human sciences to address environmental problems from multiple perspectives in an interdisciplinary way. The BS in ES includes experiences where students are regionally engaged, have global opportunities and have ownership in developing their pathways of learning within the flexible degree program.

Statement on Alignment of Unit Mission w/ University and College Mission (brief articulation of unit's alignment at each level)

The ES program is aligned strongly with the College of Arts and Sciences' and WCU's mission, Quality Enhancement Plan (QEP) goals, the UNC strategic planning initiatives (UNC-Tomorrow) and WCU's 2020 strategic plan through its integrative educational approach, service learning capstone, and focus on environmental sustainability. Goal 1.1 of the 2020 Plan includes leadership in environmental sustainability on campus and regionally. Our ES graduates are uniquely skilled at integrating biological, chemical, geological, natural resource conservation and management, and environmental health content and concepts to address complex environmental sustainability problems. Students are additionally able to effectively promote sustainability through their technical and communication skills, both as professionals and citizens. In addition, our ES students are actively engaged with the campus and regional community through their capstone course and through the wide variety of opportunities provided by the diverse faculty from seven degree programs that support the ES program. The environmental scholarship these faculty bring into the classroom through the teacher-scholar model helps students understand different approaches to addressing environmental problems.

Student Learning Outcome (SLO) <i>What will students know or be able to do upon completion of the program?</i>	Data Source <i>Where will the data be collected for this analysis? Who is responsible for collecting the data?</i>	Time Period <i>How frequently is data collected for this outcome?</i>	Method(s) <i>How will you determine that the students know or can do what you expect?</i>	Measure(s) <i>What rubric or standard will be used to determine student success? How does the standard define student success?</i>	Target(s) <i>What is the performance standard?</i>	Institutional SLOs*				
						IVC	SCP	CER	PCE	APV
<p>ES students will:</p> <ol style="list-style-type: none"> 1. Gain basic science knowledge and technical skills in biology, geology, chemistry, calculus, spatial analysis 2. Gain understanding of the basic relationships between the environment and people through studying: <ol style="list-style-type: none"> a. impacts humans have on environmental sustainability b. impacts the environment has on humans c. policies that affect environmental sustainability 3. Be able to analyze and interpret basic environmental data 4. Develop competencies in the field by gaining: <ol style="list-style-type: none"> a. knowledge about the natural world in a field setting b. skills using field equipment and sampling techniques 5. Develop competencies in the laboratory through use of instruments and techniques to quantify chemicals applicable to environmental problems 	<p>Demonstration of SLOs #1, 2, 3, 4, and 5 is through successful completion of coursework (grades of “C” or higher in courses) in the curriculum. Each of these SLOs aligns with specific required components in the curriculum. Grade-based data is compiled from students’ degree audits upon completion of their BS in ES.</p> <p>Decisions for inclusion or deletion of courses in the curriculum are based on alignment of course SLOs with desired SLOs of the ES program and grades ES students in these courses.</p> <p>Achievement of SLOs #6, 7 and 8 occurs throughout the entire curriculum and is demonstrated through a self-analysis completed by each student at the end of the capstone project (see attached questions).</p> <p>SLOs #9 and #10 is achieved through the interdisciplinary component in approved 2-year upper level course</p>	<p>Grade-based data are compiled and assessed every 5 years</p> <p>Curriculum is assessed every 5 years</p> <p>Student self - analysis and completion of 2-year plans occur annually</p> <p>Inter-disciplinary goals assessed every 5 years based on courses listed in students’ degree audits</p>	<p>Analysis of grades achieved in courses (direct)</p> <p>Analysis of curriculum ensures inclusion of courses most appropriate to meet SLOs</p> <p>Analysis of self-analysis completed by each student at the end of the capstone project (direct)</p> <p>Analysis of employer data (indirect)</p>	<p>Achievement of “C” or higher grades represents knowledge and skills gained</p> <p>Course SLOs are compared to ES program SLOs to ensure alignment</p> <p>Courses listed by students in their self-analysis as having helped them achieve SLOs identifies strengths and weaknesses of the program</p> <p>Alumni employers can show alignment with program SLOs and can be compared to career goals identified in student 2-year plans.</p>	<p>70% of ES majors achieve “C” or higher in a course</p> <p>General alignment of SLOs between courses and ES program</p> <p>General trends obvious in self-analysis documents</p> <p>General alignment between employer types, career goals and ES program SLOs</p>	SLO #9, 10	SLO #1, 2, 3, 4, 5, 6, 8, 9	SLO #3, 6, 7	SLO #2, 9	SLO #10

Student Learning Outcome (SLO) <i>What will students know or be able to do upon completion of the program?</i>	Data Source <i>Where will the data be collected for this analysis? Who is responsible for collecting the data?</i>	Time Period <i>How frequently is data collected for this outcome?</i>	Method(s) <i>How will you determine that the students know or can do what you expect?</i>	Measure(s) <i>What rubric or standard will be used to determine student success? How does the standard define student success?</i>	Target(s) <i>What is the performance standard?</i>	Institutional SLOs*				
						IVC	SCP	CER	PCE	APV
6. Develop critical thinking, reading and writing skills 7. Develop effective oral and written communication skills 8. Develop skills to solve complex problems 9. Gain an interdisciplinary perspective toward environmental sustainability through integrating information from a variety of contexts 10. Clarify purpose and values through designing a student-specific curriculum plan of upper level courses that relates to their career goals	plans that are required and completed by each student prior to completing 60 credit hours (or 30 hours for transfer students). 2-year plans are turned in during ES250 and filed with a students' advisor and the ES Program Director. SLO #9 is additionally demonstrated through successful completion (grades of "C" or higher) of group-based capstone projects that are a complex and interdisciplinary, sustainability problem. Overall achievement of program SLOs is demonstrated by alumni success	Alumni employer data are collected every 5 years								

*Institutional Student Learning Outcomes –

- IVC **Integrate information from a variety of contexts** – Students will make connections between personal interest and abilities, general education, programs of study, general electives, experiential learning opportunities, and other co-curricular activities; and relate the implications/value of these connections to “real world” scenarios.
- SCP **Solve Complex Problems** – Students will identify the dimensions of complex issues or problems; analyze and evaluate multiple sources of information/data; apply knowledge and decision-making processes to new questions or issues; and reflect on the implications of their solution/decision
- CER **Communicate effectively and responsibly** – Students will convey complex information in a variety of formats and contexts; identify intended audience and communicate appropriately and respectfully.
- PCE **Practice civic engagement** – Students will identify their roles and responsibilities as engaged citizens by considering the public policies that affect their choices and actions; by recognizing commonalities and interdependence of diverse views/values; and by acting responsibly to positively affect public policy.
- APV **Clarify and act on purpose and values** – Students will examine the values that influence their own decision-making processes; take responsibility for their own learning and development in a manner consistent with academic integrity and their own goals and aspirations; intentionally use knowledge gained from learning experiences to make informed judgments about their future plans; and bring those plans into action.

ES495: Final Journal Entry – ES Program and Self-Assessment**Part 1: ES Program Assessment**

Reflect on your experience in ES495 and courses you have taken for your BS in ES focusing on courses in the major (e.g., on the ES check sheet). For each of the 8 items below, list courses where you were required to do the item and describe if the sum of your experiences has provided you with skills you feel you need (**met expectations**) or do you feel your ES program has inadequately prepared you for this skill (**not met**)? For any skill where the ES program has not prepared you, provide feedback on how we can improve the ES program to help you attain the knowledge or skill.

- 1) Effective oral communication
- 2) *Scholarly* (professional & scientific language) communication (oral and written [including email])
- 3) Defined a problem, assessed/described current status, provided realistic recommendations
- 4) Used quantitative methods
- 5) Used literature to support problem assessment and making recommendations
- 6) Demonstrated competence/skills for independent research
- 7) Demonstrated competence/skills for team-based research
- 8) Used knowledge and concepts in an interdisciplinary way

Part 2: Self Evaluation

Based on the descriptions on the next page, tell me which type of student you feel most accurately reflects your participation AND leadership in completing the ES495 project. You must provide specific evidence of how your performance matches with the bullets in each description. You can use +/- system if you feel you fall between the descriptions (e.g., you have met some but not all of a particular description). Keep in mind that an “A” student truly acted as a team-member who did MORE than just their own piece and inserted it into the presentation and paper (this latter person would be a “B” or “C” student). Use your journal to help you remember specifics of your participation.

An “A” student:

- Regularly attended and was on time for all meetings (in and outside of class) and the group IN ADVANCE if they will be absent or late. Knowing they will be absent, this student volunteers to do extra work to make up for missing a meeting – BUT instead of saying “what can I do to help” this person says “this is what I can do to help since I can’t attend the meeting” (e.g., the person has enough knowledge of the project and what needs to be done that they know what they can work on).
- Does not wait to be asked to do things. Instead, s/he volunteers to complete work that s/he feels or the team decided needs to be accomplished. This student asks other team members if they need help and willingly pitches in to help other team members finish their work.
- Volunteers to help in all aspects of the project from planning to data collection to data analysis, and presentation and report writing. This person steps up to work even on tasks that are less personally desirable or more personally challenging. They are willing to “step out of their comfort zone”.
- Shares leadership responsibilities throughout the semester and when serving in a leadership role does not dominate (nor dictate) tasks the group feels need to be accomplished.
- Actively participates in group discussions (versus just attending meetings and taking notes).
- Meets deadlines agreed upon by the team, comes to meetings prepared, takes the journal seriously and thus writes substantive (e.g., reflective versus superficial) entries.
- Turns in high quality work that does not have to be substantially improved by the rest of the class.
- Is respectful of other people’s opinions, seeks other opinions from the rest of the group and is a good listener who actively pays attention to what is being said versus thinking about what they are going to say next, and does not interrupt.
- Exhibits a positive or optimistic philosophy toward getting tasks accomplished (versus throwing roadblocks up or being argumentative about why something won’t work).
- Does their very best work, but also works to bring out the best talents of each member in the team.
- In summary, an “A” student has actively (versus passively) participated in the project. They exhibited professional/responsible and leadership behavior, were involved in organization of tasks, they consistently showed up to collect data, they helped analyze data and they created figures, tables, and slides and literature citations that were included in the final presentation/paper and on slides.

“B” student:

- Regularly attends and is generally on time for all meetings (in and outside of class).
- Volunteers to help but mostly for tasks they feel they are good at or they want to do. These students do pitch in to help others finish their work when asked.
- Takes on a leadership role only when asked, participates in groups by answering questions asked by group members but does not generally take initiative to bring ideas up to the group.
- Usually meets deadlines, usually comes to meetings prepared for the work
- Puts only moderate effort into their journal (most grades are “check” but at least turned in the journal)
- Turns in work that needs to be improved somewhat by the rest of the group.
- Is respectful of other people’s opinions, is a good listener and generally does not interrupt.
- Does not show strong commitment in terms of attitude about getting things done, is focused on their own work more than the team’s work
- In summary, a “B” student actively and passively participated. They exhibited responsible but not usually leadership behavior, did what was asked but did not usually volunteer outside of when asked, they showed up to collect some data, created a few figures, tables, and slides included in the final presentation/paper, provided a few literature citations to support ideas and statements in the final presentation/paper. They minimally helped editing. These students would know most of the answers to questions regarding data collection and analysis and results in the final presentation/paper.

“C” student:

- Misses meetings (in and outside of class) and/or is often late to meetings, often without explanation to the rest of the group.
- Only takes on work when asked to by other group members and only that work they want to do. They are unwilling to step outside their comfort zone.
- Is generally unwilling to take on leadership for a task.
- Attends meetings but does not actively contribute to discussions.
- Has a hard time meeting deadlines agreed upon by the group, generally does not come to meetings prepared for the work that is scheduled to be done
- Takes a minimalist approach to the journal (doesn't address all the questions, entries are superficial, journal entry completed at the last minute and is sloppy). This would be check or check minus grades for your weekly journal and for journals that were not turned in (e.g., weeks missing) or not on time.
- Turns in work that has to be edited and improved by the rest of the team (e.g., not high enough quality to meet the team's overall standards).
- Is respectful of other people's opinions but doesn't really care about them – during meetings they just focus on getting done what they want to work on (e.g., working on their laptop on a task assigned to them rather than focusing on what the group is discussing and participating in the discussion).
- Does not actively pay attention to what is being said; instead they are just thinking about what they are going to say next, or they don't pay attention and show little desire to contribute. This student is often on their phone during meetings or data collection or is having side conversations with their neighbor.
- Has an attitude that gets in the way of getting things done, including arguing, etc.
- Does the minimum work needed to pass the class.
- In summary, a “C” student only passively participated in the project. They generally did not exhibit responsible behavior (e.g., had to be nagged to get their work done or to volunteer), did only what was asked, often their assigned tasks were incomplete, they did not volunteer outside of when asked, they skipped class or data collection dates or when they did show up, they did not really help much. This student did not create very many if any figures, tables, or slides in the final presentation and paper, they provided few literature citations to support ideas and statements in the final presentation and paper. They generally did not help with editing. These students would know some but not all answers to questions asked regarding data collection and analysis, and results.

“D” student:

- Minimally participated in the project. They generally did not attend meetings, did only what was asked but often failed to complete assigned tasks, generally did not volunteer even when asked, they rarely showed up to collect data, they generally did not create figures, tables, or slides, generally did not provide literature citations or help with editing. When asked questions about the project, these students would probably not be able to provide accurate answers.

Appendix Standard 3

3.1 WCU Catalog copy of Environmental Science curriculum

Total number of hours for program: 120.

Liberal Studies Hours: 30

The major requires 72 hours as follows:

Foundations in Environmental Science (36 Credits)

BIOL 141 - Principles of Biology II Credits: (4)

BIOL 241 - Ecology and Evolution Credits: (4)

CHEM 139 - General Chemistry Credits: (4)

CHEM 140 - Advanced General Chemistry Credits: (4)

ES 150 - Introduction and Approaches to Environmental Science Credits: (4)

ES 250 – Seminal Readings in Environmental Science Credits: (1)

ES 350 – Energy, Economy, and the Environment Credits: (1)

ES 495 - Senior Research Seminar in Environmental Science Credits: (3)

GEOG 221 – Geospatial Analysis Credits: (3)

GEOL 150 - Methods in Geology Credits: (4)

MATH 146 or 153 - Pre Calculus or Calculus Credits: (4)

Environmental Health (3 Credits)

Choose one from the following list:

ENVH 310 - Water Quality Control Credits: (3)

ENVH 375 - Environmental Toxicology Credits: (3)

ENVH 440 - Air Quality Control Credits: (3)

Environmental Policy (3 Credits)

Choose one from the following list:

ECON 310 - Natural Resource Economics Credits: (3)

ENVH 458 - Environmental Regulation and Law Credits: (3)

PSC 442 - Natural Resources Policy and Administration Credits: (3)

Environment and Society (3 Credits)

Choose one from the following list:

ANTH 351 - Environmental Anthropology Credits: (3)

PAR 330 - America's Wilderness Ethics and Aesthetics Credits: (3)

PAR 333 - Environmental Ethics Credits: (3)

PSC 320 – International Environmental Politics Credits: (3)

SOC 371 - Society and the Environment Credits: (3)

Advanced Study in the Environmental Sciences

Student must obtain approval of a degree plan from the ES committee prior to pursuing Advanced Study courses. Advanced Study courses must not duplicate Foundations courses.

A. Quantitative Methods (3 Credits)

Choose one from the following list:

- BIOL 467 - Biostatistics Credits: (3)
- CHEM 232 - Quantitative Analysis Credits: (3)
- ENVH 470 – Principles of Epidemiology Credits: (3)
- MATH 270 - Statistical Methods I Credits: (3)

*B. Advanced Environmental Sciences (6-8 Credits)**i. Field & Natural Environmental Science*

Choose one from the following list:

- BIOL 375 – Methods in Ecology and Evolution Credits: (4)
- BIOL 435 - Aquatic Ecology Credits: (4)
- GEOL 302 – Geomorphology Credits: (4)
- GEOL 305 - Soils and Hydrology Credits: (4)

ii. Analytical/Instrumentation

Choose one from the following list:

- CHEM 330 - Aquatic Chemistry Credits: (4)
- CHEM 331 – Environmental Organic Chemistry Credits: (4)
- GEOL 465 Environmental Geochemistry Credits (3)
- ENVH 450 Quantitative Air Analysis Credits (2)

C. Guided Electives (16-18 Credits)

Selections may include courses from the list below, from courses above not being used to fulfill a category requirement, or any 300-400 level course offered at WCU that is in a student's approved required 2-year plan of study.

- BIOL 304 - General Ecology Credits: (3)
- BIOL 438 - Ecological Restoration (3)
- BIOL 441 – Conservation Biology (3)
- CHEM 370 - Instrumental Analysis I Credits: (4)
- CHEM 435 - Instrumental Analysis II Credits: (3)
- CHEM 461 - Environmental Chemistry Credits: (3)
- COMM 313 – Conflict Resolution (3)
- ENVH 312 - Solid and Hazardous Waste Management Credits: (2)
- GEOG 324 – Introduction to Remote Sensing (4)
- GEOL 405 - Hydrogeology Credits: (4)
- GEOL 410 - Fluvial Geomorphology Credits: (3)
- GEOL 423 - Contaminated Rivers: Assessment, Remediation, and Restoration Credits: (3)
- GEOL 455 - Wetlands Credits: (3)
- MATH 370 - Probability and Statistics I Credits: (3)
- MATH 375 - Statistical Methods II Credits: (3)
- NRM 320 – Soil Conservation (3)
- NRM 330 – Introduction to Wildlife Management (3)
- NRM 344 – Introduction to Geographic Information Systems (4)

NRM 351 - Forest Ecology Credits: (3)
NRM 371 - Landscape Ecology Credits: (3)
NRM 460 – Watershed Management (3)
SOC 385 – Methods of Social Research (3)

D. General Electives

Students must take at least 30 hours at the junior-senior level at WCU in order to satisfy general university degree requirements. (General Elective Hours depend on the number of hours taken in the major that also count for Liberal Studies.) Visit the department's website at <http://www.wcu.edu/4428.asp> to view the 8 semester curriculum guide.

3.2 Environmental Science BS Degree Plan and Checksheet

Purpose

The B.S. degree in Environmental Science at WCU was deliberately designed to allow students to focus their coursework in a way that will help them achieve future career goals. Therefore, ES majors have considerable flexibility in the choice of courses that count toward their B.S. degree. The expectation is that ES majors select courses in a meaningful way (versus just taking what sounds interesting the next semester) and that their selection also makes their degree distinguishable from other science degrees at WCU (such as ENVH, BIOL, GEOL, etc.). To demonstrate that you have selected your coursework in a meaningful way and that illustrates how your degree is distinctly ES, students must *develop and follow* a plan of courses for their Junior and Senior years. This plan is a degree requirement.

Requirements

1. A degree plan for the 16-18 hours of upper division electives (300- and 400-level courses) must be completed by each student and approved by the Environmental Science Committee *prior* to the point where a student has four or fewer semesters remaining
2. Your plan must be approved by the Environmental Science Committee and on file with Laura DeWald before you will be issued your PIN for the upcoming semester
3. Your plan must meet the following requirements:
 - a. Course selection should reflect a coherent cluster that supports your future career goal(s) and that reflects the interdisciplinary nature of an Environmental Science degree at WCU
 - b. Your plan must be logistically feasible; you must design your plan so that courses are listed in semesters/years when they are actually offered
 - c. For each course in your plan, you must list the skills you expect to obtain from the course, the prerequisites needed to take the course, and describe how it meets the interdisciplinary and career objective criteria
 - d. Alternative courses must be listed for each semester (to accommodate unforeseen conflicts, etc.)

Instructions

1. Write a one-page narrative that:

- a. Describes your career goals and provides actual examples and skills needed for that career. For example, if your goal is to work for a consulting firm, do some research and provide examples of consulting firms and skills they require/desire for their employees
 - b. Lists 300- and 400-level courses that will help you achieve your career goal and for each course listed, describes skills from that course that will help you achieve your career goal
 - c. Describes how your selection of courses is consistent with the interdisciplinary goals of the ES degree at WCU
2. Fill out an ES course check-sheet to illustrate your plan is logistically feasible (must list alternative courses)
 3. Turn in your one-page narrative and check-sheet to Laura DeWald no later than two weeks prior to advising day

Environmental Science, BS Degree Course Check Sheet

Course	Credits	Semester Offered	Grade
Foundations in Environmental Science			
ES150 Intro & Approaches to Environ. Science	4	Fall, Lab	
ES250 Seminal Readings in Environ. Science	1	Spring, Soph., Jr. Senior status	
ES350 Energy, Econ. & the Environment	1	Spring, Jr., or Senior status	
BIOL141 & 241 Biology II & Ecol. and Evolution	4 & 4	Fall, Spring, Lab	
CHEM 139 & 140 General Chemistry	4 & 4	Fall & Sp, Lab	
GEOL150 Methods in Geology	4	Fall, Spring, Lab	
MATH146 or 153 Pre-Calculus or Calculus	4	Fall & Spring (MATH130 or SAT prereq)	
ES495 Senior Seminar in Environ Science	3	Last Fall semester at WCU	
GEOG221 Geospatial Analysis	3	Spring of Sophomore year, Lab	
<u>Environmental Health: choose one from the following:</u>			
ENVH375 Environmental Toxicology	3	Fall	
ENVH440 Air Quality Control	3	Spring	
ENVH310 Water Quality Control	3	Fall	
<u>Environmental Policy: choose one from the following:</u>			
ENVH458 Environ. Regulation & Law	3	Fall	
PSC442 Natural Res. Policy & Admin.	3	Fall	
ECON310 Natural Res. Economics	3	Fall, Econ prereq	
<u>Environment and Society: choose one from the following:</u>			
SOC371 Society and the Environment	3	?	
PAR330 Amer. Wild. Ethics & Aesthetics	3	Fall	
PAR333 Environmental Ethics	3	Spring	
ANTH 351 Environ. Anthropology	3	Odd Fall	
PSC320 International Environmental Politics	3	Odd Spring	
Advanced Study in Environmental Sciences (must not duplicate Foundations)			
A. Quantitative Methods: choose one from the following:			
BIOL467 Biostatistics	3	Spring	

ENVH470 Principles of Epidemiology	3	Spring	
CHEM232 Quantitative Analysis	3	Fall & Spring, Lab required	
MATH270 Statistical Methods I	3	Fall?	
B. Advanced Environmental Sciences			
i. Field & Natural Environmental Science: choose one from the following:			
GEOL305 Soils and Hydrology	4	Spring, Lab	
BIOL435 Aquatic Ecology	4	Fall, Lab	
GEOL302 Geomorphology	4	Lab	
BIOL375 Methods in Ecology and Evolution	4	Biology 141 prereq, Fall, Lab	
ii. Analytical/Instrumentation: choose one from the following:			
CHEM330 Aquatic Chemistry	4	Odd Spring, Lab, CHEM 140 prereq	
CHEM331 Environmental Organic Chemistry	4	Even Fall, Lab, CHEM 140 prereq	
GEOL465 Environmental Geochemistry	3	Even Spring, Lab	
ENVH450 Quantitative Air Analysis	2	Spring (not recommended)	
C. 16 Hours of Upper Elective Courses. Selections may include <u>any 300-400 level course offered at WCU that is in a student's approved required 2-year plan of study.</u> Elective courses can come from the above list if it they are <i>not being used to fulfill the category requirement.</i> Suggested elective courses include: BIOL 304; 438; 441, CHEM 370; 435; 461, COMM 313, ENVH 312, GEOG 324, GEOL 405; 450; 410; 423; 455, NRM 320; 330; 344; 351; 371; 460, MATH 370; 375, SOC 385. 2-year plans are a graduation requirement and must be approved <u>prior to completing 60 credits [30 credits for transfers]</u>. These plans are due in ES250 one week prior to the spring semester advising day.			
D. General Electives: These are courses taken in addition to the above requirements. None are required.			

3.3 Syllabi of courses selected most often by students

Foundations Courses

Appendix Standard 3

3.1 WCU Catalog copy of Environmental Science curriculum

Total number of hours for program: 120.

Liberal Studies Hours: 30

The major requires 72 hours as follows:

Foundations in Environmental Science (36 Credits)

BIOL 141 - Principles of Biology II Credits: (4)

BIOL 241 - Ecology and Evolution Credits: (4)

CHEM 139 - General Chemistry Credits: (4)

CHEM 140 - Advanced General Chemistry Credits: (4)

ES 150 - Introduction and Approaches to Environmental Science Credits: (4)

ES 250 – Seminal Readings in Environmental Science Credits: (1)

ES 350 – Energy, Economy, and the Environment Credits: (1)

ES 495 - Senior Research Seminar in Environmental Science Credits: (3)

GEOG 221 – Geospatial Analysis Credits: (3)

GEOL 150 - Methods in Geology Credits: (4)

MATH 146 or 153 - Pre Calculus or Calculus Credits: (4)

Environmental Health (3 Credits)

Choose one from the following list:

ENVH 310 - Water Quality Control Credits: (3)

ENVH 375 - Environmental Toxicology Credits: (3)

ENVH 440 - Air Quality Control Credits: (3)

Environmental Policy (3 Credits)

Choose one from the following list:

ECON 310 - Natural Resource Economics Credits: (3)

ENVH 458 - Environmental Regulation and Law Credits: (3)

PSC 442 - Natural Resources Policy and Administration Credits: (3)

Environment and Society (3 Credits)

Choose one from the following list:

ANTH 351 - Environmental Anthropology Credits: (3)

PAR 330 - America's Wilderness Ethics and Aesthetics Credits: (3)

PAR 333 - Environmental Ethics Credits: (3)

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SOC 371 - Society and the Environment Credits: (3)

Advanced Study in the Environmental Sciences

Student must obtain approval of a degree plan from the ES committee prior to pursuing Advanced Study courses. Advanced Study courses must not duplicate Foundations courses.

A. Quantitative Methods (3 Credits)

Choose one from the following list:

- BIOL 467 - Biostatistics Credits: (3)
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- MATH 270 - Statistical Methods I Credits: (3)

*B. Advanced Environmental Sciences (6-8 Credits)**i. Field & Natural Environmental Science*

Choose one from the following list:

- BIOL 375 – Methods in Ecology and Evolution Credits: (4)
- BIOL 435 - Aquatic Ecology Credits: (4)
- GEOL 302 – Geomorphology Credits: (4)
- GEOL 305 - Soils and Hydrology Credits: (4)

ii. Analytical/Instrumentation

Choose one from the following list:

- CHEM 330 - Aquatic Chemistry Credits: (4)
- CHEM 331 – Environmental Organic Chemistry Credits: (4)
- GEOL 465 Environmental Geochemistry Credits (3)
- ENVH 450 Quantitative Air Analysis Credits (2)

C. Guided Electives (16-18 Credits)

Selections may include courses from the list below, from courses above not being used to fulfill a category requirement, or any 300-400 level course offered at WCU that is in a student's approved required 2-year plan of study.

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- BIOL 441 – Conservation Biology (3)
- CHEM 370 - Instrumental Analysis I Credits: (4)
- CHEM 435 - Instrumental Analysis II Credits: (3)
- CHEM 461 - Environmental Chemistry Credits: (3)
- COMM 313 – Conflict Resolution (3)
- ENVH 312 - Solid and Hazardous Waste Management Credits: (2)
- GEOG 324 – Introduction to Remote Sensing (4)
- GEOL 405 - Hydrogeology Credits: (4)
- GEOL 410 - Fluvial Geomorphology Credits: (3)
- GEOL 423 - Contaminated Rivers: Assessment, Remediation, and Restoration Credits: (3)
- GEOL 455 - Wetlands Credits: (3)
- MATH 370 - Probability and Statistics I Credits: (3)
- MATH 375 - Statistical Methods II Credits: (3)
- NRM 320 – Soil Conservation (3)
- NRM 330 – Introduction to Wildlife Management (3)
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NRM 371 - Landscape Ecology Credits: (3)
NRM 460 – Watershed Management (3)
SOC 385 – Methods of Social Research (3)

D. General Electives

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Purpose

The B.S. degree in Environmental Science at WCU was deliberately designed to allow students to focus their coursework in a way that will help them achieve future career goals. Therefore, ES majors have considerable flexibility in the choice of courses that count toward their B.S. degree. The expectation is that ES majors select courses in a meaningful way (versus just taking what sounds interesting the next semester) and that their selection also makes their degree distinguishable from other science degrees at WCU (such as ENVH, BIOL, GEOL, etc.). To demonstrate that you have selected your coursework in a meaningful way and that illustrates how your degree is distinctly ES, students must *develop and follow* a plan of courses for their Junior and Senior years. This plan is a degree requirement.

Requirements

1. A degree plan for the 16-18 hours of upper division electives (300- and 400-level courses) must be completed by each student and approved by the Environmental Science Committee *prior* to the point where a student has four or fewer semesters remaining
2. Your plan must be approved by the Environmental Science Committee and on file with Laura DeWald before you will be issued your PIN for the upcoming semester
3. Your plan must meet the following requirements:
 - a. Course selection should reflect a coherent cluster that supports your future career goal(s) and that reflects the interdisciplinary nature of an Environmental Science degree at WCU
 - b. Your plan must be logistically feasible; you must design your plan so that courses are listed in semesters/years when they are actually offered
 - c. For each course in your plan, you must list the skills you expect to obtain from the course, the prerequisites needed to take the course, and describe how it meets the interdisciplinary and career objective criteria
 - d. Alternative courses must be listed for each semester (to accommodate unforeseen conflicts, etc.)

Instructions

1. Write a one-page narrative that:

- a. Describes your career goals and provides actual examples and skills needed for that career. For example, if your goal is to work for a consulting firm, do some research and provide examples of consulting firms and skills they require/desire for their employees
 - b. Lists 300- and 400-level courses that will help you achieve your career goal and for each course listed, describes skills from that course that will help you achieve your career goal
 - c. Describes how your selection of courses is consistent with the interdisciplinary goals of the ES degree at WCU
2. Fill out an ES course check-sheet to illustrate your plan is logistically feasible (must list alternative courses)
 3. Turn in your one-page narrative and check-sheet to Laura DeWald no later than two weeks prior to advising day

Environmental Science, BS Degree Course Check Sheet

Course	Credits	Semester Offered	Grade
Foundations in Environmental Science			
ES150 Intro & Approaches to Environ. Science	4	Fall, Lab	
ES250 Seminal Readings in Environ. Science	1	Spring, Soph., Jr. Senior status	
ES350 Energy, Econ. & the Environment	1	Spring, Jr., or Senior status	
BIOL141 & 241 Biology II & Ecol. and Evolution	4 & 4	Fall, Spring, Lab	
CHEM 139 & 140 General Chemistry	4 & 4	Fall & Sp, Lab	
GEOL150 Methods in Geology	4	Fall, Spring, Lab	
MATH146 or 153 Pre-Calculus or Calculus	4	Fall & Spring (MATH130 or SAT prereq)	
ES495 Senior Seminar in Environ Science	3	Last Fall semester at WCU	
GEOG221 Geospatial Analysis	3	Spring of Sophomore year, Lab	
<u>Environmental Health: choose one from the following:</u>			
ENVH375 Environmental Toxicology	3	Fall	
ENVH440 Air Quality Control	3	Spring	
ENVH310 Water Quality Control	3	Fall	
<u>Environmental Policy: choose one from the following:</u>			
ENVH458 Environ. Regulation & Law	3	Fall	
PSC442 Natural Res. Policy & Admin.	3	Fall	
ECON310 Natural Res. Economics	3	Fall, Econ prereq	
<u>Environment and Society: choose one from the following:</u>			
SOC371 Society and the Environment	3	?	
PAR330 Amer. Wild. Ethics & Aesthetics	3	Fall	
PAR333 Environmental Ethics	3	Spring	
ANTH 351 Environ. Anthropology	3	Odd Fall	
PSC320 International Environmental Politics	3	Odd Spring	
Advanced Study in Environmental Sciences (must not duplicate Foundations)			
A. Quantitative Methods: choose one from the following:			
BIOL467 Biostatistics	3	Spring	

ENVH470 Principles of Epidemiology	3	Spring	
CHEM232 Quantitative Analysis	3	Fall & Spring, Lab required	
MATH270 Statistical Methods I	3	Fall?	
B. Advanced Environmental Sciences			
i. Field & Natural Environmental Science: choose one from the following:			
GEOL305 Soils and Hydrology	4	Spring, Lab	
BIOL435 Aquatic Ecology	4	Fall, Lab	
GEOL302 Geomorphology	4	Lab	
BIOL375 Methods in Ecology and Evolution	4	Biology 141 prereq, Fall, Lab	
ii. Analytical/Instrumentation: choose one from the following:			
CHEM330 Aquatic Chemistry	4	Odd Spring, Lab, CHEM 140 prereq	
CHEM331 Environmental Organic Chemistry	4	Even Fall, Lab, CHEM 140 prereq	
GEOL465 Environmental Geochemistry	3	Even Spring, Lab	
ENVH450 Quantitative Air Analysis	2	Spring (not recommended)	
C. 16 Hours of Upper Elective Courses. Selections may include <u>any 300-400 level course offered at WCU that is in a student's approved required 2-year plan of study.</u> Elective courses can come from the above list if it they are <i>not being used to fulfill the category requirement.</i> Suggested elective courses include: BIOL 304; 438; 441, CHEM 370; 435; 461, COMM 313, ENVH 312, GEOG 324, GEOL 405; 450; 410; 423; 455, NRM 320; 330; 344; 351; 371; 460, MATH 370; 375, SOC 385. 2-year plans are a graduation requirement and must be approved <u>prior to completing 60 credits [30 credits for transfers]</u>. These plans are due in ES250 one week prior to the spring semester advising day.			
D. General Electives: These are courses taken in addition to the above requirements. None are required.			

3.3 Syllabi of courses selected most often by students

Foundations Courses

BIOLOGY 141 Section 01 Principles of Biology II
Fall 2015

Class time: MWF 9:00-9:55 Meeting Room 365 Belk Arts Complex

Instructors: Mr. Weaver B. Haney

NS 108A

*Office Hours- 12:30-2:30pm TU TH or by
appointment*

Phone: 227-7244

Email: whaney@email.wcu.edu

Text: Biology by Campbell and Reece, 9th Ed. Pearson Education

Tentative Schedule:

DATE		BIOLOGICAL TOPICS	READING ASSIGNMENT
Aug	17	Introduction, Domains of Life, Lecture 1	537-542, 556- 566
	17	Phylogenetics	
	19	Cladistics	542-547
	19	Evolution	452-467
	21	Viruses (Living or Non-living?)	381-393
	24	Prokaryotes Lecture 2	566-572
	26	Eukaryotes, Endosymbiosis	575-579
	28	Protists Lecture 3	
	31	Protist continued Lecture 4	580-597
Sep	2	Review Exam 1	
	4	Exam 1	
	7	No Class Labor Day Holiday	
	9	Land Plants, Alternation of Generation Lecture 5	600-603
	11	Nonvascular Plants,	606-610
	14	Seedless Vascular Plants Lecture 6	610-615
	16	Plant Behavior	
	18	Seed plants , Lecture 7	618-620, 621-625
	21	Gymnosperms Lecture 7 Continued	
	23	Angiosperms Lecture 8	625-633
	25	Angiosperms Lecture 8 Continued	
	28	Plant Structure, Lecture 9	738-745
	28	Growth and Development Lecture 10	746-754
	30	Lecture 10 Continued	
Oct	2	Review Exam 2	
	5	Exam 2	
	7	Fungi Lecture 11	636-651
	9	Fungi Lecture 12	
	12	No Class Fall Break	
	19	Lecture 13 Overview of Animal Diversity	654-664

	21	Lecture 14 Introduction to Invertebrates	666-673
	23	Lophotrochozoans Lecture 15	674-682
	26	Lecture 17-Ecdysozoans	684-
	28	Coral Reefs- A Tale of Two Cities	
	30	Lecture 18-Arthropods and Invertebrate Deuterostomes	684-694
	2	Lecture 18 Continued	
	4	Review Exam 3	
Nov	6	Exam 3	
	9	Chordates Lecture No. 19A	697-708
	11	Gnathostomes -Sea Lampreys – Threat to Great Lakes fisheries	
	13	Lecture 19B- Tetrapods	709-714
	16	Threats to Amphibian Diversity	
	18	Lecture No. 20 –Amniotes	720-723
	20	Lecture No. 21 Reptiles	715-720
	23	Lecture No. 22 - Mammals	721-727
	25	No Class Thanksgiving Break	
	30	Wolves of Yellowstone	
Dec	2	Primates	
	5	Review Final Exam	
Final Exams	8	Exam 4 8:30-11:00 am	

4) Homework- There will be 4 homework assignments worth 25 points each. Homework assignments will be handed out in class and **WILL NOT be posted** on Blackboard. To receive your homework assignment you will be expected to be present during class. I will NOT provide copies of the homework for an unexcused absence.

Grades:

Exam 1	15 %
Exam 2	15 %
Exam 3	15 %
Exam 4	15 %
Homework	15%
Laboratory	25 %

Total	100 %
Extra credit	6 %

Grading Scale: Grades will be based on a 10-point scale:

A+ = 97-100 %	B+ = 87-89 %	C+ = 77-79 %	D+ = 67-69 %	F = <60 %
A = 94-96 %	B = 84-86 %	C = 74-76 %	D = 64-66 %	
A- = 90-93 %	B- = 80-83 %	C- = 70-73 %	D- = 60-63 %	

Extra Credit: 6 % extra credit points are possible attending three biology seminars and writing a one- to two-page report (double-spaced) on each. offered by biology department or other departments on campus. *Poorly written reports may be returned for a rewrite before a grade is assigned.*

Exam Format: Exams may be a combination of multiple choice, short answer and essay questions. Your instructor will provide you with a set of study or sample questions beforehand. Each exam will cover only the material directly preceding it since the last exam.

Attendance at Exams: You will have four hourly exams, including the final, and you are expected to be present for all of these exams. *If you must be absent from an exam due to a prescheduled university-sanctioned activity, you may arrange to take the exam early with permission of the instructor.* Makeups of missed exams will be granted on a case-by-case basis (in most cases, only emergencies, illness or death in the family are valid excuses and must be documented). You have ONE WEEK after the missed exam in which to make up the exam. Late assignments- Assignments must be submitted on the day they are due in class. Late assignments will result in a 50% reduction in grade per day. E-mailed assignments will NOT be accepted.

Help with the course in general: Your instructors are here to assist you in succeeding in this course. You are always welcome to contact us for assistance, whether it is help with understanding the course material itself, help with learning strategies, forming study groups, or help coping with other issues that may interfere with your academic success. Tutors are available for this course at the Academic Support Services Office. Seek help EARLY and OFTEN. It is much easier to bounce back from one poor exam grade than from two, three or four!

Office of Disability Services

Accommodations for Students with Disabilities: Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All information is confidential. Please contact the Office of Disability Services at (828) 227-3886 or come by Suite 135 Killian Annex for an appointment.

Student Support Services

Student Support Services provides support to students who are either first-generation, low-income or those who have disclosed a disability with: academic advising, mentoring, one-on-one tutorial support, and workshops focused on career, financial aid and graduate school preparation. You

may contact SSS at (828) 227-7127 or email sssprogram@wcu.edu for more information. SSS is located in the Killian Annex, room 138.

Writing and Learning Commons (WaLC)

The Writing and Learning Commons (WaLC), located in BELK 207, provides free small-group course tutoring, one-on-one writing tutoring and academic skills consultations, and online writing and learning resources for all students. All tutoring sessions take place in the WaLC or in designated classrooms on campus. To schedule tutoring appointments, log in to TutorTrac from the WaLC homepage (<http://walc.wcu.edu>) or call 828-227-2274. Distance students and students taking classes at Biltmore Park are encouraged to use Smarthinking and the WaLC's online resources. Students may also take advantage of writing tutoring offered at the Biltmore Park campus on certain days of the week; call 828-227-2274 or log in to TutorTrac and select "Biltmore Park Writing Tutoring" for availabilities.

Math Tutoring Center (usually included in Math department lower division courses)

The Mathematics Tutoring Center (455 Stillwell, <http://mathlab.wcu.edu>, 227-3830) provides tutoring in all lower-division math and many CS courses, help with mathematical concepts in other disciplines, and workshops on study skills specific to mathematics courses. Tutoring is available on a drop-in basis, 9-5 and 6-9 pm Monday-Thursday, and 9-5 on Friday or by appointment.

Academic Calendar includes dates for all breaks, university closures, final exams, etc. The academic calendar can be found at: <http://www.wcu.edu/academics/campus-academic-resources/registrars-office/academic-calendar.asp>.

Academic Honesty Policy: Western Carolina University, as a community of scholarship, is also a community of honor. Faculty, staff, administrators, and students work together to achieve the highest standards of honesty and integrity. Academic dishonesty is a serious offense at Western Carolina University because it threatens the quality of scholarship and defrauds those who depend on knowledge and integrity. Academic dishonesty includes: a. Cheating—Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise. b. Fabrication—Intentional falsification of information or citation in an academic exercise. c. Plagiarism—Intentionally or knowingly representing the words or ideas of someone else as one's own in an academic exercise.

d. Facilitation of Academic Dishonesty—Intentionally or knowingly helping or attempting to help someone else to commit an act of academic dishonesty, such as knowingly allowing another to copy information during an examination or other academic exercise.

The procedures for cases involving allegations of academic dishonesty may be found in the Student Handbook.

INTRODUCTION TO ECOLOGY AND EVOLUTION (BIOL 241) Lab Syllabus

Lecture Instructor: **Jeremy D. Hyman**

Office: 115 Natural Sciences Building

voice: (828) 227-3657

email: jhyman@email.wcu.edu

Lecture 01: 9:30 am - 10:45 am T-TH Stillwell 149

Lecture 02: 12:30 pm – 1:45 pm T-TH Stillwell 150

Laboratory 34: 2:30 pm – 5:20 pm M Natural Sciences Bldg 118 - Jessica Duke

Laboratory 30: 2:05 pm - 4:55 pm T Natural Science Bldg 118 - Maegan Lockett

Laboratory 31: 2:30 pm - 5:20 pm W Natural Science Bldg 118 - Jessica Duke

Laboratory 32: 2:05 pm - 4:55 pm R Natural Science Bldg 118 - Joe Pechmann

Laboratory 33: 1:25 pm - 4:15 pm F Natural Science Bldg 118 - Jessica Duke

I. Course Purpose

This course examines the interaction of organisms with their environment, and investigate the origin and diversification of organisms, as well as the forces which control the abundance and distribution of organisms.

Prerequisites: Biol 140,141, 240. 3 Lecture, 3 Lab.

II. Course Aims and Objectives:

Aims: The course is designed to provide all Biology majors with a minimum proficiency in Evolutionary Biology, including natural selection, speciation, and phylogenetics, as well as Ecology, including population genetics, population dynamics, and community and ecosystem processes. Lab is an integral part of this course, and will consist of a variety of exercises, including field trips, experiments, paper discussions, and presentations. Studying Biology is not merely about memorizing facts and theories – it is also about learning how to be a scientist. These labs are designed to give you experience with the process of doing science (making observations, proposing hypotheses, designing experiments, collecting and analyzing data, and writing in a scientific style).

Specific Learning Objectives:

By the end of this course, students will:

- Be more familiar with the scientific fields of ecology and evolutionary biology
- Understand some of the techniques used by field biologists to study ecological and evolutionary processes
- Be more proficient at scientific data collection, analysis, writing and oral presentation

- Understand the basic concepts of population genetics, natural selection, speciation, competition and co-evolution that shape patterns of plant and animal distribution in the natural world.

III. Course Materials

Files for the course will be posted on the Blackboard Course Web Page.

Announcements will be sent via email through Blackboard. You are responsible for any information sent to you via your official university email.

IV. Faculty Expectations of Students/Course Policies

Attendance:

Attendance at all labs is required. Lab grades may be penalized up to 2% of the final grade for all unexcused absences. There may be 2 weekend labs, including one night lab. Attendance of these labs is required as well, though alternate assignments are available for those who cannot attend. You must attend the lab section for which you are registered. It is generally not possible to attend another section.

Timely Submissions

All lab assignments will have a specified due date. Assignments turned in after the due date will be penalized 20% of the assignment grade for each day they are late. Some lab assignments will be impossible to make up if you do not attend lab.

Accommodations for Students with Disabilities:

Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All information is confidential. Please contact the Office of Disability Services at (828) 227-3886 or come by Suite 135 Killian Annex for an appointment.

Student Support Services:

Student Support Services provides support to students who are either first-generation, low-income or those who have disclosed a disability with: academic advising, mentoring, one-on-one tutorial support, and workshops focused on career, financial aid and graduate school preparation. You may contact SSS at (828) 227-7127 or email sssprogram@wcu.edu for more information. SSS is located in the Killian Annex, room 138.

Civility and Ground Rules:

The Western Carolina University Community Creed states: "I will respect the rights and well-being of others."

Each student may possess different ideas, as well as different ways of communicating those ideas. Because of these differences, respect and civility are integral to maintaining the quality of the academic environment and free inquiry.

(<http://www.wcu.edu/student-life/policies-affecting-students/statement-of-student-rights-and-responsibilities.asp>)

SafeAssign Tool:

All written work submitted for this class is eligible for submission to the SafeAssign tool at the instructor's discretion.

V. Academic Integrity Policy and Reporting Process:

This policy addresses academic integrity violations of undergraduate and graduate students. Graduate students should read inside the parenthesis below to identify the appropriate entities in charge of that step of the process.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of the Academic Integrity Policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community. While academic in scope, any violation of this policy is by nature, a violation of the Code of Student Conduct and will follow the same conduct process (see Article VII.B.1.a.). If the charge occurs close to the end of an academic semester or term or in the event of the reasonable need of either party for additional time to gather information timelines may be extended at the discretion of the Department of Student Community Ethics (DSCE).

I. General:

This policy addresses academic integrity violations of undergraduate and graduate students.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of this policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community.

Instructors have the right to determine the appropriate academic sanctions for violations of the Academic Integrity Policy within their courses, up to an including a final grade of "F" in the course in which the violation occurs.

II. Definitions:

1. Cheating – Using, or attempting to use, unauthorized materials, information, or study aids in any academic exercise.
2. Fabrication – Creating and/or falsifying information or citation in any academic exercise.
3. Plagiarism – Representing the words or ideas of someone else as one's own in any academic exercise.

4. Facilitation – Helping or attempting to help someone to commit a violation of the Academic Integrity Policy in any academic exercise (e.g. allowing another person to copy information during an examination).

III. Undergraduate and Graduate Academic Integrity Process:

1. Within five (5) business days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, s/he will inform his/her department head (or associate Dean of the graduate school when applicable) in writing of the allegation and proposed sanction(s).
2. Within ten (10) business days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, the instructor will inform the student of the allegation, including the proposed sanction(s), in writing. In the written notification, the instructor will inform the student of his/her right to request a meeting with the instructor. During the meeting, the instructor shall complete the Academic Integrity Violation Faculty Resolution Form. If the student does not request a meeting with the instructor within five (5) business days of receipt of the written allegation(s), the student shall be deemed to have mutually resolved the matter and shall be bound to the sanction(s) outlined by the instructor in the written allegation. If the student does not request a meeting, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
3. Within five (5) business days of meeting with the instructor, the student shall either appeal the decision to the department head or mutually resolve the matter by accepting the allegation and proposed sanction(s). No action by the student within five (5) business days of the meeting with the instructor shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the instructor, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
4. Within five (5) business days of receiving a student's appeal, the department head must schedule a meeting with the student. The instructor may be present during the meeting. During the meeting, the department head shall complete the Academic Integrity Violation Department Head Resolution Form. Only information submitted during the meeting with the student, or in the meeting between the instructor and the student, may be considered by the department head. The evidentiary standard for making a decision shall be preponderance of the evidence. The department head may agree or disagree with the allegation(s) of the instructor. The department head may also approve, overturn, or modify the sanction(s) proposed by the instructor. If the student does not attend the scheduled meeting with the department head, the matter will be heard in absentia and shall not be subject to further review and/or appeal.
5. Within five (5) business days of meeting with the department head, the student shall either appeal the decision to an Academic Integrity Board or mutually resolve the matter by accepting the allegation and proposed sanction(s). The student must submit an appeal to the academic Dean listed on the Academic Integrity Violation Department Head Resolution Form. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the department head, the

- alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
6. Within seven (7) business days of receiving a student's appeal, the appropriate academic Dean must schedule an Academic Integrity Board hearing with the student. The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. The instructor may be present during the hearing. Only information submitted during the hearing, or in the meetings between the instructor/department head and the student, may be considered by the hearing board. The evidentiary standard for making a decision shall be preponderance of the evidence. The hearing board may agree or disagree with the allegation(s) of the instructor. The hearing board may also approve, overturn, or modify the sanction(s) proposed by the instructor and/or department head. If the student does not attend the scheduled hearing, the matter will be heard in absentia and shall not be subject to further review and/or appeal. Within ten (10) business days of the hearing, the appropriate academic Dean shall review pertinent records and send the student written notification of the decision of the Academic Integrity Board.
 7. Within five (5) business days of receiving written notification of the decision of the Academic Integrity Board the student may accept the findings and sanctions of the board or submit an appeal to the designated academic Dean. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the Academic Integrity Board, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
 8. If the student elects to file an appeal of the decision of the Academic Integrity Board, she must submit a written appeal within five (5) business days of receiving written notification of the decision of the Academic Integrity Board to the designated academic Dean. An appeal to an academic Dean must be limited to the following grounds; 1) a violation or due process or 2) a material deviation from Substantive and Procedural Standards by the UNC Board of Governors (as set forth in the UNC Manual 700.4.1).
 9. If an appeal is heard by an academic Dean, s/he shall review pertinent records within ten (10) business days of receiving a valid appeal. The academic Dean may agree or disagree with the allegation(s) of the instructor. The academic Dean may also approve, overturn, or modify the sanction(s) proposed by the instructor, department head, and or Academic Integrity Board. Within five (5) days of making a decision, the academic Dean shall provide the student with a written decision. The decision of the academic Dean shall be final.
 10. The student must remain enrolled in the course related to the case, and may not be permitted to withdraw from the course related to the case, until all hearing timelines, notifications, and/or appeals have been completed.
 11. Upon resolution of each level of the case (no matter the outcome), the instructor, department head, and academic Dean must provide the Department of Student Community Ethics with all materials and documents related to the case (i.e. course syllabus, materials in violation of the Academic Integrity Policy, Instructor Resolution Form, Department Head Resolution Form, Academic Integrity Board decision letter, academic Dean decision letter, etc...). The Department of Student Community Ethics shall

serve as the repository for all records associated with allegations and violations associated with the Academic Integrity Policy.

IV. Academic Integrity Board:

The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. Students and faculty members serving on boards for each college will be selected by each college Dean. The Department of Student Community Ethics will train all board members prior to their service on a hearing board. Each academic Dean will convene hearing boards as necessary, and will determine a faculty member to serve as chair prior to a hearing.

V. Sanctions:

The instructor, department head, Academic Integrity Board, and/or academic Dean may impose academic sanctions permitted by the institution (not to exceed receiving a grade of "F" for the course). The instructor, department head, Academic Integrity Board, and/or academic Dean may not permanently remove the student from the course or suspend/expel the student from a program or the University. Student behavior of the magnitude to warrant consideration for permanent removal from the course or suspension/expulsion from a program or the University must be referred to the Department of Student Community Ethics.

VI. Habitual Violations of the Academic Integrity Policy:

Upon receipt of materials associated with violations of the Academic Integrity Policy, the Department of Student Community Ethics will determine if a student has previous violations of University policies. Students with a prior record of violations, or who commits a gross and/or egregious violation of the Academic Integrity Policy, will be referred to the Department of Student Community Ethics for consideration of being subject to hearing proceedings as a habitual violator. Students with three or more violations of the Academic Integrity Policy will automatically be subject to hearing proceedings as a habitual violator. Students in this category are subject to course-related sanctions imposed by the instructor, department head, Academic Integrity Board, and/or academic Dean and University-level sanctions imposed by the Department of Student Community Ethics for habitual violations of University policies.

Additional information is available on the Student Success website under Student Community Ethics.

VI. Resources

Writing and Learning Commons (WaLC):

The Writing and Learning Commons (WaLC) is a free student service, located in BELK 207, providing course tutoring, writing tutoring, academic skills consultations, international student consultations, graduate and professional exam preparation resources, and online writing and learning resources for all students. To schedule

tutoring appointments, visit the WaLC homepage (<http://walc.wcu.edu>) or call 828-227-2274.

Distance students and students taking classes at Biltmore Park are encouraged to use Smarthinking (<http://www.wcu.edu/academics/edoutreach/distance-online-programs/student-resources/services-for-distance-students.asp>) and the WaLC's online resources.

Math Tutoring Center:

The Mathematics Tutoring Center provides tutoring in all lower-division math and many CS courses (455 Stillwell, <http://mathlab.wcu.edu>, 828-227-3830), help with mathematical concepts in other disciplines, and workshops on study skills specific to mathematics courses. Tutoring is available on a drop-in basis, 9 am – 5 pm and 6 - 9 pm Monday-Thursday, and 9 am – 5 pm on Friday.

Blackboard Support:

The learning management system for this class is blackboard and can be found at: <http://wcu.blackboard.com>. Additional help with blackboard can be found at: tc.wcu.edu, (828) 227-7487 or by visiting the Technology Commons located on the ground floor of the Hunter Library.

VII. Grading

Your lab grade will be based on several assignments:

11 lab participation grades	11x10 = 110pts
Ivy Lab paper	40pts
Human Behavior Presentations	50pts
Goldenrod Lab, Paper and Presentation	50pts
Last Presentation - topic TBA	50pts
Total	300pts

Your lab score will then be converted to a percentage, and that percentage will be used along with your lecture scores to calculate a final grade for the class.

INTRODUCTION TO ECOLOGY AND EVOLUTION

(BIOL 241)

Instructor: **Jeremy D. Hyman**
Office: 115 Natural Sciences Building
voice: (828) 227-3657
email: jhyman@email.wcu.edu
WWW: Files and Announcements will be posted on Blackboard Course Web Page

Lecture 01: 9:30 am - 10:45 am T-TH Stillwell 149

Lecture 02: 12:30 pm – 1:45 pm T-TH Stillwell 150

Laboratory 34: 2:30 pm – 5:20 pm M Natural Sciences Bldg 118

Laboratory 30: 2:05 pm - 4:55 pm T Natural Science Bldg 118

Laboratory 31: 2:30 pm - 5:20 pm W Natural Science Bldg 118

Laboratory 32: 2:05 pm - 4:55 pm R Natural Science Bldg 118

Laboratory 33: 1:25 pm - 4:15 pm F Natural Science Bldg 118

Office Hours: One hour each day immediately following lecture: 11:00-12:00 TR, 2:00-3:00. Many other times are available by appointment.

I. Course Purpose

This course examines the interaction of organisms with their environment, and investigate the origin and diversification of organisms, as well as the forces which control the abundance and distribution of organisms.

Prerequisites: Biol 140,141, 240. 3 Lecture, 3 Lab.

II. Course Aims and Objectives:

Aims: The course is designed to provide all Biology majors with a minimum proficiency in Evolutionary Biology, including natural selection, speciation, and phylogenetics, as well as Ecology, including population genetics, population dynamics, and community and ecosystem processes. Lab is an integral part of this course, and will consist of a variety of exercises, including field trips, experiments, paper discussions, and presentations. Studying Biology is not merely about memorizing facts and theories – it is also about learning how to be a scientist. These labs are designed to give you experience with the process of doing science (making observations, proposing hypotheses, designing experiments, collecting and analyzing data, and writing in a scientific style).

Specific Learning Objectives:

By the end of this course, students will:

- Be more familiar with the scientific fields of ecology and evolutionary biology
- Understand some of the techniques used by field biologists to study ecological and evolutionary processes

- Be more proficient at scientific data collection, analysis, writing and oral presentation
- Understand the basic concepts of population genetics, natural selection, speciation, competition and co-evolution that shape patterns of plant and animal distribution in the natural world.

III. Course Materials

Text: The official text book for the course is:

Stiling, P. Ecology: Global Insights & Investigations. McGraw Hill. NY. 2012.

However, please note that I do not lecture directly from the book. For much of the material, my lectures and lecture notes are the primary material for which you are responsible. The book may only be a reference, or supplement to what we discuss in class.

In addition, a great deal of the lecture material will be based on the primary literature. Links to electronic readings will be posted on the MyCat course web page.

IV. Faculty Expectations of Students/Course Policies

Attendance:

- **Attendance:**

In class, I do not take roll, except for the first two weeks when required. You will be neither directly penalized, nor rewarded based on your presence. But, I do **not** provide Power Point® presentations or copies of my notes, so your attendance and notes will be very important to your success in this course. While in class I expect you to be courteous of your classmates, which includes arriving to class on time and to refrain from using cell phones, even to text, while in class.

Please keep in mind also that I do not lecture directly from the text, I include numerous examples not included in the text, and may focus on material in a manner different from the text. In other words, reading the text is not a substitute for attending class. **Attendance at all labs is required, including one Friday or Saturday night and one Saturday afternoon lab.** Lab grades may be penalized up to 2% of the final grade for all unexcused absences.

- **Classroom and lab participation:**

In both lecture and lab, active participation is expected. This includes not just attendance, but also engaging in class discussion and participating in group activities. To this end, texting or other uses of electronic devices that are not related to class activities is prohibited. Continued use of such devices in class will result in lost participation points.

- **Timely submission of assignments:**

All assignments will have a specified due date. Assignments turned in after the due date will be penalized 20% of the assignment grade for each day they are

late. Some lab assignments will be impossible to make up if you do not attend lab. If you miss an exam, it cannot be made up unless you have a university approved excuse.

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SafeAssign Tool:

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days of the meeting with the instructor shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the instructor, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.

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7. Within five (5) business days of receiving written notification of the decision of the Academic Integrity Board the student may accept the findings and sanctions of the board or submit an appeal to the designated academic Dean. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the

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10. The student must remain enrolled in the course related to the case, and may not be permitted to withdraw from the course related to the case, until all hearing timelines, notifications, and/or appeals have been completed.
11. Upon resolution of each level of the case (no matter the outcome), the instructor, department head, and academic Dean must provide the Department of Student Community Ethics with all materials and documents related to the case (i.e. course syllabus, materials in violation of the Academic Integrity Policy, Instructor Resolution Form, Department Head Resolution Form, Academic Integrity Board decision letter, academic Dean decision letter, etc...). The Department of Student Community Ethics shall serve as the repository for all records associated with allegations and violations associated with the Academic Integrity Policy.

IV. Academic Integrity Board:

The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. Students and faculty members serving on boards for each college will be selected by each college Dean. The Department of Student Community Ethics will train all board members prior to their service on a hearing board. Each academic Dean will convene hearing boards as necessary, and will determine a faculty member to serve as chair prior to a hearing.

V. Sanctions:

The instructor, department head, Academic Integrity Board, and/or academic Dean may impose academic sanctions permitted by the institution (not to exceed receiving a grade of "F" for the course). The instructor, department head, Academic Integrity Board, and/or academic Dean may not permanently remove the student from the course or suspend/expel the student from a program or the University. Student behavior of the magnitude to warrant consideration for permanent removal from the course or suspension/expulsion from a program or the University must be referred to the Department of Student Community Ethics.

VI. Habitual Violations of the Academic Integrity Policy:

Upon receipt of materials associated with violations of the Academic Integrity Policy, the Department of Student Community Ethics will determine if a student has previous violations of University policies. Students with a prior record of violations, or who commits a gross and/or egregious violation of the Academic Integrity Policy, will be referred to the Department of Student Community Ethics for consideration of being subject to hearing proceedings as a habitual violator. Students with three or more violations of the Academic Integrity Policy will automatically be subject to hearing proceedings as a habitual violator. Students in this category are subject to course-related sanctions imposed by the instructor, department head, Academic Integrity Board, and/or academic Dean and University-level sanctions imposed by the Department of Student Community Ethics for habitual violations of University policies.

Additional information is available on the Student Success website under Student Community Ethics.

VI. Resources**Writing and Learning Commons (WaLC):**

The Writing and Learning Commons (WaLC) is a free student service, located in BELK 207, providing course tutoring, writing tutoring, academic skills consultations, international student consultations, graduate and professional exam preparation resources, and online writing and learning resources for all students. To schedule tutoring appointments, visit the WaLC homepage (<http://walc.wcu.edu>) or call 828-227-2274.

Distance students and students taking classes at Biltmore Park are encouraged to use Smarthinking (<http://www.wcu.edu/academics/edoutreach/distance-online-programs/student-resources/services-for-distance-students.asp>) and the WaLC's online resources.

Math Tutoring Center:

The Mathematics Tutoring Center provides tutoring in all lower-division math and many CS courses (455 Stillwell, <http://mathlab.wcu.edu>, 828-227-3830), help with mathematical concepts in other disciplines, and workshops on study skills specific to mathematics courses. Tutoring is available on a drop-in basis, 9 am – 5 pm and 6 - 9 pm Monday-Thursday, and 9 am – 5 pm on Friday.

Blackboard Support:

The learning management system for this class is blackboard and can be found at: <http://wcu.blackboard.com>. Additional help with blackboard can be found at: tc.wcu.edu, (828) 227-7487 or by visiting the Technology Commons located on the ground floor of the Hunter Library.

V. Grading:

Final letter grades will be based on the proportion of points earned out of the total number of points available. There will be five (5) quizzes, worth 5 points each, 3 major

exams, (2 mid-terms and a final), worth 100 points each. The final exam is cumulative. The exams may be given to individuals at an alternate time given prior approval. The quiz and exam grades will account for 83% of the final grade. Lecture participation will count for 2% of the final grade. Laboratory scores will be adjusted so that laboratory performance will account for 15% of the final grade. All laboratory reports and assignments are due the following week unless otherwise stipulated. Reports and assignments will be accepted late, however the value of the work will be reduced by 20% of the original per day that the report is late. So, after 5 days the report has no worth and will not be accepted.

Final letter grades will be assigned based on a 10 point scale:

A → 94-100%		A ⁻ → 90-93%;
B ⁺ → 88-89%;	B → 84-87%;	B ⁻ → 80-83%;
C ⁺ → 78-79%;	C → 74-77%;	C ⁻ → 70-73%;
D → 60-69%;		
F → < 60%.		

VI. Lab:

Lab is an integral part of this course, and will consist of a variety of exercises, including field trips, experiments, paper discussions, and presentations. **The most important field trips, the salamander field trips, will take place over 2 weekends in September. These field trips involve long, evening labs, with substantial time spent out in the woods, from approximately 8pm to 2am. If you cannot attend the field trips, an alternate term paper assignment will be given.**

Your lab grade will be based on several assignments:

11 lab participation grades	11x10 = 110pts
Ivy Lab paper	40pts
Human Behavior Presentations	50pts
Goldenrod Lab, Paper and Presentation	50pts
Last Presentation - topic TBA	50pts
Total	300pts

Your lab score will then be converted to a percentage, and that percentage will be used along with your lecture scores to calculate a final grade for the class. As mentioned above, laboratory scores will be adjusted so that laboratory performance will account for 15% of the final grade. All laboratory reports and assignments are due the following week unless otherwise stipulated. Reports and assignments will be accepted late, however the value of the work will be reduced by 20% of the original per day that the report is late. So, after 5 days the report has no worth and will not be accepted.

Tentative Course Schedule - Fall 2015

Date	Weekly Topic	Reading Assignment	Lab
1 Tues, Aug 18	What is Evolution/What is Science?	Ch 1	No Lab
2 Thurs, Aug 20		Ch 1	
3 Tues, Aug 25	Natural Selection in Depth	Ch 2 & 3	Stats Lab
4 Thurs, Aug 27	QUIZ 1	Ch 2 & 3	
5 Tues, Sep 1	Modes of Selection	Ch 2	Ivy Lab
6 Thurs, Sep 3	QUIZ 2	Ch 2	
7 Tues, Sep 8	Behavioral Ecology	Ch 3	No Lab
8 Thurs, Sep 10	QUIZ 3	Ch 3	LABOR DAY
9 Tues, Sep 15	Hardy-Weinberg / simple population genetics	No Chapter	Stickleback Lab
10 Thurs, Sep 17	QUIZ 4	No Chapter	
11 Tues, Sep 22	Speciation	No Chapter	Phylogenetics Lab
12 Thurs, Sep 24	QUIZ 5	Ch 4	
13 Tues, Sep 29	Phylogenetics	Ch 4	Human Behavior
14 Thurs, Oct 1	MIDTERM 1	Ch 9 & 10	
15 Tues, Oct 6	Niches		Life tables
16 Thurs, Oct 8			
Tues, Oct 12	Fall Break – no classes	Ch 9 & 10	No Lab
Thurs, Oct 16	Fall Break – no classes	Ch 9 & 10	
17 Tues, Oct 20	Trade-offs / life history	Ch 11-16	Behavior Presentations
18 Thurs, Oct 22		Ch 11-16	
Tues, Oct 26	Advising Day – No Classes		No Lab
19 Thurs, Oct 28	Population growth & Demography	Ch 11-16	
20 Tues, Nov 3	Population growth & Demography	Ch 17-19	Goldenrod lab
21 Thurs, Nov 5		Ch 17-19	
22 Tues, Nov 10	Ecological Interactions	Ch 20	TBA
23 Thurs, Nov 12	MIDTERM 2		
24 Tues, Nov 17	Ecology & the Physical Environment	Ch 21	TBA
25 Thurs, Nov 19		Ch 22-24	
26 Tues, Nov 24	Ecological Succession	Ch 25	No Lab
Thurs, Nov 26	Thanksgiving – No Classes		
27 Tues, Dec 1	Island Biogeography	Ch 25	TBA
28 Thurs, Dec 3		Ch 27	

Fifth Week Grades Due	Monday, September 22
Advising Day	Tuesday, October 27
Last Day to Drop with a "W"	Monday, October 19
Final Semester Examinations	Saturday-Friday, December 6-12
Final Exam in this course 9:30 section:	Wednesday Dec. 9 th , 12:00-2:30
Final Exam in this course 12:30 section:	Thursday Dec. 10 th , 3:00-5:30

ENV 150 - Introduction and Approaches to Environmental Science: Fall 2015

Teaching Team: Laura DeWald (coordinator), Beverly Collins (biology), Channa DeSilva (chemistry), Mark Lord (geosciences), Brian Byrd (environmental health), Ron Davis & Laura DeWald (natural resource conservation and management)

Each instructor/team will provide a syllabus for their unit that will list their office hours, contact information, reading assignments, topics schedule, and how the points for their section are allocated. Each instructor will have a folder on the lecture site in Blackboard where all their materials will be posted.

Coordinator Contact Information (Laura DeWald):

Office: 317 Stillwell

Phone: 227-2478

E-mail: ldewald@wcu.edu

Office Hours: W Noon-1:00, T/Th 9:30-10:30, or by appointment, or anytime my door is open!

Course Description

- 🌿 Environmental science is a wide-ranging and complex discipline. In this course, you will be exposed to the complexity of environmental science along with different approaches to understanding and investigating environmental problems.
- 🌿 Sustainable solutions to environmental problems require that they be socially desirable, economically feasible and ecologically viable. This requires an environmental scientist to have a broad knowledge of biological, physical, and social sciences. In this course we will use laboratory activities, case studies, readings, and class discussions to explore the varied aspects and approaches to solving environmental problems.

Learning Outcomes

- 🌿 Students will practice:
 - ▶ critical thinking, reading and writing
 - ▶ applying scholarly information and methods to understand environmental problems
 - ▶ writing technical reports and orally communicating environmental science topics
 - ▶ teamwork
- 🌿 Students will gain knowledge and understanding of the:
 - ▶ scientific and societal framework of environmental science
 - ▶ some of the basic biological, chemical, geological, environmental health, ecological, economic and natural resources principles related to environmental science
 - ▶ approaches and methodology used in solving contemporary environmental problems

Expectations - you are expected to:

- 🌿 attend each day
- 🌿 come to class prepared to be actively involved in what is going on
- 🌿 work to your potential
- 🌿 take an active role in your education by asking questions, studying, completing assignments, and taking responsibility for your performance

Required Text

Kaufmann, RK, and CJ Cleveland. 2008. Environmental Science. McGraw Hill Co. New York.

The textbook supplements material being taught. Some faculty will use it more than others, and there will be numerous handouts posted on Blackboard during course.

Course Structure

- The course has two 75-minute lectures and one 2-hour laboratory per week. You will *not* receive a separate grade for lab because it is *incorporated* into your overall course grade.
- The course consists of a team of faculty who teach different units in the course.
 - There are many advantages of being taught by multiple faculty, including getting exposure to different expertise and perspectives. However, teaching styles will vary among instructors so you will need to adapt as faculty rotate throughout the course.
 - The coordinator and faculty will do their best to help you transition from one instructor to the next, but you should be aware of expectations listed on the syllabus for each unit.
 - To help remediate issues associated with different exam styles and grading criteria, the coordinator (Dr. DeWald) will create and grade all exams and will grade all reports.

Assessment of Learning Outcomes and Policies

- 🍁 **Attendance** –Your grade and achievement of learning outcomes is positively correlated to attendance. Keep in mind that graded or not, absences significantly lower your grade.
- 🍁 **Technical Reports** – All written assignments *must be* typed, double-spaced, in 12 pt font and turned in as a hard copy to Dr. DeWald. You must use the technical report format provided in the template handed out in class.
 - **10% bonus awarded to students who visit the WaLC and turn in a revised version of their technical reports prior to the due date (must include the draft, WaLC form and final version to get the bonus).**
- 🍁 **In-Class Group Work** – Environmental science problems can not be solved working as individuals. Therefore, group work will occur throughout the course to help achieve learning outcomes related to team-work.
- 🍁 **Oral Reporting** – Environmental scientists must be able to communicate with the public and their peers. Therefore, you will practice oral presentation skills throughout the course.
- 🍁 **Exams** – Exams assess your understanding and ability to apply your knowledge to environmental science. There six short, content-based, in-class exams at the end of each unit and there are three take-home synthesis concept-based exams. *Students who miss exams will receive a zero (0) for the exam.*

🍁 Final Grade*

Individual Units: 6 @ 50 points each	300 points
30 pt. Technical Report + 20 pt. In-Class Exam for each unit	
2-year plan rough draft, video summaries	50 points
<u>Synthesis Take-Home Essay Exams: 3 @ 50 points each...</u>	<u>150 points</u>
Total	500 points

A+ = >98%, A = 93-97%, A- = 90-92%, B+ = 87-89%, B = 83-86%, B- = 80-82%,
C+ = 77-79%, C = 73-76%, C- = 70-72%, D+ = 67-69%, D = 63-66%, D- = 60-62%, F = < 60%

 **Late Work**

Late work is not accepted because it is unfair to your classmates who turn assignments in on time, and it is unfair to faculty trying to get assignments back to students in a timely manner. However, life happens so feel free to plead your case to Dr. DeWald IN ADVANCE of a due date if you need an extension.

 **Class Environment**

We encourage *respectful* disagreement and debate. Listening to different opinions is one of the best ways to learn. Keep an open mind and resist the urge to immediately dismiss a view you disagree with. This class is a forum where we can have open discussion and where everyone has the opportunity to participate and feels comfortable participating. Everyone should be polite and tolerant of divergent viewpoints. Please listen and do not talk when others are talking. Be respectful of your fellow students and instructors.

 **Other Policies:**

- See Policy handout posted on Blackboard associated with resources to help you such as WaLC, Math tutoring, accommodations for students with disabilities, student support services, academic integrity, etc.

- Be particularly careful to understand what copying and plagiarism is. When I see reports or exams from two or more students that are basically the same other than a few words or phrases changed – that is copying and thus is cheating. When you copy word-for-word from a published source (even if you cite the source) that is plagiarism. You MUST put things into your own words even when citing.

- Cell Phones – TURNED OFF (not on vibrate) during class.

- Class Attendance – See WCU policy for details. Remember it is NOT the responsibility of the instructors to help you make up work you have missed. If you need an excused absence or an extension on an assignment...you MUST talk to Dr. DeWald PRIOR to the due date. Collection of data during lab is very important and can NOT be made up. Students who miss lab should still turn in a report, but you will be penalized 10% for missing the data collection.

- Tobacco Use – The use of ALL tobacco products is prohibited during class. This includes when we are outside for lab, smokeless tobacco and e-cigarettes.

Overall Schedule

See Individual Instructor Unit Syllabi for more Detailed Information

Unit Instructor	Dates	Topics
DeWald	Aug 18, 19, 20	Foundations: Ecology Review, Sustainability,
	Aug 25, 26	Ecological Economics
	Aug 27	Foundations Content Exam (30 minutes)
Byrd	Aug 27, Sept 1, 2, 3	Environmental Health Approaches
	Sept 8, 9	Mosquito Study
	Sept 10	ENVH Content Exam (30 minutes)
Collins	Sept 10, 15, 16, 17	Biological Approaches: Biodiversity & Invasives
	Sept 22, 23	Invasive Plant Study
	Sept 24	Biology Content Exam (30 minutes)
Synthesis Exam #1 (DeWald, Byrd, Collins Units)		
Lord	Sept 24, 29, 30, Oct 1	Geologic Approaches
	Oct 6, 7	
	Oct 8	Geology Content Exam (30 minutes)
October 12-16 Fall Break		
DeWald & Davis	Oct 20, 21, 22	Natural Resources Approaches
	Oct 27: Advising Day, No Class	
	Oct 28, 29, Nov 3	Wildlife Habitat, Squirrel HSI
	Nov 5	NRCM Content Exam (30 minutes)
November 4 No Lab		
DeSilva	Nov 5, 10, 11, 12	Chemical Approaches: Air Pollution
	Nov 17, 18	Automobile exhaust and cigarette smoke study
	Nov 19	Chemistry Content Exam (30 minutes)
Synthesis Exam #2 (DeWald, Lord, DeSilva units)		
<i>Nov 25-27 Thanksgiving Holiday: No Class</i>		
DeWald	Nov 19, 24	Wrap-up, Synthesis &
	Dec 1, 2, 3	2-yr course ES Course plans
Synthesis Exam #3 Taken during final exam: Tuesday December 8, Noon-2:30 pm		
<ul style="list-style-type: none"> • Each unit has a 45 minute introductory lecture to start the section, followed by three 75-minute lectures (T/TH), and two 2-hour labs (Wednesdays) and a 30-minute content exam to complete the unit • Each unit has one technical (lab) report (30 points) and concludes with a 30-minute content-based exam (20 points). Therefore, each unit is worth 50 points. • There are two take-home synthesis exams that integrate across the previous three units and one comprehensive synthesis final exam that covers the entire semester which is given during finals week • Dr. DeWald writes and grades all content exams, synthesis exams, and all technical reports 		

Spring 2015

Tuesdays 4:10 – 5:00 PM, Stillwell 225

Instructors:

- Dr. David Henderson, dghenderson@wcu.edu
232 Stillwell Building, 227-2939
- Dr. Beverly Collins, collinsb@email.wcu.edu
109 Natural Science, 227-3663
- Dr. Jim Veteto, jrveteto@email.wcu.edu
106A McKee, 227-3777

“There are two spiritual dangers in not owning a farm. One is the danger of supposing that breakfast comes from the grocery, and the other that heat comes from the furnace.”

—Aldo Leopold

Description: This course is the second in a sequence of four core Environmental Science courses. It introduces students to major figures, works and ideas in environmental thought. This year the focus is on sustainable agriculture.

Objective: Environmental Science majors will demonstrate knowledge and understanding of the literature and fundamental events that shape modern environmental science, policy and values.

Texts:

- *The Omnivore’s Dilemma: A Natural History of Four Meals*. Michael Pollan. New York: Penguin Press, 2006.
- Supplemental readings and films will be available on Blackboard.

Assignment and Grade Breakdown:

- Grade Components
 - Reading Questions: 25%
 - Crop Profile 25%
 - 2-Year Plan Required for Passing Grade
 - History of a Meal 35%
 - Attendance & Participation 15%
- Reading Questions: Each week you will prepare for class by writing on an index card three questions about the week’s readings and bringing it with you to class.
- Crop Profile: You will be randomly assigned a crop to investigate. You will need to write a 2-page paper on its natural, cultural and political history.
- 2-Year Plan: You must revise and complete the 2-year plan which you started in ES 150. This should be submitted on Blackboard and to your academic adviser before advising day. Dr. DeWald has provided you with more detailed instructions.
- History of a Meal: Pollan’s book traces the history of three meals, but you only have to do one. This should be a real meal that you prepare and eat (take a photo too). You will then need to write a paper, at least 2 pages, taking an informed and critical look at the major ingredients and how they got to your plate.
- Attendance and Participation: Attendance and participation at every meeting is expected. Merely coming will not get you full credit here. Up to two absences (including university excused absences) may be expunged by completing an additional assignment, to be arranged with an instructor (for example, writing a paper on the missed topic). Any absences not expunged will result in 7 points off your final grade. Communicate with us promptly about any absences.

- We desire to make the classroom a safe place to examine ideas and inquire freely for the truth. So please be courteous and respectful of your fellow students, and we shall do the same for you.
- All correspondence should be to your instructors' university email addresses, with "ES 250" in the subject line, and written in an appropriate format and tone.
- Late papers submitted with instructor permission will be accepted for 50% credit.
- Taking papers to the Writing and Learning Commons before they are due will be rewarded with 1 extra credit point on your final grade.
- Cell phones should be set to silent. Should you need to take a call, please step out quietly before doing so. Do not wear headphones during class. Do not use social media or entertainment media during class. If we find you using facebook or shopping on Amazon, we will count you absent.
- Blackboard: This class will make use of the Blackboard LMS. You will need to use it to access course materials and to turn in assignments. There are tutorials available online to help you become familiar with the software. *Save all your work somewhere else also!* Sometimes Blackboard loses things.
- Accommodations for Students with Disabilities: Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to Disability Services. All information is confidential. Please contact the Office of Disability Services for more information at (828) 227-3886 or lalexis@wcu.edu You may also visit the office's website: disability.wcu.edu
- Academic Honesty Policy: Western Carolina University, as a community of scholarship, is also a community of honor. Faculty, staff, administrators, and students work together to achieve the highest standards of honesty and integrity. Academic dishonesty is a serious offense at Western Carolina University because it threatens the quality of scholarship and defrauds those who depend on knowledge and integrity. Further information may be found in the Student Handbook.

WCU instructors reserve the right to use plagiarism prevention software (such as SafeAssignment.com) as well as Google, Yahoo, and/or other Internet search engines to determine whether or not student papers have been plagiarized. With plagiarism prevention software, instructors may upload student papers into a searchable database or teach students how to upload their own work as part of the course requirements.

Grade Scale:

<u>Grade</u>	<u>Percent</u>	<u>Interpretation</u>	<u>Quality Points per Semester Hour</u>	<u>Paper Rubric</u>	
A+	100 +	Distinguished	4.0		<i>ideas</i> <i>presentation</i>
A	93-100	Excellent	4.0	A:	insightful articulate & professional
A-	90-92		3.67		
B+	88-89		3.33		
B	83-87	Good	3.0	B:	understanding clear, only minor errors
B-	80-82		2.67		
C+	78-79		2.33		
C	73-77	Satisfactory	2.0	C:	significant error in either idea or presentation
C-	70-72		1.67		
D+	68-69		1.33		
D	63-67	Poor	1.0	D:	substantially erroneous or fails to meet assignment criteria
D-	60-62		.67		
F	0-59	Failure	0		

SCHEDULE

- **Week 1: January 13**
Syllabus and Introductions
- **Week 2: January 20 – Origins and History of Agriculture**
Readings: Sutton and Anderson “Origins of Food Production”; Cleveland “Agricultural Revolutions”
- **Week 3: January 27 – Corn**
Readings: Pollan chapter 1; Green and Robinson, “Maize was Our Life: A History of Cherokee Corn”
- **Week 4: February 3 – The Modern Farm**
Readings: Pollan chapter 2; *The Plow the Broke the Plains* (short film, 1936); Barlett, “Industrial Farming in Evolutionary Perspective”
- **Week 5: February 10 – It’s Business**
Readings: Pollan chapters 3 & 4
- **Week 6: February 17 – To Market**
Readings: Pollan chapters 5 & 6
Submit 2-Year Plan
- **Week 7: March 3 – Fast Food**
Readings: Pollan chapter 7; *Food Inc.* (film, 2008)

Spring Break

- **Week 8: March 17 – Agrarianism**
Readings: Pollan chapter 8; Wendell Berry, “Conservationist and Agrarian”
Crop Profile Due
- **Week 9: March 24 - Organic**
Readings: Pollan chapter 9; *The New Green Giants* (film, 2012)
- **Week 10: March 31 – Grass**
Readings: Pollan chapter 10; Grass reading (TBA)
- **Week 11: April 7 – Animals**
Readings: Pollan 11 & 12
- **Week 12: April 14 – More Animals**
Readings: Pollan 17; Brown, “Long in the Horn: An Agricultural Anthropology of Livestock Improvement”
- **Week 13: April 21 – Food Justice**
Readings: Campbell and Veteto “Free Seeds and Food Sovereignty”; Slocum and Cadieux “Practice of Food Justice”
- **Week 14: April 28 – Meal Discussion**
Readings: Pollan 16
History of a Meal Due

ES 350-01: Seminar in Energy, Economics, and the Environment

Spring 2016
McKee 112
M 3:15 – 4:05

Instructors: Mrs. Lauren Bishop
Office of Sustainability & Energy Management
Facilities Management
3476 Old Cullowhee Road / 828-227-3562 / lbishop@wcu.edu
Chief Sustainability Officer &
Director of Sustainability & Energy Management

Mr. Andy Coburn
Program for the Study of Developed Shorelines
Belk 294 / 828-227-3027 / acoburn@wcu.edu
Research/Graduate Faculty &
Associate Director Program for the Study of Developed Shorelines

Office Hours: Mrs. Lauren Bishop – By Appointment
Mr. Andy Coburn – By Appointment

I. Rationale/Purpose:

This course is the third in a sequence of four, constituting the core of the Environmental Science Program. This course will explore how environmental and economic sustainability are impacted by issues related to energy production and consumption.

II. Course Aims and Objectives:

Aims Environmental Science majors will gain background knowledge and tools they can use during the ES capstone course and in their subsequent careers. This course is designed to provide you with information about current environmental issues, as well as some of the efforts being made to address them at the local, regional and global scale. You will learn not only the science behind these issues (e.g. what causes global climate change), you'll also be exposed to the economic, political and social factors that influence environmental change and shape our responses to it. In this semester four major topics will be discussed: Economy and the Environment, Energy and the Environment, Population, Resiliency, and Environmental Ethics.

Specific Learning Objectives:

By the end of this course, students will be able to:

1. Clearly describe sustainability, its components, and how it may be achieved in the modern world.
2. Demonstrate a clear understanding of energy conservation, its importance, how it is achieved, and the consequences of ignoring the practice.
3. Clearly describe climate change and associated mitigation approaches.
4. Demonstrate a clear understanding of the economic, environmental, and ethical issues related to conservation, environmental protection, and sustainability.
5. Navigate the job market effectively by presenting themselves well on a resume, identifying target jobs in their fields, and possessing knowledge related to pursuit of those jobs.

III. Course Materials

Course readings: Required readings posted on Blackboard with appropriate notice.

IV. Course Policies

Accommodations for Students with Disabilities

Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to Disability Services. All information is confidential. Please contact the Office of Disability Services for more information at (828) 227-3886 or disabilityservices@wcu.edu. You may also visit the office's website: <http://disability.wcu.edu>.

Academic Integrity Policy:

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of the Academic Integrity Policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community. While academic in scope, any violation of this policy is by nature, a violation of the Code of Student Conduct and will follow the same conduct process (see Article VII.B.1.a.). If the charge occurs close to the end of an academic semester or term or in the event of the reasonable need of either party for additional time to gather information timelines may be extended at the discretion of the Department of Student Community Ethics (DSCE).

Violations of the Academic Integrity Policy include:

- **Cheating** - Using or attempting to use unauthorized materials, information, or study aids in any academic exercise.
- **Fabrication** - Creating and/or falsifying information or citation in any academic exercise.
- **Plagiarism** - Representing the words or ideas of someone else as one's own in any academic exercise.
- **Facilitation** - Helping or attempting to help someone to commit a violation of the Academic Integrity Policy in any academic exercise (e.g. allowing another to copy information during an examination)

Faculty members have the right to determine the appropriate sanction(s) for violations of the Academic Integrity Policy within their courses, up to and including a final grade of "F" in the course. Within five (5) days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, the instructor will inform his/her department head (Associate Dean of the Graduate School when the student is a graduate student) in writing of the allegation and proposed sanction(s).

The Academic Integrity Policy and Faculty Reporting Form can be found online at <http://dsce.wcu.edu>.

Participation (30%):

Class participation is worth 30% of your total course grade. **We truly grade class participation!** If we don't know your name – or better yet, the sound of your voice – by the end of the semester, you will very likely have a class participation problem. You are expected to come to class prepared to discuss the day's topic, engage as an active participant, and be respectful of others.

This includes an in-class debate in which you will be asked to make a convincing argument in favor of, or against, a specific topic. In-class debates teach public speaking skills and help develop critical thinking, research skills and organization and prioritization of information. They also present opportunities to become engaged with important and complex - but often unfamiliar - material in different ways; forming and deconstructing the opinions of others, as well as your own. A formal, in-class debate encourages you to produce your own arguments rather than regurgitate those of others. Most importantly, however, debates develop higher-order thinking skills of evaluation and analysis, which will help improve your writing skills as you learn to produce more developed arguments and structure them in a coherent way.

Blackboard:

Blackboard will be heavily utilized in this course. Not only is all course information (this syllabus, etc.) posted on Blackboard, you will occasionally have **required** course readings posted on Blackboard.

Assignments (25%):

Three reading assignments – Detailed in a Blackboard folder.

Resume – Detailed in a Blackboard folder.

Service Learning Project (15%):

You must complete at least 4 hours of volunteer work with a local community group, and turn in a signed community service timesheet documenting your service. A list of community groups is available at <http://www.wcu.edu/about-wcu/leadership/office-of-the-provost/ugstudies/center-for-service-learning/>. If you would like to work with a different group, you must have it OK'ed by the course instructors. You will also complete a one-page paper reflecting on your experience.

Energy Sector Investment Project (25%):

At the end of the first class, you will be divided into teams of two and assigned a specific sector of energy production/conservation. You will research your specific sector, and identify and “invest” in public companies that do business within that sector. Over the course of the semester, you will monitor governmental actions/policies and/or international/national/state events that may have a profound influence on your energy sector AND/OR the performance of one or more of your selected companies (measured by a change in stock price). At the end of the semester, you will submit a short paper and make a presentation summarizing your efforts and findings. Complete instructions for the ESIP will be provided on Blackboard.

Cell Phones:

Cell phones (ringing, texting, talking, etc.) are not permitted in class. **We will call you out on this if we see a cell phone in class.** Come to class ready to participate or just stay home. *Note: The same applies for earphones of any type, reading the paper, etc.

Laptop Computers, Tablets, Etc.

Laptop computers, tablets, and other devices are not permitted in class unless otherwise requested.

E-Mail

Please check your e-mail account which is on file with WCU regularly, as it is the primary form of communication between the instructors and students. Blackboard announcements we post will also come to your e-mail.

V. Grading Procedures:

Course grades will be calculated as follows:

Course Requirement	Percentage of Grade
3 Reading Assignments (all combined)	25%
Service Learning Project (reflection paper)	15%
Energy Sector Investment Project (presentation & paper)	25%
Resume	5%
Participation	30%
TOTAL	100%

This is a living document so make sure to check Blackboard for updates.

We will also make announcements to changes during class.

Grading and Quality Point System

Grade	Interpretation	Quality Points per Semester Hour	Grade	Interpretation	Quality Points per Semester Hour
A+	Excellent	4.0	I	Incomplete	--
A	Excellent	4.0	IP	In Progress	--
A-		3.67	S	Satisfactory	--
B+		3.33	U	Unsatisfactory	--
B	Good	3.0	W	Withdrawal	--
B-		2.67	AU	Audit	--
C+		2.33	NC	No Credit	--
C	Satisfactory	2.0			
C-		1.67			
D+		1.33			
D	Poor	1.0			
D-		.67			
F	Failure	0			

The grades of A+, A, A-, B+, B, B-, C+, C, C-, D+, D, D- and F indicate gradations in quality from Excellent to Failure. Please note that a C- grade is less than satisfactory and may not meet particular program and/or course requirements.

Composition-Condition Marks: A student whose written work in any course fails to meet acceptable standards will be assigned a composition-condition (CC) mark by the instructor on the final grade report. All undergraduates who receive two CC grades prior to the semester in which they complete 110 hours at Western Carolina University are so notified by the registrar and are required to pass English 300 or English 401 before they will be eligible for graduation. This course must be taken within two semesters of receiving the second CC and must be passed with a grade of C (2.0) or better.

Students must be familiar with the class attendance, withdrawal, and drop-add policies and procedures.

VI. Tentative Course Schedule*Subject to change with appropriate notice.*

Class Meeting	Topic	Notes
January 11	Introduction to ES 350 and debate topic selection	ESIP Handout/Debate Prep
January 18	No Class – MLK Holiday	
January 25	ESIP Review and Debate	Energy Sector Investment Project Assignment DUE
February 1	Energy 101 David King, WCU Energy Manager	Resume Assignment DUE
February 8	Sea Level Rise & Coastal Resiliency Andy Coburn	
February 15	Mountain Top Removal	
February 22	Systems Thinking & Agents of Change Lauren Bishop	
February 29	Soft Skills & the Job Market Lauren Bishop	Reading Assignment #1 DUE
March 7	Land Use Planning Activity Andy Coburn	Assignment prep is available on Blackboard
March 14	Watershed/Water Resource Management Eric Romaniszyn, Executive Director, Haywood Waterways Association	
March 21	No Class - Spring Break	
March 28	Climate Change: Frontline: <i>Climate of Doubt</i> Part 1	
April 4	Climate Change: Frontline: <i>Climate of Doubt</i> Part 2	Reading Assignment #2 DUE: Climate Change Science: A Modern Synthesis Volume 1 - The Physical Climate
April 11	Think Globally, Act Locally: Community Gardens and Farmer's Markets Adam Bigelow and Curt Collins	
April 18	Leadership Practices Inventory Lauren Bishop	Reading Assignment #3 DUE
April 25	Energy Sector Investment Presentations	Service Learning Assignment DUE
May 2	FINAL EXAMS: No Class	ESIP Paper DUE

Energy Sector Investment Tracking Project

A sector is a unique industry group. A lot of people — including many financial professionals — use the terms **sector** and **industry** interchangeably, but they aren't the same. Industry describes a specific set of businesses, while sector is a broader term. In fact, a sector is technically a broad section of the overall economy that usually includes more than one industry. For example, the financial sector includes banking, investment banking, mortgages, accounting, insurance and asset management — six distinct industries. Other sectors of the economy include Healthcare, Technology, Telecommunications and Utilities.

The Energy Sector is a category of industries that relate to the production, supply or conservation of energy, which is defined as the capacity of a physical system to perform work. The Energy Sector includes industries and companies involved in the exploration and development of oil or gas reserves; oil and gas drilling; integrated power firms; firms that develop and/or produce sources of “alternative,” renewable or “green” energy (such as biofuels, wind, solar and geothermal) and firms that help us use less energy (conservation).

Performance in the Energy Sector is largely driven by the supply and demand for global energy. Traditional energy producers typically do well during times of high oil and gas prices, but earn less when demand or the value of energy drops. Alternative energy producers, on the other hand, are influenced more by technology and governmental policies. In general, the entire Energy Sector is sensitive to political, social and environmental changes and events.

ASSIGNMENT:

For this project, you will identify, purchase and track the stock performance of companies within a specific industry of the Energy Sector (assigned at the end of the first class). We will use Google Finance for this assignment. To get to our Google Finance class page, log-in to Google using wcues350@gmail.com and password **STOCKS350 (all CAPS)**.

However, before you can purchase any stock, you'll first need to identify companies within your industry that sell stock to the public. It's up to YOU to research and find out who does what within your industry. There are a number of good online resources, so keep track of the sites you use because you WILL want/need this info later on. Two places to start are <http://www.altenergystocks.com> and <http://www.sustainablebusiness.com>.

REVISED DIRECTIONS:

At any point after class on Monday, January 25th each team will:

1. Log on to Google using wcues350@gmail.com and password **STOCKS350**,
2. Go to Google Finance,
3. Locate the portfolio with your industry's name (like Solar or Wind),
4. Enter the symbol of the stock you want to purchase in the box named “Add symbol,”
5. Click the “Add transaction data” plus sign,
6. Make sure the “Type” box says Buy. Enter January 25, 2016 as the date, the number of shares of stock you want to purchase and the price of the stock at the time of purchase,
7. Click the “Deduct from cash” button and click “Add to portfolio.”

You must purchase the stock of at least 3 companies you have identified within your industry, and the maximum amount you can spend is \$1,000,000 (you may or may not have to figure this).

YOU WILL HAVE 2 WEEKS TO RESEARCH AND PREPARE, SO BE READY TO DO THIS AS SOON AS POSSIBLE AFTER CLASS ON JANUARY 25!!

After you make your initial stock purchases, you are free to buy and sell stocks (within your industry, of course) over the remainder of the semester. Be sure to keep track of your transactions since Google Finance doesn't do this very well.

The goal of the project is not to have the most money at the end of the semester (although the team with the highest fund balance will be receive some sort of accolade), but to gain an understanding of the energy sector, who's in it and how politics, policies and significant events (both human and environmental) influence and/or dictate energy production, use and conservation. Therefore, it is up to you to:

- 1) Track how your investments are doing,
- 2) Keep an eye out for any major federal or state energy policies that could impact your investments (we'll talk more about how to do this later), and
- 3) Assess how significant natural events like an earthquake or flood can impact your investments.

Good luck and have fun! And, as always, PLEASE let us know if you have a question, comment or concern!

ES495: Senior Seminar: Sustainability Assessment of Highlands Biological Station Fall 2015

Course Objectives:

The purpose of this course is for you to apply your skills and knowledge of environmental science to an open-ended problem. In doing this, you will gain improved understanding and skills in problem definition, in development of methods to address a problem, integration of concepts, project management, data analysis and professional oral and written presentation. This fall we will be working for Dr. James Costa, Director of the Highlands Biological Station (HBS) in Highlands, NC. HBS is a field station within the University of North Carolina (UNC) system. The first ES495 Capstone project was an energy audit of HBS and many changes based on the capstone report were implemented. Thus, we will redo the energy audit to see how sustainability has changed (or not) in the past 7 years.

Seminar Format:

A key difference between your experience in “regular” classes and this seminar is the responsibility you have to our collective learning and data collection goals, as well as the responsibility you have to the education of your peers. Individually and collectively you will be responsible for reading literature, setting goals related to the overall objective for your project, formulating methods to collect data, collecting and analyzing data, and presenting results and interpretation in a variety of formats.

The project is an open-ended problem which means the paths to the outcomes are not fully known. As such, the precise direction and schedule you will take in this course is dependent upon a lot of variables that cannot be anticipated over a 15-week period. After establishing an initial plan of action, the group will need to continually assess the plan to assure that it still provides the best path to achieve your group’s objectives.

Seminar Plan and Project:

There are three work-based objectives:

1. Define the problem, do background research and develop methodology
2. Collect and analyze data
3. Complete a written report and oral presentation

Our semester will culminate with a formal report, and oral presentation. The written report will be in the form of a manuscript with all of you as authors. The report and presentation will be for an audience greater than our course and will include Environmental Science Faculty at WCU, ES150 students and other interested students and staff at WCU.

Evaluation:

15% Project Management: working effectively in a team, meeting deadlines, etc. (see rubric)

Includes self-assessment, assessment by peers and assessment by the instructor

15% Class Participation

Attendance, using time effectively (e.g., working days where class does not formally meet),

Leading discussions and participating in discussions of literature related to the project. Failure to fully participate in data collection will result in a final grade no higher than a “C” in the course.

25% Journal

You are required to keep a journal throughout the semester that documents your experiences and progress toward completing tasks for ES495 (see handout).

45% Final Report: written document + oral presentation

Writing quality (see rubric), use of literature, use of specifics

Note: Poor use of peer reviewed literature will result in a grade no higher than a “C” in this class

Note: Lack of specifics (we will discuss what this means in class) will result in a grade no higher than a “C” in this class

**Department of Chemistry & Physics****CHEM 139, General Chemistry I****Spring 2016**

TR 11:00-12:15, Belk 323

Instructor Information**Instructor: Dr. Cynthia Atterholt****Campus Office/Office hours: ST 407, MWF 10-11 a.m. or by appointment****Email: atterholt@email.wcu.edu****Phone Contacts: 828-227-3676, or 828-227-7260 for departmental office****I. Rationale/Purpose**

This course is the first semester of a two-semester General Chemistry course. Successful completion of this course with at least a C- is a pre-requisite for CHEM 140.

II. Course Description and Learning Objectives:**Course Description**

In this course, you will study a basic general chemistry, including use of the periodic table, atomic structure and bonding, naming chemical compounds, chemical equations, dimensional analysis, and molecular geometries. The laboratory portion of this course will continue to provide an introduction to experimentation. Three hours per week will be spent in lecture and three hours per week will be spent in the laboratory. This course is worth four credit hours.

This course partially satisfies the C5 science requirement of the WCU liberal studies program and contains a laboratory component. In the physical sciences, students will be directed toward the definition and solution of problems involving the character of matter, energy, motion, or mechanical/dynamic systems. Study in these courses concern scientific methods.

Laboratory work will be central to theoretical discussions as an experience in the character of scientific work, and will provide an opportunity to experience the environment in which scientific study is conducted.

Learning Objectives

- By the end of this course, students will be able to:
 - Be able to use the periodic table.
 - Understand atomic structure and bonding.
 - Be able to name chemical compounds.
 - Be able to balance chemical equations.
 - Be able to solve problems using dimensional analysis
 - Be able to calculate theoretical yields.
 - Be able to predict the products that form as a result of mixing known reactants.
 - Be able to determine molecular geometries.
 - Understand hybrid orbital theory.

III. Course Materials

Text: *Principles of Chemistry: A Molecular Approach*, 3rd ed.; Tro, Nivaldo J., Upper Saddle River, NJ: Pearson Prentice Hall, 2016.

Laboratory Supplies: Chem21Labs account, safety goggles, gloves, notebook, and calculators are required.

Accessing Media: Course materials will be placed on Blackboard.

IV. Faculty Expectations of Students/Course Policies

Attendance:

Attendance in class is mandatory and it is the responsibility of each student to sign the attendance sheet each day. If there is any reason you will be absent from class for an exam, call me or send me an e-mail **before** you miss class. **If** you have a legitimate, documented absence on the day of an exam, you must bring a written, documented excuse from your doctor, hospital, funeral home, etc., to me upon your return. **If** there is a legitimate, documented absence on the day of an exam (with a written excuse), the make-up exam will need to be scheduled before the exams are returned to the class, which is usually the next class period. If I determine this is not possible, due to a documented emergency, a make-up exam will be given the last day of the semester, April 29. Student athletes, band members, or students traveling on a field trip who have a documented, planned absence will need to make arrangements to take their exam **before** their scheduled trip or absence.

Students who miss 3 or fewer class periods will have the option of replacing their lowest exam grade with their final exam grade. The 3 absences will allow for issues related to illness, accidents, death in the family, field trips, inclement weather, etc. Students who miss more than 3 class periods (excused or unexcused) will **not** have the option of replacing their lowest exam grade with the final exam grade.

Mobile Devices:

Mobile devices, such as cell phone, tablets, and laptops, are not to be used during class, unless the student has explicit permission from the instructor. Evidence has shown that taking notes by hand is more beneficial to your learning than taking notes electronically. Under no circumstances may these devices be used in lieu of a traditional scientific calculator, especially on an exam. If an electronic device other than a scientific calculator is seen during a quiz or exam, it will be assumed that you are cheating.

Timely Submissions:

Assignments:

There will be reading, homework questions, and quizzes during the semester. Some of the homework assignments will be completed in Blackboard, and some assignments will be paper assignments to be submitted in class. Due dates will be published in Blackboard. All paper assignments are to be typed or printed neatly (so I can read them). However, you may hand write equations and chemical structures—just make sure they are legible! There will be a penalty for any late work.

Expectations for Submitting Required Work:

On the date that paper assignments are due, I will collect your papers at the beginning of class.

Homework not submitted at the beginning of classes will be late. To submit your assignments, you must arrive to class **on time** or submit your assignments in Blackboard on time. Some assignments will be completed during class and collected at the end of the class period. Students **must be present** in order to complete the in-class assignments or quizzes to receive credit.

Accommodations for Students with Disabilities:

Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All information is confidential. Please contact the Office of Disability Services at (828) 227-3886 or come by Suite 135 Killian Annex for an appointment.

Student Support Services:

Student Support Services provides support to students who are either first-generation, low-income or those who have disclosed a disability with: academic advising, mentoring, one-on-one tutorial support, and workshops focused on career, financial aid and graduate school preparation. You may contact SSS at (828) 227-7127 or email sssprogram@wcu.edu for more information. SSS is located in the Killian Annex, room 138.

Course Evaluation: April 3-29

Civility and Ground Rules:

The Western Carolina University Community Creed states: "I will respect the rights and well-being of others."

Each student may possess different ideas, as well as different ways of communicating those ideas. Because of these differences, respect and civility are integral to maintaining the quality of the academic environment and free inquiry.

(<http://www.wcu.edu/student-life/policies-affecting-students/statement-of-student-rights-and-responsibilities.asp>)

SafeAssign Tool:

All written work submitted for this class is eligible for submission to the SafeAssign tool at the instructor's discretion.

V. Academic Integrity Policy and Reporting Process:

This policy addresses academic integrity violations of undergraduate and graduate students. Graduate students should read inside the parenthesis below to identify the appropriate entities in charge of that step of the process.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of the Academic Integrity Policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community. While academic in scope, any violation of this policy is by nature, a violation of the Code of Student Conduct and will follow the same conduct process (see Article VII.B.1.a.). If the charge occurs close to the end of an academic semester or term or in the event of the reasonable need of either party for additional time to gather information timelines may be extended at the discretion of the Department of Student Community Ethics (DSCE).

I. General:

This policy addresses academic integrity violations of undergraduate and graduate students.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of this policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community.

Instructors have the right to determine the appropriate academic sanctions for violations of the Academic Integrity Policy within their courses, up to an including a final grade of “F” in the course in which the violation occurs.

II. Definitions:

1. Cheating – Using, or attempting to use, unauthorized materials, information, or study aids in any academic exercise.
2. Fabrication – Creating and/or falsifying information or citation in any academic exercise.
3. Plagiarism – Representing the words or ideas of someone else as one’s own in any academic exercise.
4. Facilitation – Helping or attempting to help someone to commit a violation of the Academic Integrity Policy in any academic exercise (e.g. allowing another person to copy information during an examination).

III. Undergraduate and Graduate Academic Integrity Process:

1. Within five (5) business days of the instructor’s knowledge of the alleged violation of the Academic Integrity Policy, s/he will inform his/her department head (or associate Dean of the graduate school when applicable) in writing of the allegation and proposed sanction(s).
2. Within ten (10) business days of the instructor’s knowledge of the alleged violation of the Academic Integrity Policy, the instructor will inform the student of the allegation, including the proposed sanction(s), in writing. In the written notification, the instructor will inform the student of his/her right to request a meeting with the instructor. During the meeting, the instructor shall complete the Academic Integrity Violation Faculty Resolution Form. If the student does not request a meeting with the instructor within five (5) business days of receipt of the written allegation(s), the student shall be deemed to have mutually resolved the matter and shall be bound to the sanction(s) outlined by the instructor in the written allegation. If the student does not request a meeting, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
3. Within five (5) business days of meeting with the instructor, the student shall either appeal the decision to the department head or mutually resolve the matter by accepting the allegation and proposed sanction(s). No action by the student within five (5) business days of the meeting with the instructor shall constitute a mutual resolution and waiver of the student’s rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the instructor, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
4. Within five (5) business days of receiving a student’s appeal, the department head must schedule a meeting with the student. The instructor may be present during the meeting. During the meeting, the department head shall complete the Academic Integrity Violation Department Head Resolution Form. Only information submitted during the meeting with the student, or in the meeting between the instructor and the student, may be considered by the department head. The evidentiary standard for making a decision shall be preponderance of the evidence. The department head may agree or disagree with the allegation(s) of the instructor. The department head may also approve, overturn, or modify the sanction(s) proposed by the instructor. If the student does not attend the scheduled meeting with the department head, the matter will be heard in absentia and shall not be subject to further review and/or appeal.
5. Within five (5) business days of meeting with the department head, the student shall either appeal the decision to an Academic Integrity Board or mutually resolve the matter by accepting the allegation and proposed sanction(s). The student must submit an appeal to the academic Dean listed on the Academic Integrity Violation Department Head Resolution Form. No action by the student within five (5) business

- days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the department head, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
6. Within seven (7) business days of receiving a student's appeal, the appropriate academic Dean must schedule an Academic Integrity Board hearing with the student. The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. The instructor may be present during the hearing. Only information submitted during the hearing, or in the meetings between the instructor/department head and the student, may be considered by the hearing board. The evidentiary standard for making a decision shall be preponderance of the evidence. The hearing board may agree or disagree with the allegation(s) of the instructor. The hearing board may also approve, overturn, or modify the sanction(s) proposed by the instructor and/or department head. If the student does not attend the scheduled hearing, the matter will be heard in absentia and shall not be subject to further review and/or appeal. Within ten (10) business days of the hearing, the appropriate academic Dean shall review pertinent records and send the student written notification of the decision of the Academic Integrity Board.
 7. Within five (5) business days of receiving written notification of the decision of the Academic Integrity Board the student may accept the findings and sanctions of the board or submit an appeal to the designated academic Dean. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the Academic Integrity Board, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
 8. If the student elects to file an appeal of the decision of the Academic Integrity Board, she must submit a written appeal within five (5) business days of receiving written notification of the decision of the Academic Integrity Board to the designated academic Dean. An appeal to an academic Dean must be limited to the following grounds; 1) a violation or due process or 2) a material deviation from Substantive and Procedural Standards by the UNC Board of Governors (as set forth in the UNC Manual 700.4.1).
 9. If an appeal is heard by an academic Dean, s/he shall review pertinent records within ten (10) business days of receiving a valid appeal. The academic Dean may agree or disagree with the allegation(s) of the instructor. The academic Dean may also approve, overturn, or modify the sanction(s) proposed by the instructor, department head, and or Academic Integrity Board. Within five (5) days of making a decision, the academic Dean shall provide the student with a written decision. The decision of the academic Dean shall be final.
 10. The student must remain enrolled in the course related to the case, and may not be permitted to withdraw from the course related to the case, until all hearing timelines, notifications, and/or appeals have been completed.
 11. Upon resolution of each level of the case (no matter the outcome), the instructor, department head, and academic Dean must provide the Department of Student Community Ethics with all materials and documents related to the case (i.e. course syllabus, materials in violation of the Academic Integrity Policy, Instructor Resolution Form, Department Head Resolution Form, Academic Integrity Board decision letter, academic Dean decision letter, etc...). The Department of Student Community Ethics shall serve as the repository for all records associated with allegations and violations associated with the Academic Integrity Policy.

IV. Academic Integrity Board:

The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. Students and faculty members serving on boards for each college will be selected by each college Dean. The Department of Student Community Ethics will train all board members prior to their service on a hearing board. Each

academic Dean will convene hearing boards as necessary, and will determine a faculty member to serve as chair prior to a hearing.

V. Sanctions:

The instructor, department head, Academic Integrity Board, and/or academic Dean may impose academic sanctions permitted by the institution (not to exceed receiving a grade of "F" for the course). The instructor, department head, Academic Integrity Board, and/or academic Dean may not permanently remove the student from the course or suspend/expel the student from a program or the University. Student behavior of the magnitude to warrant consideration for permanent removal from the course or suspension/expulsion from a program or the University must be referred to the Department of Student Community Ethics.

VI. Habitual Violations of the Academic Integrity Policy:

Upon receipt of materials associated with violations of the Academic Integrity Policy, the Department of Student Community Ethics will determine if a student has previous violations of University policies. Students with a prior record of violations, or who commits a gross and/or egregious violation of the Academic Integrity Policy, will be referred to the Department of Student Community Ethics for consideration of being subject to hearing proceedings as a habitual violator. Students with three or more violations of the Academic Integrity Policy will automatically be subject to hearing proceedings as a habitual violator. Students in this category are subject to course-related sanctions imposed by the instructor, department head, Academic Integrity Board, and/or academic Dean and University-level sanctions imposed by the Department of Student Community Ethics for habitual violations of University policies.

Additional information is available on the Student Success website under Student Community Ethics.

VI. Resources

Writing and Learning Commons (WaLC):

The Writing and Learning Commons (WaLC) is a free student service, located in BELK 207, providing course tutoring, writing tutoring, academic skills consultations, international student consultations, graduate and professional exam preparation resources, and online writing and learning resources for all students. To schedule tutoring appointments, visit the WaLC homepage (<http://walc.wcu.edu>) or call 828-227-2274.

Math Tutoring Center:

The Mathematics Tutoring Center provides tutoring in all lower-division math and many CS courses (455 Stillwell, <http://mathlab.wcu.edu>, 828-227-3830), help with mathematical concepts in other disciplines, and workshops on study skills specific to mathematics courses. Tutoring is available on a drop-in basis, 9 am – 5 pm and 6 - 9 pm Monday-Thursday, and 9 am – 5 pm on Friday.

Blackboard Support:

The learning management system for this class is blackboard and can be found at: <http://wcu.blackboard.com>. Additional help with blackboard can be found at: tc.wcu.edu, (828) 227-7487 or by visiting the Technology Commons located on the ground floor of the Hunter Library.

Academic Calendar: includes dates for all breaks, university closures, final exams, etc. The academic calendar can be found at: <http://www.wcu.edu/academics/campus-academic-resources/registrar-office/academic-calendar.asp>.

VII. Grading Procedures:

Homework, Quizzes, Attendance	20%
Laboratory	20%
3 Exams	40%
Final Exam	20%

There will be three exams given during the semester, plus the final exam. Each exam will cover material from reading assignments, lecture, and homework. Test questions will include multiple choice, short answer, equations, and problems. The final exam will be cumulative. *Cell phones may **not** be used as calculators on exams, and students **may not have any electronic device** other than a calculator out (or in their lap) during an exam.* Students may not wear hoods, hats, headphones, ear buds, etc., during exams. *Students may **not** leave the classroom during an exam.* If you leave the classroom, you will need to turn in your exam before you leave. If I observe any suspicious behavior during an exam, I will either move you to another seat or collect your exam and issue a zero for the exam.

Tentative exam dates: February 9, March 17, and April 19

Final Exam:

There will be a comprehensive final exam **Tuesday, May 3**, from **12:00 noon to 2:30 pm**.

Letter grades will be assigned according to the following:

98-100% = A+; 92-97% = A; 90-91% = A-; 88-89% = B+; 82-87% = B; 80-81% = B-; 78-79 = C+; 72-77% = C; 70-71% = C-; 68-69 = D+; 62-67% = D; 60-61 = D-; <60% = F

VIII. Grading and Quality Point System

Grade	Interpretation	Quality Points per Semester Hour	Grade	Interpretation	Quality Points per Semester Hour
A+	Excellent	4.0	I	Incomplete	[--]
A	Excellent	4.0	IP	In Progress	[--]
A-		3.67	S	Satisfactory	[--]
B+		3.33	U	Unsatisfactory	[--]
B	Good	3.0	W	Withdrawal	[--]
B-		2.67	AU	Audit	[--]
C+		2.33	NC	No Credit	[--]
C	Satisfactory	2.0			
C-		1.67			
D+		1.33			
D	Poor	1.0			
D-		0.67			
F	Failure	0.0			

The grades of A+, A, A-, B+, B, B-, C+, C, C-, D+, D, D- and F indicate gradations in quality from Excellent to Failure. Please note that a C- grade is less than satisfactory and may not meet particular program and/or course requirements.

Students must be familiar with the class attendance, withdrawal, and drop-add policies and procedures.

IX. Tentative Course Schedule

Date	Topics	Reading Assignments
1/12-1/14	Course Introduction; Atoms & Molecules; Scientific Method; Classification of Matter; Physical/Chemical Properties; Energy; Units	1.1-1.6
1/19-1/21	Reliability of Measurement; Solving Chemical Problems; Atomic Theory and Laws; Atomic Structure; Subatomic Particles	1.7-1.8; 2.2-2.5
1/26- 1/28	Periodic Law and the Periodic Table; Atomic Mass; Molar Mass; Chemical Bonds	2.6–2.8; 3.2
2/2- 2/4	Chemical Formulas and Molecular Models; Elements and Compounds; Ionic Compounds; Molecular Compounds; Formula Mass and the Mole	3.3-3.7
2/9- 2/11	EXAM 1 ; Composition of Compounds; Determining a Chemical Formula; Chemical Equations; Organic Compounds	3.8-3.11
2/16- 2/18	Fossil Fuels; Reaction Stoichiometry; Limiting Reactants; Solution Concentration and Stoichiometry	4.2-4.4
2/23 No class 2/25	Aq. Solutions and Solubility; Precipitation Reactions; Representing Aqueous Reactions; Acid-Base and Gas-Evolution Reactions; Oxidation-Reduction Reactions	4.5 - 4.9
3/1-3/3	Pressure; Simple Gas Laws; Ideal Gas Law; Molar Volume, Density, and Mass; Gas Mixtures and Partial Pressures	5.2-5.6
Advising day 3/8 3/10	Gases in Chemical Reactions; Kinetic Molecular Theory; Movement of Gases; Real Gases	5.7-5.10
3/15-3/17	Energy and the 1 st Law of Thermodynamics; Heat and Work; ΔE ; EXAM 2	6.2—6.5
3/21-3/25	Spring break	
3/29-3/31	Enthalpy; Calorimetry; ΔH ; Hess's Law; Enthalpies of Reaction	6.6-6.9
4/5- 4/7	Nature of Light; Atomic Spectroscopy and the Bohr Model; Wave Nature of Matter; Atomic Orbitals	7.2-7.6
4/12-4/14	Periodic Table; Electron Configurations; Valence Electrons; Quantum-Mechanical Model; Periodic Trends; Ions; Electron Affinities and Metallic Character	8.2-8.8
4/19-4/21	EXAM 3 ; Types of Chemical Bonds; Electron Dot Notation; Ionic Bonding; Covalent Bonding	9.2-9.5
4/26- 4/28	Electronegativity and Bond Polarity; Lewis Structures; Resonance and the Formal Charge; Octet Rule & Exceptions; Bonding Energies and Bond Lengths; Bonding in Metals	9.6-9.11
Tuesday 5/3, 12:00–2:30 pm	FINAL EXAM	

Academic Calendar: includes dates for all breaks, university closures, final exams, etc. The academic calendar can be found at: <http://www.wcu.edu/academics/campus-academic-resources/registrars-office/academic-calendar.asp>.

Final Exam: The university final exam schedule can be found here: http://www.wcu.edu/registrar/calendars/spring_final_exam.pdf

Important Dates:

First day of Spring classes at WCU: Monday, January 11, 2016

Drop/Add: Monday, January 11, 2016 to Friday, January 15, 2016

University closed: Monday, January 18, 2016

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Spring break: Monday, March 21, 2016 to Sunday, March 27, 2016

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Final Exams: Saturday April 30, 2016 to Friday, May 6, 2016

Grades due to the Registrar: Monday, May 9, 2016

Tips for Success (Advice from previous students):

Attend class regularly, read textbook, and complete and submit all assignments on time. Use notecards to help learn and review important material.

Syllabus Updates:

This syllabus, with its course schedule, is based on the most recent information about the course content and schedule planned for this course. Its content is subject to revision as needed to adapt to new knowledge or unanticipated events. Updates will remain focused on achieving the course objectives and students will receive notification of such changes. Students will be notified of changes and are responsible for attending to such changes or modifications as distributed by the instructor or posted to Blackboard.

**Department of Chemistry & Physics****CHEM 140, General Chemistry II****Spring 2016**

MWF 9:05-9:55, NS 1

Instructor Information**Instructor: Dr. Cynthia Atterholt****Campus Office/Office hours: ST 407, MWF 10-11 a.m. or by appointment****Email: atterholt@email.wcu.edu****Phone Contacts: 828-227-3676, or 828-227-7260 for departmental office****I. Rationale/Purpose**

This course is the second semester of a two-semester General Chemistry course. Successful completion of this course with at least a C- is a pre-requisite for all subsequent chemistry courses.

II. Course Description and Learning Objectives:**Course Description**

In this course, you will study a continuation of basic chemistry learned in CHEM 139, including bonding theories, chemical interactions, kinetics, equilibrium, thermodynamics and electrochemistry. The laboratory portion of this course will continue to provide an introduction to experimentation. Three hours per week will be spent in lecture and three hours per week will be spent in the laboratory. This course is worth four credit hours.

This course partially satisfies the C5 science requirement of the WCU liberal studies program and contains a laboratory component. In the physical sciences, students will be directed toward the definition and solution of problems involving the character of matter, energy, motion, or mechanical/dynamic systems. Study in these courses concern scientific methods.

Laboratory work will be central to theoretical discussions as an experience in the character of scientific work, and will provide an opportunity to experience the environment in which scientific study is conducted.

Learning Objectives

- By the end of this course, students will be able to:
 - understand theories of chemical bonding
 - understand how molecules interact with one another in different states of matter
 - be able to determine the order and rate of a chemical reaction
 - be able to formally define acids and bases and understand their properties and reactivity
 - be able to predict what species will be present when a reaction reaches equilibrium
 - understand and quantify thermodynamic properties, such as enthalpy, entropy and Gibbs energy
 - balance oxidation-reduction reactions and predict the direction of electron flow in these reactions, given standard reduction potentials.

III. Course Materials

Text: *Principles of Chemistry: A Molecular Approach*, 3rd ed.; Tro, Nivaldo J., Upper Saddle River, NJ: Pearson Prentice Hall, 2016.

Laboratory Supplies: Chem21Labs account, safety goggles, gloves, notebook, and calculators are required.

Accessing Media: Course materials will be placed on Blackboard.

IV. Faculty Expectations of Students/Course Policies

Attendance:

Attendance in class is mandatory and it is the responsibility of each student to sign the attendance sheet each day. If there is any reason you will be absent from class for an exam, call me or send me an e-mail **before** you miss class. **If** you have a legitimate, documented absence on the day of an exam, you must bring a written, documented excuse from your doctor, hospital, funeral home, etc., to me upon your return. **If** there is a legitimate, documented absence on the day of an exam (with a written excuse), the make-up exam will need to be scheduled before the exams are returned to the class, which is usually the next class period. If I determine this is not possible, due to a documented emergency, a make-up exam will be given the last day of the semester, April 29. Student athletes, band members, or students traveling on a field trip who have a documented, planned absence will need to make arrangements to take their exam **before** their scheduled trip or absence.

Students who miss 3 or fewer class periods will have the option of replacing their lowest exam grade with their final exam grade. The 3 absences will allow for issues related to illness, accidents, death in the family, field trips, inclement weather, etc. Students who miss more than 3 class periods (excused or unexcused) will **not** have the option of replacing their lowest exam grade with the final exam grade.

Mobile Devices:

Mobile devices, such as cell phone, tablets, and laptops, are not to be used during class, unless the student has explicit permission from the instructor. Evidence has shown that taking notes by hand is more beneficial to your learning than taking notes electronically. Under no circumstances may these devices be used in lieu of a traditional scientific calculator, especially on an exam. If an electronic device other than a scientific calculator is seen during a quiz or exam, it will be assumed that you are cheating.

Timely Submissions:

Assignments:

There will be reading, homework questions, and quizzes during the semester. Some of the homework assignments will be completed in Blackboard, and some assignments will be paper assignments to be submitted in class. Due dates will be published in Blackboard. All paper assignments are to be typed or printed neatly (so I can read them). However, you may hand write equations and chemical structures—just make sure they are legible! There will be a penalty for any late work.

Expectations for Submitting Required Work:

On the date that paper assignments are due, I will collect your papers at the beginning of class.

Homework not submitted at the beginning of classes will be late. To submit your assignments, you must arrive to class **on time** or submit your assignments in Blackboard on time. Some assignments will be completed during class and collected at the end of the class period. Students **must be present** in order to complete the in-class assignments or quizzes to receive credit.

Accommodations for Students with Disabilities:

Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All information is confidential. Please contact the Office of Disability Services at (828) 227-3886 or come by Suite 135 Killian Annex for an appointment.

Student Support Services:

Student Support Services provides support to students who are either first-generation, low-income or those who have disclosed a disability with: academic advising, mentoring, one-on-one tutorial support, and workshops focused on career, financial aid and graduate school preparation. You may contact SSS at (828) 227-7127 or email sssprogram@wcu.edu for more information. SSS is located in the Killian Annex, room 138.

Course Evaluation: April 3-29

Civility and Ground Rules:

The Western Carolina University Community Creed states: "I will respect the rights and well-being of others."

Each student may possess different ideas, as well as different ways of communicating those ideas. Because of these differences, respect and civility are integral to maintaining the quality of the academic environment and free inquiry.

(<http://www.wcu.edu/student-life/policies-affecting-students/statement-of-student-rights-and-responsibilities.asp>)

SafeAssign Tool:

All written work submitted for this class is eligible for submission to the SafeAssign tool at the instructor's discretion.

V. Academic Integrity Policy and Reporting Process:

This policy addresses academic integrity violations of undergraduate and graduate students. Graduate students should read inside the parenthesis below to identify the appropriate entities in charge of that step of the process.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of the Academic Integrity Policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community. While academic in scope, any violation of this policy is by nature, a violation of the Code of Student Conduct and will follow the same conduct process (see Article VII.B.1.a.). If the charge occurs close to the end of an academic semester or term or in the event of the reasonable need of either party for additional time to gather information timelines may be extended at the discretion of the Department of Student Community Ethics (DSCE).

I. General:

This policy addresses academic integrity violations of undergraduate and graduate students.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of this policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community.

Instructors have the right to determine the appropriate academic sanctions for violations of the Academic Integrity Policy within their courses, up to an including a final grade of “F” in the course in which the violation occurs.

II. Definitions:

1. Cheating – Using, or attempting to use, unauthorized materials, information, or study aids in any academic exercise.
2. Fabrication – Creating and/or falsifying information or citation in any academic exercise.
3. Plagiarism – Representing the words or ideas of someone else as one’s own in any academic exercise.
4. Facilitation – Helping or attempting to help someone to commit a violation of the Academic Integrity Policy in any academic exercise (e.g. allowing another person to copy information during an examination).

III. Undergraduate and Graduate Academic Integrity Process:

1. Within five (5) business days of the instructor’s knowledge of the alleged violation of the Academic Integrity Policy, s/he will inform his/her department head (or associate Dean of the graduate school when applicable) in writing of the allegation and proposed sanction(s).
2. Within ten (10) business days of the instructor’s knowledge of the alleged violation of the Academic Integrity Policy, the instructor will inform the student of the allegation, including the proposed sanction(s), in writing. In the written notification, the instructor will inform the student of his/her right to request a meeting with the instructor. During the meeting, the instructor shall complete the Academic Integrity Violation Faculty Resolution Form. If the student does not request a meeting with the instructor within five (5) business days of receipt of the written allegation(s), the student shall be deemed to have mutually resolved the matter and shall be bound to the sanction(s) outlined by the instructor in the written allegation. If the student does not request a meeting, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
3. Within five (5) business days of meeting with the instructor, the student shall either appeal the decision to the department head or mutually resolve the matter by accepting the allegation and proposed sanction(s). No action by the student within five (5) business days of the meeting with the instructor shall constitute a mutual resolution and waiver of the student’s rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the instructor, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
4. Within five (5) business days of receiving a student’s appeal, the department head must schedule a meeting with the student. The instructor may be present during the meeting. During the meeting, the department head shall complete the Academic Integrity Violation Department Head Resolution Form. Only information submitted during the meeting with the student, or in the meeting between the instructor and the student, may be considered by the department head. The evidentiary standard for making a decision shall be preponderance of the evidence. The department head may agree or disagree with the allegation(s) of the instructor. The department head may also approve, overturn, or modify the sanction(s) proposed by the instructor. If the student does not attend the scheduled meeting with the department head, the matter will be heard in absentia and shall not be subject to further review and/or appeal.
5. Within five (5) business days of meeting with the department head, the student shall either appeal the decision to an Academic Integrity Board or mutually resolve the matter by accepting the allegation and proposed sanction(s). The student must submit an appeal to the academic Dean listed on the Academic Integrity Violation Department Head Resolution Form. No action by the student within five (5) business

- days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the department head, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
6. Within seven (7) business days of receiving a student's appeal, the appropriate academic Dean must schedule an Academic Integrity Board hearing with the student. The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. The instructor may be present during the hearing. Only information submitted during the hearing, or in the meetings between the instructor/department head and the student, may be considered by the hearing board. The evidentiary standard for making a decision shall be preponderance of the evidence. The hearing board may agree or disagree with the allegation(s) of the instructor. The hearing board may also approve, overturn, or modify the sanction(s) proposed by the instructor and/or department head. If the student does not attend the scheduled hearing, the matter will be heard in absentia and shall not be subject to further review and/or appeal. Within ten (10) business days of the hearing, the appropriate academic Dean shall review pertinent records and send the student written notification of the decision of the Academic Integrity Board.
 7. Within five (5) business days of receiving written notification of the decision of the Academic Integrity Board the student may accept the findings and sanctions of the board or submit an appeal to the designated academic Dean. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the Academic Integrity Board, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
 8. If the student elects to file an appeal of the decision of the Academic Integrity Board, she must submit a written appeal within five (5) business days of receiving written notification of the decision of the Academic Integrity Board to the designated academic Dean. An appeal to an academic Dean must be limited to the following grounds; 1) a violation or due process or 2) a material deviation from Substantive and Procedural Standards by the UNC Board of Governors (as set forth in the UNC Manual 700.4.1).
 9. If an appeal is heard by an academic Dean, s/he shall review pertinent records within ten (10) business days of receiving a valid appeal. The academic Dean may agree or disagree with the allegation(s) of the instructor. The academic Dean may also approve, overturn, or modify the sanction(s) proposed by the instructor, department head, and or Academic Integrity Board. Within five (5) days of making a decision, the academic Dean shall provide the student with a written decision. The decision of the academic Dean shall be final.
 10. The student must remain enrolled in the course related to the case, and may not be permitted to withdraw from the course related to the case, until all hearing timelines, notifications, and/or appeals have been completed.
 11. Upon resolution of each level of the case (no matter the outcome), the instructor, department head, and academic Dean must provide the Department of Student Community Ethics with all materials and documents related to the case (i.e. course syllabus, materials in violation of the Academic Integrity Policy, Instructor Resolution Form, Department Head Resolution Form, Academic Integrity Board decision letter, academic Dean decision letter, etc...). The Department of Student Community Ethics shall serve as the repository for all records associated with allegations and violations associated with the Academic Integrity Policy.

IV. Academic Integrity Board:

The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. Students and faculty members serving on boards for each college will be selected by each college Dean. The Department of Student Community Ethics will train all board members prior to their service on a hearing board. Each

academic Dean will convene hearing boards as necessary, and will determine a faculty member to serve as chair prior to a hearing.

V. Sanctions:

The instructor, department head, Academic Integrity Board, and/or academic Dean may impose academic sanctions permitted by the institution (not to exceed receiving a grade of "F" for the course). The instructor, department head, Academic Integrity Board, and/or academic Dean may not permanently remove the student from the course or suspend/expel the student from a program or the University. Student behavior of the magnitude to warrant consideration for permanent removal from the course or suspension/expulsion from a program or the University must be referred to the Department of Student Community Ethics.

VI. Habitual Violations of the Academic Integrity Policy:

Upon receipt of materials associated with violations of the Academic Integrity Policy, the Department of Student Community Ethics will determine if a student has previous violations of University policies. Students with a prior record of violations, or who commits a gross and/or egregious violation of the Academic Integrity Policy, will be referred to the Department of Student Community Ethics for consideration of being subject to hearing proceedings as a habitual violator. Students with three or more violations of the Academic Integrity Policy will automatically be subject to hearing proceedings as a habitual violator. Students in this category are subject to course-related sanctions imposed by the instructor, department head, Academic Integrity Board, and/or academic Dean and University-level sanctions imposed by the Department of Student Community Ethics for habitual violations of University policies.

Additional information is available on the Student Success website under Student Community Ethics.

VI. Resources

Writing and Learning Commons (WaLC):

The Writing and Learning Commons (WaLC) is a free student service, located in BELK 207, providing course tutoring, writing tutoring, academic skills consultations, international student consultations, graduate and professional exam preparation resources, and online writing and learning resources for all students. To schedule tutoring appointments, visit the WaLC homepage (<http://walc.wcu.edu>) or call 828-227-2274.

Math Tutoring Center:

The Mathematics Tutoring Center provides tutoring in all lower-division math and many CS courses (455 Stillwell, <http://mathlab.wcu.edu>, 828-227-3830), help with mathematical concepts in other disciplines, and workshops on study skills specific to mathematics courses. Tutoring is available on a drop-in basis, 9 am – 5 pm and 6 - 9 pm Monday-Thursday, and 9 am – 5 pm on Friday.

Blackboard Support:

The learning management system for this class is blackboard and can be found at: <http://wcu.blackboard.com>. Additional help with blackboard can be found at: tc.wcu.edu, (828) 227-7487 or by visiting the Technology Commons located on the ground floor of the Hunter Library.

Academic Calendar: includes dates for all breaks, university closures, final exams, etc. The academic calendar can be found at: <http://www.wcu.edu/academics/campus-academic-resources/registrar-office/academic-calendar.asp>.

VII. Grading Procedures:

Homework, Quizzes, Attendance	20%
Laboratory	20%
3 Exams	40%
Final Exam	20%

There will be three exams given during the semester, plus the final exam. Each exam will cover material from reading assignments, lecture, and homework. Test questions will include multiple choice, short answer, equations, and problems. The final exam will be cumulative. *Cell phones may **not** be used as calculators on exams, and students **may not have any electronic device** other than a calculator out (or in their lap) during an exam.* Students may not wear hoods, hats, headphones, ear buds, etc., during exams. *Students may **not** leave the classroom during an exam.* If you leave the classroom, you will need to turn in your exam before you leave. If I observe any suspicious behavior during an exam, I will either move you to another seat or collect your exam and issue a zero for the exam.

Tentative exam dates: February 12, March 18, and April 22

Final Exam:

There will be a comprehensive final exam **Tuesday, May 3**, from **8:30 am to 11:00 am**.

Letter grades will be assigned according to the following:

98-100% = A+; 92-97% = A; 90-91% = A-; 88-89% = B+; 82-87% = B; 80-81% = B-; 78-79 = C+; 72-77% = C; 70-71% = C-; 68-69 = D+; 62-67% = D; 60-61 = D-; <60% = F

VIII. Grading and Quality Point System

Grade	Interpretation	Quality Points per Semester Hour	Grade	Interpretation	Quality Points per Semester Hour
A+	Excellent	4.0	I	Incomplete	[--]
A	Excellent	4.0	IP	In Progress	[--]
A-		3.67	S	Satisfactory	[--]
B+		3.33	U	Unsatisfactory	[--]
B	Good	3.0	W	Withdrawal	[--]
B-		2.67	AU	Audit	[--]
C+		2.33	NC	No Credit	[--]
C	Satisfactory	2.0			
C-		1.67			
D+		1.33			
D	Poor	1.0			
D-		0.67			
F	Failure	0.0			

The grades of A+, A, A-, B+, B, B-, C+, C, C-, D+, D, D- and F indicate gradations in quality from Excellent to Failure. Please note that a C- grade is less than satisfactory and may not meet particular program and/or course requirements.

Students must be familiar with the class attendance, withdrawal, and drop-add policies and procedures.

IX. Tentative Course Schedule

Chapter 9 (review)—week 1 (Jan. 11-15)

Chapter 10.2-10.8—week 2 & 3 (Jan. 20-22 & Jan. 17-29)

Chapter 11.2, 11.3, 11.5, 11.6, and 11.8—week 4 & 5 (Feb. 1-5 and Feb. 8-12); **Test 1**

Chapter 12.2-12.6—week 6 (Feb. 15-19)

Chapter 13.2-13.7—week 7, 8, 9 (Feb. 22, Feb. 29-March 4, March 7)

Chapter 14.2-14.3, 14.5-14.9—week 9 & 10 (March 9-11, March 14-18); **Test 2**

Chapter 15.2-15.7, 15.9-15.11—week 11-13 (March 28-April 1, April 4-8, and April 11)

Chapter 16.2-16.4—week 13 (April 13 & 15)

Chapter 17.1-17.6, 17.8-17.9—week 14 (April 18-22); **Test 3**

Chapter 18.2-18.6—week 15 (April 25-29)

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Grades due to the Registrar: Monday, May 9, 2016

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Syllabus Updates:

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Geology 150-02: Methods in Geology Geology 150-32: Methods in Geology Lab

Instructor: Dr. Ben Tanner **Office:** Stillwell 307 **Office Hours:** MWF 10-11:00am; R 12:20-1:20pm
e-mail: btanner@email.wcu.edu **Phone:** 227-3915 Also by appointment or “drop in”
Course Text: Chernicoff & Witney, An Introduction to Physical Geology, Fourth Edition
Class Meeting Time: MWF9:05am – 9:55am, Stillwell 322
Lab Meeting Time: Stillwell 322; R 2:30 – 4:20pm

COURSE DESCRIPTION

Through this course we will achieve a better understanding of science and scientific principles, the Earth, the materials that make up the Earth, and how these materials came to be where they are. We will focus on the systems, processes and cycles on Earth, and begin to learn about the nature of the evolution of our planet. While many aspects of geology are relevant to our everyday lives, we will also explore some of the interesting phenomena of our planet out of pure interest and curiosity (Two traits that help to make us human!). Geology is a fascinating subject. Don't be afraid to be amazed by the world around you!

Goals – This course will further the development of scientific communication and investigation skills. Many of the class assignments will require your active participation and will require systematic thought and problem solving. Many of the projects that we will undertake (such as the wetlands lab project) will not necessarily have a pre-defined outcome. We will develop the skills necessary to take on these types of assignments so that you can approach real-world scientific problems with confidence. You will also communicate your results in the form of scientific papers, lab reports, and in class presentations, thereby strengthening your scientific communication skills.

GRADING			
	Lab:	30%	Lab practical = 8%, Lab final = 7%, Lab assignments = 15%
	Tests (3):	45%	See makeup policy note below
	Assignments and Participation	10%	Many of the topics that we cover will be through in class assignments, out of class assignments and discussions. It is essential for everyone to participate and participation will be graded during the appropriate classes with a check, check minus, or check plus. Assignments will receive a percentage score. 1 dropped assignment will be allowed and there will be no makeups for assignments unless agreeable arrangements have been made in advance (at least one day) of the class.
	Quizzes	10%	Pop quizzes will be given occasionally that will cover the previous night's reading assignment. One drop is allowed and there will be no makeups unless agreeable arrangements have been made in advance (at least one day) of the class.
	Attendance	5%	It is essential that you attend class in order to succeed in this course. Many topics that I introduce are not covered adequately in the text, and missing assignments and group work will directly impact your course grade. 3 absences with no point deduction and then 2% deduction for additional absences to a maximum of 5% from the final course grade. Non attendance of the mandatory field trip on 3/29 (4/11 Alternative Date) will result in an automatic 2% deduction from the final course grade.

100-94%:A, 93-90%:A-, 89-87%:B+, 86-83%:B, 82-80%:B-, 79-77%:C+, 76-73%:C, 72-70%:C-, 69-60%:D, <60%:F

MAKEUP POLICY

All assignments must be turned in on time and cannot be made up. You are allowed one dropped assignment, so use it wisely. Tests cannot be made up. If you miss a test and have a valid, verifiable excuse (i.e. Doctor's note) you will have the opportunity to take a comprehensive final to replace the missing test grade. The comprehensive final will be given during the class final examination period. If you know that you will have to miss an assignment or a test, see me in advance so that we can make alternative arrangements.

A NOTE ON CLASSROOM ETIQUETTE

I strive to maintain a learning environment that is comfortable and free from distraction. Electronic devices must be put away before the beginning of class. If you are waiting on an important call (e.g. family member in the hospital), please see me before class for special arrangements. Also, please do what is necessary before class so that you do not have to step out (for water, bathroom, etc.) during class, especially during testing. Students leaving the room during testing will be required to turn their test in to be graded before exiting the classroom.

COMPOSITION CONDITION MARKS

A student whose written work in any course fails to meet acceptable standards will be assigned a composition-condition (CC) mark by the instructor on the final grade report. All undergraduates who receive two CC grades prior to the semester in which they complete 110 hours at Western Carolina University are so notified by the registrar and are required to pass English 300 or English 401 before they will be eligible for graduation. This course must be taken within two semesters of receiving the second CC and must be passed with a grade of C (2.0) or better.

ACADEMIC HONESTY POLICY

(Complete policy can be found within the undergraduate catalog – several important points are included here)

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of the Academic Integrity Policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community. While academic in scope, any violation of this policy is by nature, a violation of the Code of Student Conduct and will follow the same conduct process.

Violations of the Academic Integrity Policy include:

Cheating - Using or attempting to use unauthorized materials, information, or study aids in any academic exercise.

Fabrication – Creating and/or falsifying information or citation in any academ-ic exercise.

Plagiarism - Representing the words or ideas of someone else as one's own in any academic exercise.

Facilitation - Helping or attempting to help someone to commit a violation of the Academic Integrity Policy in any academic exercise (e.g. allowing another to copy information during an examination)

Faculty members have the right to determine the appropriate sanction(s) for violations of the Academic Integrity Policy within their courses, up to and including a final grade of "F" in the course. Within five (5) days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, the instructor will inform his/her department head in writing of the allegation and proposed sanction(s).

Subsequent procedures for cases involving allegations of academic dishonesty can be found in the student handbook.

Accommodations for Students with Disabilities: Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All information is confidential. Please contact the Office of Disability Services at (828) 227-3886 or come by Suite 135 Killian Annex for an appointment.

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Writing and Learning Commons (WaLC)

The Writing and Learning Commons (WaLC), located in BELK 207, provides free small-group course tutoring, one-on-one writing tutoring and academic skills consultations, and online writing and learning resources for all students. All tutoring sessions take place in the WaLC or in designated classrooms on campus. To schedule tutoring appointments, log in to TutorTrac from the WaLC homepage (<http://walc.wcu.edu>) or call 828-227-2274. Distance students and students taking classes at Biltmore Park are encouraged to use Smarthinking and the WaLC's online resources. Students may also take advantage of writing tutoring offered at the Biltmore Park campus on certain days of the week; call 828-227-2274 or log in to TutorTrac and select "Biltmore Park Writing Tutoring" for availabilities. Math Tutoring Center (usually included in Math department lower division courses)

The Mathematics Tutoring Center (455 Stillwell, <http://mathlab.wcu.edu>, 227-3830) provides tutoring in all lower-division math and many CS courses, help with mathematical concepts in other disciplines, and workshops on study skills specific to mathematics courses. Tutoring is available on a drop-in basis, 9-5 and 6-9 pm Monday-Thursday, and 9-5 on Friday or by appointment.

Academic Calendar includes dates for all breaks, university closures, final exams, etc. The academic calendar can be found at: <http://www.wcu.edu/academics/campus-academic-resources/registrars-office/academic-calendar.asp>.

CLASS SCHEDULE AND ASSIGNMENTS ARE TENTATIVE AND ARE SUBJECT TO CHANGE DURING THE SEMESTER. YOU WILL BE NOTIFIED OF ANY CHANGES DURING CLASS TIME

MATH 146 Syllabus

Precalculus

Revised: January 2015

Course Description

Functions using equations, graphs, and numerical data; linear, exponential, logarithmic, trigonometric, polynomial, and rational functions; transformations, compositions, inverses, and combinations of functions; trigonometry with identities. Prerequisite: MATH 130. Four semester hours

Student Learning Objectives

By the end of this course, students will be able to:

Interpret functions as mathematical models in numerical, graphical, and algebraic forms;

Recognize basic properties and graphs of elementary functions and will use transformations to graph functions;

Identify characteristics of graphs of linear, exponential, logarithmic, polynomial, rational, and trigonometric functions;

Solve exponential, logarithmic, polynomial, rational, and trigonometric equations;

Describe the concept of inverse functions and perform inverse operations with some elementary functions, as well as exponential, logarithmic, and trigonometric functions;

Apply trigonometric functions in terms of both the right triangle definition and the circular definition;

Manipulate trigonometric expressions in order to verify trigonometric identities and solve trigonometric equations; and

Use technology appropriately in the evaluation, analysis and synthesis of information in problem-solving situations.

Text

Connally, Hughes-Hallett, Gleason, et.al. Functions Modeling Change: A Preparation for Calculus, (fourth edition). John Wiley and Sons, New York, 2011.

Grading Procedure

Grading procedures and factors influencing course grade are left to the discretion of individual instructors, subject to general university policy.

Attendance Policy

Attendance policy is left to the discretion of individual instructors, subject to general university policy.

Course Outline

- Chapter 1 Linear Functions And Change

All Sections. (1 week)

- Chapter 2 Functions

All Sections (1 week)

- Chapter 3 Quadratic Functions

All Sections (1/2 week)

- Chapter 4 Exponential Functions

All Sections (1 1/2 weeks)

- Chapter 5 Logarithmic Functions

Sections 5.1 - 5.3 (3/4 week)

- Chapter 11 Polynomial and Rational Functions

Sections 11.1 - 11.5 (1 1/2 weeks)

- Chapter 7 Trigonometry in Circles and Triangles

All Sections (and if time permits 7.3) (2 weeks)

- Chapter 8 The Trigonometric Functions

Sections 8.1 - 8.4 (1 week)

- Chapter 10 Compositions, Inverses, and Combinations of Functions

Section 10.1 - 10.2 (1/2 week)

Other topics as time permits, such as parametric equations and polar functions



**College of Health and Human Sciences
Department of Environmental Health
ENVH 310 – Water Quality Control
Fall 2015
HHS 433
MWF 10:40am – 11:30am**

Instructor Information

Instructor: Kimberlee K Hall, PhD

Campus Office/Office hours: HHS 422 - MW 9:00am – 10:30am and T 11:30am – 1:30pm or by appointment

Email: kkhall@email.wcu.edu

Email is the most reliable way to communicate with your instructors outside of class. Students must use their WCU email accounts (Catamount Mail). The university spam filter most often blocks non-WCU email accounts. Students may contact instructors via telephone; however, your instructor will return messages through email only. E-mails will be answered within 24 hours or by the following business day

Phone Contact: 828-227-2654

Course Tutor: Marcus Mentzer, mcmentzer1@catamount.wcu.edu

I. Rationale/Purpose

The processes for the development of water resources and water supplies, quantity and quality requirements, pollution prevention control measures, and collection and treatment of wastewater for disposal or reuse will be examined in the context of health implications.

II. Course Aims and Objectives

Upon successful completion of the ENVH 310 course students will be able to:

1. Discuss chemical and microbial water quality characteristics,
2. Illustrate the hydrologic cycle and identify sources of water,
3. Identify the types and sources of physical, chemical, and biological water pollutants,
4. Describe the health hazards associated with drinking water supplies, wastewater disposal systems, and industrial effluents,
5. Analyze water and watersheds to determine health and acceptability,
6. Illustrate the processes of water and wastewater treatment and discuss treatment methodologies and laboratory tests applicable to surface waters, drinking water supplies and wastewater disposal systems,
7. Recognize the significance and impact of water quality legislation, and
8. Describe the significance of safe water and proper sanitation to health and well-being.

III. Course Materials

Text: Hammer, M. J. and Hammer, Jr. M. A. (2008). Water and wastewater technology, 6th edition, Upper Saddle River, NJ: Pearson Education, Inc.

Problems with technology are not acceptable excuses for missed or late work. You should not assume that everything will go smoothly when it comes to the Internet, Blackboard, and/or computers. It is incumbent upon you to PLAN AHEAD and to not leave assignments for the last possible moment. It is advisable to keep work for all your courses organized on your personal computer, as well as a USB drive to ensure you have a backup of your work in the event that your computer crashes or Blackboard does not work correctly. If your computer does not work, there are many others on campus for your use.

IV. Faculty Expectations of Students/Course Policies

Attendance: The experience missed is very difficult, if not impossible, to make up. Students are responsible for the academic consequences of absence. You are expected to attend all class and activity sessions. Attendance doesn't count for your grade and it doesn't count against your grade. It is your job as a student to attend class and engage yourself in the educational process, so there is no "extra credit" for attendance. Likewise, there is no formal penalty for poor attendance but it is the experience of this instructor that poor attendance results in poor course performance. Instances of university approved absences will be handled on a case by case basis.

If you are absent on the day that the instructor distributes a handout or assigns homework, it is your responsibility to get the handout (and lecture/discussion notes) from a classmate. Most of the handouts and presentations are available electronically. Activities completed in class cannot be made up if the student is absent.

If you are sick or otherwise unable to attend class on the day a test or quiz is scheduled, you must notify the instructor *prior* to the time the test or quiz is scheduled. If prior notification of your absence is not given (and received) you will receive a grade of zero on the test. If you have a university approved excuse, you can make up the test or quiz with no penalty. Missed tests and quizzes must be made up within one week or you will receive a zero. All make-up tests are essay format.

WCU Inclement weather policy: <http://www.wcu.edu/weather/>

Western rarely closes and students who live off campus should use good judgment in commuting during inclement weather. Students should check Blackboard and their email for additional information about potential class cancellations from the instructor.

Timely Submissions: You are required to submit all assignments to pass the course. Assignments are due by 11:55pm EST on the date specified in the course schedule. All assignments must be submitted via Blackboard as Word documents with the prescribed file name. Hard copies of assignments will not be accepted. Failure to submit assignments as a Word document or with the prescribed file name will result in score of zero for the assignment. Late submissions will lose 50% of the total grade for each day they are late - this means a submission made 2 days late will not receive any points. Extensions on assignments will be considered on a case by case basis.

Accommodations for Students with Disabilities: Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All information is confidential. Please contact the Office of Disability Services at (828) 227-3886 or come by Suite 135 Killian Annex for an appointment.

Student Support Services: Student Support Services provides support to students who are either first-generation, low-income or those who have disclosed a disability with: academic advising, mentoring, one-on-one tutorial support, and workshops focused on career, financial aid and graduate school preparation. You may contact SSS at (828) 227-7127 or email sssprogram@wcu.edu for more information. SSS is located in the Killian Annex, room 138.

Course Evaluation: Student course evaluations are accessed through your Catamount email and will be open from November 8 – December 5. The course evaluation is completely external to course and instructor has no control over access or availability. Instructor cannot view student evaluations until after final grades are submitted. All student submissions are anonymous and are used to improve instruction and materials.

Civility and Ground Rules: The Western Carolina University Community Creed states: "I will respect the rights and well-being of others."

Each student may possess different ideas, as well as different ways of communicating those ideas. Because of these differences, respect and civility are integral to maintaining the quality of the academic environment and free inquiry. (<http://www.wcu.edu/student-life/policies-affecting-students/statement-of-student-rights-and-responsibilities.asp>)

Be courteous to your fellow students and respect their opinions – you don't have to agree with everything discussed in class, but it is important to respect and consider other perspectives. Disruptive students will be asked to leave the class. If you carry a cell phone, turn it off or switch to silent mode during class. Texting during class is not allowed. If you must make a call or text, discuss this with the instructor prior to the beginning of class. Use of cell phones during tests or quizzes is considered a violation of the WCU Academic Honesty Policy. Computer use in the classroom should be relevant to course material. A one-time warning will be given if a cell phone or computer disrupts class and subsequent disruptions will result in severe deductions in the course grade.

SafeAssign Tool: All written work submitted for this class is eligible for submission to the SafeAssign tool at the instructor's discretion.

V. Academic Integrity Policy and Reporting Process

This policy addresses academic integrity violations of undergraduate and graduate students. Graduate students should read inside the parenthesis below to identify the appropriate entities in charge of that step of the process.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of the Academic Integrity Policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community. While academic in scope, any violation of this policy is by nature, a violation of the Code of Student Conduct and will follow the same conduct process (see Article VII.B.1.a.). If the charge occurs close to the end of an academic semester or term or in the event of the reasonable need of either party for additional time to gather information timelines may be extended at the discretion of the Department of Student Community Ethics (DSCE).

I. General:

This policy addresses academic integrity violations of undergraduate and graduate students.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of this policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community.

Instructors have the right to determine the appropriate academic sanctions for violations of the Academic Integrity Policy within their courses, up to an including a final grade of "F" in the course in which the violation occurs.

II. Definitions:

1. Cheating – Using, or attempting to use, unauthorized materials, information, or study aids in any academic exercise.
2. Fabrication – Creating and/or falsifying information or citation in any academic exercise.
3. Plagiarism – Representing the words or ideas of someone else as one's own in any academic exercise.
4. Facilitation – Helping or attempting to help someone to commit a violation of the Academic Integrity Policy in any academic exercise (e.g. allowing another person to copy information during an

examination).

III. Undergraduate and Graduate Academic Integrity Process:

1. Within five (5) business days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, s/he will inform his/her department head (or associate Dean of the graduate school when applicable) in writing of the allegation and proposed sanction(s).

2. Within ten (10) business days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, the instructor will inform the student of the allegation, including the proposed sanction(s), in writing. In the written notification, the instructor will inform the student of his/her right to request a meeting with the instructor. During the meeting, the instructor shall complete the Academic Integrity Violation Faculty Resolution Form. If the student does not request a meeting with the instructor within five (5) business days of receipt of the written allegation(s), the student shall be deemed to have mutually resolved the matter and shall be bound to the sanction(s) outlined by the instructor in the written allegation. If the student does not request a meeting, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.

3. Within five (5) business days of meeting with the instructor, the student shall either appeal the decision to the department head or mutually resolve the matter by accepting the allegation and proposed sanction(s). No action by the student within five (5) business days of the meeting with the instructor shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the instructor, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.

4. Within five (5) business days of receiving a student's appeal, the department head must schedule a meeting with the student. The instructor may be present during the meeting. During the meeting, the department head shall complete the Academic Integrity Violation Department Head Resolution Form. Only information submitted during the meeting with the student, or in the meeting between the instructor and the student, may be considered by the department head. The evidentiary standard for making a decision shall be preponderance of the evidence. The department head may agree or disagree with the allegation(s) of the instructor. The department head may also approve, overturn, or modify the sanction(s) proposed by the instructor. If the student does not attend the scheduled meeting with the department head, the matter will be heard in absentia and shall not be subject to further review and/or appeal.

5. Within five (5) business days of meeting with the department head, the student shall either appeal the decision to an Academic Integrity Board or mutually resolve the matter by accepting the allegation and proposed sanction(s). The student must submit an appeal to the academic Dean listed on the Academic Integrity Violation Department Head Resolution Form. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the department head, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.

6. Within seven (7) business days of receiving a student's appeal, the appropriate academic Dean must schedule an Academic Integrity Board hearing with the student. The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. The instructor may be present during the hearing. Only information submitted during the hearing, or in the meetings between the instructor/department head and the student, may be considered by the hearing board. The evidentiary standard for making a decision shall be preponderance of the evidence. The hearing board may agree or disagree with the allegation(s) of the instructor. The hearing board may also approve, overturn, or modify the sanction(s) proposed by the instructor and/or department head. If the student does not attend the scheduled hearing, the matter will be heard in absentia and shall not be subject to further review and/or appeal. Within ten (10) business days of the hearing, the appropriate academic Dean shall review pertinent records and send the student written notification of the decision of the Academic Integrity Board.

7. Within five (5) business days of receiving written notification of the decision of the Academic Integrity Board the student may accept the findings and sanctions of the board or submit an appeal to the designated academic Dean. No action by the student within five (5) business days of the meeting with the

department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the Academic Integrity Board, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.

8. If the student elects to file an appeal of the decision of the Academic Integrity Board, she must submit a written appeal within five (5) business days of receiving written notification of the decision of the Academic Integrity Board to the designated academic Dean. An appeal to an academic Dean must be limited to the following grounds; 1) a violation or due process or 2) a material deviation from Substantive and Procedural Standards by the UNC Board of Governors (as set forth in the UNC Manual 700.4.1).

9. If an appeal is heard by an academic Dean, s/he shall review pertinent records within ten (10) business days of receiving a valid appeal. The academic Dean may agree or disagree with the allegation(s) of the instructor. The academic Dean may also approve, overturn, or modify the sanction(s) proposed by the instructor, department head, and or Academic Integrity Board. Within five (5) days of making a decision, the academic Dean shall provide the student with a written decision. The decision of the academic Dean shall be final.

10. The student must remain enrolled in the course related to the case, and may not be permitted to withdraw from the course related to the case, until all hearing timelines, notifications, and/or appeals have been completed.

11. Upon resolution of each level of the case (no matter the outcome), the instructor, department head, and academic Dean must provide the Department of Student Community Ethics with all materials and documents related to the case (i.e. course syllabus, materials in violation of the Academic Integrity Policy, Instructor Resolution Form, Department Head Resolution Form, Academic Integrity Board decision letter, academic Dean decision letter, etc...). The Department of Student Community Ethics shall serve as the repository for all records associated with allegations and violations associated with the Academic Integrity Policy.

IV. Academic Integrity Board:

The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. Students and faculty members serving on boards for each college will be selected by each college Dean. The Department of Student Community Ethics will train all board members prior to their service on a hearing board. Each academic Dean will convene hearing boards as necessary, and will determine a faculty member to serve as chair prior to a hearing.

V. Sanctions:

The instructor, department head, Academic Integrity Board, and/or academic Dean may impose academic sanctions permitted by the institution (not to exceed receiving a grade of "F" for the course). The instructor, department head, Academic Integrity Board, and/or academic Dean may not permanently remove the student from the course or suspend/expel the student from a program or the University. Student behavior of the magnitude to warrant consideration for permanent removal from the course or suspension/expulsion from a program or the University must be referred to the Department of Student Community Ethics.

VI. Habitual Violations of the Academic Integrity Policy:

Upon receipt of materials associated with violations of the Academic Integrity Policy, the Department of Student Community Ethics will determine if a student has previous violations of University policies. Students with a prior record of violations, or who commits a gross and/or egregious violation of the Academic Integrity Policy, will be referred to the Department of Student Community Ethics for consideration of being subject to hearing proceedings as a habitual violator. Students with three or more violations of the Academic Integrity Policy will automatically be subject to hearing proceedings as a habitual violator. Students in this category are subject to course-related sanctions imposed by the instructor, department head, Academic Integrity

Board, and/or academic Dean and University-level sanctions imposed by the Department of Student Community Ethics for habitual violations of University policies.

Additional information is available on the Student Success website under Student Community Ethics.

VI. Resources

Writing and Learning Commons (WaLC): The Writing and Learning Commons (WaLC) is a free student service, located in BELK 207, providing course tutoring, writing tutoring, academic skills consultations, international student consultations, graduate and professional exam preparation resources, and online writing and learning resources for all students. To schedule a writing appointment, Call 828-227-7197 to schedule a writing appointment or 828-227-2274 for course tutoring. Visit the website <http://walc.ecu.edu> for additional resources, hours of operation, and appointment information.

Blackboard Support: Large portions of this course will be administered on Blackboard. It is the responsibility of the student to maintain access to Blackboard and their Western email account throughout the entire semester. For issues accessing WCU email or Blackboard contact IT Services by phone (828-227-7487) or by email (itshelp@email.wcu.edu).

Students will be expected to access Blackboard on a daily basis. Blackboard may be accessed via the WCU homepage (www.wcu.edu) or My Cat (<https://mycat1.wcu.edu/cp/home/displaylogin>). The learning management system for this class is Blackboard and can be found at <http://wcu.blackboard.com>. Phone and Online Chat support with Blackboard can be found at <http://wcu.edusupportcenter.com> or by calling 866-374-8144. Additional on-campus support can be found at <http://tc.wcu.edu>, by calling 828-227-7487, or by visiting the Technology Commons located on the ground floor of the Hunter Library.

VII. Grading Procedures

All grades will be posted on Blackboard. Students may view their grades at all times and can estimate their overall performance in this class.

There are a number of different evaluation methods in this course to allow students to build on their technical skills, as well as improve their oral and written communication. Methods of assessment will include four (5) problem sets, two (2) group projects (involving participation and peer evaluation), a midterm exam, and a final exam. Details of each assessment are as follows:

5 Problem Sets (50 points each):

Points: 250

Problem sets are available under the "Assignments" tab in Blackboard. Each problem set will consist of questions taken from presentations, discussions, and the textbook. Critical thinking and discussion skills will be necessary to complete these problem sets. You are expected to work independently on problem sets.

Midterm Exam

Points: 150

The midterm exam will be administered on Friday, October 23 and will consist of critical thinking and discussion questions.

2 Group Projects (50 points each):

Points: 100

Group Project 1: Chlorine Dioxide vs. UV Disinfection *OR* Stream Specific vs. Watershed Specific TMDL development. Half of the class will participate in the disinfection debate and the other half will participate in the TMDL debate. Participation is still required even if you are not the half of the class participating in the debate. Specifics including instructions, format, and time allowances are available on the course Blackboard site under the "Assignments" tab. Debate teams will be determined following Fall Break.

Final Exam:

Points: 150

The final exam will be held on December 9 from 8:30am to 11:00am. It will be cumulative and will consist of critical thinking and discussion questions.

VIII. Grading and Quality Point System

<i>Percentage Grade</i>	<i>Letter grade</i>
97-100	A+
93 – 96.9	A
90 – 92.9	A-
87 – 89.9	B+
83 – 86.9	B
80 – 82.9	B-
77 – 79.9	C+
73 – 76.9	C
70 – 72.9	C-
67 – 69.9	D+
63 – 66.9	D
60 – 62.9	D-
59 and below	F

IX. Tentative Course Schedule

This syllabus, with its course schedule, is based on the most recent information about the course content and schedule planned for this course. Its content is subject to revision as needed to adapt to new knowledge or unanticipated events. Updates will remain focused on achieving the course objectives and students will receive notification of such changes. Students will be notified of changes and are responsible for attending to such changes or modifications as distributed by the instructor or posted to Blackboard.

Week 1: 8/17 – 8/22

Topic: Introduction and Water Chemistry

- Hammer and Hammer, Chapter 2.

Week 2: 8/23 – 8/29

Topic: Water Chemistry

- Hammer and Hammer, Chapter 2.

Week 3: 8/30 – 9/5

Topic: Water Systems

- Problem Set 1 Due – Wednesday, September 2 via Blackboard no later than 11:55pm

Week 4: 9/6 – 9/12

Topic: Water Systems

- Labor Day – Monday, September 7 – NO CLASS

Week 5: 9/13 – 9/19

Topic: Health Hazards Associated with Water

- Hammer and Hammer, Chapter 3

Week 6: 9/20 – 9/26**Topic:** Health Hazards Associated with Water

- Hammer and Hammer, Chapter 3

Week 7: 9/27 – 10/3**Topic:** Water Quality and Pollution

- Problem Set 2 Due – Friday, October 2 via Blackboard no later than 11:55pm

Week 8: 10/4 – 10/10**Topic:** Wastewater Treatment Systems

- Hammer and Hammer, Chapters 9 and 11

Week 9: 10/11 – 10/17**FALL BREAK – NO CLASS****Week 10:** 10/18 – 10/24**Topic:** Onsite Wastewater Systems

- Midterm Exam – Friday, October 23 (Water Chemistry through Wastewater Treatment Systems)

Week 11: 10/25 – 10/31**Topic:** Drinking Water Treatment

- Hammer and Hammer, Chapter 7
- Friday, October 30 – NO CLASS

Week 12: 11/1 – 11/7**Topic:** Drinking Water Treatment

- Hammer and Hammer, Chapter 3
- Debate 1: Chlorine Dioxide vs. UV Radiation – Friday, November 6
- Problem Set 3 Due – Friday, November 6 via Blackboard no later than 11:55pm

Week 13: 11/8 – 11/14**Topic:** Wells

- In Class Activity – Friday, November 13

Week 14: 11/15 – 11/21**Topic:** Regulations

- Hammer and Hammer, Chapter 5
- Debate 2: Stream Specific vs. Watershed Specific TMDLs – Friday, November 20
- Problem Set 4 Due – Friday, November 20 via Blackboard no later than 11:55pm

Week 15: 11/22 – 11/28**Topic:** Student Presentations

- Thanksgiving Break – Wednesday and Friday – NO CLASS

Week 16: 11/29 – 12/5**Topic:** Student Presentations

- Problem Set 5 Due – Friday, December 4 via Blackboard no later than 11:55pm

FINAL EXAM

- Wednesday, December 9 8:30am – 11:00am

Academic Calendar: includes dates for all breaks, university closures, final exams, etc. The academic calendar can be found at: <http://www.wcu.edu/academics/campus-academic-resources/registrars-office/academic-calendar.asp>.

ENVH 375 Environmental Toxicology

Fall 2015



Instructors: Dr. Burton Ogle
 Office Location: HHS 420
 Email: bogle@email.wcu.edu (preferred method of communication)

Course Meeting Times: MWF 11:45 - 12:35

Office Phone: 227-3517; Fax: 227-7446

Office Hours: Tuesdays 9:30 – 1:00 and Mondays 12:50 – 2:00, and by appointment

ENVH Info: <http://envh.wcu.edu>

I. Rationale/Purpose

This course is intended to familiarize students with the mechanisms by which toxins are absorbed, metabolized and excreted from the body. Further, students will become knowledgeable of various classes of toxins, target organs, historical perspectives of toxicology and the importance of risk assessment. This course is required for EH majors and is a useful course for a variety of majors including Chemistry, Biology and Environmental Science. The pre-requisite is EH major or permission of instructor.

II. Course Aims and Objectives:

Upon successful completion of ENVH 375, the student will be able to:

- Characterize the routes of entry whereby a toxin may enter the body;
- Understand the differences between acute and chronic toxicity;
- Recognize the biological and physiological pathways of toxins within the body;
- Be familiar with many of the most pervasive toxins, their target organs, and their toxic action;
- Identify dose-response relationships;
- Understand the concepts of lethal dose 50;
- Differentiate between various chronic effects such as carcinogenicity, teratogenicity and mutagenicity;
- Appreciate the historical evolution of the field of toxicology;
- Recognize the relationship and application of toxicology within environmental health practice; and, Understand the value of toxicology for evaluating risk.

III. Course Materials

It is advisable to keep work for all your courses organized on your personal computer, as well as a USB pen drive. This will give you a back up of all your work if your computer crashes or BlackBoard does not work correctly. If your computer does not work, there are many others on campus for your use – this is not an acceptable excuse for missed or late work.

Course readings:

Text: **Principles and Practices of Toxicology in Public Health**, Richards (2008) (WCU textbook rental system). Additional readings may be posted in BlackBoard.

IV. Faculty Expectations of Students/Course Policies

Student Behavior-Cell Phone-Laptop/Tablet Policy:

Disruptive students will be asked to leave the class. If you carry a cell phone, turn it off or switch to silent mode during class. Texting and other social networking during class is not allowed. If you must make a call or text, discuss this with your instructor prior to the beginning of class. Use of cell phones during tests or exams is considered a violation of the WCU Academic Honesty Policy (see below). Computer use in the classroom should be relevant to course material/class discussion. A one-time warning will be given if a cell phone or computer disrupts class and subsequent disruptions will result in severe deductions in the course grade. Be courteous to your fellow students and respect their opinions – you don't have to agree with everything discussed in class, but it is important to respect others as you would have them respect you.

Statement on Accommodations for Students with Disabilities:

Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All

information is confidential. Please contact the Office of Disability Services at (828) 227-3886 or come by Suite 135 Killian Annex for an appointment.

Student Support Services

Student Support Services provides support to students who are either first-generation, low-income or those who have disclosed a disability with: academic advising, mentoring, one-on-one tutorial support, and workshops focused on career, financial aid and graduate school preparation. You may contact SSS at (828) 227-7127 or email sssprogram@wcu.edu for more information. SSS is located in the Killian Annex, room 138.

Blackboard, Email, and Contacting your Instructor

Portions of this course will be administered through Blackboard. It is the student's responsibility to maintain access to Blackboard and their Western email account throughout the entire semester. For issues accessing WCU email or Blackboard contact IT Services (828-227-7487, itshelp@email.wcu.edu).

Students will be expected to access Blackboard on a daily basis. Blackboard may be accessed via the WCU homepage (www.wcu.edu) or My Cat (<https://mycat1.wcu.edu/cp/home/displaylogin>)

Email is the most reliable way to communicate with your instructor outside of class. Students must use their WCU email accounts (Catamount Mail). The university spam filter most often blocks non-WCU email accounts.

Students may contact the instructor via telephone; however, your instructor will return messages through email.

- **Academic Honesty:** www.academicintegrity.wcu.edu
Western Carolina University, as a community of scholarship, is also a community of honor. Faculty, staff, administrators, and students work together to achieve the highest standards of honesty and integrity. Academic dishonesty is a serious offense at Western Carolina University because it threatens the quality of scholarship and defrauds those who depend on knowledge and integrity. Academic dishonesty includes:
 - a. **Cheating** - intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise.
 - b. **Fabrication** - intentional falsification of information or citation in an academic exercise.
 - c. **Plagiarism** - intentionally or knowingly representing the words or ideas of someone else as one's own in an academic exercise.
 - d. **Facilitation of Academic Dishonesty**—intentionally or knowingly helping or attempting to help someone else to commit an act of academic dishonesty, such as knowingly allowing another to copy information during an examination or other academic exercise.

Instructors have the right to determine the appropriate sanction or sanctions for academic dishonesty within their courses up to and including a final grade of "F" in the course. Within 5 calendar days of the event, the instructor will inform his/her department head in writing, of the academic dishonesty charge and sanction. Please see the Student Handbook for additional information.

- **Attendance Policy:** http://catalog.wcu.edu/content.php?catoid=15&navoid=231#clas_atte_poli
A student with more unexcused absences than the semester hours given for a course (3 for this course) can expect the instructor to lower their final grade. Missing approximately 10% of class meeting times (e.g. 4-5 classes) or more constitutes a significant amount of class materials and experience missed and it is very difficult, if not impossible, to make up these absences. Students should expect at least a letter grade deduction for excessive absences. Students are responsible for the academic consequences of an absence. You are expected to attend all class and activity sessions.

If a student is sick or otherwise unable to attend class on the day an exam is scheduled, the student must notify the instructor *prior* to the time the exam is scheduled. If prior notification of absence is not given (and received), the student will receive a grade of zero on the exam. If the student has an acceptable reason for the absence, the exam can be made up without penalty. **Missed exams must be made up within one week or a grade of zero will be recorded. All make-up exams are essay format.**

If the student is absent on the day that the instructor distributes a handout or assigns homework, it is the student's responsibility to get the handout (and lecture/discussion notes) from a classmate. Most of the handouts and presentations are available electronically on BlackBoard. Activities and quizzes completed in class cannot be made up if the student is absent.

The **WCU Inclement weather policy** may be found here: <http://www.wcu.edu/weather/>

Western rarely closes and students who live off campus should use good judgment in commuting during inclement weather. Students should check BlackBoard and their email for additional information about class instructions from the instructor. Your instructor will attempt to email the class as soon as possible to announce class meetings during inclement weather.

V. Grading Procedures:

The following table describes assignments and approximate points assigned to those items. A description of each method of evaluation is described below. This course follows a “total points” system. To calculate your grade, find your total points in BlackBoard and determine the percentage of the total available points.

Evaluation Type	Approximate Points
Attendance, class participation, homework	5%
Tests (Typically 2)	35%
Quizzes (typically 6-7)	45%
Final, Comprehensive Exam	15%
Total Points	100%

Attendance, Class participation and Homework: In addition to regular attendance, each student is required to participate in classroom discussion on a regular basis. Periodic homework assignments will be posted in BlackBoard.

Tests: There will typically be 2 tests. Each test will contain a mix of objective, short answer, and critical thinking discussion questions.

Quizzes: Quizzes will typically be given for each unit. Quizzes are typically in class (Turning Point) but may be administered in Bb. They are intended to help students study and understand appropriate material for tests and exam.

Grading:

The following grading scale is to be used for ENVH 375:

Percentage Grade	Letter grade
97-100	A+
93 – 96.9	A
90 – 92.9	A-
87 – 89.9	B+
83 – 86.9	B
80 – 82.9	B-
77 – 79.9	C+
73 – 76.9	C
70 – 72.9	C-
67 – 69.9	D+
63 – 66.9	D
60 – 62.9	D-
59 and below	F

VI. Student Evaluation of Course

Student course evaluations are accessed through your Catamount email and will be open from mid-November to early December. The course evaluation is completely external to course and instructor has no control over access or availability. Instructor cannot view student evaluations until after final grades are submitted. All student submissions are anonymous and used to improve instruction and materials.

VII. Additional Support for Students

The Writing and Learning Commons (WaLC) seeks to enhance the academic environment and raise the level of academic discourse at WCU by providing tutoring, academic skills consultations, workshops, online learning resources, and faculty consultations. Writing Assistants collaborate with students from all classes and majors at every stage of the writing process, from brainstorming and prewriting to drafting and revising. Course tutors facilitate collaborative group sessions and offer strategies for effective study and efficient time management. Call 227-7197 for writing appointments and 227-2274 for course tutoring. Visit the website, <http://walc.wcu.edu>, for additional learning and writing resources, hours of operation, and appointment information. All consultations and tutoring sessions take place in 30 Hunter Library. Distance students should use Smarthinking, an online tutoring service available via Blackboard, and WaLC's online resources.

VIII. Tentative Course Schedule

Topical Unit	Text Chapter	Week Covered
Introduction to Course and the History of Toxicology	Ch 1	1-2
Dose and Response	Ch 6 (plus handout)	3
Routes of Exposure and Factors that Affect Toxicity	Ch 3	4 - 5
Absorption of Toxicants	Ch 7	6
Distribution, Storage, Elimination of Toxicants– Test 1	Ch 8	7 – 8
Biotransformation	Ch 9	9 – 10
Environmental Toxins, Nanoscale Toxicity and Risk Assessment	Ch 23 (plus handout)	11 – 12
Natural/Biological Toxins	Ch 4	13 – 14
Nanotechnology and other timely subjects – Test 2	handouts	15
Exam – Monday, Dec. 7		15

Fall 2015 – Important Dates

Aug 17 Classes begin
 Sept. 7 Labor Day – No Classes
 Oct 9 Alternative assignment (Bb) or Guest Speaker
 Oct. 12-16 Fall Break - No Classes
 Oct. 27 Advising Day - No Classes
 Nov. 23 Alternative Assignment or Guest Speaker
 Nov. 25 – 27 Thanksgiving Break – No Classes
 Dec. 4 Last day of classes
 Dec. 7 – 11 Final Exams



ENVH 440 – Air Quality Control

Spring 2015

Western Carolina University College of Health and Human Sciences, School of Health Sciences Environmental Health Program

Location: HHSB 349
 Meeting times: MWF 11:45 – 12:35
 Instructors: Dr. Burton Ogle
 Contact Info: BOgle@email.wcu.edu (preferred); HHSB 420; Tel: 227-3517; Fax: 227-7446
 Office Hours: MWF: 8:00- 9:30, other times by appointment.
 Webpages: <http://envh.wcu.edu>;
 Prerequisites: ENVH major or permission of instructor
 Co-requisites: ENVH 450 (for ENVH majors)
 Credits: 3 semester hours

I. Rationale/Purpose

This course presents a broad view of all major aspects of air quality. It includes a study of pollutants, pollutant sources, effects of pollution, dispersion of pollution, legal authority for air pollution control, measurement and control of emissions, enforcement of regulations, inspections, implementation plans, and other related topics.

II. Course Aims and Objectives

The objective of this course is to provide the student with an understanding of the sources, causes, and effects of air pollution and to introduce the student to various strategies for air quality management and control. The student will learn to:

- Recognize and use appropriately terms associated with all major aspects of air quality;
- Relate the legal aspects of air pollution to the tasks one performs on the job;
- Identify the weather and topographic factors that affect pollution dispersion and the sources and limitations of related data;
- Identify the areas of risk assessment in air;
- Describe the authority and program elements necessary for compliance with the Clean Air Act;
- Associate air pollution control apparatus with the types of sources and pollutants to which they are typically applied;
- Recognize the role that government agencies play in a current comprehensive air pollution control program; and,
- Recognize the health and welfare goals which motivate efforts to improve and/or maintain the quality of air.

III. Course Materials

- Required text(s): Air Quality by Thad Godish – 4th Edition – Book Store Rental
- Background/supplementary readings - furnished as handouts and/or electronic files on Blackboard
- Loose-leaf notebook to maintain all course materials (e.g. PowerPoint notes; readings, etc.)
- USB pen drive (or other portable drive) to keep all course-related electronic files and submissions.

IV. Faculty Expectations of Students/Course Policies

Accommodations for students with disabilities:

Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to Disability Services. All information is confidential. Please contact the Office of Disability Services for more information at (828) 227-3886.

Academic Integrity:

Western Carolina University, as a community of scholarship, is also a community of honor. Faculty, staff, administrators, and students work together to achieve the highest standards of honesty and integrity. Academic dishonesty is a serious offense at Western Carolina University because it threatens the quality of scholarship and defrauds those who depend on knowledge and integrity. Academic dishonesty includes: a. **Cheating** - Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise; b. **Fabrication** - Intentional falsification of information or citation in an academic exercise; c. **Plagiarism** - Intentionally or knowingly representing the words or ideas of someone else as one's own in an academic exercise; and, d. **Facilitation of Academic Dishonesty** - Intentionally or knowingly helping or attempting to help someone else to commit an act of academic dishonesty, such as knowingly allowing another to copy information during an examination or other academic exercise. The procedures for cases involving allegations of academic dishonesty are found in the WCU Student Handbook. Code of Student Conduct: <http://www.wcu.edu/24861.asp>

WCU instructors reserve the right to use plagiarism prevention software (such as SafeAssignment.com) as well as Google, Yahoo, and/or other Internet search engines to determine whether or not student papers have been plagiarized. With plagiarism prevention software, instructors may upload student papers into a searchable database or teach students how to upload their own work as part of the course requirements.

Attendance Policy

Class attendance is required. Students are responsible for the academic consequences of absence. Roll will be taken at the beginning of each class - if you are late to class, you will likely be counted as "absent" unless you bring this to the instructor's attention after class. The WCU policy on excused/unexcused absences will be followed. Students having more than 5 unexcused absences in all likelihood will not meet the requirements of the course and will be assigned a grade of "F" or "I" as appropriate. At a minimum, each unexcused absence will result in 1 point being subtracted from the final course grade - up to 5% of the final grade. If you have a valid excuse for your absence, you must discuss this with your professor no later than the following class period. Excessive tardiness will be penalized as absences.

Late assignments will receive deductions of up to 10% per day late.

If you are sick or unable to attend class on the day an exam is scheduled, you must notify the instructor *prior* to the time the exam is scheduled. If prior notification of your absence is not given (and received), you will receive a grade of zero on the exam. If you have an acceptable reason, you can make up the exam with no penalty. Missed exams must be made up within one week or you will receive a zero. All make-up exams are essay format.

Classroom Behavior

Disruptive students will be asked to leave the class. Please refer to the WCU Student Handbook for more information about behavior expectations.

Cell Phones, Laptops, Tablets

If you carry a cell phone, turn it off or switch to a non-audible mode during class. A one-time warning will be given if a cell phone disrupts class and subsequent disruptions will result in severe deductions in the course grade. Cell phone usage during quizzes/exams, including text-messaging is considered a violation of the Academic Honesty Policy (see above) - disciplinary action will be taken. **Students who use cell phones, laptops or tablets for reasons other than directly related to the subject matter will be asked to leave.**

Inclement weather

Please refer to the WCU Inclement weather webpage: <http://www.wcu.edu/weather/> - commuters should use good judgment is attempting to reach campus during inclement weather. Resident students will be expected to attend all classes regardless of weather. Check the above website and/or Blackboard in the event of inclement weather.

Portions of this course will be administered through Blackboard. It is the student's responsibility to maintain access to Blackboard and their Western email account throughout the entire semester. For issues accessing WCU email or Blackboard contact IT Services (828-227-7487, itshelp@email.wcu.edu).

Students will be expected to access Blackboard on a **daily basis**. Blackboard may be accessed via the WCU homepage (www.wcu.edu) or My Cat (<https://mycat1.wcu.edu/cp/home/displaylogin>)

Email is the most reliable way to communicate with your instructor outside of class. Students must use their WCU email accounts (Catamount Mail). The university spam filter most often blocks non-WCU email accounts. Students may contact instructor via telephone; however, your instructor will return messages through email only.

V. Grading Procedures

Grades will be posted on Blackboard (My Grades module). Students may view their grades at all times and can estimate their overall performance in this class.

Evaluation Instrument	Percentage of Grade
Quizzes (typically one for each unit/chapter)	35
Attendance	5
Assignments	5
Exams (typically 2)	40
Final, Comprehensive Exam	15
Total	100

Quizzes: A quiz (typically via Turning Point) will follow each unit. Quizzes are typically multiple choice or true/false. **There will be no make-up for in-class quizzes, regardless of the reason for absence.** Material for quizzes is mostly from PowerPoint lectures and assigned readings. Pop quizzes (unannounced quizzes) may be given to encourage students to keep up with the material and assignments. **Quiz grades will be designated as Q1, Q2, Q3.....etc. in the Blackboard gradebook.** **The instructor often drops the lowest quiz grade; however, if a student has an unexcused absence on a quiz day, there will be no make-up quiz. Students having missed 5 or more classes will not be able to drop their lowest quiz. Only WCU-sponsored absences qualify for make-up quizzes.**

Exams are normally in-class. The first exam will cover the first half of material and a second exam will cover most or all of the final half of material. Exams will primarily be short answer, fill in the blank and essay. Material for tests comes from reading assignments, class discussion and homework readings/assignments. A **final exam** will be given at the end of the semester which reflects the most significant concepts on air quality. The final exam is typically essay only. Cogent, concise, and detailed discussion of central topics are expected. Students must turn off all electronic devices during exams. **Exam grades will be designated as E1, E2 and Final in the Blackboard gradebook.**

Attendance: Up to 5 points on the final grade is assigned to class attendance. Students with 5 or more unexcused absences will not be able to drop the lowest quiz grade. These points will be distributed as follows:

Number of Absences	Attendance Points
0	5
1	4
2	3
3	2
4	1
5 or More	0

Assignments. Periodically, videos and readings will be assigned/shown and students will be expected to write reflections on what was learned by those assignments. The reflections are 3-part: Part 1 is a summary of the reading or video; Part

EXAMPLE OF GRADE CALCULATION

Student A accumulated the following grades through the semester:

Quiz Average: 88
Attendance: 4
Assignments Average: 95
Exam Average: 80
Final Exam: 89

Final Grade = $(88 \times 0.35) + 4 + (95 \times 0.05) + (80 \times 0.40) + (89 \times 0.15) = 84.9$ or "B"

Environmental Science Program Self-Study (Appendix 3)
 2 is your personal thoughts on the assignment; and Part 3 is "Works Cited" (prefer APA style). Specifics on assignments will be described and submitted in Blackboard. **Assignment grades will be designated as A1, A2, A3.....etc. in the Blackboard gradebook. Assignments that are missed cannot be made up and may count as a class absence if the assignment takes the place of a class meeting.**

Grades: Letter grades will be assigned according to the following:

Honors Contracts: Honors contracts are available for this class. Please see the instructor for additional information.

VI. Student Evaluation of Course

Student course evaluations are accessed through your Catamount email. The course evaluation is completely external to course and instructor has no control over access or availability. Instructor cannot view student evaluations until after final grades are submitted. All student submissions are anonymous and used to improve instruction and materials.

Percentage Grade Letter grade

97-100	A+
93-96.9	A
90 - 92.9	A-
87 - 89.9	B+
83 - 86.9	B
80 - 82.9	B-
77 - 79.9	C+
73 - 76.9	C
70 - 72.9	C-
67 - 69.9	D+
63 - 66.9	D
60 - 62.9	D-
59 and below	F

VII. Tentative Course Schedule - *May change to accommodate student needs*

Topical Unit	Reading	Week Covered
Introduction and Chapter 1 – The Atmosphere	Ch. 1	1-2
Chapter 2 - Atmospheric Pollutants	Ch. 2	2 – 5
Federal Air Quality Regulation	Handout	5 – 6
NC Clean Smokestacks Act	Handout	5 - 6
Exam 1		
Chapter 3 – Dispersion	Ch. 3	7
Chapter 4 – Atmospheric Effects	Ch. 4	8
Chapter 5 – Health Effects	Ch. 5	9
Chapter 6 – Welfare Effects	Ch. 6	10 - 11
Exam 2		
Chapter 7 – Air Quality Assessment	Ch. 7	12 - 13
Chapter 10 – Control of Static Emissions	Ch. 10	14 - 15
Quiz on Chapters 7, and 10		
Final Comprehensive Exam		

Syllabi: Environmental Policy

ECONOMICS 310
NATURAL RESOURCE ECONOMICS

Fall 2015

Instructor - Robert F. Mulligan

mulligan@wcu.edu

<http://paws.wcu.edu/mulligan/>

[COURSE CALENDAR](#)

[POWERPOINTS &
STUDY QUIZZES](#)

[SUPPLEMENTAL
MATERIALS](#)

[EXAM REVIEW
TOPICS](#)

[INSTRUCTOR OFFICE
HOURS](#)

[ECON FILM SERIES](#)

[RFM HOME](#)

"Practical men, who believe themselves exempt from any intellectual influences, are usually the slaves of some defunct economist. Madmen in authority, who hear voices in the air, are distilling their frenzy from some academic scribbler of a few years back. - *John Maynard Keynes*

Office hours - MWF 11:00 AM- 12:00 noon, or by appointment. I am also available by email. Offices – Forsyth 224A, Camp 110C, Phone - (828) 227-3329.

1. Required Text - James R. Kahn, *The Economic Approach to Environmental and Natural Resources*, 3rd edition. I will provide photocopies of the relevant chapters.

2. Course Objectives

"The world consists of facts, not of things." - *Ludwig Wittgenstein*

- a. Develop an understanding of economic markets and how they function to transmit information, provide incentives to economic agents, allocate resources, and distribute income, and satisfy peoples' wants.
- b. Explore the different roles played by households, firms, and the government in the economy.
- c. Explore how natural resources act as constraints on satisfying individual wants, but how they make it possible for individuals to satisfy their wants in the first place.

We will cover the following chapters in Kahn:

1. Introduction.
2. Economic Efficiency and Markets: How the Invisible Hand Works.
3. Government Intervention in Market Failure.
4. Valuing the Environment.
5. Environmental Decision-Making: Criteria and Methods of Assessment.
6. The Macroeconomics of the Environment.
7. Global Environmental Change: Ozone Depletion and Global Climate Change.
8. Energy and the Environment.
9. The Use of Energy and the Environment.
12. Temperate Forests.
14. Biodiversity and Habitat Preservation.
15. Water Resources

3. Suggested Study Strategy

Spend no less than twenty-thirty minutes each weeknight reviewing, recopying, and reorganizing your notes, in addition to reading the assigned chapters of Kahn. This adds up to

about 8-10 hours of study time each month. Be committed to spending enough time each day to cover the material you need to, and to fully reviewing your notes and identifying areas requiring further work and things you need to ask me about. Spread out this way, your study time will be much more productive than an equivalent amount of cramming before tests. In addition to taking lecture notes in class, read, outline, and make notes on all assigned readings. Take the chapter quizzes posted on the course website to test your understanding and identify problem areas which need further work. Take all the applicable chapter quizzes to prepare for exams. The more time you have spent on the course, the easier it will be to spend additional time studying, and the more productive additional study time will be for you. Start this strategy the first day of class, because the sooner you start, the more you will get out of it and the easier it will be to continue.

4. Course Policies & Organization

"Eighty percent of success is just showing up." - Woody Allen

a. Absence policy:

Class attendance is essential. Attendance is important because:

1. Responsible adults display responsible behavior, and
2. Difficult concepts will be explained and administrative announcements will be made in class.

"Be content with fruit, with flowers, with weeds, even with thorns, but gather them in the one garden you may call your own."

- Edmond Rostand, Cyrano de Bergerac

b. Grades: Out of a total of 11000 possible points:

Test 1

100 points

Test 2	200 points
Test 3/Final Exam	300 points
Linked In Assignment	100 points
Total:	700 points

you will receive the following letter grade:

<i>Letter Grade</i>	<i>Minimum Required Percentage</i>
A+	93.33%
A	90.00%
A-	86.67%
B+	83.33%
B	80.00%
B-	76.67%
C+	73.33%
C	70.00%
C-	66.67%
D+	63.33%
D	60.00%
D-	56.67%
F	0

Cheating will not be tolerated and will result in an automatic grade of F for the course.

"Champions keep playing until they get it right." - Billie Jean King

c. Examination Policies:

1. No make ups.
2. Cheating will result in an automatic grade of F for the course.
4. There will be three cumulative exams. Exam 3 will be on Wednesday of the last week of class and may be taken in place

of the final. A final exam will be given during the scheduled final exam period. You may take either or both. If you take both, only the highest score will count. If you do better on test 2 than test 1, your test 2 grade will count for both tests 1 and 2.

5. If you do better on test 3 than test 1 or test 2, your test 3 grade will replace each of the earlier test grades it improves on.

6. *Always bring a calculator on test days.*

d. Withdrawal Policy:

1. Students considering withdrawal prior to the withdrawal deadline should make an appointment to discuss withdrawal with the instructor. This is to give me the opportunity to advise you of your options and standing in the class. I do not attempt to stop students from withdrawing.

2. Ws will not be given after the appropriate deadline except for documented medical or legal reasons. See the WCU Undergraduate Catalog.

3. Every semester a number of students receive Fs because they stop attending class and taking exams, but do not formally withdraw through the registrar. Don't let this happen to you.

5. *Electronic Writing Assignment:*

Your assignment is to create a resume-like homepage on the professional networking website LinkedIn (<http://www.linkedin.com>). Register for a free, non-premium account. At a minimum, list Western Carolina University as your school, from the year you enrolled, to the future year you expect to graduate. Any other information is optional, but everything you include in your personal profile must be (a.) honest and factually correct, and (b.) must be presented in a mature, professional manner. You may wish to include information on past and/or current employment, extra-

curricular activities, etc. If you post a picture, it must present a professional appearance. When you are done and ready for your profile to be graded, invite me to add you as a contact. My email address is mulligan@wcu.edu. This assignment is due on **Friday, September 4**, but you are welcome to complete it earlier.

6. Office of Disability Services

Accommodations for Students with Disabilities: Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All information is confidential. Please contact the Office of Disability Services at (828) 227-3886 or come by Suite 135 Killian Annex for an appointment.

7. Student Support Services

Student Support Services provides support to students who are either first-generation, low-income or those who have disclosed a disability with: academic advising, mentoring, one-on-one tutorial support, and workshops focused on career, financial aid and graduate school preparation. You may contact SSS at (828) 227-7127 or email sssprogram@wcu.edu for more information. SSS is located in the Killian Annex, room 138.

8. Writing and Learning Commons (WaLC)

The Writing and Learning Commons (WaLC), located in BELK 207, provides free [course tutoring](#), [writing tutoring](#), [academic skills consultations](#), [international student consultations](#), graduate and professional [exam preparation](#) resources, and online writing and learning [resources](#) for all students. All

tutoring sessions take place in the WaLC or in designated classrooms on campus. To schedule tutoring appointments, visit the WaLC homepage (<http://walc.wcu.edu>) or call 828-227-2274.

9. *Academic Calendar* includes dates for all breaks, university closures, final exams, etc. The academic calendar can be found at: <http://www.wcu.edu/academics/campus-academic-resources/registrars-office/academic-calendar.asp>.

10. *Course calendar:*

Read assigned chapters ***before*** the day they will be discussed in class.

ECON 310 CALENDAR



ENVH 458 Environmental Regulation and Law

Fall 2015

Instructor: Dr. Tracy Zontek
 Office Location: HHS 418
 Email: zontek@email.wcu.edu (preferred method of communication)
 Course Meeting Times: MWF 8:00 to 8:50; Belk 409
 Office Phone: 227-2146; Fax: 227-7446 (All voicemail messages will be returned with an email.)
 Office Hours: 10:40 – 2:00 M, 10:00 – 11:00 T, 10:40 – 12:30 W, and by appointment
 ENVH Info: <http://envh.wcu.edu>

I. Rationale/Purpose

The student will acquire an understanding of a variety of approaches to environmental law, the importance of the understanding fundamental law, the court system, and the development of knowledge of several federal acts relating to the environment and the general public's health. The student will also gain knowledge in professional development by applying any segment of the entire legal system to resolve environmental issues. This course will also enrich student's understanding of standards, ethics, and environmental practice issues.

II. Course Aims and Objectives:

By the end of this course, students will:

- Understand the methods by which environmental laws are promulgated.
- Discuss the role of the courts in environmental cases.
- Define the rights of regulated individuals, and limits of government authority.
- Distinguish between civil and criminal prosecution.
- Review case histories and discuss their implications.
- State the intent of major environmental legislation.
- Apply ethical considerations to the practice of environmental health professionals.
- Understand the importance of non-enforceable industry standards.
- Consider professional registration and certification.

III. Course Materials

It is advisable to keep work for all your courses organized on your personal computer, as well as a USB pen drive. This will give you a backup of all your work if your computer crashes or Blackboard does not work correctly. If your computer does not work, there are many others on campus for your use. Computer issues are not an acceptable excuse for missed or late work.

Text:

Sullivan T. F. P. (Ed). (2013) *Environmental Law Handbook*, 22nd ed. Berman Press; Plymouth, UK.

Course readings:

Instructor will post course readings on Blackboard (Bb).

Portions of this course will be administered on Blackboard. It is the student's responsibility to maintain access to Blackboard/Blackboard and their Western email account throughout the entire semester.

IT Services Help Desk

828-227-7487

1-866-928-7487 (toll free)

itshelp@email.wcu.edu

IV. Faculty Expectations of Students/Course Policies

- **Student Behavior:**

Disruptive students will be asked to leave the class. **Computer use in the classroom should be relevant to course material.** A one-time warning will be given if a cell phone or computer disrupts class and subsequent disruptions will result in severe deductions in the course grade. Be courteous to your fellow students and respect their opinions – you don't have to agree with everything discussed in class, but it is important to respect others as you would have them respect you.

- **Cell phones, Laptops and Tablets**

If you carry a cell phone, turn it off or switch to a non-audible mode during class. Cell phone usage during quizzes/exams, including text-messaging is considered a violation of the Academic Honesty Policy (see below) - disciplinary action will be taken. **Students who use cell phones, laptops or tablets for reasons other than directly related to the subject matter will be asked to leave.**

- **Statement on Accommodations for Students with Disabilities**

Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All information is confidential. Please contact the Office of Disability Services at (828) 227-3886 or come by Suite 135 Killian Annex for an appointment.

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- **Statement on Academic Honesty:** www.academicintegrity.wcu.edu

Western Carolina University, as a community of scholarship, is also a community of honor. Faculty, staff, administrators, and students work together to achieve the highest standards of honesty and integrity. Academic dishonesty is a serious offense at Western Carolina University because it threatens the quality of scholarship and defrauds those who depend on knowledge and integrity. Academic dishonesty includes:

- Cheating**—Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise.
- Fabrication**—Intentional falsification of information or citation in an academic exercise.
- Plagiarism**—Intentionally or knowingly representing the words or ideas of someone else as one's own in an academic exercise.
- Facilitation of Academic Dishonesty**—Intentionally or knowingly helping or attempting to help someone else to commit an act of academic dishonesty, such as knowingly allowing another to copy information during an examination or other academic exercise.

Instructors have the right to determine the appropriate sanction or sanctions for academic dishonesty within their courses up to and including a final grade of "F" in the course. Please see the Student Handbook for additional information.

SafeAssign Tool:

All written work submitted for this class is eligible for submission to the SafeAssign tool at the instructor's discretion.

- Attendance Policy: http://catalog.wcu.edu/content.php?catoid=15&navoid=231#clas_atte_poli

A student with more unexcused absences than the semester hours given for a course (3 for this course) can expect the instructor to lower their final grade. Missing approximately 10% of class meeting times (e.g. 4-5 MWF classes, 3 TR classes, or 1 laboratory or night class) or more constitutes a significant number of absences and the experience missed and is very difficult, if not impossible, to make up. Students should expect at least a letter grade deduction for significant absences. Students are responsible for the academic consequences of absence. You are expected to attend all class and activity sessions. **Students having excessive absences will be reported to the "Early Alert" academic process.**

If you are sick or otherwise unable to attend class on the day a test is scheduled, you must notify the instructor prior to the time the exam is scheduled. If prior notification of your absence is not given (and received), you will receive a grade of zero on the exam. If you have an acceptable reason, you can make up the exam with no penalty. **Missed exams must be made up within one week or you will receive a zero. Make-up exams are typically essay format.**

If you are absent on the day that the instructor distributes a handout or assigns homework, it is your responsibility to get the handout (and lecture/discussion notes) from a classmate. Most of the handouts and presentations are available electronically. Activities and quizzes completed in class cannot be made up if the student is absent.

Students who are chronically late to class should discuss their reasons for being late with the instructor. Chronic tardiness will result in deductions from the final grade.

The **WCU Inclement weather policy** may be found here: <http://www.wcu.edu/weather/>

Western rarely closes and students who live off campus should use good judgment in commuting during inclement weather. Students should check Blackboard and their email for additional information about class instructions from the instructor.

V. Grading Procedures:

The following table describes assignments and course grade weighting. A description of each method of evaluation is described below. Grades can be accessed in Blackboard.

Evaluation Type	Percentage of Overall Grade
Attendance and Class Participation	10%
Quizzes	35%
Assignments	20%
Tests (3)	35%

Attendance and class participation: Each student is required to participate (talk!) in classroom discussion on a regular basis. This class will often use the Socratic Method requiring involvement in an exchange of ideas, experiences, and feelings. We will all learn from one another. Your ideas and opinions are important and critical to our discussion.

Quizzes: Most modules will have a quiz (typically Turning Point but may be online in Blackboard or written) to assist you with reading and interpreting multiple choice and true/false questions prior to the exam. These quizzes are used as learning tools to determine the effectiveness of your study before the exam. They will also help you prepare for taking online tests and quizzes in the future.

Tests: There are 3 tests, including the final exam; each will contain a mix of multiple choice, short answer, and critical thinking discussion questions.

Assignments: The instructor has developed assignments to increase your understanding and application of course materials. In-class assignments cannot be made up if you are absent.

Grading:

The following grading scale applies to this course:

Percentage Grade	Letter grade
97-100	A+
93 – 96.9	A
90 – 92.9	A-
87 – 89.9	B+

83 – 86.9	B
80 – 82.9	B-
77 – 79.9	C+
73 – 76.9	C
70 – 72.9	C-
67 – 69.9	D+
63 – 66.9	D
60 – 62.9	D-
59 and below	F

VI. Student Evaluation of Course

Student course evaluations are accessed through your Catamount email. The course evaluation is completely external to course and instructor has no control over access or availability. Instructor cannot view student evaluations until after final grades are submitted. All student submissions are anonymous and used to improve instruction and materials. Generally, students filling out their course evaluations will receive their final grades several days earlier than those who do not.

VII. Additional Support for Students

The Writing and Learning Commons (WaLC) is a free student service, located in BELK 207, providing course tutoring, writing tutoring, academic skills consultations, international student consultations, graduate and professional exam preparation resources, and online writing and learning resources for all students. To schedule tutoring appointments, visit the WaLC homepage (<http://walc.wcu.edu>) or call 828-227-2274.

Tentative Course Outline

I. Fundamentals of law

- Defining environmental law
- Law that establish compliance obligations
- Common law and environmental torts
- Laws that enforce permits, prohibitions, and penalties
- Organic law
- Administrative law and procedure
- Court room guidelines
- Liability, indemnity, and contribution
- Right of entry

II. U.S. Federal Regulations

- Toxic Substances Control Act
- Resource Conservation and Recovery Act
- Underground Storage Tanks
- Comprehensive Environmental Response, Compensation and Liability Act
- Oil Pollution Act
- Emergency Planning and Community Right-to-Know Act
- Consumer Product Safety Commission
- Family Smoking Prevention and Tobacco Control Act
- Pool and Spa Safety Act
- Atomic Energy Act

III. Standards

- International Organization for Standardization (ISO)
- UL
- NFPA
- ANSI

- IV. Certifications and Registrations for Environmental Health Professionals
- V. Ethics
- VI. Recent and Emerging Environmental Health Practice Issues

PSC 442-01: Natural Resource Management and Policy

Fall 2015
150 Stillwell
TR 11:00-12:15

Instructor: Dr. Jay Gerlach Stillwell 343 / 828-227-3855 / jdgerlach@email.wcu.edu
Office Hours: TR 12:30-2:00 (other times by appointment)

I. Rationale/Purpose

The purpose of PSC 442 (Natural Resource Management and Policy) is to examine the various aspects of American natural resource regulation, preservation, and conservation. The course also peeks into the global natural resource policy scene and tackles specific topics such as energy policy, climate change, and pollution control.

II. Course Aims and Objectives:**• Aims**

The primary goal of this course is to prepare junior- and senior-level students at WCU for work in, or interaction with, the field of natural resource management and policy. Students should leave the course with an understanding of the core concepts associated with natural resource management in the United States, as well as how policies and regulations governing these resources are made, implemented, and evaluated. Students will learn the natural resource policy process and its actors, and will dive into specifics regarding substantive areas of natural resource policy (air pollution, water pollution, climate change, energy and sustainability, fisheries management, etc.).

• Specific Learning Objectives

By the end of this course, students will be able to:

1. Describe the need for natural resource management and regulation.
2. Describe the role of the U.S. government and state governments in conserving and protecting our natural resources.
3. Explain the major natural resource policy areas at play in the United States – how each is governed and why.
4. Describe the policy process behind the governance of American natural resources.
5. Demonstrate a thorough understanding of natural resource ethics.

III. Course Materials*Course readings:*

- Clark, Tim W. (2002). *The Policy Process: A Practical Guide for Natural Resource Professionals*. Yale University Press. ISBN: 0-300-09012-9 (**WCU bookstore rental**)
- Brunner, Ronald D.; Steelman, Toddi A.; Coe-Juell, Lindy; Cromley, Christina M.; Edwards, Christine M.; and Tucker, Donna W. (2005). *Adaptive Governance: Integrating Science, Policy, and Decision Making*. Columbia University Press. ISBN: 0-231-13625-0 (**for purchase**)
- Smith, Zachary A. (2013). *The Environmental Policy Paradox*, 6th edition. Pearson. ISBN: 978-0-205-85588-9. (**for purchase**)
- **Other required readings posted on Blackboard with appropriate notice – typically one week.**

IV. University Policies and Resources

Accommodations for Students with Disabilities

Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All information is confidential. Please contact the Office of Disability Services at (828) 227-3886 or come by Suite 135 Killian Annex for an appointment.

Student Support Services

Student Support Services provides support to students who are either first-generation, low-income or those who have disclosed a disability with: academic advising, mentoring, one-on-one tutorial support, and workshops focused on career, financial aid and graduate school preparation. You may contact SSS at (828) 227-7127 or email sssprogram@wcu.edu for more information. SSS is located in the Killian Annex, room 138.

Civility and Ground Rules

The Western Carolina University Community Creed states: "I will respect the rights and well-being of others." Each student may possess different ideas, as well as different ways of communicating those ideas. Because of these differences, respect and civility are integral to maintaining the quality of the academic environment and free inquiry.

(<http://www.wcu.edu/student-life/policies-affecting-students/statement-of-student-rights-and-responsibilities.asp>)

SafeAssign Tool

All written work submitted for this class is eligible for submission to the SafeAssign tool at the instructor's discretion.

Academic Integrity Policy and Reporting Process

This policy addresses academic integrity violations of undergraduate and graduate students. Graduate students should read inside the parenthesis below to identify the appropriate entities in charge of that step of the process.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of the Academic Integrity Policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community. While academic in scope, any violation of this policy is by nature, a violation of the Code of Student Conduct and will follow the same conduct process (see Article VII.B.1.a.). If the charge occurs close to the end of an academic semester or term or in the event of the reasonable need of either party for additional time to gather information timelines may be extended at the discretion of the Department of Student Community Ethics (DSCE).

I. General

This policy addresses academic integrity violations of undergraduate and graduate students.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of this policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community.

Instructors have the right to determine the appropriate academic sanctions for violations of the Academic Integrity Policy within their courses, up to an including a final grade of "F" in the course in which the violation occurs.

II. Definitions

1. Cheating – Using, or attempting to use, unauthorized materials, information, or study aids in any academic exercise.

2. Fabrication – Creating and/or falsifying information or citation in any academic exercise.
3. Plagiarism – Representing the words or ideas of someone else as one's own in any academic exercise.
4. Facilitation – Helping or attempting to help someone to commit a violation of the Academic Integrity Policy in any academic exercise (e.g. allowing another person to copy information during an examination).

III. Undergraduate and Graduate Academic Integrity Process

1. Within five (5) business days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, s/he will inform his/her department head (or associate Dean of the graduate school when applicable) in writing of the allegation and proposed sanction(s).
2. Within ten (10) business days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, the instructor will inform the student of the allegation, including the proposed sanction(s), in writing. In the written notification, the instructor will inform the student of his/her right to request a meeting with the instructor. During the meeting, the instructor shall complete the Academic Integrity Violation Faculty Resolution Form. If the student does not request a meeting with the instructor within five (5) business days of receipt of the written allegation(s), the student shall be deemed to have mutually resolved the matter and shall be bound to the sanction(s) outlined by the instructor in the written allegation. If the student does not request a meeting, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
3. Within five (5) business days of meeting with the instructor, the student shall either appeal the decision to the department head or mutually resolve the matter by accepting the allegation and proposed sanction(s). No action by the student within five (5) business days of the meeting with the instructor shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the instructor, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
4. Within five (5) business days of receiving a student's appeal, the department head must schedule a meeting with the student. The instructor may be present during the meeting. During the meeting, the department head shall complete the Academic Integrity Violation Department Head Resolution Form. Only information submitted during the meeting with the student, or in the meeting between the instructor and the student, may be considered by the department head. The evidentiary standard for making a decision shall be preponderance of the evidence. The department head may agree or disagree with the allegation(s) of the instructor. The department head may also approve, overturn, or modify the sanction(s) proposed by the instructor. If the student does not attend the scheduled meeting with the department head, the matter will be heard in absentia and shall not be subject to further review and/or appeal.
5. Within five (5) business days of meeting with the department head, the student shall either appeal the decision to an Academic Integrity Board or mutually resolve the matter by accepting the allegation and proposed sanction(s). The student must submit an appeal to the academic Dean listed on the Academic Integrity Violation Department Head Resolution Form. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the department head, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
6. Within seven (7) business days of receiving a student's appeal, the appropriate academic Dean must schedule an Academic Integrity Board hearing with the student. The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. The instructor may be present during the hearing. Only information submitted during the hearing, or in the meetings between the instructor/department head and the student, may be considered by the hearing board. The evidentiary standard for making a decision shall be preponderance of the evidence. The hearing board may agree or disagree with the allegation(s) of the instructor. The hearing board may

also approve, overturn, or modify the sanction(s) proposed by the instructor and/or department head. If the student does not attend the scheduled hearing, the matter will be heard in absentia and shall not be subject to further review and/or appeal. Within ten (10) business days of the hearing, the appropriate academic Dean shall review pertinent records and send the student written notification of the decision of the Academic Integrity Board.

7. Within five (5) business days of receiving written notification of the decision of the Academic Integrity Board the student may accept the findings and sanctions of the board or submit an appeal to the designated academic Dean. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the Academic Integrity Board, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
8. If the student elects to file an appeal of the decision of the Academic Integrity Board, she must submit a written appeal within five (5) business days of receiving written notification of the decision of the Academic Integrity Board to the designated academic Dean. An appeal to an academic Dean must be limited to the following grounds; 1) a violation or due process or 2) a material deviation from Substantive and Procedural Standards by the UNC Board of Governors (as set forth in the UNC Manual 700.4.1).
9. If an appeal is heard by an academic Dean, s/he shall review pertinent records within ten (10) business days of receiving a valid appeal. The academic Dean may agree or disagree with the allegation(s) of the instructor. The academic Dean may also approve, overturn, or modify the sanction(s) proposed by the instructor, department head, and or Academic Integrity Board. Within five (5) days of making a decision, the academic Dean shall provide the student with a written decision. The decision of the academic Dean shall be final.
10. The student must remain enrolled in the course related to the case, and may not be permitted to withdraw from the course related to the case, until all hearing timelines, notifications, and/or appeals have been completed.
11. Upon resolution of each level of the case (no matter the outcome), the instructor, department head, and academic Dean must provide the Department of Student Community Ethics with all materials and documents related to the case (i.e. course syllabus, materials in violation of the Academic Integrity Policy, Instructor Resolution Form, Department Head Resolution Form, Academic Integrity Board decision letter, academic Dean decision letter, etc...). The Department of Student Community Ethics shall serve as the repository for all records associated with allegations and violations associated with the Academic Integrity Policy.

IV. Academic Integrity Board

The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. Students and faculty members serving on boards for each college will be selected by each college Dean. The Department of Student Community Ethics will train all board members prior to their service on a hearing board. Each academic Dean will convene hearing boards as necessary, and will determine a faculty member to serve as chair prior to a hearing.

V. Sanctions

The instructor, department head, Academic Integrity Board, and/or academic Dean may impose academic sanctions permitted by the institution (not to exceed receiving a grade of "F" for the course). The instructor, department head, Academic Integrity Board, and/or academic Dean may not permanently remove the student from the course or suspend/expel the student from a program or the University. Student behavior of the magnitude to warrant consideration for permanent removal from the course or suspension/expulsion from a program or the University must be referred to the Department of Student Community Ethics.

VI. Habitual Violations of the Academic Integrity Policy

Upon receipt of materials associated with violations of the Academic Integrity Policy, the Department of Student Community Ethics will determine if a student has previous violations of University policies. Students

with a prior record of violations, or who commits a gross and/or egregious violation of the Academic Integrity Policy, will be referred to the Department of Student Community Ethics for consideration of being subject to hearing proceedings as a habitual violator. Students with three or more violations of the Academic Integrity Policy will automatically be subject to hearing proceedings as a habitual violator. Students in this category are subject to course-related sanctions imposed by the instructor, department head, Academic Integrity Board, and/or academic Dean and University-level sanctions imposed by the Department of Student Community Ethics for habitual violations of University policies. Additional information is available on the Student Success website under Student Community Ethics.

Writing and Learning Commons (WaLC)

The Writing and Learning Commons (WaLC) is a free student service, located in BELK 207, providing course tutoring, writing tutoring, academic skills consultations, international student consultations, graduate and professional exam preparation resources, and online writing and learning resources for all students. To schedule tutoring appointments, visit the WaLC homepage (<http://walc.wcu.edu>) or call 828-227-2274.

Distance students and students taking classes at Biltmore Park are encouraged to use Smarthinking (<http://www.wcu.edu/academics/edoutreach/distance-online-programs/student-resources/services-for-distance-students.asp>) and the WaLC's online resources.

Math Tutoring Center

The Mathematics Tutoring Center provides tutoring in all lower-division math and many CS courses (455 Stillwell, <http://mathlab.wcu.edu>, 828-227-3830), help with mathematical concepts in other disciplines, and workshops on study skills specific to mathematics courses. Tutoring is available on a drop-in basis, 9 am – 5 pm and 6 - 9 pm Monday-Thursday, and 9 am – 5 pm on Friday.

V. Course Policies

Participation

Class participation is worth 15% of your total course grade. **I truly grade class participation!** If I don't know your name – or better yet, the sound of your voice – by the end of the semester, you will very likely have a class participation problem. You are expected to come to class prepared to discuss the day's topic, engage in class as an active participant, and be respectful of others. I take attendance during each class period as one criterion of participation measurement.

Blackboard

Blackboard will be heavily utilized in this course. Not only is all course information (this syllabus, etc.) posted on Blackboard, you will occasionally have **required** course readings posted on Blackboard. All Case Study Review assignments and the Policy Issue Paper assignment will be posted on Blackboard. Furthermore, **you are expected to turn these assignments in on Blackboard by the dates and times listed in the course schedule.** The learning management system for this class is blackboard and can be found at: <http://wcu.blackboard.com>. Additional help with blackboard can be found at: tc.wcu.edu, (828) 227-7487 or by visiting the Technology Commons located on the ground floor of the Hunter Library.

Exams

Exams 1-3 will consist of multiple choice and short essay questions. The final exam will be structured in a similar fashion. No make-up exams will be given without 1) prior notice and 2) a university-approved *written* excuse (provided through Student Affairs).

Case Study Reviews

Case Study Review assignments will be detailed (and turned in) on Blackboard. Reading assignments for these reviews are detailed in the "Notes" section of the course schedule at the end of this syllabus.

Policy Issue Paper

The Policy Issue Paper assignment will be detailed (and turned in) on Blackboard. Be listening for us to discuss this assignment in class.

Late Work

My policy on late work is simple. If your work is one second to 24 hours late (Blackboard will time stamp), an automatic 20% penalty is deducted prior to my grading it. If your work is between 24 and 48 hours late, an automatic 50% penalty is deducted. If your work is more than 48 hours late, it will not be graded and you will earn a grade of zero. No excuses, and those time periods are firm to the second.

Cell Phones

Cell phones (ringing, texting, talking, etc.) are not permitted in class. **I will call you out on this if I see a cell phone in class.** Come to class ready to participate or just stay home.

*Note: The same applies for earphones of any type, reading the paper, etc.

Laptop Computers, Tablets, Etc.

Laptop computers are not permitted in class. My lecture Power Point slides will be posted to Blackboard at the end of each subject discussed in class. During class, you are encouraged to take additional notes using a pen and paper. Your class notes can supplement our Power Point slides and assist you in better understanding course material and studying for exams.

E-Mail

Please check your e-mail account which is on file with WCU regularly, as it is the primary form of communication between the instructor and students. Blackboard announcements I post will also come to your e-mail.

VI. Class Atmosphere

It is my hope that each class period will not only be informative, but enjoyable. Though lecture is the primary class format, discussion is integrated into many class periods. During these discussion times, you are encouraged to participate by sharing your opinions and views on the various discussion topics which arise throughout the semester. I ask that you always keep your comments respectful of others and clean from a language standpoint.

VII. Grading Procedures:

Course grades will be calculated as follows:

Course Requirement	Percentage of Grade
Participation	15%
Case Study Review #1	5%
Case Study Review #2	5%
Case Study Review #3	5%
Exam #1	15%
Exam #2	15%
Exam #3	15%
Policy Issue Paper	10%
Final Exam	15%
TOTAL	100%

Course-specific learning objectives 1-5 will be assessed through case study reviews, exams, and the final exam. Objectives 2-4 will be further assessed through the policy issue paper requirement.

Grading and Quality Point System

Grade	Interpretation	Quality Points per Semester Hour	Grade	Interpretation	Quality Points per Semester Hour
A+	Excellent	4.0	I	Incomplete	--
A	Excellent	4.0	IP	In Progress	--
A-		3.67	S	Satisfactory	--
B+		3.33	U	Unsatisfactory	--
B	Good	3.0	W	Withdrawal	--
B-		2.67	AU	Audit	--
C+		2.33	NC	No Credit	--
C	Satisfactory	2.0			
C-		1.67			
D+		1.33			
D	Poor	1.0			
D-		.67			
F	Failure	0			

The grades of A+, A, A-, B+, B, B-, C+, C, C-, D+, D, D- and F indicate gradations in quality from Excellent to Failure. Please note that a C- grade is less than satisfactory and may not meet particular program and/or course requirements.

Composition-Condition Marks: A student whose written work in any course fails to meet acceptable standards will be assigned a composition-condition (CC) mark by the instructor on the final grade report. All undergraduates who receive two CC grades prior to the semester in which they complete 110 hours at Western Carolina University are so notified by the registrar and are required to pass English 300 or English 401 before they will be eligible for graduation. This course must be taken within two semesters of receiving the second CC and must be passed with a grade of C (2.0) or better.

Students must be familiar with the class attendance, withdrawal, and drop-add policies and procedures.

VIII. Tentative Course Schedule*Subject to change with appropriate notice.*

Week	Topic	Assigned Reading	Notes
Aug. 18-20	Introduction Overview	Smith – chs. 1 & 2	
Aug. 25-27	The Policy Process	Clark – ch. 4	
Sept. 1-3	Who owns what? Ethics	Clark – ch. 1	
Sept. 8-10	Legislation Affecting NR Policy	Smith – ch. 3	Case Study Review 1 DUE – Sept. 10 (11:00a) Brunner et al. – ch. 2
Sept. 15-17	Endangered Species Act	Posted to Blackboard	EXAM 1 – Sept. 17
Sept. 22-24	Economics / Market Based Policies	Posted to Blackboard	
Sept. 29 – Oct. 1	Agencies & Administration	Smith – ch. 4 Clark – ch. 5	Case Study Review 2 DUE – Oct. 1 (11:00a) Brunner et al. – ch. 3
Oct. 6-8	Land Use / Habitat Protection	Smith – ch. 9	
Oct. 13-15	-	-	NO CLASS – Oct. 13 & 15 Last day for a “W” – Oct. 19
Oct. 20-22	Fisheries Management	Posted to Blackboard	EXAM 2 – Oct. 22
Oct. 27-29	Air Pollution Policy	Smith – ch. 5	NO CLASS – Oct. 27
Nov. 3-5	Water Pollution Policy	Smith – ch. 6	
Nov. 10-12	Energy / Sustainability	Smith – ch. 7	Case Study Review 3 DUE – Nov. 12 (11:00a) Brunner et al. – ch. 5
Nov. 17-19	Climate Change	Posted to Blackboard	EXAM 3 – Nov. 19
Nov. 24-26	“A Mountain Removed”	-	NO CLASS – Nov. 26

Dec. 1-3	Globalization	Smith – chs. 10 & 11	Policy Issue Paper DUE – Dec. 3 (11:00a)
Dec. 8	-	-	FINAL EXAM – 12:00-2:30

IX. Important Dates Quick Reference

September 10 – Case Study Review #1 due via Blackboard (11:00a)
September 17 – Exam #1

October 1 – Case Study Review #2 due via Blackboard (11:00a)
October 22 – Exam #2

November 12 – Case Study Review #3 due via Blackboard (11:00a)
November 19 – Exam #3

December 3 – Policy Issue Paper due via Blackboard (11:00a)
December 8 – Final Exam (cumulative)

NO CLASS DATES: October 13, 15, 27; November 26

ENVIRONMENTAL ANTHROPOLOGY

(Anthropology 351)

Fall 2015

Western Carolina University
Room: McKee 229
Tues, Thurs 11-12:15

James R. Veteto, Ph.D.
Office: 106A McKee
Office Hours: Wed 12-5 PM
Phone: 828-227-3777
Email: jrveteto@email.wcu.edu

COURSE DESCRIPTION

Environmental Anthropology is a more recent outgrowth of Ecological Anthropology, which can be characterized as the study of the interrelationship between human groups, cultures, and societies and the ecosystems in which they are embedded in all times and all places across planet earth. Scholars have delineated environmental anthropology as becoming more prominent in the 1980s and typically focusing on analysis and application of anthropological knowledge to contemporary environmental issues. Ecological and Environmental anthropology can most productively be viewed as a single interrelated discipline, with ecological anthropology focusing more on basic academic research and environmental anthropology being more focused on contemporary environmental issues and having more of an applied, practicing, critical, and/or advocacy approach.

Part I of this course will focus on theoretical developments in ecological and environmental anthropology from the 1950s forward and will introduce students to three of the most prominent research programs in environmental/ecological anthropology today: ethnoecology, historical ecology, and political ecology. Part II will focus on analysis and the application of anthropological knowledge to five of the most pressing environmental issues facing the contemporary world: population and consumption, biodiversity conservation, sustainable agriculture, and global climate change. The last two weeks of the course will focus on the role of anthropology in creating viable alternative political ecologies leading to a sustainable future for humankind.

COURSE FORMAT

This is a critical thinking course based primarily on readings, presentations by the instructor and guest speakers, and class discussion. Every student should have read and come prepared to discuss the material for each class period. A final research paper will also allow students to

pursue their own particular interests in the environmental anthropology. The instructor reserves the right to add or subtract readings, videos, or guest lectures as deemed necessary as the course develops, yet the course syllabus will be followed in the main as indicated below.

COURSE OBJECTIVES

The primary goals of this course are to provide:

1. an introduction to key theoretical concepts, thinkers, and practitioners of environmental anthropology
2. a relevant and global sampling of key literature in environmental anthropology
3. a familiarity with a sampling of the most important environmental issues facing the world today and theoretical and practical tools being used by anthropologists to research and address them
4. an in-depth exploration of a particular topic in environmental anthropology through an individual research paper

COURSE GRADING

The final course grade (A, B, C, D, or F) for each student will be calculated as follows:

- 10% regular class attendance as well as active and meaningful participation in class discussions of readings and other subjects.
- 5% research paper proposal (one page double-spaced turned in hard-copy in class TUESDAY, SEPTEMBER 22ND)
- 5% 2-page report on Museum of the Cherokee Indian Visit, due on **Nov. 17**
- Four Tests, 15% each, 60% of final grade (Sept. 10, Oct. 6, Oct. 29, Dec. 3)
- 20% final research paper (7 pages double-spaced turned in hardcopy to the front desk, department of anthropology and sociology, McKee 101 BY MONDAY, DECEMBER 7TH at 12:00 NOON, using American Anthropological Association formatting guidelines—see http://www.aaanet.org/publications/style_guide.pdf)

*Note: No grade of incomplete (I) will be given in this class with the exception of a major medical emergency or call to active duty for US military personnel. The last day to drop classes this semester with a grade of W is Monday, October 19th, so make up your mind if you are going to complete the course before that date. As of October 19th, you will only be given a grade of WF or F if you decide not to finish the course, with the exceptions mentioned above.

Students are expected to arrive at class on time and remain attentive throughout the entire period. Attendance will be taken every meeting. The final course grade will be lowered by one letter grade on the fifth absence from class and one letter grade for every absence after the fifth, unless excused by an official memo from a medical doctor, administrator, etc.

REQUIRED TEXTBOOKS

Haenn, Nora and Richard R. Wilk (editors). 2006. *The Environment in Anthropology: A Reader in Ecology, Culture, and Sustainable Living*. New York: New York University Press.

Townsend, Patricia K. 2009. *Environmental Anthropology: From Pigs to Policies* (Second Edition). Prospect Heights, IL: Waveland Press, Inc.

ADDITIONAL COURSE READINGS

Additional course readings taken from journals and selected books will be posted electronically on blackboard.

SCHEDULE OF CLASS MEETINGS AND ASSIGNMENTS*

* For each date listed, the readings are to be read prior to class and students should be prepared to thoroughly discuss them during class

I. Ecological and Environmental Anthropology: Theory Since the 1950s and Contemporary Subfields

Tues. Aug. 18: Introduction, Purpose, Goals, Syllabus, Expectations

Thurs. Aug. 21: Theoretical Foundations of Ecological and Environmental Anthropology

- 1) Sponsel. 2007. "Ecological Anthropology" available at: http://www.eoearth.org/article/Ecological_anthropology
- 2) **Townsend Book**: Chpt. 2, "Julian Steward's Cultural Ecology" p. 9-16.
- 3) **Haenn and Wilk Book**: Steward, Chpt. 1, "The Concept and Method of Cultural Ecology" p.5-9.

Tues. Aug. 25: Theoretical Foundations of Ecological and Environmental Anthropology

- 1) **Haenn and Wilk Book**: Moran, Chpt. 3, "Ecosystem Ecology in Biology and Anthropology" p.15-26.
- 2) **Townsend Book**: Chpt. 4, "Pigs for the Ancestors" p. 23-28.
- 3) **Rappaport. 1967**. "Ritual Regulation of Environmental Relations Among a New Guinea People"

Thurs. Aug. 25: The Theoretical Foundations of Ecological and Environmental Anthropology

- 1) **Haenn and Wilk Book**: Orlove, Chpt. 19, “The Third Stage of Ecological Anthropology: Processual Approaches” p. 205-14.
- 2) **Haenn and Wilk Book**: Kottak, Chpt. 6, “The New Ecological Anthropology” p. 40-52.

Tues. Sept. 1: Ethnoecology

- 1) **Hunn. 2007**. “Ethnobiology in Four Phases”
- 2) **Townsend Book**: Chpt. 3, “Ethnoecology” p.17-22.

Thursday, Sept. 3: Applied Ethnoecology in Cherokee, NC

Guest Speaker: Dr. David Cozzo, Director, Revitalization of Traditional Cherokee Artisan Resources (RTCAR)

- 1) **Visit and Read Over RTCAR Website**: <http://rtcar.org/>

Tuesday, Sept. 8: Ethnoecology

- 1) **Posey. 2008**. “Indigenous Management of Tropical Forest Ecosystems: The Case of the Kayapó Indians of the Brazilian Amazon”
- 2) **Wall and Masayesva. 2004**. “People of the Corn: Teachings in Traditional Hopi Agriculture, Spirituality, and Sustainability”

Thurs. Sept. 10:

Test # 1

Tues Sept. 15: Historical Ecology

- 1) **Balée. 1998**. “Historical Ecology: Premises and Postulates”
- 2) **Armstrong and Veteto. 2015**. “Historical Ecology and Ethnobiology: Applied Research for Environmental Conservation and Social Justice”

Thurs Sept. 17: Historical Ecology

- 1) **Gragson et al. 2008**. “Agricultural Transformation of Southern Appalachia”

Tues. Sept. 22: Political Ecology

Film: *The Natural State of America: we all live downstream*

- 1) **Greenberg and Park. 1994**. “Political Ecology”
- 2) **Haenn and Wilk Book**: Chpt. 27, Stonich and Dewalt, “The Political Ecology of Deforestation in Honduras” p.284-301.

*****Research Proposal Due: Hardcopy, At the Beginning of Class**

Thurs. Sept. 24: Rooted in the Mountains Plants for Food & Medicine Conference

The Cherokee Worldview—Tom Belt and TJ Holland

Class Meets in **College of Health & Human Sciences Rm. 204**

Dr. Veteto will be at the back of the room with an attendance sign-up sheet

Tues. Sept. 29: Political Ecology

- 3) **Townsend Book**: “It Isn’t Easy Being Green” p. 87-95.
- 4) **Ortiz. 1992.** “Our Homeland, A National Sacrifice Area”

Thurs. Oct. 1: Spiritual Ecology

- 1) **Sponsel. 2007.** “Spiritual Ecology: One Anthropologist’s Reflections”
- 2) **Townsend Book**: Chpt. 9, “Holy Ground” p. 61-68.

Tues. Oct. 6

Test # 2

II. The Application of Environmental Anthropology to Contemporary Environmental Issues

Thurs. Oct. 8: Population

- 1) **Malthus. 1798.** “An Essay on the Principle of Population” Chpts. 1-2, p. 1-11.
- 2) **Townsend Book**: Chpt. 10, “Population” p.69-78.
- 3) **Kaplan. 1994.** “The Coming Anarchy”

Oct. 12-16th, Fall Break, Enjoy!!!!

Tues. Oct. 20: Consumption

Film: *The Story of Stuff*

- 1) **Townsend Book**: Chpt. 13, “Consumer Cultures” p. 97-101
- 2) **Gardener et al. 2004.** “The State of Consumption Today”
- 3) **Snyder. 1995.** “Four Changes, With a Postscript”

Thurs. Oct. 22: Biodiversity Conservation

- 1) Orlove and Brush. 1996. "Anthropology and the Conservation of Biodiversity"
- 2) Ehrlich. 1988. "The Loss of Diversity: Causes and Consequence"
- 3) Nabhan. 1997. "Pledging Allegiance to All Sorts of Diversity"

Tues. Oct. 27:

Advising Day, No Class!

Thurs. Oct. 29:

TEST # 3

Tues. Nov. 3 Applied Ethnoecology: Agricultural Biodiversity Research and Conservation in Southern Appalachia & the Ozarks

- 1) Veteto. 2014. "Seeds of Persistence: Agrobiodiversity in the American Mountain South."
- 2) Veteto and Welch. 2013. "Food from the Ancestors: Documentation, Conservation, and Revival of Eastern Cherokee Heirloom Vegetable and Fruit Cultivars"

Thurs Nov. 5 Applied Ethnoecology: Agricultural Biodiversity Research and Conservation in Southern Appalachia & the Ozarks

- 1) Veteto. 2013. "Down Deep in the Holler: Chasing Seeds and Stories in Southern Appalachia"
- 2) Campbell and Veteto. 2015. "Free Seeds and Food Sovereignty: Anthropology and Grassroots Agrobiodiversity Conservation Strategies in the US South"

Tues. Nov. 10: Sustainable Agriculture

Film: *Food, Inc.*

- 1) Rhoades. 2005. "Agricultural Anthropology"
- 2) Berry. 2006. "Conservationist and Agrarian"

Thurs. Nov. 12

- **NO CLASS! BETWEEN NOW & TUESDAYS CLASS GO TO THE MUSEUM OF THE CHEROKEE INDIAN IN CHEROKEE, NC & BRING BACK A RECEIPT TO SHOW ATTENDANCE AND STAPLE TO A 2 PAGE DOUBLE-SPACED REPORT ON WHAT YOU LEARNED THERE**

Tues. Nov. 17: The Anthropology of Global Climate Change

- 1) Roncoli, Crane, and Orlove. 2009. "Fielding Climate Change in Cultural Anthropology"

2) **Townsend Book**: Chpt. 8, “The Climate is Changing”

- **MUSEUM OF CHEROKEE INDIAN 2-PAGE REPORT DUE!**

Thurs. Nov. 19: The Anthropology of Global Climate Change

1) **Veteto and Carlson. 2014.** “Climate Change and Apple Diversity: Local Perceptions from Appalachia”

2) **Lockyer. 2010.** “Community-Initiated Carbon Reduction & Climate Change Action: From Ecovillages to Transition Towns”

NOVEMBER 24-27, THANKSGIVING, NO CLASS!!!!

Tues. Dec. 1: Alternative Political Ecologies and the Sustainable Future

1) **Lockyer and Veteto. 2013.** “Environmental Anthropology Engaging Ecotopia: An Introduction”

2) **Berg. 2013.** “Growing a Life-Place Politics”

Thurs. Dec. 3

TEST # 4

FINAL RESEARCH PAPERS DUE BY MONDAY, DECEMBER 7th, 12:00 NOON, ANTHROPOLOGY DEPT FRONT DESK, McKee 101!

HAVE A GREAT WINTER BREAK!!!!

Fall 2015
Forsyth 314
TR 9:30 – 10:45 pm

*How near to good is what is wild.
There is the marrow of nature—there her
divine liquors—that is the wine I love.*

-Henry David Thoreau

Instructor: Dr. David Henderson
232 Stillwell Building
dghenderson@wcu.edu
828-277-2939

Office Hours: Monday 10:15 – 11:45 AM and Tuesday 2:00 – 3:30 PM. Also available by appointment or drop-in.

Description: This course investigates how the American conception of “wilderness” has evolved and the consequences of this changing idea for nature preservation and for the scientific and aesthetic appreciation of the wild.

Course Materials

- Sketch Book or Journal.
- Required texts:
 - *Wilderness and the American Mind*, Roderick Nash, 4th ed. (Yale 2001).
 - *American Wilderness: A New History*, ed. Michael Lewis (Oxford 2007).
 - *Great Smokey Mountains Trees & Wildflowers: A Folding Pocket Guide to Familiar Species* (Pocket Naturalist Guide Series).
- Recommended further resources in the library:
 - *The Idea of Wilderness*, Max Oelschlaeger (Yale 1993).
 - *Great New Wilderness Debate*, eds. Callicott and Nelson (Georgia 1998).
 - *The Wilderness Debate Rages On*, eds. Callicott and Nelson (Georgia 2008).
 - *Keeping a Nature Journal*, Clare Walker Leslie and Charles Roth (Storey, 2003).

Grading Point System:

<u>Assignment</u>	<u>Points</u>
Most Interesting Posts	15
Nature Journal	20
Field Experience	20
Midterm Essay Exam	20
Final Essay Exam	25
Perfect Attendance	+3



ASSIGNMENT DETAILS

- **Most Interesting Posts:** This is a reading intensive course, and you really need to keep up with the reading. If you don't, you rob not only yourself but also your fellow classmates of the full experience, by impoverishing class discussion. So before every class, you will make a post on a Blackboard discussion thread, reporting what you found to be the “Most Interesting Idea” in the reading. Your post should include a quotation from the text and a sentence or two from you in comment. You can miss two of these before losing points.
- **Nature Journal:** Aesthetic and scientific appreciation of wild nature figures prominently in this course. In light of this, you will keep a nature journal to help cultivate and discipline your awareness. In this journal, you will record detailed observations and reflections and make a number of sketches from wild nature. This means you will need to make frequent forays into wild or semi-wild places (WCU trail ok; UC lawn not so much). Drawing from nature disciplines the attention and develops a greater sensitivity to nature's aesthetic properties. The journal will also engage you in the practice of natural history, in the mode of William Bartram and Henry Thoreau.

You will need to make at least ten substantive entries, half of them before the class following fall break, when I will do a progress check. Each entry should include at least the following: 1) date and location information, 2) written description of your observations and reflections, 3) drawing(s) of the species, natural object or landscape you are considering, indicating the important features, and 4) scientific interpretation, such as species or mineral identification

(as well as you can) or technical description of landscape processes. The scientific interpretation will often be added later, when you come back in from the field and try to identify things, probably using library resources.

Grading will be largely based on good faith effort. I'm more interested in the process than in whether you have made great art, although some students have made some great art. Half the grade will be for your care of observation and scientific interpretation, and half will be for the drawings. Examples will be given in class, and a helpful guide to nature journaling will be put on course reserve in the library. Art supplies are available at the bookstore. I won't dictate what particular supplies you use, but get a good sketchbook, not just notebook paper. I like the 5½" x 8" hardbound ones, as they are easy to take in a backpack. They run \$6 at the bookstore.

- **Field Experience:** Many of the writings and statutes regarding wilderness place a high value on wilderness experience. Your assignment is to make a significant foray into a wilderness area (designated or otherwise) and write a blog post on Blackboard (at least 1000 words) about your experience. It should be a wilderness experience *for you*, so scale the challenge relative to your self and your abilities. This could range from a long day hike to a several day primitive camp. I will lead one trip, dates to be announced, so you have the option to come with me. Please plan together and go with a friend or a group—if you really want to do a solo trip, please consult with me about your plan in detail. Make use of Basecamp Cullowhee for advice, supplies and even guided trips. The *Whee Adventure Guides* (<http://www.wcu.edu/30018.asp>) may also be helpful to you. BE RESPONSIBLE! Purify your water, keep warm and dry, and don't put food in your tent. Any field experiences must be completed and posted before the last class meeting.

The blog post on Blackboard must include at least, but is not limited to: 1) Details about where you went, when and with whom; 2) Consideration of the wilderness character of where you went, or the lack thereof; 3) Consideration of the aesthetic qualities and scientific interest of the wilderness or your experience; and 4) Reflection on connections between your experience and the ideas, people or events discussed in class.

- **Essay Exams:** There will be two in-class, essay exams. The questions are posted on Blackboard, for you to prepare. But the exams will be closed book and without notes. Bring pens and plenty of paper.

Aims and Objectives:

- Aims and Specific Learning Objectives:
 - Trace the development of the American conception of *wilderness*.
 - Familiarity with the major figures and texts of the wilderness preservation tradition.
 - Situate American attitudes toward wilderness in their broader historical context.
 - Compare and contrast American views of nature with those of other times and cultures.
 - Connect developments in science and art with attitudes toward nature preservation.
 - Interpret the Wilderness Act.
 - Evaluate arguments for and against the preservation of wilderness.
 - Enrich personal appreciation of wild nature.
- This course is a Liberal Studies Perspectives course. The primary goals of the Perspectives courses are:
 - To promote love of learning and to cultivate an active interest in the Liberal Studies;
 - To build on the Core's foundation through practice and refinement of areas of academic emphasis;
 - To provide students with a broadened world view and knowledge base;
 - To provide experiences in the arts, humanities, and social sciences from which connections between disciplines can be revealed;
 - To provide an introduction to the challenges of living in a global society;
 - To create opportunities for reflection on values, and for discussing differences in values in a critical yet tolerant manner;
 - To afford opportunities to make career or disciplinary choices.
- This course satisfies the P4 Perspective requirement of the Liberal Studies Program. In it, you will be exposed to landmark texts that embody the traditional Western heritage of humanity's attempt to understand the human condition and that engage you in the exploration of the significance of human modes of being, thought, and values in your life. As in all Liberal Studies Perspective offerings, this course will emphasize reading, writing, and the use of information, as well as one or more of the following: critical analysis, oral communication, service learning, moral reflection, and cultural diversity.

Course Policies

- I desire to make the classroom a safe place to examine ideas and inquire freely for the truth. So please be courteous and respectful of your fellow students, and I shall do the same for you.
- Attendance is expected. Perfect attendance will be rewarded with 3 extra credit points on your total grade. There will be no penalties for the first two absences. For every absence over two, I will subtract 3 points from your final grade. Up to three absences may be expunged by writing a 500-700 word summary of the readings that were assigned for the day of each absence. (One summary per day not per reading.) If you have absences but expunge them all, then you will get 1 extra credit point on your final grade. Summaries should be turned in by email.
- Electronic devices: Laptops and tablets may be used for taking notes. Please refrain from emailing, texting, browsing, facebooking and the like during class on any device. It distracts those around you and dampens class discussion. If you need to respond to a critical communication, please step out of class and return when you are able.
- Blackboard: This class will make use of the Blackboard LMS. You will need to use it to access course materials and to turn in assignments. There are tutorials available online to help you become familiar with the software. *Save all your work somewhere else also!* Sometimes Blackboard loses things.
- In the event of inclement weather, please check your email and Blackboard. I may hold class online.
- Accommodations for Students with Disabilities: Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities. Students who require reasonable accommodations must identify themselves as having a disability and provide current diagnostic documentation to Disability Services. All information is confidential. Please contact Disability Services for more information at (828) 227-2716 or 144 Killian Annex. You can also visit the office's website: <http://www.wcu.edu/12789.asp>
- **Academic Honesty Policy**
Western Carolina University, as a community of scholarship, is also a community of honor. Faculty, staff, administrators, and students work together to achieve the highest standards of honesty and integrity. Academic dishonesty is a serious offense at Western Carolina University because it threatens the quality of scholarship and defrauds those who depend on knowledge and integrity. Academic dishonesty includes:
 - a. **Cheating**—Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise.
 - b. **Fabrication**—Intentional falsification of information or citation in an academic exercise.
 - c. **Plagiarism**—Intentionally or knowingly representing the words or ideas of someone else as one's own in an academic exercise.
 - d. **Facilitation of Academic Dishonesty**—Intentionally or knowingly helping or attempting to help someone else to commit an act of academic dishonesty, such as knowingly allowing another to copy information during an examination or other academic exercise.

WCU instructors reserve the right to use plagiarism prevention software (such as SafeAssignment.com) as well as Google, Yahoo, and/or other Internet search engines to determine whether or not student papers have been plagiarized. With plagiarism prevention software, instructors may upload student papers into a searchable database or teach students how to upload their own work as part of the course requirements.

Instructors have the right to determine the appropriate sanction or sanctions for academic dishonesty within their courses up to and including a final grade of "F" in the course. Within 5 calendar days of the event the instructor will inform his/her department head, and the Associate Dean of the Graduate School when the student is a graduate student, in writing of the academic dishonesty charge and sanction. Further information may be found in the Student Handbook.

Grade Scale:

<u>Grade</u>	<u>Percent</u>	<u>Interpretation</u>	<u>Quality Points per Semester Hour</u>	<u>Essay Rubric</u>	
A+	100 +	Distinguished	4.0		<i>ideas</i> <i>presentation</i>
A	93-100	Excellent	4.0	A:	insightful articulate & professional
A-	90-92		3.67		
B+	88-89		3.33		
B	83-87	Good	3.0	B:	understanding clear,
B-	80-82		2.67		only minor errors
C+	78-79		2.33		
C	73-77	Satisfactory	2.0	C:	significant error in either idea or presentation
C-	70-72		1.67		
D+	68-69		1.33		
D	63-67	Poor	1.0	D:	substantially erroneous or fails to meet assignment criteria
D-	60-62		.67		
F	0-59	Failure	0		

SCHEDULE*AW: American Wilderness—A New History**Nash: Wilderness & the American Mind***Week 1: August 18 & 20**

- Tuesday – Introductions and Syllabus
- Thursday – Old World Opinion
 - Nash 8-22: Chpt 1 “Old World Roots of Opinion”
 - *AW* 3-13: Chpt 1 “American Wilderness”

Week 2: August 25 & 27

- Tuesday – Pre-Columbian
 - *AW* 15-33: Chpt 2 “First Contact”
- Thursday – Colonial Period
 - Nash 23-43: Chpt 2 “A Wilderness Condition”
 - *Blackboard*: Edwards selection

Week 3: September 1 & 3

- Tuesday – Agrarianism
 - *AW* 55-72: Chpt 4 “Farm Against Forest”
- Thursday – Romanticism
 - Nash 44-66: Chpt 3 “The Romantic Wilderness”
 - *Blackboard*: Emerson selection

Week 4: September 8 & 10

- Tuesday – Landscape Painting
 - Nash 67-83: Chpt 4 “The *American Wilderness*”
 - *AW* 91-112: Chpt 6 “The Fate of Wilderness in American Landscape Art”
- Thursday – Natural History
 - *Blackboard*: “Audubon”
 - *Blackboard*: “Bartram”



Week 5: September 15 & 17

- Tuesday – Henry David Thoreau
 - *AW* 73-90: Chpt 5 “Natural History, Romanticism and Thoreau”
 - *Blackboard*: Thoreau selections
- Thursday – Preservation
 - Nash 96-121: Chpts 6 “Preserve the Wilderness!” & 7 “Wilderness Preserved”

Week 6: September 22 & 24

- Tuesday – John Muir
 - Nash 122-140: Chpt 8 “John Muir: Publicizer”
 - *Blackboard*: Muir selections
- Thursday – Frederick Olmsted and Gifford Pinchot
 - *Blackboard*: “Olmsted Legacy”
 - *AW* 131-147: Chpt 8 “A Sylvan Prospect”

Week 7: September 29 & October 1

- Tuesday – Wilderness Cult and Rural Backlash
 - Nash 141-160: Chpt 9 “The Wilderness Cult”
 - *AW* 113-130: Chpt 7 “Wilderness Parks and their Discontents”
- Thursday – **Midterm Essay Exam**

Week 8: October 6 & 8

- Tuesday – Hetch-Hetchy
 - Nash 161-181: Chpt 10 “Hetch Hetchy”
 - *Blackboard*: *Hetch Hetchy Op Eds*
 - *AW* 167-86: Chpt 10 “Putting Wilderness in Context”
- Thursday – Aldo Leopold
 - Nash 182-199: Chpt 11 “Aldo Leopold: Prophet”
 - *Blackboard*: Leopold selections

FALL BREAK October 12-16

- Watch “*Green Fire*,” the Leopold movie on *Blackboard*

Week 9: October 20 & 22

- Tuesday – The Wilderness Act
 - Nash 200-237: Chpt 12 “Decisions for Permanence”
 - *Blackboard*: Marshall “Problem of Wilderness”
 - *Blackboard*: Olson “Why Wilderness?”
 - **Nature Journal Progress Check**
- Thursday – The Wilderness Act
 - *Blackboard*: Leopold Report
 - *Blackboard*: Wilderness Act

Week 10: October 29

- Tuesday – Advising Day
- Thursday – Alaska and Irony of Victory
 - Nash 272-341: Chpts 14 “Alaska” & 15 “The Irony of Victory”

Week 11: November 3 & 5

- Tuesday – Leave No Trace ethics
 - *Blackboard*: Turner, “Woodcraft to Leave No Trace”
- Thursday – Wilderness Philosophy and Poesy
 - Nash 238-271: Chpt 13 “Toward a Philosophy of Wilderness”
 - *Blackboard*: Poetry Selection



Week 12: November 10 & 12

- Tuesday –International Perspective
 - *Blackboard*: Guha “Third World Critique”
 - *AW* 223-238: Chpt 13 “Creating Wild Places form Domesticated Landscapes”
 - *Blackboard*: “Tourism is a Curse to Us” (Guardian)
- Thursday – Minority Voices
 - *Blackboard*: Bear, “Indian Wisdom”
 - *Blackboard*: Smith, “What is Africa to me?”
 - *AW* 149-166: Chpt 9 “Gender and Wilderness Conservation”

Week 13: November 17 & 19

- Tuesday – Critics
 - *Blackboard*: Callicott, “The Wilderness Idea Revisited”
 - *Blackboard*: Cronon, “The Trouble with Wilderness”
- Thursday – Wilderness Politics
 - *Blackboard*: Foreman, “Wilderness Areas for Real”
 - *AW* 243-61: Chpt 14 “Politics of Modern Wilderness”

Week 14: November 24

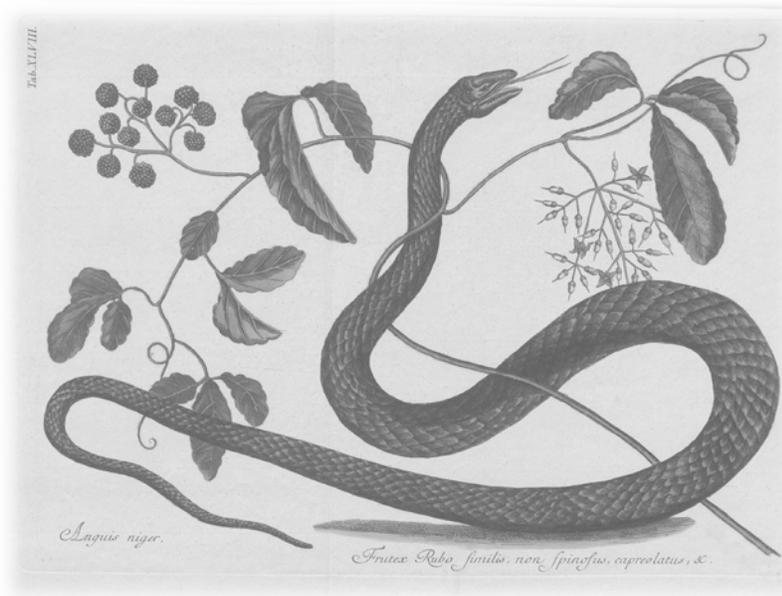
- Tuesday – Replies
 - *Blackboard*: Friskics, “The Twofold Myth of Pristine Wilderness”
 - *Blackboard*: Plumwood, “Wilderness Skepticism and Wilderness Dualism”
- **THANKSGIVING BREAK, NOVEMBER 25-27**

Week 15: December 1 & 3

- Tuesday – Biodiversity and Conservation Biology
 - *AW* 205-22: Chpt 12 “Wilderness and Conservation Science”
- Thursday – Management and Restoration
 - *Blackboard*: Noss, “Wilderness Recovery”
 - *Blackboard*: Henderson, “On the Possibility of Managing for Wilderness”
 - **Nature Journal Due**
 - **Field Experience Blog Post Due**

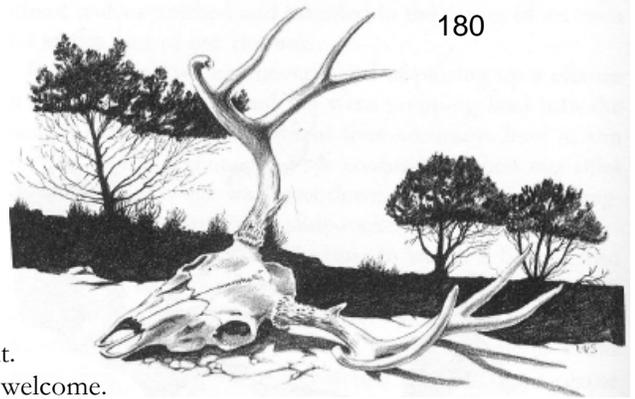
Final Exam:

Essay Exam. Study with the questions ahead of time. Bring pens and paper.



Spring 2015
 TR 9:30-10:45 AM, Belk 365

Instructor: Dr. David Henderson
 232 Stillwell Building
dghenderson@wcu.edu
 828-227-2939



Office Hours: Tuesday 2:00-3:30, Thursday 1:00-2:30 and by appointment.
 Scheduling visits ahead of time is helpful, but drop-ins are welcome.

Description: Environmental ethics concerns how humans ought to relate to nature. What is just and right in our use of the environment, both as it impacts present and future people and as it concerns the rest of creation? Traditions and approaches both ancient and modern will be considered. Guiding contemporary concepts, such as sustainability and biodiversity will be critically assessed, and the ethical dimensions of current environmental problems, such as mountaintop removal and population growth, will be explored. (P1)

Texts:

- *Earthcare: An Anthology in Environmental Ethics.* eds. David Clowney & Patricia Mosto. (Rowman & Littlefield, 2009). [rental]
- *Foundations of Environmental Ethics.* Eugene Hargrove. (Environmental Ethics Books, 1989). [purchase]
- Additional readings shall be made available through Blackboard.

Assignment and Grade Breakdown:

- **Grade Components**

○ Participation	20%	
○ Term Paper		60% (all combined)
▪ Topic Choice:	5%	
▪ Abstract & Annotated Bibliography:	15%	
▪ Fellow and Peer-Review Draft:	10%	
▪ Final Paper:	30%	
○ Field Trip / Service Learning:		20%
- **Participation:** Be here, awake and alert, with all your reading done. This percentage also includes any short exercises given along the way, such as the footprint quiz. Each absence after your first will lose 5 points, up to the twenty. Up to three absences (including excused) may be expunged by writing a 500-word summary of the main ideas from the readings for the missed day. Please turn in summaries within two weeks. Perfect attendance will earn 5 bonus points on your final grade. Missing the final's week meeting is a double absence and may only be excused by special arrangement.
- **Term Paper:** A 2500 word (~10 pages), double-spaced paper will be written on a topic relevant to the course. This will be completed and graded in a few stages, with the help of the Writing Fellows program. You will need to meet individually with a Writing Fellow twice along the way, for the abstract and bibliography first and then for the draft. The topic is your choice, as long as it clearly relates to environmental ethics. Present the issue clearly, including its ethical or philosophical dimensions. Argue for a substantive conclusion. Cite scholarly sources with [Chicago style footnotes](#). For an example of this format, see the journal of [Environmental Ethics](#), available electronically through the library.
 - The Topic: Pick a topic within environmental ethics. Be as precise as you can, but expect it to change and narrow as you develop your idea. I will provide some possibilities, and you can bounce ideas off me anytime.
 - The Abstract and Annotated Bibliography: The abstract should be 150+ words presenting your topic and what you intend to say about it. The bibliography should include and describe at least 10 high quality, potential sources for your paper. Each citation should have an annotation of at least 75 words, describing the source and how you will use it. We will discuss this in class in more depth. This is due to your Writing Fellow two weeks before it is due to me.

not intended to be “rough.” You will first get feedback from your Writing Fellow and then from each other. At the peer workshop everyone should bring two hard copies their paper. You will read and give feedback on two of your peers’ papers. Submit an electronic version of your draft on Blackboard at the same time it is due to your Writing Fellow.

- The Final Paper. Your final product should make use of the feedback you received on the draft. Learning to edit and rewrite is a major component of learning to write well.
- **Field Trip or Service Learning:** You must either participate in the class field trip or complete a service-learning project (must be related to course themes.)

Field Trip Option: I wish I could require you to all go on the field trip, but space is limited and some of you are bound to have conflicting obligations. I will lead a trip to Kayford Mt in West Virginia, where we will see mountaintop removal mining first hand. I will provide transportation and we usually camp, so the costs should be minimal. After the trip you will need to post a reflection blog of at least 300 words, describing what you saw and how it relates to the class material.

Service Learning Option: In consultation with me and the Center for Service Learning, identify an opportunity to serve in connection with environmental values. The actual service activity must total at least **7 hours**. You will also need to write a blog post reflecting on the activity, it’s effectiveness and what you learned (300+ words). Some ideas and opportunities for service-learning activities will be discussed in class.

- **Extra Credit Opportunities:** There will be various events over the semester which will merit extra credit for attendance or participation. I will mention some, but you can suggest others as well. For most events, such as films or lectures, 1 point of extra credit is available to those who participate and write a 100+ word blog post about these events.

Aims and Objectives:

- Specific Course Learning Objectives:
 - Appreciate the ethical dimensions of environmental problems
 - Discern the implications of ethical theory for environmental practice
 - Evaluate social and economic policy in terms of its ecological consequences
 - Critically assess one’s own environmental impact
 - Cultivate a moral sensibility toward the biotic community
- Selected Liberal Studies learning goals
 - Demonstrate the ability to locate, analyze, synthesize, and evaluate information;
 - Demonstrate the ability to read with comprehension, and to write and speak clearly, coherently, and effectively as well as to adapt modes of communication appropriate to an audience;
 - Demonstrate the ability to critically analyze arguments;
 - Demonstrate the ability to recognize behaviors and define choices that affect lifelong well-being;
 - Demonstrate an understanding of
 - Past human experiences and ability to relate them to the present;
 - Scientific concepts and methods as well as contemporary issues in science and technology;
 - Cultural heritage through its expressions of wisdom, literature and art and their roles in the process of self and social understanding.

Expectations of Students and Course Policies

- I desire to make the classroom a safe place to examine ideas and inquire freely for the truth. So please be courteous and respectful of your fellow students, even when you disagree with them, and I shall do the same for you.
- All correspondence with me should be to my university email address (dghenderson@wcu.edu), with “PAR 333” in the subject line, and written in an appropriate format and tone.
- Late work will be accepted for 70% credit. You must attach a written explanation of why it is late. You should do this in the comment section for Blackboard submissions.
- Cell phones should be set to silent. Should you need to take a call, please step out quietly before doing so. Do not wear headphones during class. Do not use social media or media entertainment during class. If I find you using facebook or shopping on Amazon, I will count you absent.
- Blackboard: This class will make use of the Blackboard LMS. You will need to use it to access course materials and to turn in assignments. There are tutorials available online to help you become familiar with the software.

- **Environmental Science Program Self-Study (Appendix B)** Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to Disability Services. All information is confidential. Please contact the Office of Disability Services for more information at (828) 227-3886 or lalexis@wcu.edu You may also visit the office's website: disability.wcu.edu
- **Academic Honesty Policy:** Western Carolina University, as a community of scholarship, is also a community of honor. Faculty, staff, administrators, and students work together to achieve the highest standards of honesty and integrity. Academic dishonesty is a serious offense at Western Carolina University because it threatens the quality of scholarship and defrauds those who depend on knowledge and integrity. Further information may be found in the Student Handbook.
WCU instructors reserve the right to use plagiarism prevention software (such as SafeAssignment.com) as well as Google, Yahoo, and/or other Internet search engines to determine whether or not student papers have been plagiarized. With plagiarism prevention software, instructors may upload student papers into a searchable database or teach students how to upload their own work as part of the course requirements.

Grading and Quality Point System

Grade	Percent	Interpretation	Quality Points	per Semester Hour
A+	100	Distinguished	4.0	I Incomplete
A	93-100	Excellent	4.0	IP In Progress
A-	90-92		3.67	S Satisfactory
B+	88-89		3.33	U Unsatisfactory
B	83-87	Good	3.0	W Withdrawal
B-	80-82		2.67	AU Audit
C+	78-79		2.33	NC No Credit
C	73-77	Satisfactory	2.0	
C-	70-72		1.67	
D+	68-69		1.33	
D	63-67	Poor	1.0	
D-	60-62		.67	
F	0-59	Failure	0	

SCHEDULE

Week 1: Jan 13 & 15

- Tuesday – Introductions and Syllabus
- Thursday – What is Nature?
 - *Leopold, "Mountain," (Blackboard); Budiansky, "Footprints" (Blackboard)*

Week 2: Jan 20 & 22

- Tuesday – What is Ethics?
 - *Earthcare pp. 3-23*
- Thursday – Abrahamic Traditions
 - *Earthcare pp. 39-46, 63-71, 82-92*

Week 3: Jan 27 & 29

- Tuesday – Eastern and Native American Traditions
 - *Earthcare pp. 93-120*
- Thursday – Western Philosophical Traditions
 - *Foundations chpt 1; Earthcare 46-53*

- Tuesday – Land Use and Ownership
 - *Foundations chpt 2*
- Thursday – Aesthetic and Scientific Preservation
 - *Foundations chpt 3*
 - **Topic submission**

Week 5: Feb 10 & 12

- Tuesday – Wildlife Protection
 - *Foundations chpt 4*
- Thursday – Animals and Near Persons
 - *Earthcare 559-83, 591-605*

Week 6: Feb 17 & 19

- Tuesday – Where does the value lie?
 - *“Treating the Dirt” (Blackboard); “Land Ethic,” Earthcare pp. 417-428*
- Thursday – Deep Ecology
 - *Earthcare pp. 193-216, 239-41*

Week 7: Feb 24 & 26

- Tuesday – Advising Day
- Thursday – Just don’t touch it?
 - *Foundations chpt 5*
 - **Abstract and bibliography to writing fellow**

Week 8: Mar 3 & 5

- Tuesday – Regional Issues
 - *Montrie, “Strip Mining,” and Newfont, “Clearcutting” (Blackboard)*
- Thursday – **No Class**, Watch “Burning the Future” on own

Spring Break

Week 9: Mar 17 & 19

- Tuesday – Ecofeminism
 - *Earthcare chpt 6, pp. 243-82*
- Thursday – Environmental Justice
 - *Earthcare chpt 7, pp. 283-321*
 - **Abstract and bibliography to me**

Week 10: Mar 24 & 26

- Tuesday – Environmental Pragmatism
 - *Pragmatism (Blackboard)*
- Thursday – Ecological Economics
 - *Hardin, Earthcare pp. 429-38; Daly, Earthcare pp. 660-65*

Week 11: Mar 31

- Tuesday – Sustainability
 - *Cobb (Blackboard); Earthcare pp. 651-59, 694-705*

More Break

Week 12: April 7 & 9

- Tuesday – Biodiversity
 - *Earthcare pp. 513-43*
- Thursday – Population and Consumption
 - *Population (Blackboard); Sagoff, Earthcare pp. 673-685; Footprint Exercise*
 - **Draft due to Writing Fellow**

- Tuesday – Waste
 - *Earthcare pp. 363-78, 396-408*
- Thursday – Air and Climate Ethics
 - *Earthcare chpt 8, pp. 325-62*

Week 14: April 21 & 23

- Tuesday – Agricultural Ethics
 - *Agriculture (Blackboard); Earthcare pp. 459-62*
- Thursday – **Peer Workshop**
 - **Bring two hard copies of your complete draft**

Week 15: April 28 & 30

- Tuesday – Ecological Restoration
 - *Elliot, Earthcare pp. 439-449; Light “Culture of Nature” (Blackboard)*
- Thursday – Politics and Activism
 - *MLK “Letter” (Blackboard); Environmental Disobedience (Blackboard)*
 - **Final Paper Due**

Final Meeting: Wednesday, May 6th, 12:00-2:30 PM

PSC 320
International Environmental Politics (IEP)
Spring 2015
MWF 11:15 am – 12:05 pm
McKee 116

Instructor – Dr. Jennifer Schiff

Office – Stillwell 350

Office Hours –

Mondays and Wednesdays, 12:30-2:30 pm,
or by appointment

Email – jsschiff@wcu.edu

Phone – 828.227.3860

COURSE GOALS AND OBJECTIVES:

This course examines the politics of international governance and cooperation from the perspective of the global environment. Throughout the semester, students will examine comparative policy efforts on a collection of environmental concerns that distress countries across the globe, including issues of population growth, food and water scarcity, environmental refugees, global climate change, environmental injustice, the rise of global consumption rates, energy resource degradation, and biodiversity loss.

By the end of the semester, students will be able to answer such questions as, how does the international community address environmental problems as a collective entity? Is global environmental governance necessary? Is it effective? What roles are played by international organizations in the creation and implementation of environmental policy, and are there any alternative approaches for solving the world's environmental problems? Ultimately, this course will enable students to critically evaluate the effectiveness of contemporary global environmental policy in addressing the most pressing ecological issues of the 21st century.

This course will allow students to:

- ❖ Further develop their critical thinking, research, written, and oral communication skills,
- ❖ Understand the origins of a broad array of contemporary environmental concerns,
- ❖ Familiarize themselves with the major theoretical perspectives used in the study of global environmental politics,
- ❖ Understand the ways in which global governing institutions attempt to solve the world's most pressing environmental problems,
- ❖ Evaluate the effectiveness of international organizations in fostering cooperation in the environmental policy arena,
- ❖ Prepare for more advanced study in international relations.

COURSE MATERIALS:

The textbook for this course is:

Pamela Chasek, David Downie, and Janet Welsh Brown. *Global Environmental Politics* 6th edition, Westview Press, 2014. ISBN: 978-08133-4896-4

This book is available via rental from the bookstore. Other supplemental readings will be made available through Blackboard during the semester.

COURSE POLICIES:

Class Attendance: Your attendance in class is crucial because we cover essential material for your exams and research projects every day. Please note that I will take attendance at the beginning of each class period. Your attendance (or lack thereof) will count toward your participation grade in the class.

IMPORTANT!!!! – Please keep in mind that all class discussions are fair game for exams. If you are absent, you are still responsible for any discussion or lecture material you may have missed. **This is primarily a notes-based class, and I often cover material that is not in the textbook, so your regular attendance and daily note-taking will prove VERY IMPORTANT when it comes time to complete your assignments and exams.**

Late Policy: I will also deduct participation points if you are **consistently** late to class. If you are late one or two times, that's not a major problem, but if you are late for class day after day, you will see a precipitous decline in your participation points. The moral of the story is --- please come to class on time!

Electronic Devices: Please turn off all electronic devices (cell phones, iPods, etc...) before class out of respect for me and for your fellow students. I don't mind if you use laptops to take notes during class, but if you are using your laptop for something other than note-taking and it proves distracting to the students sitting behind you, I will ask you to turn off the laptop and refrain from using it for the rest of the semester.

Late Assignments/Exams: Warning!! I am a stickler for deadlines, so there will be penalties when your work is late. I will accept late work up to 48 hours (two days) after an assignment is due, but I will deduct 10 points off of your assignment grade as a late penalty. The 48 hours begins at the end of class on the day the assignment was due. After that 48-hour period is over, I will **not** accept your late assignment, and you will receive a zero.

I am willing to grant extensions on assignments under certain circumstances, but you must come and speak to me **BEFORE** the assignment is due. Do not approach me after the due date and ask for an extension because I will not grant you one. **Communication is key here – please contact me BEFORE you have issues turning in an assignment, not after.**

As for exams, make-up exams will only be given in extreme circumstances. If you must miss an exam for ANY reason (including illness), you need to notify me *in advance* of the exam, and you

must provide documentation describing the reason for your absence. If these two conditions are not met, no make-up exam will be granted.

Accommodations for Students with Disabilities: Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities. Students who require reasonable accommodations must identify themselves as having a disability and provide current diagnostic documentation to Disability Services. All information is confidential. Please contact Disability Services for more information at (828) 227-2716 or 144 Killian Annex. You can also visit the office's website: <http://www.wcu.edu/12789.asp>.

Academic Integrity: Western Carolina University, as a community of scholarship, is also a community of honor. Faculty, staff, administrators, and students work together to achieve the highest standards of honesty and integrity. Academic dishonesty is a serious offense at Western Carolina University because it threatens the quality of scholarship and defrauds those who depend on knowledge and integrity. Academic dishonesty includes:

- a. **Cheating**—Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise.
- b. **Fabrication**—Intentional falsification of information or citation in an academic exercise.
- c. **Plagiarism**—Intentionally or knowingly representing the words or ideas of someone else as one's own in an academic exercise.
- d. **Facilitation of Academic Dishonesty**—Intentionally or knowingly helping or attempting to help someone else to commit an act of academic dishonesty, such as knowingly allowing another to copy information during an examination or other academic exercise.

As the instructor, I reserve the right to determine the appropriate sanction or sanctions for academic dishonesty up to and including a final grade of "F" in the course. I will also notify the head of my department in writing of the academic dishonesty charge and sanction within five calendar days of the event. Please see the Student Handbook for more information about the process and procedures involved in reporting instances of academic dishonesty.

In this class, examples of academic dishonesty may include, but are not limited to,

- failing to properly cite direct quotes or paraphrased material,
- using an unauthorized aid on an assignment/exam,
- passing off the work of another individual as your own.

Staplers and Electronic Submission of Assignments: Staplers are our friend...embrace them! I **WILL NOT** accept unstapled work, so you may want to invest in a mini-stapler if you don't already own one.

Since I love staplers so much, this means that I WILL NOT accept written assignments online, unless otherwise instructed. Instead, you must turn in a hard copy of each written assignment – that way, we don't have any confusion regarding whether an assignment was submitted on time (or whether your email wasn't working/or my email wasn't working/or we don't have compatible word processing programs, whether Blackboard was down, etc.).

Blackboard and Email: I expect you to check Blackboard and your WCU email account on a regular basis. When I send out a class announcement via email, it is **NOT** acceptable to tell me that the reason you weren't aware of the announcement is because you don't check your email.

I encourage you to email me with any questions or issues you may have, and be aware that each time you email me about a specific issue, I will send you a confirmation email. If you haven't received a confirmation from me within 24 hours of your original email, please assume that I didn't receive it, and email me again or contact me in person.

Grading: Your final grade will be determined according to the following scale: 100%/A+, 93-99/A, 90-92/A-, 87-89/B+, 84-86/B, 80-83/B-, 77-79/C+, 74-76/C, 70-73/C-, 67-69/D+, 64-66/D, 60-63/D-, and 59 and below/F.

Select extra credit opportunities will be available throughout the semester, and I will announce those opportunities in class. No student will be able to earn more than five extra credit points a semester.

Do not expect to negotiate or bargain for a better grade at the end of the semester. Whatever grade you have earned at the end of the semester is the grade you will receive in the class.

CLASS ASSIGNMENTS:

1. **Attendance/Participation (10%)** – During each class, I encourage you to ask questions and to comment on the material we are covering. Part of every person's learning process is being able to intelligently discuss issues with their peers, and I expect this of all of you. As such, attendance and participation are closely connected. Obviously, if you don't attend class, you cannot participate. It's really that simple.

Thus, in this class, your regular attendance is very important to me. As a general rule, you can miss up to three classes before absences start to affect your attendance grade, but once you reach that limit, you will incur a significant deduction with each additional absence beyond three. **Please note that because you have the opportunity to miss up to three classes without penalty, the concept of excused v. unexcused absences doesn't exist in this class. Those three "freebie" absences are meant to cover everything – sickness, school trips, oversleeping, etc., so use them wisely.**

2. **Three Exams (45% total)** – This class will have three separate exams covering material from class lectures and the reading. The exams may consist of any combination of identification, short-answer, and long-answer essay questions and will NOT require you to purchase a blue book. The dates for our class exams are –

- 1) **Friday, February 13 (15%)**
- 2) **Monday, March 30 (15%)**
- 3) **Monday, May 4 from 3:00 pm until 5:30 pm – during our assigned final exam time (15%)**

3. **Country Assignments** – This class takes a comparative approach to many global environmental policy issues, and your assignments will follow the same pattern. In this spirit, each student will choose a country at the beginning of the semester (from a list that I provide) and will then be responsible for representing the viewpoint of that same country throughout the semester – for example, sometimes the exam questions will ask you to provide your country's perspective on various environmental policy issues, or I may call on you in class and ask how your country might approach a specific environmental problem.

You will have two specific tasks related to your country assignments –

A. Position Paper (20%) -- We will spend approximately 1.5 weeks of the semester trying to create a global water policy treaty (Model UN-style) as a class. For this exercise, each student will represent their assigned country at the Cullowhee Conference, a simulation designed to develop a treaty addressing the problems of water scarcity across the globe. During the conference, students will take the position of their assigned state in trying to solve the issue by debating and collaborating with other states. To prepare for the conference, each student will write a position paper, due on **Friday, March 6** and that paper will outline your country's water policy position.

Position papers must follow a specified format (this will be posted on Blackboard). Generally speaking, however, each paper should be no less than five pages, double-spaced. Additionally, each will involve research on your part, as you will need to write the paper from the perspective of your assigned country and address 1) what kinds of water provision issues your country faces, 2) what measures your country is already taking to address its water issues (if any), and 3) three suggestions your country proposes for solving the problem from a **global perspective**. You need to be as specific as possible with these position papers. When discussing a country's current policies, detail any existing laws by name, and in terms of solutions, don't offer vague and generalized solutions – specificity is always a better approach.

B. Current Event Presentation (10%) -- Starting on **Wednesday, January 21**, one student on each class day will be responsible for selecting a news article detailing a current environmentally-related event **in their assigned country** and describing that event/article to the class. You don't need any slides or images for this presentation; instead, think of it as a mini-lecture. You'll stand up in front of the class for approximately five minutes and tell us a story of a current event. Do not read the article verbatim in front of the class – just summarize its contents, and put it into the context of the overall themes and theories we will discuss throughout the semester. I will post a sign-up sheet for the article presentations within the first few days of class, and each student will be responsible for presenting one article during the course of the semester.

4. Journal Article Review (15%) – Part of the learning process is to prove that you can comprehend and analyze complex research, and that type of critical thinking is what this assignment is all about. You must choose ONE (1) **RESEARCH ARTICLE** (dated any time from 2012 to the present) from the academic journal *Global Environmental Politics*, and identify and critique the argument presented in the article (instructions for accessing this journal on-line are available on Blackboard under Course Documents). Your assignment should answer the following questions: a) What is the primary argument presented by the article? What point are the researchers trying to make? b) What evidence do they use to persuade you of their argument's validity? c) Do you find their argument convincing? Why or why not? Are some parts of their analysis more convincing than others? Identify any problems or holes you see in their overall argument, and don't forget to praise them for what they got right. In essence, offer your own critique of the article's contents.

This assignment should be between three and five pages, double-spaced, and you must include a complete citation for the article you choose as a **header** on your assignment. Remember, your analysis is academic in nature, so **DO NOT** use first or second person when writing – stay with

the third person perspective. Some of these journal articles are very challenging to understand, even for people with advanced degrees in the subject, so I don't expect you to be perfect with your work here. I do, however, expect you to try your best to understand the article and make a real effort to write a cohesive critique. This assignment is due on **Wednesday, April 15**.

Tentative Class Outline/Suggested Readings

(All listed chapters are from the textbook, and each of the listed articles is posted on Blackboard, under Course Documents and then Supplemental Readings).

Topic	Week	Suggested Readings
<ul style="list-style-type: none"> Defining the Transboundary Nature of Global Environmental Governance 	1	<ul style="list-style-type: none"> Chapter 1 Garrett Hardin, "The Tragedy of the Commons."
<ul style="list-style-type: none"> Institutions and Actors Regimes Dilemmas of Common Interest and Aversion 	2	<ul style="list-style-type: none"> Chapters 2 and 5 Pamela Chasek, "NGOs and State Capacity in International Environmental Negotiations: The Experience of the Earth Negotiations Bulletin."
<ul style="list-style-type: none"> Sustainable Development Brundtland Report 	3	<ul style="list-style-type: none"> Chapter 6
<ul style="list-style-type: none"> Issue-Area #1: Global Climate Change Kyoto Protocol Copenhagen Accord Two and Three Level Games 	4	<ul style="list-style-type: none"> Chapter 3 Hermann Ott, "Climate Change: An Important Foreign Policy Issue."
<ul style="list-style-type: none"> Climate Change as Cause of Conflict Climate Change as Cause of Environmental Migration 	5	<ul style="list-style-type: none"> Thomas Homer-Dixon, "Environmental Changes as Causes of Acute Conflict."
<ul style="list-style-type: none"> Issue-Area #2: Water Scarcity Millennium Development Goals IWRM South Africa Case Study 	6	<ul style="list-style-type: none"> IWRM Policy Brief – Global Water Partnership
<ul style="list-style-type: none"> Water Scarcity continued... Canada Case Study 	7	<ul style="list-style-type: none"> No Readings
<ul style="list-style-type: none"> Population Growth Demographic Transition Theory China's One Child Family Policy 	8	<ul style="list-style-type: none"> William Ophuls, "Ecology and the Politics of Scarcity Revisited," Readings 1 & 2.
<ul style="list-style-type: none"> Cullowhee Water Conference (CWC) 	9-10	<ul style="list-style-type: none"> No readings, but come prepared by understanding your country's position on water issues.

Topic	Week	Suggested Readings
<ul style="list-style-type: none"> • Issue-Area #3 – Energy Security • Policy Activity 	11	<ul style="list-style-type: none"> • Race for Arctic Readings #1 and #2
<ul style="list-style-type: none"> • Energy Security continued... • <i>Who Killed the Electric Car?</i> 	12	<ul style="list-style-type: none"> • Green Consumerism Readings #1 and #2
<ul style="list-style-type: none"> • Environmental Justice Bhopal, India Case Study 	13	<ul style="list-style-type: none"> • Amnesty International, “Clouds of Injustice: Bhopal Disaster 20 Years On.”
<ul style="list-style-type: none"> • Capitalism and Environmental Politics • Commodity Chains 	14	<ul style="list-style-type: none"> • Herman Daly, “Steady-State Economy.” • Kenneth Boulding, “The Economics of the Coming Spaceship Earth.”
<ul style="list-style-type: none"> • New Forms of Global Environmental Governance? • Class Wrap-up 	15	<ul style="list-style-type: none"> • Steve Charnovitz, “World Environment Organization.”

Sociology 371**Society and the Environment
Fall 2015**

A. A. Hickey
107B McKee
227-3832
Hickey@wcu.edu

The interaction between the physical environment and the human environment illustrates the basic framework of the sociological perspective. How human societies relate to the natural world requires an examination of our basic assumptions about how human activities are organized and structured. The issues to be discussed and analyzed in this course are personal, organizational and societal. The issues are also both macro and micro, local, regional, national and international. In short we will cover the map of human activity.

Texts: Charles Harper
Environment and Society, Fifth Edition
Prentice Hall, 2012

Jared Diamond
Collapse: How Societies Choose to Fail Or Succeed
Penguin Books, 2011
Must be purchased by week 2

Course Requirements:

<u>Grading:</u>	Midterm Exam	20%
	Book Review	20%
	Article review	15%
	Issue paper	20%
	Final Examination	25%

Examinations: There will be a midterm exam and a final examination. Exams will be essay and short answer in format and will be taken in class. We will develop questions from the material and the exams will be based on them.

Attendance: I strongly feel that attendance in class is essential to learning. Your job is to read the material that is assigned and come to class prepared to discuss. My job is to make class worth your time. Therefore my attendance policy is straightforward: For every absence over 2, you will lose one letter grade from your final grade. If a problem arises during the semester, it is your responsibility to discuss it with me to see if continuing in the class is feasible.

Book Review: You will choose a book that deals with the environment and write a 3-5 page review. A list of books will be distributed and we will develop an outline for the paper.

Article Review: The paper for this course will trace environmental issues in terms of connections between the local and the global. The idea is to demonstrate how global concerns are evidenced at the local level and the other way around. The resources necessary for this are professional journal articles. Popular press articles are not acceptable. Check with me if you are unsure. The article review is to be 3-5 pages long. We will develop an outline for this review.

Issue Paper: This paper will follow up on the article review and will focus on proposed solutions to an issue. Again, the idea is to trace the contextual issues. You will need to review the literature for this paper...and of course the professional journals are to be used. Popular press articles can be used to set up the issue. The paper is to be 5-7 pages.

Late papers will be penalized one letter grade for each day (not class day) that the paper is late.

Course Policies: The topics to be covered in this class tend to generate really good disagreements. I enjoy lively discussions but I will not tolerate **Ad Hominum** arguments. You do not have to respect everyone's opinion but you do have to respect the person making the argument. Intellectual growth can only occur in an atmosphere where we all feel safe to try out new ideas and new ways of thinking. Lastly, in part because of the atmosphere that I am trying to create, no hats or food will be allowed in class. Also, cell phones, PDAs and laptops should be turned off before class starts.

Academic Honesty: The University Academic Honesty Policy is found in the undergraduate catalog. Note that there are four areas included: Cheating, fabrication, plagiarism and the facilitation of academic dishonesty. I take this policy very seriously and ignorance is not a valid excuse.

Accommodations for Students with Disabilities: Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All information is confidential. Please contact the Office of Disability Services at (828) 227-3886 or come by Suite 135 Killian Annex for an appointment.

Final Note: I will let you know what my office hours are but I am around my Office a fair amount and, of course, you can always make an Appointment. If you are having problems with me or with the course, please come and see me.

Key Dates:

Oct 12-16	Fall Break
October 27	Advising Day
October 29	Article review is due
Oct 19	Last day to withdraw
Oct 22	Book review is due
Nov 24	Issue paper is due
Dec 3	Last day of Class
Dec 9	Final Exam, 12-2:30

Class Schedule

Week of: Monday:

August 17	Introduction to the class	Harper: Ch. 1
August 24	Introduction to Collapse	Diamond: Prologue
August 31	Sources and Sinks	Harper: Ch. 2 Diamond: Ch. 2
September 7	Climate Change	Harper: CH. 3
September 14	Energy	Harper: Ch. 4
September 21	Population	Harper: Ch. 5 Diamond: Ch. 3-5
September 28	Midterm Exam	
October 5	Globalization and Sustainability	Harper: Ch. 6 Diamond: Ch. 9
October 12	Global cont	
October 19 last day for a W	Markets and Policies	Harper: Ch. 7
October 27 Tuesday- Advising day	Modern Societies	Diamond: Ch. 10-13
November 2	Environmentalism	Harper: Ch. 8
November 9	Environmental Justice	TBA
November 16	Practical Lessons	Diamond: Ch. 14-16
November 23 Thanksgiving Nov 25-27	Practical Lessons, Continued	
November 30	Wrap-up	
December 9	Final Exam 12-2:30	

Teacher: Greg Adkison (gadkison@wcu.edu, 227-3655, 126 Natural Sciences Building).

Office hours 10am–11am Mon & Wed. I'm happy to meet other times. Just **email me** to make an appointment.

Class website: <http://paws.wcu.edu/gadkison>

Contacting you: I will rely on your catamount email address to contact you.

Course description, purpose, goals:

1. This course covers statistical concepts and methods required for scientific research, including experimental design, probability, descriptive statistical summaries, inferential statistical analyses, and the use of a real statistical analysis computer program to properly manage, manipulate, and analyze data.
2. This course integrates lecture and lab. Some class sessions will consist of only discussing concepts or techniques or practicing techniques. Other class sessions will include discussing concepts and techniques and practicing techniques.
3. Some of the specifics you will learn include the ability to...
 - a. describe and properly use components of experiments
 - b. properly design basic to moderately complex experiments to answer questions about the world
 - c. competently summarize data from experiments with descriptive statistics and graphs
 - d. competently test for relationships among an experiment's variables, including comparison of treatments
 - e. competently use results from analyses to make inferences about populations represented by an experiment's samples
 - f. skillfully use R, which means being able to write code that includes commonly used functions to describe and analyze data from experiments

Text: Whitlock MC, Schluter D. 2015. The analysis of biological data, 2nd ed. Roberts & Co. Publishers, Greenwood Village, Colorado.

Grading (%): A+ (100), A (93-99), A- (90-92), B+ (87-89), B (83-86), B- (80-82), C+ (77-79), C (73-76), C- (70-72), D+ (67-69), D (63-66), D- (60-62), F (< 60).

Grades lose their meaning when they are altered to accommodate poor performance (i.e., "curved"). I will not "curve" grades.

- ◆ **grade** = sum of exam scores/ total pts possible x 100
- ◆ **Exams** will attempt to measure your ability to 1) *recall* information, 2) correctly *apply* concepts and methods to solve problems, 3) competently use R and your mind to *analyze* data and scenarios, 4) correctly *interpret* results from scenarios, experiments, and statistical analyses, and 5) *pull together* concepts and methods to discover relationships and develop insight. Any class experience is potential material for the exams (e.g., lecture, discussion, activities, outside reading). The final exam will contain material covered throughout the entire semester.
- ◆ **Activities are simply another method I use for teaching** (in contrast, for example, to lectures), and I generally think **they should not be part of your grade for three reasons**. **First**, it's somewhat unfair to hold you accountable for content and skills involved in an activity if you're doing the activity to *learn* that set of content and skills. **Second**, it's something of a misrepresentation of how much you've learned if you're given credit for simply doing the activity. **Third**, your grade should be based on how well you've learned the content and skills taught rather than your behavior.

Biostatistics Syllabus (biol 467)

- ◆ Please take care to **directly answer the specific questions** that are posed **on exams and activities**. **Your responses should be thoughtful and concise.** **Creative writing is an art that brightens our lives, but this is not a creative writing class.** I will be evaluating your ability to **distill** and **apply** information. Accordingly, answers and writing that introduce irrelevant thoughts will be penalized.

Writing guides and style manuals are excellent resources for instruction on how to write clearly and simply, how to avoid jargon, how to use proper grammar and punctuation, etc. I recommend Jane Straus's **Blue Book of Grammar and Punctuation** (http://www.grammarbook.com/english_rules.asp).

Policies

1. Be polite and kind to each other and me.
2. **If you miss an exam** and have **a legitimate excuse** based on my standards and university policy, and if you can **provide absolute proof of your excuse**, you and I will work out a time for you to make up the exam. Otherwise, any missed exams can be made up last week of the semester. **Please let me know if you need accommodations for extenuating circumstances** such as supporting a family or functioning as a primary caregiver to a family member.
3. **Attendance.** No points are awarded for attendance. No points are deducted for absences. **My door is always open to serious students.** I encourage you to come by for help in class. That said, I will give little attention outside of class to students who miss class for no good reason because **giving them time takes away time that I could otherwise give to students who are trying.**
4. Academic dishonesty (e.g., plagiarism, cheating, fabrication, facilitation; see Student Handbook) will minimally result in a failing grade for the work in question, and can result in a failing grade for the course. **Although students work in lab groups, each student's written work on exams and graded assignments must be entirely her/his own.**

Western Carolina University's Academic Honesty Policy. Western Carolina University, as a community of scholarship, is also a community of honor. Faculty, staff, administrators, and students work together to achieve the highest standards of honesty and integrity. Academic dishonesty is a serious offense at Western Carolina University because it threatens the quality of scholarship and defrauds those who depend on knowledge and integrity. Academic dishonesty includes the following

- a. Cheating: intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise.
- b. Fabrication: intentional falsification of information or citation in an academic exercise.
- c. Plagiarism: intentionally or knowingly representing the words or ideas of someone else as one's own in an academic exercise.
- d. Facilitation of Academic Dishonesty: intentionally or knowingly helping or attempting to help someone else to commit an act of academic dishonesty, such as knowingly allowing another to copy information during an examination or other academic exercise.

Instructors have the right to determine the appropriate sanction or sanctions for academic dishonesty within their courses up to and including a final grade of "F" in the course. Within 5 calendar days of the event the instructor will inform his/her department head, and the Associate Dean of the Graduate School when the student is a graduate student, in writing of the academic dishonesty charge and sanction.

5. Components of the course such as topics and the number and dates of exams may be modified.

Accommodations for Students with Disabilities: Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability or medical condition and provide current diagnostic documentation to Disability Services. All information is confidential. Please contact the Office of Disability Services for more information at 828-227-3886.

List of Topics

I do not put the topics we'll cover into a "schedule" because every group of students is different and for that reason there is no way I can predict a "finely tuned" schedule. The topics we will cover and the sequence we will roughly follow are listed below. KEEP IN MIND that you will also be tested on the proper/effective use of Excel and particularly R in the context of the topics listed below.

1. Scientific approach to discovery/learning: nature & components of experiments, what science can do, what it cannot do, and why statistical analysis is necessary for some (perhaps most) scientific work (chs 1, 4, 14, and pages 201, 233, 301, 500,)
2. Correct way(s) to "set up" and manage data: complex datasets require more than a spreadsheet program
NOTE: data = things given, measurements, facts, observations
NOTE: datum = something given, measurement, fact, observation
3. Descriptive statistics: types of variables, summary descriptions of data (chs 1, 2, 3)
4. Samples, statistical populations, and principles of inference (chs 4, 5, 6, 10, 11)
5. Inference – testing for association between two continuous variables or between two ordinal variables (i.e., variables whose values are ranks): scatterplots, Pearson correlation & Spearman correlation (ch 16)
6. Inference – testing for association between one categorical explanatory variable and one continuous response variable: boxplots, plots of mean with confidence interval, two-sample t-test, & single factor anova (chs 12, 15)
7. Inference – testing for effect of one continuous explanatory variable on one continuous response variable: OLS regression, scatterplots with regression line & confidence interval/ribbon (ch 17)
8. Inference – testing for association between one continuous response variable and at least two categorical, crossed explanatory variables: factorial anova (ch 18.3)
9. Inference – testing for association between at least one categorical explanatory variable and one continuous response variable when replicates of the experiment are in pairs or triplets or other size "blocks" (i.e., when at least one explanatory variable is a blocking factor): paired t-test & block anova (chs 12, 14, 18.2)
10. Inference – testing for "effect of" a continuous explanatory variable & a categorical explanatory variable on a continuous response variable, or said another way, testing for "effect of" a categorical explanatory variable on a continuous response variable while "accounting for" variation in a continuous explanatory variable (aka, a covariate) that may alter any "effect of" the categorical explanatory variable: ancova (chs 18.4)
11. Inference – alternatives when response variable's error distribution doesn't meet requirements of a test: transformations, GLM, and re-sampling techniques (ch 13, 18, 19)
12. Inference – testing for "effect of" more than one continuous explanatory variable on one continuous response variable: multiple OLS regression (not in book)
13. Inference – testing for "effect of" at least one continuous or categorical explanatory variable and one categorical response variable (abbreviated RV): logistic regression if RV is binomial (ch 17.9); multinomial logistic regression if RV has more than two levels (not in book)
14. Inference – testing for association between categorical variables (aka, analysis of frequencies=counts & relative frequencies=proportions): log-linear modeling & Poisson regression (not in book), goodness of fit (ch 8), contingency analysis (ch 9)
15. Multivariate data reduction techniques (not in book): factor analysis (FA), principal components analysis (PCA), reciprocal averaging (RA) [aka, correspondence analysis (CA)], nonmetric multidimensional scaling (NMDS)

Exam Schedule (with perhaps 1 class period flexibility in delay)

Exam 1: Feb 9

Exam 2: Mar 17

Exam 3: Apr 26 (& possibly 28)

Exam 4 will have questions covering all topics taught throughout the semester: 12pm May 3

Syllabi: Advanced Study in Environmental Sciences

Western Carolina University

CHEM232: Quantitative Analysis

Spring 2016

Course Information

- Lecture: TR 9:30-10:45 pm in BK 304
 - Lecture Instructor: Scott W. Huffman, Ph.D.
 - Office: Natural Science Building Room 224
 - Phone: 227-3669
 - Email: shuffman@wcu.edu
 - Office Hours: Mondays 10-11 am, Wednesday 2-3 pm or by appointment
 - Website: <http://agora.cs.wcu.edu/~huffman/chem232.html>
- Text: Quantitative Chemical Analysis by Danial Harris 8th Edition.
- Online homework: Sapling Learning <http://saplinglearning.com>
- Lab: TR 2:00-4:50 pm in NS 208

Communication with the Instructor

For all email based communication with your instructor, please begin your email subject line with CHEM232 (all caps) followed by whatever else you want to say in the subject. I get too much email from people that I don't care about, and I don't want to miss one of yours. So I have built a filtering system for my email client that puts your emails (identified by the subject criteria CHEM232) into a high priority queue. By complying with this request, I will feel more confident in my timely response to your inquiries.

Course Description and Prerequisites

Quantitative Analysis is a foundational course in analytical chemistry in which students are introduced to the whole analytical process. Within the analytical process students will, explore the selection of a method of chemical analysis (given a limited set of measurement techniques), learn about sample preparation, method validation and record keeping.

The prerequisites of this course are a C in CHEM 140 and a C in MATH 140, 146, 152, 153, 252, 253, 255, or 256.

Specific Learning Objectives

Upon completion of this course students should be able to

- predict the equilibrium concentration of several chemical species of a given chemical equilibrium system
- identify sample preparation criteria and techniques to control the equilibrium concentration of a sample
- create/modify/select/evaluate a method of analysis given a specific measurement problem or situation using volumetric, gravimetric, potentiometric and visible electronic spectroscopic techniques
- extract chemical information from data acquired from a given method of analysis
- evaluate the quality and reliability of chemical information extracted from data acquired from a given method of analysis

Learning Environment

In this course, we will use a collaborative learning framework. For most of you, this course is a new format that is based upon learning new knowledge, skills and abilities through group work using conditions that include the following elements:

- Positive interdependence

Group members are incentivized to rely upon one another in order to successfully complete assignments. If any group members fail to do their part, everyone suffers consequences.

- Individual accountability

All members in the group are held accountable for doing their share of the work and for mastery of all of the material to be learned.

- Face-to-Face promotive interaction

Although some of the group work may be parcelled out and done individually, some must be done interactively, with group members providing one another with feedback, challenging reasoning and conclusions, and perhaps most importantly, teaching and encouraging one another.

- Collaborative skill building

Students develop and practice trust-building, leadership, decision-making, communication, and conflict management skills.

- Group processing

Group members set group goals, periodically assess what they are doing well as a team, and identify changes they will make to function more effectively in the future.

Justification

In cognitive psychological and educational research literature,¹ there is a growing body of evidence supporting the idea that learning in groups of your peers is a great way to learn. Therefore, we will use this group-based framework to enhance your knowledge, skills and abilities required for this course. In other words: collaborative learning = better grades.

Format

There are 7 distinct types of activities that you will experience during the "lecture" portion of this course.

Traditional lecture

This is where I talk at you to explain stuff. You probably have experienced this kind of activity. This will happen whenever there is inadequate written or recorded information from which you can learn. In the literature, it says that I should minimize the time I do this because it is not good for you, and will therefore be the last resort of the learning activities.

Pre-Problem reading

I will assign reading/watching sections in one of the books, or on the WWW for you to read/watch **before** you come to class. The purpose of this is to prepare you to actively participate with your group.

Example problems

I will assign a few example problems to accompany the Pre-Problem reading. These problems will generally cover the kinds of problems that you will collaboratively solve in your group. You will work on these problems before the next class period. You should work on these individually. You should prepare an outline of how you solved these problems and bring it to your next group meeting (class period).

Ungraded Practice problems

I will issue to you a set of practice problems generally from the Harris textbook. After each assigned reading and example problems, you will meet as a group and work through these problems. The purpose of these practice problems is to learn, grow and practice the knowledge, skills and abilities for this module of the course.

Graded Homework (Sapling Learning + 3 or 4 others)

After you have worked as a group through the practice problems, you will be given a new set of problems that are completely different but that require the same skills, knowledge and abilities practiced before. You will work as a group on these problems that I will print for you, but in Sapling Learning the problems will be slightly different so every student generally will have a unique set of problems, so I expect that all members of a group will get the same grade. The purpose of this procedure is for you to learn how to solve the problems, rather than how to let one person do the problems for you. Each student's homework grade will be modified (up or down)

according to their group participation (called a group modifier). See below for a description of how I will assess each group member's participation.

The instructions for signing up are available at the following website:

<http://bit.ly/saplinginstructions>

Once you have registered and enrolled, you can log in at any time to complete or review your homework assignments. During sign up or throughout the term, if you have any technical problems or grading issues, send an email to support@saplinglearning.com explaining the issue. The Sapling Learning support team is almost always faster and better able to resolve issues than your instructor.

For graded homework not using Sapling, only one assignment per group is turned in for grading. Record only contributors to the work in the assignment. (Only write or type the names of those that contributed to the work on the work that you hand in.)

Quizzes

The class period following the due date of each graded homework, there will be a quiz covering the previously practiced material. These quizzes will be taken individually.

Since each student is held individually accountable for the course material, these quizzes are one of my ways of making these determinations.

Exams

Attendance for all exams is mandatory; there are no make-ups. Tentative exam dates are

Exam	Date
Exam 1	week 5
Exam 2	week 10
Exam 3	week 14
Final Exam	Cumulative Wednesday, May. 4, 2016, 12:00-2:30 pm

If you do better on your cumulative final exam than on an hour exam, **and** your attendance is greater than or equal to 85% of the class periods, then I will replace your lowest hour exam with your final exam score.

Bonus points on hour exam grades will be given for each member of a group whose group exam average is a B- or higher. The purpose of this bonus is to provide a positive interdependence of the group members. You must work as a group to ensure that every member is doing his or her best, and has acquired the knowledge, skills, and abilities required for the course.

Since each student is held individually accountable for the course material, these exams are one of my ways of making these determinations.

Group formation and governance

We will use the website CATME.org for establishing the Groups and assessment of the groups' teamworking performance. You will receive emails from this website periodically with requests to fill out a survey. Filling out these surveys is part of your group modifier. Your graded homework will be adjusted up or down based upon your responsible group behavior and not your percentage of total effort contributed.

The first survey will be used to form groups. Subsequent surveys will be used for the assessment of group behavior.

All groups will contain 3 or 4 members.

Last Resort

When a group has an uncooperative member (hitchhiker) and everything else has been tried and failed, the other team members may notify the hitchhiker in writing that he/she will be fired if cooperation is not forthcoming, sending a copy of the memo to the instructor. If there is no improvement after a week or if there is and the behavior resumes, they may send a second memo to the hitchhiker (also sending a copy to the instructor) stating that he/she is no longer with the team. The fired student should meet with the instructor to discuss options.

Similarly, students who are consistently doing all of the work for their group may issue a warning memo that they will quit unless they start getting cooperation, and a second memo announcing their resignation from the group if the cooperation is not forthcoming.

Students who get fired or quit must find a group of three willing to accept them, otherwise they get zeros for the remaining assignments.

Grade Determination

In the table below is the percentage breakdown of the different graded elements of the course. There are several other important modifiers to this table. **First, you must pass the lab to pass the course.** Chemistry is a laboratory science, I expect you to be able to perform the laboratory assignments. A trend of past students' performance shows that the laboratory grades track with the rest of the course grades. So the take home message here is that the lab portion of this course is not necessarily a grade booster. Second, you must have a passing exam average for you to get credit for the group homework. This criteria is designed to enhance your desire to participate in the group work.

Assignment	Percentage
Hour Exams	50
Final Exam	10
Lab	20
Homework	10
Quiz	10
Total	100

Performance on exams, homework, and quizzes is expressed on a T-score ^a where the letter grade-point scale lookup table is below.

^aWhich is a modified Z-score from Chapter 4 in Harris

Grade	T-Score
A+	≥ 72
A	64 - 71.99
A-	62 - 63.99
B+	60 - 61.99
B	57 - 59.99
B-	55 - 56.99
C+	52 - 54.99
C	49 - 51.99
C-	47 - 48.99
D+	45 - 46.99
D	42 - 44.99
D-	40 - 41.99
F	< 40

Your T-score is computed according to the formula

$$T = 50 + \frac{10(X-50)}{20}$$

where X is your raw score on the exam.

At the end of the semester, your overall laboratory average will be converted to this T-score based on the following table.

Lab Score	T-scale
48.00 - 50.00	64
46.00 - 47.99	62
44.50 - 45.99	60
42.50 - 44.49	58
40.00 - 42.49	55
37.50 - 39.99	51
35.00 - 37.49	47
32.50 - 34.99	45
30.00 - 32.49	42
27.50 - 29.99	39
25.00 - 27.49	36
22.50 - 24.99	32
20.00 - 22.49	28
17.50 - 17.49	24
15.00 - 17.49	20
below 15.00	10

Since your homework grades are mostly created on Sapling Learning, which is an international tool for online chemistry homework, your raw grades in Sapling Learning will be converted to a T-score using the following formula

$$T = 50 + \frac{10(X-75)}{10}$$

Your quiz T-score will be computed for the entire semester using the following formulas:

$$\text{Raw Score} = \frac{\text{Quiz Points Earned}}{\text{Total Possible Points}} * 100\%$$

$$T = 50 + \frac{10(\text{Raw Score}-50)}{9}$$

where X is your raw score for the quizzes.

Course Specific Policies

Attendance

The only legitimate excuses to miss a class is participation in a university sanctioned trip (in which case you need to provide written documentation ahead of time). Attendance is not mandatory, but **STRONGLY** recommended. If you miss class, you will miss the material for that day, and there are **NO** makes ups.

Mobile Communication Devices Policy

Mobile communication devices are prohibited in the class and the laboratory during quizzes and exams. If I see a mobile communication device during an exam or quiz, I will assume that you are cheating, and you will receive a zero on the assignment, and the WCU Academic Integrity Policy reprinted below will be followed.

University Policies

Academic Integrity Policy and Reporting Process

This policy addresses academic integrity violations of undergraduate and graduate students. Graduate students should read inside the parenthesis below to identify the appropriate entities in charge of that step of the process.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of the Academic Integrity Policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community. While academic in scope, any violation of this policy is by nature, a violation of the Code of Student Conduct and will follow the same conduct process (see Article-VII.B.1.a.). If the charge occurs close to the end of an academic semester or term or in the event of the reasonable need of either party for additional time to gather information timelines may be extended at the discretion of the Department of Student Community Ethics (DSCE).

I. General

This policy addresses academic integrity violations of undergraduate and graduate students. Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of this policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community.

Instructors have the right to determine the appropriate academic sanctions for violations of the Academic Integrity Policy within their courses, up to and including a final grade of “F” in the course in which the violation occurs.

II. Definitions

- 1 Cheating – Using, or attempting to use, unauthorized materials, information, or study aids in any academic exercise.

- 2 Fabrication – Creating and/or falsifying information or citation in any academic exercise.
- 3 Plagiarism – Representing the words or ideas of someone else as one's own in any academic exercise.
- 4 Facilitation – Helping or attempting to help someone to commit a violation of the Academic Integrity Policy in any academic exercise (e.g. allowing another person to copy information during an examination).

III. Undergraduate and Graduate Academic Integrity Process

1. Within five (5) business days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, s/he will inform his/her department head (or associate Dean of the graduate school when applicable) in writing of the allegation and proposed sanction(s).
2. Within ten (10) business days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, the instructor will inform the student of the allegation, including the proposed sanction(s), in writing. In the written notification, the instructor will inform the student of his/her right to request a meeting with the instructor. During the meeting, the instructor shall complete the Academic Integrity Violation Faculty Resolution Form. If the student does not request a meeting with the instructor within five (5) business days of receipt of the written allegation(s), the student shall be deemed to have mutually resolved the matter and shall be bound to the sanction(s) outlined by the instructor in the written allegation. If the student does not request a meeting, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
3. Within five (5) business days of meeting with the instructor, the student shall either appeal the decision to the department head or mutually resolve the matter by accepting the allegation and proposed sanction(s). No action by the student within five (5) business days of the meeting with the instructor shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the instructor, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
4. Within five (5) business days of receiving a student's appeal, the department head must schedule a meeting with the student. The instructor may be present during the meeting. During the meeting, the department head shall complete the Academic Integrity Violation Department Head Resolution Form. Only information submitted during the meeting with the student, or in the meeting between the instructor and the student, may be considered by the department head. The evidentiary standard for making a decision shall be preponderance of the evidence. The department head may agree or disagree with the allegation(s) of the instructor. The department head may also approve, overturn, or modify the sanction(s) proposed by the instructor. If the student does not attend the scheduled meeting with the department head, the matter will be heard in absentia and shall not be subject to further review and/or appeal.
5. Within five (5) business days of meeting with the department head, the student shall either appeal the decision to an Academic Integrity Board or mutually resolve the

matter by accepting the allegation and proposed sanction(s). The student must submit an appeal to the academic Dean listed on the Academic Integrity Violation Department Head Resolution Form. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the department head, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.

6. Within seven (7) business days of receiving a student's appeal, the appropriate academic Dean must schedule an Academic Integrity Board hearing with the student. The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. The instructor may be present during the hearing. Only information submitted during the hearing, or in the meetings between the instructor/department head and the student, may be considered by the hearing board. The evidentiary standard for making a decision shall be preponderance of the evidence. The hearing board may agree or disagree with the allegation(s) of the instructor. The hearing board may also approve, overturn, or modify the sanction(s) proposed by the instructor and/or department head. If the student does not attend the scheduled hearing, the matter will be heard in absentia and shall not be subject to further review and/or appeal. Within ten (10) business days of the hearing, the appropriate academic Dean shall review pertinent records and send the student written notification of the decision of the Academic Integrity Board.
7. Within five (5) business days of receiving written notification of the decision of the Academic Integrity Board the student may accept the findings and sanctions of the board or submit an appeal to the designated academic Dean. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the Academic Integrity Board, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
8. If the student elects to file an appeal of the decision of the Academic Integrity Board, she must submit a written appeal within five (5) business days of receiving written notification of the decision of the Academic Integrity Board to the designated academic Dean. An appeal to an academic Dean must be limited to the following grounds; 1) a violation or due process or 2) a material deviation from Substantive and Procedural Standards by the UNC Board of Governors (as set forth in the UNC Manual 700.4.1).
9. If an appeal is heard by an academic Dean, s/he shall review pertinent records within ten (10) business days of receiving a valid appeal. The academic Dean may agree or disagree with the allegation(s) of the instructor. The academic Dean may also approve, overturn, or modify the sanction(s) proposed by the instructor, department head, and or Academic Integrity Board. Within five (5) days of making a decision, the academic Dean shall provide the student with a written decision. The decision of the academic Dean shall be final.
10. The student must remain enrolled in the course related to the case, and may not be

permitted to withdraw from the course related to the case, until all hearing timelines, notifications, and/or appeals have been completed.

11. Upon resolution of each level of the case (no matter the outcome), the instructor, department head, and academic Dean must provide the Department of Student Community Ethics with all materials and documents related to the case (i.e. course syllabus, materials in violation of the Academic Integrity Policy, Instructor Resolution Form, Department Head Resolution Form, Academic Integrity Board decision letter, academic Dean decision letter, etc. . .). The Department of Student Community Ethics shall serve as the repository for all records associated with allegations and violations associated with the Academic Integrity Policy.

IV. Academic Integrity Board

The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. Students and faculty members serving on boards for each college will be selected by each college Dean. The Department of Student Community Ethics will train all board members prior to their service on a hearing board. Each academic Dean will convene hearing boards as necessary, and will determine a faculty member to serve as chair prior to a hearing.

V. Sanctions

The instructor, department head, Academic Integrity Board, and/or academic Dean may impose academic sanctions permitted by the institution (not to exceed receiving a grade of “F” for the course). The instructor, department head, Academic Integrity Board, and/or academic Dean may not permanently remove the student from the course or suspend/expel the student from a program or the University. Student behavior of the magnitude to warrant consideration for permanent removal from the course or suspension/expulsion from a program or the University must be referred to the Department of Student Community Ethics.

VI. Habitual Violations of the Academic Integrity Policy

Upon receipt of materials associated with violations of the Academic Integrity Policy, the Department of Student Community Ethics will determine if a student has previous violations of University policies. Students with a prior record of violations, or who commits a gross and/or egregious violation of the Academic Integrity Policy, will be referred to the Department of Student Community Ethics for consideration of being subject to hearing proceedings as a habitual violator. Students with three or more violations of the Academic Integrity Policy will automatically be subject to hearing proceedings as a habitual violator. Students in this category are subject to course-related sanctions imposed by the instructor, department head, Academic Integrity Board, and/or academic Dean and University-level sanctions imposed by the Department of Student Community Ethics for habitual violations of University policies. Additional information is available on the Student Success website under Student Community Ethics.

Inclement weather policy:

The University does not, as a matter of general practice, close its operations or cancel classes in Cullowhee because of bad weather. Many Western students commute from different distances

and directions and weather conditions for those students may vary greatly from conditions on the Cullowhee campus. Students are advised to check road conditions in their areas and determine whether it is reasonable for them to drive to campus. *The University expects students to make every effort to attend class but not to jeopardize their safety by driving during dangerous conditions.* Faculty members will accommodate those students who are unable to attend class because of hazardous weather conditions.

Resources

Accommodations for Students with Disabilities:

Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All information is confidential. Please contact the Office of Disability Services at (828) 227-3886 or come by Suite 135 Killian Annex for an appointment.

Student Support Services

Student Support Services provides support to students who are either first-generation, low-income or those who have disclosed a disability with: academic advising, mentoring, one-on-one tutorial support, and workshops focused on career, financial aid and graduate school preparation. You may contact SSS at (828) 227-7127 or email sssprogram@wcu.edu for more information. SSS is located in the Killian Annex, room 138.

Writing and Learning Commons (WaLC)

The Writing and Learning Commons (WaLC) is a free student service, located in BELK 207, providing course tutoring, writing tutoring, academic skills consultations, international student consultations, graduate and professional exam preparation resources, and online writing and learning resources for all students. To schedule tutoring appointments, visit the WaLC homepage (<http://walc.wcu.edu>) or call 828-227-2274.

Distance students and students taking classes at Biltmore Park are encouraged to use Smarthinking (<http://www.wcu.edu/academics/edoutreach/distance-online-programs/student-resources-services-for-distance-students.asp>) and the WaLC's online resources.

Math Tutoring Center

The Mathematics Tutoring Center provides tutoring in all lower-division math and many CS courses (455 Stillwell, <http://mathlab.wcu.edu>, 828-227-3830), help with mathematical concepts in other disciplines, and workshops on study skills specific to mathematics courses. Tutoring is available on a drop-in basis, 9 am – 5 pm and 6 - 9 pm Monday-Thursday, and 9 am – 5 pm on Friday.

Blackboard Support

The learning management system for this class is blackboard and can be found at: <http://wcu.blackboard.com>. Additional help with blackboard can be found at: tc.wcu.edu, (828) 227-7487 or by visiting the Technology Commons located on the ground floor of the Hunter Library.

WCU Academic Calendar

Event	Date information
First day of Fall classes at WCU	<2016-01-11 Mon>
Drop/Add period	<2016-01-11 Mon> - <2016-01-15 Fri>
University closed	<2016-01-18 Mon>
Spring Break	<2016-02-24 Wed> - <2016-02-26 Fri>
Last day to withdrawal with a grade of W	<2016-03-17 Thu> at 17:00
Advising day (no classes)	<2016-03-08 Tue>
Spring Break Part Deux	<2016-03-21 Mon> - <2016-03-25 Fri>
Last day of Fall classes at WCU	<2016-04-29 Fri>

The academic Calendar includes dates for all breaks, university closures, final exams, etc and can be found at: <http://www.wcu.edu/academics/campus-academic-resources/registrars-office/academic-calendar.asp>.

References

- [1] Richard M. Felder and Rebecca Brent. Cooperative Learning. In Mabrouk, PA, editor, *ACTIVE LEARNING: MODELS FROM THE ANALYTICAL SCIENCES*, volume 970 of *ACS SYMPOSIUM SERIES*, pages 34–53, 2007.

**College of Health and Human Sciences
School of Health Sciences
Environmental Health Program**

- I. Course: **ENVH 470, Principles of Epidemiology and Biostatistics
4 Credit Hours (Class Meets from 11:00- 12:45 T/Th, HHSB 421)**
- II. Text: R. M. Merrill (2013). Fundamentals of Epidemiology and Biostatistics: Jones and Bartlett Publishers. ISBN: 978-1-4496-6753-5
- III. Professor: Brian D. Byrd, PhD, MSPH
E-mail: bdbyrd@wcu.edu (best method of communication)
Office: HHSB 416
Phone: 227-2607
Fax: 227-7446
Office hours: M: 10:30-12:30 & W: 9:00-12:00; Office hours often are filled up with students who “drop by”, if you want to secure a meeting time, please arrange a specific meeting time during office hours via e-mail appointment.

Portions of this course will be administered on BlackBoard. It is the student’s responsibility to maintain access to BlackBoard and their Catamount email account throughout the entire semester. IT Services Help Desk: 227-7487, 1-866-928-7487(toll free), itshelp@email.wcu.edu

IV. Course Description and Background:

Epidemiology is the study of the distribution and determinants of disease/health in populations. It is the cornerstone discipline/science in public health. This course will focus on applied statistical methods as they relate to descriptive and analytic epidemiological concepts. Briefly, descriptive epidemiology focuses on the characterization of the distribution (spatial and temporal) of disease/health related events. Analytic epidemiology focuses on finding and quantifying associations (e.g., risk factors) and the causes of disease/health. This course introduces statistical and epidemiologic methods necessary to understand the occurrence and control of conditions such as infectious and chronic diseases, community health, and environmental health hazards.

V. Course Aims and Objectives:

This introductory course is designed to provide students with an overview of the occurrence of disease in human populations through statistical analyses, and epidemiological methods, results and applications. Emphasis will be placed on quantitative methods that allow the student to calculate and interpret relevant health statistics. Basic concepts of statistical inference, including hypothesis testing, p-values, and confidence intervals will be introduced. Specific topics will include comparison on means and proportions, distribution theory, regression and correlation, confounding, study design, sample size, odds, and probability.

Specifically, by the end of this course, students will:

- Understand the basic terminology, methods, and principles of biostatistics and epidemiology
- Be able to explain how statistical methods are used in public health
- Be familiar with statistical inference
- Be able to estimate the value of various population parameters from a sample of data
- Be able to test the hypothesis that a value of a population parameter equals a certain value
- Understand the significance and use of statistical measures and records in epidemiology
- Appreciate the role of epidemiology in Public Health and Environmental Health Sciences
- Understand epidemiologic strategy and the epidemiologic investigation process
- Access available governmental (county, state, federal, global) epidemiologic data inventories
- Prepare an epidemiological investigation report using basic investigative and statistical techniques, methods and data sources

VI. Instructional Methods:

The student may receive instruction through readings, case studies, internet sources, PowerPoint presentations, handouts, discussion, video presentation, and projects. In addition, current mass media and peer reviewed journal articles will be discussed as appropriate. Reading assignments (Merrill Text and others) will also be provided. These materials may not be reviewed during class meetings. However, students will be held responsible for the material on course examinations.

VII. Attendance Policies:

You are expected to attend all class meetings. Although I rarely take a formal roll, your absence is generally notable to me. Students are responsible for the academic consequences of absence. Students who do not attend the lectures generally fail exams.

If you are sick or unable to attend class on the day an exam is scheduled, you must notify the instructor *prior to the time the exam is scheduled*. If you have an acceptable reason, you can make up the exam with no penalty. **Missed exams must be made up within one week or you will receive a zero. All make-up exams are essay format. You must bring your own “blue book” for a make-up exam.**

If you are absent on the day that the instructor distributes a handout or assignment, it is your responsibility to get the handout (and lecture/discussion notes) from a classmate. Most of the handouts and presentations are available electronically. Activities and quizzes completed in class cannot be made up if the student does not have a university approved excuse.

The **inclement weather policy** is located at: <http://www.wcu.edu/weather/>

Western rarely closes and students who live off campus should use good judgment in commuting during inclement weather.

VIII. Assignments and Evaluation Methods:

There are a number of different evaluation methods in this course to allow students to improve their technical, written, communication and critical thinking skills and abilities. There are a total of two semester exams and a comprehensive final; each will contain a mix of multiple choice, short answer, and critical thinking discussion questions. Each student will produce a written report worth 100 points (20% of your final grade) summarizing a computer based study of an infectious disease outbreak (Pharyngitis in Louisiana). Additional guidelines regarding the computer based learning assignment will be provided. ***Late assignments will be penalized by 15% for each day they are late. Assignments will not be accepted if more than 48 hours late.***

Evaluation Instrument	Points
Semester Exams (2) 100 points each	200
Final Exam (Cumulative)	150
CDC Computer Based Learning Write Up (Outbreak Investigation Report)	100
Participation (Attendance, Discussions, Current Events, In Class Assignments etc.)	50
Total Points	500

Grading

A+:	97-100%		
A:	93 – 96.9%	C:	73 – 76.9%
A-:	90 – 92.9%	C-:	70 – 72.9%
B+:	87 – 89.9%	D+:	67 – 69.9%
B:	83 – 86.9%	D:	63 – 66.9%
B-:	80 – 82.9%	D-:	60 – 62.9%
C+:	77 – 79.9%	F:	below 60.0%

IX. Statement on Accommodations for students with disabilities:

Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities. Students who require disability services or reasonable accommodations must identify themselves as having a disability and provide current diagnostic documentation to Disability Services. All information is confidential. Please contact Disability Services for more information at (828) 227-2716 or 144 Killian Annex.

X. Statement on Academic Integrity (including plagiarism):

Western Carolina University, as a community of scholarship, is also a community of honor. Faculty, staff, administrators, and students work together to achieve the highest standards of honesty and integrity. Academic dishonesty is a serious offense at Western Carolina University because it threatens the quality of scholarship and defrauds those who depend on knowledge and integrity. Academic dishonesty includes:

- Cheating**—Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise.
- Fabrication**—Intentional falsification of information or citation in an academic exercise.
- Plagiarism**—Intentionally or knowingly representing the words or ideas of someone else as one's own in an academic exercise.
- Facilitation of Academic Dishonesty**—Intentionally or knowingly helping or attempting to help someone else to commit an act of academic dishonesty, such as knowingly allowing another to copy information during an examination or other academic exercise.

“Plagiarism is the theft of someone else’s words, works, or ideas. It includes such acts as (1) turning in a friend’s paper and saying it is yours; (2) using another person’s data or ideas without acknowledgement; (3) copying an author’s exact words and putting them in your paper without quotation marks; and (4) using wording that is very similar to that of the original source but passing it off as entirely your own, even while acknowledging the source.” (V.E. McMillan, *Writing Papers in the Biological Sciences*, 4th Edition, 2006, page 29)

WCU instructors reserve the right to use plagiarism prevention software (such as SafeAssignment.com) as well as Google, Yahoo, and/or other Internet search engines to determine whether or not student papers have been plagiarized. With plagiarism prevention software, instructors may upload student papers into a searchable database or teach students how to upload their own work as part of the course requirements.

Instructors have the right to determine the appropriate sanction or sanctions for academic dishonesty within their courses up to and including a final grade of “F” in the course. Within 5 calendar days of the event the instructor will inform the department head and the Associate Dean of the Graduate School when the student is a graduate student, in writing of the academic dishonesty charge and sanction. Please see the Student Handbook for additional information.

XI. Student Evaluation of Course

Student course evaluations are accessed through your Catamount e-mail and will be open later in the semester. The course evaluation is completely external to course and instructor has no control over access or availability. Instructors cannot view student evaluations until after final grades are submitted. *All student submissions are anonymous and used to improve instruction and materials.*

XII. Student Conduct

Disruptive students will be asked to leave the class and then required to meet with the instructor within 24 hours. Failure to do so constitutes an honor violation. If you carry a cell phone, turn it off or switch to silent mode during class. A one-time warning will be given if a cell phone disrupts class and subsequent disruptions may result in deductions in the course grade. Texting during the class is unprofessional and discourteous and will result in the loss of participation points. Be courteous to your fellow students and respect their contributions to any class dialogue.

Other expectations:

- *E-mail Etiquette:*
Electronic mail (not through BlackBoard) to and from your “@catamount.wcu.edu” address is the preferred method of communication. Please follow common e-mail rules:
 1. Use your @catamount.wcu.edu email address
 2. Use a short and accurate subject header
 3. Use a proper salutation
 4. Introduce yourself in the first paragraph (if needed)
 5. The message body should be written with parsimony and a clear message.
 6. Leave-taking (departing farewell) should be appropriate. (Respectfully, Yours sincerely, etc.)
 7. Sign you email with your full (First and Last) name
 8. Proofread for content, spelling and grammar.

(Adapted from Wikihow)

Class	Date	Topic	Reading Assignment
1	Tues, Jan 14	Syllabus What is Epidemiology?	Syllabus Epidemiology as a Liberal Art
2	Thurs, Jan 16	Introduction Analytical vs Descriptive Epidemiology	Merrill, Chapter 1 Epidemiology as a Liberal Art
3	Tues, Jan 21	Field Epi: Oswego Outbreak	BlackBoard
4	Thurs, Jan 23	Field Epi: Oswego Outbreak	BlackBoard
5	Tues, Jan 28	Data and Descriptive Measures	Merrill, Chapter 2
6	Thurs, Jan 30	Data and Descriptive Measures	Merrill, Chapter 2
7	Tues, Feb 4	No Class Meeting	Online Assignment-BlackBoard
8	Thurs, Feb 6	No Class Meeting	Online Assignment-BlackBoard
9	Tues, Feb 11	Standardizing Rates	Merrill, Chapter 3
10	Thurs, Feb 13	Standardizing Rates	Merrill, Chapter 3
11	Tues, Feb 18	Describing Data with Graph	Merrill, Chapter 4
12	Thurs, Feb 20	Exam I	
	Tues, Feb 25	Advising Day – No Classes	
13	Thurs, Feb 27	Exam I Review Quantitative Disease Concepts	BlackBoard
14	Tues, Mar 4	No Class Meeting	Online Assignment-BlackBoard
15	Thurs, Mar 6	No Class Meeting	Online Assignment-BlackBoard
	Tues, Mar 11	Spring Break – No Classes	
	Thurs, Mar 13	Spring Break – No Classes	
16	Tues, Mar 18	Probability Concepts Clinical Sensitivity and Specificity	Merrill, Chapter 5
17	Thurs, Mar 20	Probability Concepts Clinical Sensitivity and Specificity <u>Computer Based Learning Exercise Due</u>	Merrill, Chapter 5
18	Tues, Mar 25	Random Variables and Distributions	Merrill, Chapter 7
19	Thurs, Mar 27	Estimation and Hypothesis Testing	Merrill, Chapter 8
20	Tues, Apr 1	Estimation and Hypothesis Testing	Merrill, Chapter 8
21	Thurs, Apr 3	Study Designs	Merrill, Chapter 10
22	Tues, Apr 8	Study Designs	Merrill, Chapter 10
23	Thurs, Apr 10	Exam II	
24	Tues, Apr 15	Statistical Measures of Association	Merrill, Chapter 11
	Thurs, Apr 17	No Classes	
25	Tues, Apr 22	Statistical Measures of Association	Merrill, Chapter 11
26	Thurs, Apr 24	Experimental Studies	Merrill, Chapter 12
27	Tues, Apr 29	Emerging Themes in Epidemiology	TBD
28	Thurs, May 1	Emerging Themes in Epidemiology	TBD

Fifth Week Grades Due	Monday, February 17
Advising Day	Tuesday, February 25
Last Day to Drop with a "W"	Wednesday, March 26
Final Semester Examinations	Saturday-Friday, May 3 – May 9
Final Exam in this course	

MATH 270 Syllabus

Statistical Methods I

Revised: September, January 2015

Course Description

Descriptive statistics, correlation, least squares regression, basic probability models, probability distributions, central limit theorem, confidence intervals, hypothesis testing. Prerequisite: MATH 140 or above. Three semester hours.

Objectives

By the end of the course students will be able to

- Describe the concepts of population and sample, and some of the basic descriptive measures associated with them;
- Explain graphical methods for data presentation;
- Connect the concepts of probability, random variables, and distributions;
- Assess the properties of common distributions, especially the normal and binomial;
- Synthesize the ideas of correlation and regression;
- Interpret estimation and hypothesis testing procedures applied to population means and proportions;
- Compare multiple means and proportions using appropriate statistical analyses; and
- Model univariate and multivariate data using linear models.

Text

Roxy Peck, Chris Olsen, and Jay DeVore. *Introduction to Statistics and Data Analysis, Fourth Edition*. (Brooks-Cole/Cengage Learning), 2011.

Grading Procedure

Grading procedures and factors influencing course grade are left to the discretion of individual instructors, subject to general university policy.

Attendance Policy

Attendance policy is left to the discretion of individual instructors, subject to general university policy.

Course Outline

- **Chapter 1: The Role Of Statistics. (1 day)**
Why Study Statistics? The Nature and Role of Variability. Statistics and the Data Analysis Process. Types of Data and Some Simple Graphical Displays
- **Chapter 2: The Data Analysis Process And Collecting Data Sensibly. (4 days)**
Statistical Studies: Observation and Experimentation. Sampling. Simple Comparative Experiments. More on

Experimental Design. Interpreting and Communicating the Results of Statistical Analyses.

Note: Section 2.5 is optional.

- **Chapter 3: Graphical Methods For Describing Data. (4 days)**

Displaying Categorical Data: Frequency Distributions, Bar Charts and Pie Charts. Displaying Numerical Data: Dotplots and Stem-and-Leaf Displays. Displaying Numerical Data: Frequency Distributions and Histograms. Interpreting the Results of Statistical Analyses. Note: Section 3.1 is optional and Section 3.4 may be taught concurrently with Section 5.1. The topic of density histograms in Section 3.3 is optional.

- **Chapter 4: Numerical Methods For Describing Data. (3 days)**

Describing the Center of a Data Set. Describing Variability in a Data Set. Summarizing a Data Set: Boxplots. Interpreting Center and Spread: Chebyshev's Rule, The Empirical Rule, and z-Scores. Interpreting the Results of Statistical Analyses. Note: The topic of trimmed means in Section 4.1 is optional.

- **Chapter 5: Summarizing Bivariate Data. (2 days)**

Scatter Plots. Correlation. Fitting a Line to Bivariate Data. Assessing the Fit of a Line. Nonlinear Relationships and Transformations. Interpreting the Results of Statistical Analyses. First steps, design of experiments, sampling design, toward statistical inference. Note: Sections 5.4 and 5.5 are optional.

- **Chapter 6: Probability. (3 days)**

Interpreting Probabilities and Basic Probability Rules. Probability as a Basis for Making Decisions. Estimating Probabilities.

- **Chapter 7: Population Distributions. (4 days)**

Describing the Distribution of Values in a Population. Population Models for Continuous Numerical Variables. Normal Distributions. Checking for Normality and Normalizing Transformations.

- **Chapter 8: Sampling Variability And Sampling Distributions. (3 days)**

Statistics and Sampling Variability. The Sampling Distribution of a Sample Mean. The Sampling Distribution of a Sample Proportion.

- **Chapter 9: Estimation Using A Single Sample. (4 days)**

Point Estimation. A Large Sample Confidence Interval for a Population Proportion. A Confidence Interval for a Population Mean. Interpreting the Results of Statistical Analyses.

- **Chapter 10: Hypothesis Testing Using A Single Sample. (6 days)**

Hypotheses and Test Procedures. Errors in Hypothesis Testing. Large-Sample Hypothesis Tests for a Population Proportion. Hypothesis Tests for a Population Mean. Power and Probability of Type II Error (Optional). Interpreting the Results of Statistical Analyses.

- **Chapter 11: Comparing Two Populations or Treatments. (4 days)**

Inferences Concerning the Difference Between Two Populations or Treatment Means Using Independent Samples. Inferences Concerning the Difference Between Two Population or Treatment Means Using Paired Samples. Large-Sample Inferences Concerning the Difference Between Two Populations or Treatment Proportions. Interpreting the Results of Statistical Analyses.

- **Chapter 12 The Analysis Of Categorical Data And Goodness-Of-Fit Tests. (2 days)**

Chi-square Tests for Univariate Data. Tests for Homogeneity and Independence in a Two-way Table. Interpreting the Results of Statistical Analyses.

- **Chapter 13: Simple Linear Regression and Correlation: Inferential Methods. (2 days)**

Simple Linear Regression Model. Inferences About the Slope of the Population Regression Line. Checking Model Adequacy.

Inferences Based on the Estimated Regression Line (Optional). Inferences About the Population Correlation Coefficient (Optional). Interpreting the Results of Statistical Analyses.

- **Chapter 14: Multiple Regression Analysis. (2 days)**

Multiple Regression Models. Fitting a Model and Assessing Its Utility. Inferences Based on an Estimated Model. Other Issues in Multiple Regression. Interpreting and Communicating the Results of Statistical Analyses.

- **Chapter 15: Analysis of Variance. (2 days)**

Single-Factor ANOVA and the F Test. Multiple Comparisons. The F Test for a Randomized Block Experiment. Two-Factor ANOVA. Interpreting the Results of Statistical Analyses.

Most instructors for this course require the use of statistical calculators.

Bio 375: Methods in Ecology and Evolution

LEC: M 12:20 – 1:10; LAB W 12:20 – 4:10 CO 302 and TBA

Instructors: Beverly Collins, 109 NS, collinsb@email.wcu.edu, 227-3663, Office hours M,F 10:10-11:00 or by appt.
 Joseph Pechmann, 111 NS, jpechmann@email.wcu.edu, 227-3661, Office hours M 1:30-2:30, Th 11:30-12:30 or by appt.

Purpose: To provide a fundamental understanding of, and practice in, current accepted methods used to study evolutionary ecology and the general ecology of individuals, populations, communities, ecosystems, and landscapes.

Course Objectives: *By the end of this course, students will:*

- Demonstrate knowledge of experimental design and methods commonly used in evolutionary and general ecology
- Apply knowledge gained through field, computer-simulation, and laboratory experiences to study current issues in ecological and evolutionary biology.

Course Materials: There is no textbook. Lecture powerpoints, readings, lab handouts, and class data will be posted on Blackboard.

Course Information:

- Attendance: Attendance is required.
- Class etiquette: Cell phones must be off and out of sight during class and lab. No non-class-related internet use during class or lab.
- **Grades** will be based on homework, 2 written exams (midterm and final); participation in class and laboratory exercises; 2 lab reports; and a digital journal or portfolio. The participation grade is based on 1.8 points for each of 14 weeks and includes physical, mental, oral, and written components of participation.

	<i>Objective or material covered</i>	<i>Number of points</i>
Participation	Objective: participate fully in class discussion and laboratory exercises	25
Homework	Practice using material learned	5
Exam I	Environmental measures; individual, population, community methods	15
Exam II	Ecosystem and landscape methods	15
Lab reports	Objective: Design work, collect data, analyze and interpret results	28
Portfolio	Objective: compile record of knowledge gained	12
		100

- The portfolio should include typed notes describing the procedures used in field and laboratory exercises and a brief summary of the results obtained. We expect it to be based on rough notes taken during field and lab exercises. We recommend buying a “Rite in the rain” notebook (available in the bookstore) for this purpose, and writing in pencil. The portfolio should not include lecture notes or powerpoints, all your raw data, or detailed statistical analyses.
- Letter grades (percentage out of **100** points) will be assigned according to the following: 98-100 A+; 93-97 A; 90-92 A-; 87-89 B+; 83-86 B; 80-82 B-; 77-79 C+; 73-76 C; 70-72 C-; 67-69 D+; 63-66 D; 60-62 D-; 59 and below F

Course Policies

Academic honesty policy: please see <http://catalog.wcu.edu/content.php?catoid=36&navoid=1194#honestypolicy>

Accommodations for Students with Disabilities: Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All information is confidential. Please contact the Office of Disability Services at (828) 227-3886 or come by Suite 135 Killian Annex for an appointment.

Student Support Services provides support to students who are either first-generation, low-income or those who have disclosed a disability with: academic advising, mentoring, one-on-one tutorial support, and workshops focused on career, financial aid and graduate school preparation. You may contact SSS at (828) 227-7127 or email sssprogram@wcu.edu for more information. SSS is located in the Killian Annex, room 138.

The Writing and Learning Commons (WaLC) is a free student service, located in BELK 207, providing course tutoring, writing tutoring, academic skills consultations, international student consultations, graduate and professional exam preparation resources, and online writing and learning resources for all students. To schedule tutoring appointments, visit the WaLC homepage (<http://walc.wcu.edu>) or call 828-227-2274.

The Mathematics Tutoring Center provides tutoring in all lower-division math and many CS courses (455 Stillwell, <http://mathlab.wcu.edu>, 828-227-3830), help with mathematical concepts in other disciplines, and workshops on study skills specific to mathematics courses. Tutoring is available on a drop-in basis, 9 am – 5 pm and 6 - 9 pm Monday-Thursday, and 9 am – 5 pm on Friday.

Blackboard Support: The learning management system for this class is blackboard and can be found at: <http://wcu.blackboard.com>. Additional help with blackboard can be found at: tc.wcu.edu, (828) 227-7487 or by visiting the Technology Commons located on the ground floor of the Hunter Library.

Academic Calendar includes dates for all breaks, university closures, final exams, etc. The academic calendar can be found at: <http://www.wcu.edu/academics/campus-academic-resources/registrar-office/academic-calendar.asp>.

Tentative Schedule (subject to revision to accommodate weather or unanticipated events)

Week	Topic	Exercise
8/17-19	Experimental Design	Lab and field: Questions and hypotheses
8/24-26	The Environment	Lecture: The Environment Field: light, water, temperature methods
8/31-9/2	The Environment; Individuals	Lecture: Individual/environment interactions Field: light (canopy), water, temperature methods
9/7-9	Individuals; Evolution	No class Monday Field : Individual/environment interactions; collect and weigh litter ; hybrid zones (weekend)
9/14-16	Populations- Catching and Counting; Evolution 4 weeks portfolio due 9/18	Lecture: Catching and counting Field: Catching/counting; Deploy litter bags; hybrid zones (weekend).
9/21-23	Populations- Catching, Counting, and Tracking	Lecture: Catching and counting (continued) Field: Radiotelemetry

9/28-30	Statistics	Data Analysis
10/5-7	Communities Lab report I due 9 Oct.	Lecture: Communities Field: Community sampling
10/12-14	No Class	Fall Break
10/19-21	Exam I	Exam
10/26-28	Community Analysis	Lecture: Community Analysis Lab: Community Lab
11/2-4	Populations to Ecosystems	Lecture: spatial methods, telemetry Field: Community sampling: seining, shocking, sweep nets
11/9-11	Ecosystems	Lecture: Ecosystems Field: Ecosystems lab- collect biomass, litter bags
11/16-18	Ecosystems	Ecosystem data analysis, weigh biomass
11/23-25	Landscapes	No class Wednesday- Thanksgiving
11/30-12/2	Landscapes	Lab: Landscape analysis Second lab report due 12/4
12/8 (3-5:30)	Exam II	<i>Final Exam – Portfolio, all material due</i>

Aquatic Ecology BIOL 435

Instructor: Thomas (Tom) Martin
333a Natural Sciences Building
Voice: 227-3660
Email: tmartin@wcu.edu

Office Hours: 08:30 – 10:00 W, 2:00 – 5:00 R, other times by appointment.

Lecture: 12:30 – 01:45 TR G09 McKee

Lab: 02:05 – 04:55 T 108 Natural Sciences Bldg.

I. Rationale/Purpose

Biological, physical, and chemical components and processes in lakes and streams; field studies of local lakes and their biota. 3 Lecture, 3 Lab. **Prerequisites** PREQ: 241 or 304.

My primary goal is to provide you with an understanding of the theoretical and applied aspects of the ecology of aquatic systems. We will touch on groundwater and wetland ecology, but our emphasis will be on the basics of stream, reservoir, and lake ecology and application to environmental problems.

II. Course Objectives: By the end of this course, students will:

- Be able to describe the chemical characteristics of water important to life
- Be able to explain the geological processes responsible for the formation of streams and lakes
- Be able to identify the higher taxonomic groups of aquatic organisms
- Be able to explain the major hypotheses explaining the dynamics and community interactions of aquatic organisms.

III. Course Materials:

Text:

Dodds, W.K. and M.R. Whiles. 2010. Freshwater ecology: concepts and environmental applications (2nd edition). Academic Press.
ISBN-10: 0123747244.

Supplemental Readings will be provided through BlackBoard.

Additional Equipment: I suggest that you invest in waders. The Biology Department has a limited supply of hip-waders, but I would strongly recommend that you invest in your own pair. Communal use of rubber footwear just doesn't seem to be a good idea. You may "wet-wade," however you must wear a pair of sturdy shoes to protect your feet from sharp objects.

Waders come in different styles and materials and their prices vary considerably (~\$15 - \$900):

Hip Waders (~\$45-55 suggested)

Hip waders provide easy on-and-off convenience; wear easily with regular clothing. They excel on smaller streams, but do restrict access to most pools. This style of wader generally comes with belt straps to aid in holding them up.



Chest Waders (~60-170 suggested)

Chest waders are more versatile simply because they provide more coverage. Always wear a wading belt when wading in chest waders.

Bootfoot versus Stockingfoot Waders

Bootfoot waders feature an integral boot that is constructed right into the wader. The advantages of this style are that you don't have to purchase a separate set of wading boots, you always know where your boots are, and they are quick to put on and take off. Most models are constructed without laces but a few incorporate them to provide a more snug fit. Boot foot waders will, in general, keep your feet warmer and in some cases come with a range of insulation choices to fit angler preferences. Bootfoot waders come with either a rubber or felt sole. Rubber soles are better in muddy conditions or when a lot of time is going to be spent walking out of the water. Rubber soles are also recommended to reduce the possibility of transmitting invasive species and/or disease from one stream to another.

Stockingfoot waders are often constructed with neoprene booties in their foot sections. They are made to insulate the foot and slip into the wading boots of your choice. Wading boots run the gamut from simple and inexpensive to high-tech and accordingly priced. Stockingfoot waders are lighter than boot foot waders, provide better ankle support and in general, true hiking boot fit, feel, and performance. Wading boots made to be used in conjunction with stockingfoot waders, in most cases, feature a lace up design that delivers a snug fit and reduces friction, potential hot spots, and blistering on longer hikes or extended periods of wading. Wading boots often feature the option of felt soles, various hiking soles, or felt soles with metal studs. Some even have interchangeable soles allowing an angler to hike to his fishing location and then change soles for wading purposes.



Complete Trash: (<\$35) Don't fall for the super cheap – they last less than one trip. Also, rubber boots aren't recommended, as they just aren't tall enough: you'll be wet wading . . .

Grading: Your final grade will be based on the percentage of the total points available that you have amassed over the course of the semester.

Points available include:

Midterm 1	100 points
Midterm 2	125 points
Final	125 points
Lab Practicum	50 points
<u>Semester Project</u>	<u>50 points</u>
Total	450 points

Grading Scale

A+	97-100%
A	93-96%
A-	89-92%
B+	85-88%
B	80-84%
B-	77-80%
C+	73-76%
C	65-72%
D	53-64%
F	<53%

Lecture outline:

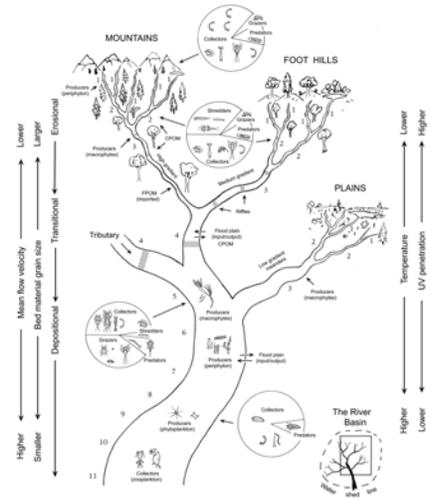
Introduction

Basic properties of water

- Chemical and Physical properties
- Density, Viscosity and movement
- Diffusion, light & heat

Hydrology and Geomorphology

- Hydrologic cycle, soil & groundwater
- Wetlands
- Stream flow & geology
- Lakes and geologic processes, types of lakes
- Movement of water within lakes/reservoirs and stratification



Chemical dynamics

- Oxygen, Carbon, Sulfur
- Nitrogen, Phosphorus
- Silicon, Iron
- Aquatic Pollutants (Acid, metals, organic pollutants, suspended solids, thermal pollution)

Nutrient dynamics

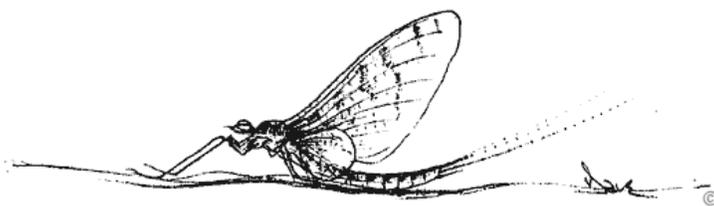
- Nutrient limitation
- Nutrient remineralization
- Trophic state
- Eutrophication

Population Interactions

- The “microbial loop”
- Top-down control of aquatic communities
- Food webs & trophic cascades
- Non-predatory interactions

Ecosystems

- The River Continuum Concept
- Serial discontinuity (effects of damming streams)
- The Flood Pulse Concept (effects of flood regime alteration)
- The Riverine Productivity Model



Mayfly clipart courtesy of Dave Whitlock (www.davewhitlock.com)

IV. Expectations

Attendance: You will be expected to invest time into this course consistent with a science course. I do not record daily attendance, but all exams will be written based on lecture notes, so attendance is strongly recommended. Laboratory sessions may not meet every week, however the semester project and some field trips may require work outside of scheduled lab time. This is a 4-credit course, and according to the Federal definition of a credit hour (<http://ifap.ed.gov/dpcletters/attachments/GEN1106.pdf>), you should expect to spend an average of 12 hours per week working on this course. You will spend approximately 6 hours per week in lecture or lab, so you should expect to spend an additional 6 hours per week of work outside the classroom or lab.

Accommodations for Students with Disabilities:

Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All information is confidential. Please contact the Office of Disability Services at (828) 227-3886 or come by Suite 135 Killian Annex for an appointment.

Student Support Services:

Student Support Services provides support to students who are either first-generation, low-income or those who have disclosed a disability with: academic advising, mentoring, one-on-one tutorial support, and workshops focused on career, financial aid and graduate school preparation. You may contact SSS at (828) 227-7127 or email sssprogram@wcu.edu for more information. SSS is located in the Killian Annex, room 138.

V. Academic Integrity Policy and Reporting Process

This policy addresses academic integrity violations of undergraduate and graduate students. Graduate students should read inside the parenthesis below to identify the appropriate entities in charge of that step of the process.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of the Academic Integrity Policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community. While academic in scope, any violation of this policy is by nature, a violation of the Code of Student Conduct and will follow the same conduct process (see Article VII.B.1.a.). If the charge occurs close to the end of an academic semester or term or in the event of the reasonable need of either party for additional time to gather information timelines may be extended at the discretion of the Department of Student Community Ethics (DSCE).

I. General:

This policy addresses academic integrity violations of undergraduate and graduate students.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of this policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community.

Instructors have the right to determine the appropriate academic sanctions for violations of the Academic Integrity Policy within their courses, up to an including a final grade of "F" in the course in which the violation occurs.

II. Definitions:

1. Cheating – Using, or attempting to use, unauthorized materials, information, or study aids in any academic exercise.

2. Fabrication – Creating and/or falsifying information or citation in any academic exercise.
3. Plagiarism – Representing the words or ideas of someone else as one's own in any academic exercise.
4. Facilitation – Helping or attempting to help someone to commit a violation of the Academic Integrity Policy in any academic exercise (e.g. allowing another person to copy information during an examination).

III. Undergraduate and Graduate Academic Integrity Process:

1. Within five (5) business days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, s/he will inform his/her department head (or associate Dean of the graduate school when applicable) in writing of the allegation and proposed sanction(s).
2. Within ten (10) business days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, the instructor will inform the student of the allegation, including the proposed sanction(s), in writing. In the written notification, the instructor will inform the student of his/her right to request a meeting with the instructor. During the meeting, the instructor shall complete the Academic Integrity Violation Faculty Resolution Form. If the student does not request a meeting with the instructor within five (5) business days of receipt of the written allegation(s), the student shall be deemed to have mutually resolved the matter and shall be bound to the sanction(s) outlined by the instructor in the written allegation. If the student does not request a meeting, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
3. Within five (5) business days of meeting with the instructor, the student shall either appeal the decision to the department head or mutually resolve the matter by accepting the allegation and proposed sanction(s). No action by the student within five (5) business days of the meeting with the instructor shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the instructor, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
4. Within five (5) business days of receiving a student's appeal, the department head must schedule a meeting with the student. The instructor may be present during the meeting. During the meeting, the department head shall complete the Academic Integrity Violation Department Head Resolution Form. Only information submitted during the meeting with the student, or in the meeting between the instructor and the student, may be considered by the department head. The evidentiary standard for making a decision shall be preponderance of the evidence. The department head may agree or disagree with the allegation(s) of the instructor. The department head may also approve, overturn, or modify the sanction(s) proposed by the instructor. If the student does not attend the scheduled meeting with the department head, the matter will be heard in absentia and shall not be subject to further review and/or appeal.
5. Within five (5) business days of meeting with the department head, the student shall either appeal the decision to an Academic Integrity Board or mutually resolve the matter by accepting the allegation and proposed sanction(s). The student must submit an appeal to the academic Dean listed on the Academic Integrity Violation Department Head Resolution Form. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the department head, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
6. Within seven (7) business days of receiving a student's appeal, the appropriate academic Dean must schedule an Academic Integrity Board hearing with the student. The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. The instructor may be present during the hearing. Only information submitted during the hearing, or in the meetings between the instructor/department head and the student, may be considered by the hearing board. The evidentiary standard for making a decision shall be preponderance of the evidence. The hearing board may agree or disagree with the allegation(s) of the instructor. The hearing board may also approve, overturn, or modify the sanction(s) proposed by the instructor and/or department head. If the student does not attend the scheduled hearing, the matter will be heard in absentia and shall not be subject to further review and/or appeal. Within ten (10) business days of the hearing, the appropriate academic Dean shall review pertinent records and send the student written notification of the decision of the Academic Integrity Board.
7. Within five (5) business days of receiving written notification of the decision of the Academic Integrity Board the student may accept the findings and sanctions of the board or submit an appeal to the designated academic Dean. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the Academic Integrity Board, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
8. If the student elects to file an appeal of the decision of the Academic Integrity Board, she must submit a written appeal within five (5) business days of receiving written notification of the decision of the Academic Integrity Board to the designated academic Dean. An appeal to an academic Dean must be limited to the

following grounds; 1) a violation of due process or 2) a material deviation from Substantive and Procedural Standards by the UNC Board of Governors (as set forth in the UNC Manual 700.4.1).

9. If an appeal is heard by an academic Dean, s/he shall review pertinent records within ten (10) business days of receiving a valid appeal. The academic Dean may agree or disagree with the allegation(s) of the instructor. The academic Dean may also approve, overturn, or modify the sanction(s) proposed by the instructor, department head, and or Academic Integrity Board. Within five (5) days of making a decision, the academic Dean shall provide the student with a written decision. The decision of the academic Dean shall be final.
10. The student must remain enrolled in the course related to the case, and may not be permitted to withdraw from the course related to the case, until all hearing timelines, notifications, and/or appeals have been completed.
11. Upon resolution of each level of the case (no matter the outcome), the instructor, department head, and academic Dean must provide the Department of Student Community Ethics with all materials and documents related to the case (i.e. course syllabus, materials in violation of the Academic Integrity Policy, Instructor Resolution Form, Department Head Resolution Form, Academic Integrity Board decision letter, academic Dean decision letter, etc...). The Department of Student Community Ethics shall serve as the repository for all records associated with allegations and violations associated with the Academic Integrity Policy.

IV. Academic Integrity Board:

The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. Students and faculty members serving on boards for each college will be selected by each college Dean. The Department of Student Community Ethics will train all board members prior to their service on a hearing board. Each academic Dean will convene hearing boards as necessary, and will determine a faculty member to serve as chair prior to a hearing.

V. Sanctions:

The instructor, department head, Academic Integrity Board, and/or academic Dean may impose academic sanctions permitted by the institution (not to exceed receiving a grade of "F" for the course). The instructor, department head, Academic Integrity Board, and/or academic Dean may not permanently remove the student from the course or suspend/expel the student from a program or the University. Student behavior of the magnitude to warrant consideration for permanent removal from the course or suspension/expulsion from a program or the University must be referred to the Department of Student Community Ethics.

VI. Habitual Violations of the Academic Integrity Policy:

Upon receipt of materials associated with violations of the Academic Integrity Policy, the Department of Student Community Ethics will determine if a student has previous violations of University policies. Students with a prior record of violations, or who commits a gross and/or egregious violation of the Academic Integrity Policy, will be referred to the Department of Student Community Ethics for consideration of being subject to hearing proceedings as a habitual violator. Students with three or more violations of the Academic Integrity Policy will automatically be subject to hearing proceedings as a habitual violator. Students in this category are subject to course-related sanctions imposed by the instructor, department head, Academic Integrity Board, and/or academic Dean and University-level sanctions imposed by the Department of Student Community Ethics for habitual violations of University policies. Additional information is available on the Student Success website under Student Community Ethics.

Geology 302 Geomorphology
Fall 2011
Lecture: TR 9:30-10:45 ST322
Lab: Tues 1:25-4:15, Room ST155

Dr. David Kinner, #3821, dkinner@wcu.edu
ST319, Office Hours: M&W 9-11
Dr. Mark Lord, #2271, mlord@wcu.edu
ST310, Office Hours: M & Th 1-3

GEOMORPHOLOGY

Scope and Objectives:

Geomorphology, most simply, is the study of landforms and the processes that shape them. As we will learn, because landscapes are at the Earth's surface, they are both the result of and affect geologic, biologic, hydrologic, and atmospheric systems. And, undoubtedly, the more than 6 billion people on Earth today, as well as our ancestors, are also intricately linked into many cause-effect relationships in landscape systems. Today, an understanding of geomorphology is essential to many environmental problems: among these are stream restoration, coastal zone management, landslides, climatic change, flooding, and soil erosion.

The purpose of this course is to provide an introduction to key principles, skills, and investigative approaches to major topics in geomorphology. The laboratory portion of this course, especially the research project, plays a critical part in your learning. At the end of this course you should be able to:

- Analyze how geomorphology can be used to aid society
- Make fundamental observations by learning where, what and how to observe
- Interpret landforms for understanding what geomorphic processes are at work or the geomorphic history for a particular area
- Understand how fundamental physics and chemistry impacts geomorphic processes and be able to apply equations of simple geomorphic phenomena (i.e., driving/resisting forces, budgets, infinite slope equation, resistance law, etc.)
- Apply tools of the trade (topographic maps, spreadsheets, field equipment) towards solving geomorphic processes
- Define and address a geomorphic research question using standard methods and data analysis techniques

Your final exam will have questions that ask you to apply each of these principles to specific examples. Therefore, you already know to some extent what is on your final.

Course Expectations:

We will provide overviews, perspective, assignments, and experiences through classes, labs, a research project, and field trips. For you to maximize the value of this course to your education, your full participation in this course is essential (i.e. attendance, preparedness, effort, attitude, completing all assignments with your best quality, etc.--you should know the drill). Specifically, you need to be learning outside of class. Class time should not be the first time you have seen specific material—read your assignments! We have high expectations for all of you in this class. We expect you to demonstrate appropriate resourcefulness, independence, and dedication to your studies related to this course.

Field investigations, student projects, homework, and other problem solving exercises will make up a significant part of our exploration of geomorphology. There is a very practical side to this course too: geomorphology is embedded into many of our nation's (and world's) environmental problems. There is a high probability that those of you who pursue careers in environmental work will be, directly or indirectly, involved in geomorphic studies. Therefore, your ability to get a job related to geomorphology and to do well at the job will be linked to how much you take from this course.

Grading:

Labs, projects, homework, etc. will make up a significant portion of this course. We will have two midterm exams and a cumulative final. Quizzes are not scheduled, but may be used if we feel it will improve the educational value of the course.

20% Midterm Exam I

20 % Midterm Exam II

30 % Final Exam (cumulative)

30 % In-class exercises, labs and research project.

Exams will consist of essays, quantitative problems, and short answer questions; exams may include a take-home portion.

All work submitted for this course must meet minimum college-level requirements with respect to writing, clarity, and completeness. Work submitted that does not meet minimum expectations **will not be accepted** for evaluation, but may be corrected and resubmitted with a late penalty (*see below*). Except when noted, all work must be turned in on the assigned due date at the start of lab or class to be considered for full credit. Late work that is not excused will be penalized at 20% per day (including Saturday and Sunday). All out-of-class written assignments, unless stated otherwise, must be typed, 12 point font, double-spaced, and have one inch margins. All references used must be cited in a standard scientific reference format (for example, USGS guidelines; posted on Blackboard for your reference).

Tentative Course Schedule:

Because of the ongoing research project, the schedule will be relatively flexible. We, at this point, will not assign dates, but we will post reading completion dates on Blackboard, so you know when you should finish your reading. Textbook chapters and the instructors (ML or DK) for each topic are included in parentheses.

- Introduction (Chap 1. ML and DK)
- Important Concepts and Energy (Chap 1 and 2, ML)
- Slope Processes and Landslides (Chap 4, DK)
- Hydrology and Basin Morphometry (Chap 5, DK)
- Stream Processes and Forms (Chap 5, 6 ML)
- Fluvial Landscapes (Chap 7, ML)
- Soils and Weathering (Chap 3, DK)
- Glacial Landscapes and Climatic Change (Chap 9,10 ML)
- Karst Processes and Forms (Chap 12, DK)

Important Dates

Exam I: September, 22nd

Exam II: November, 22nd

Final Exam: December, 14th

Fall Break: October 13th and 18th

Thanksgiving: November 24th

Course Text: Process Geomorphology, (5th edition), by Ritter, Kochel, and Miller.
Other readings will be included on Blackboard.

Attendance:

We expect each of you to attend all classes unless you have an excused absence, although we will not directly count attendance in your grade (although missing any assignments will directly affect your grade). Your presence, your preparedness, and your participation in all classes and labs are important to your success in the course as well as the success of the class. There will be no make-up work permitted for unexcused absences. Excused absences are given only when: (1) you have a reasonable reason for missing class, (2) **before** the class you are going to miss, you notify one of us **by email**. Try to get in the habit of bringing your text and a calculator to all class and lab meetings.

Research Project

You will conduct geomorphic research in the class as part of the class. This research is focused around a new research station that has been supported by the National Science Foundation (NSF). This semester, research will be related to channel characteristics of streams within small watersheds near campus. In our opinion, research is that the best way to train to a geoscientist. Note that this project is real research—it is part of a larger effort to learn about the region, and we don't know what the results will be. Some of you may even be able to present the results of your semester's work at a professional conference.

Research will be completed during class, labs and in some cases your own time. More information will be given about this effort as the semester continues.

NSF Grant Information (IRB Approved)

As part of this class, all students will participate in scientific research related to the course topic. Together, we will be investigating the how different elements of the landscape in the Southern Appalachians can be used to develop predictive models of the quality and quantity of stream water and groundwater. This type of knowledge is important to understanding aquatic ecosystems and to environmentally sound landuse planning.

Separate from the class scientific research project, we (Dave Kinner & Mark Lord) are carrying out a study to evaluate the role of authentic (i.e. real) research experiences on student learning, especially in the sciences. Lots of data show that individual research by college seniors provides benefits to understanding science and careers. For our study, we want to test the role of research-based learning by small groups of students in a wide variety of classes. To best test this, we hope that you will permit us to use your feedback on the value of research-based learning. Your feedback will be collected during class time in two ways: 1) In two small-group discussions led by member of the WCU faculty center who specializes in educational assessment. 2) By completing an online questionnaire related to undergraduate research.

All students in this class must take part in the group discussions and complete the survey. However, only the feedback by students who provide consent will be included in our research-based learning study. We will analyze the data from these assessments to better understand the value of research-based learning. If all goes well, you can help us advance the understanding of science education in general. Be assured that your answers are completely confidential and will be reported only as summaries in which no individual's answers will be identified.

Permitting us to use your feedback as part of our study on research-based learning is completely voluntary. It will have no impact on your course grade, our view of you, or any future opportunities.

If you have any questions or comments about this study, we would be happy to talk with you. Please be aware that this questionnaire has been approved by the University's Institutional Review Board. If you have any questions about this approval process, please contact the IRB at 227-317

Geomorphology Lab:

Labs are an essential part, and hopefully a fun part, of this course. The best way to learn geomorphology is to *do* geomorphology—that is our goal for you in lab. There will be a wide variety of lab types on the topics we study in class—the types include field exercises, map & aerial photo exercises, computer modeling, and quantitative analysis. The specific expectations for labs will vary (i.e. maps, short answer questions, lab reports, etc.) Please, for your enjoyment of field labs, come prepared—at some point in the semester, you will likely be out in the rain, heat, cold, etc. Probable lab activities include field exercises to study soils, stream flow, landslides, infiltration capacities, etc.; modeling slope failures, and mapping exercises.

Cell Phones:

Any cell phone use (texting, calling answering) will not be tolerated! If we see it happening, we make ask you to leave class!

Blackboard:

We will use the Blackboard site to post extra readings, to collect assignments, and to post grades. We will not as a practice post Powerpoints. Please be sure to know how to access these materials.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities. Students who require disability services or reasonable accommodations must identify themselves as having a disability and provide current diagnostic documentation to Disability Services. All information is confidential. Please contact Disability Services for more information at (828) 227-2716 or 144 Killian Annex.

ACADEMIC INTEGRITY

Western Carolina University, as a community of scholarship, is also a community of honor. Faculty, staff, administrators, and students work together to achieve the highest standards of honesty and integrity. Academic dishonesty is a serious offense at Western Carolina University because it threatens the quality of scholarship and defrauds those who depend on knowledge and integrity. Academic dishonesty includes:

- a. **Cheating**—Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise.
- b. **Fabrication**—Intentional falsification of information or citation in an academic exercise.
- c. **Plagiarism**—Intentionally or knowingly representing the words or ideas of someone else as one's own in an academic exercise.
- d. **Facilitation of Academic Dishonesty**—Intentionally or knowingly helping or attempting to help someone else to commit an act of academic dishonesty, such as knowingly allowing another to copy information during an examination or other academic exercise.

Instructors have the right to determine the appropriate sanction or sanctions for academic dishonesty within their courses up to and including a final grade of "F" in the course. Within 5 calendar days of the event the instructor will inform his/her department head, and the Associate Dean of the Graduate School when the student is a graduate student, in writing of the academic dishonesty charge and sanction. For more information on academic integrity, visit the Student Handbook.

Statement on Group Work and Plagiarism: In the modern work environment we are often called upon work as teams. Teamwork facilitates the exchange of ideas and helps us learn from one another. Different people bring different ideas to the group. However, teamwork does not eliminate the need for personal accountability, and individual responsibility. Some exercises in this course will require you to work in peer groups. Each student is expected to participate fully in the work of the group:

- a. It is not acceptable to sit by the sidelines while your group works, and then copy the data or duplicate the results later.
- b. It is permissible, and sometimes advisable, for a group to split up work. *For example*, in a stream profiling lab, two group members might take measurements for a profile while two others take measurements for calculating the velocity of a stream. In this case, the two who gathered profile data may copy velocity from the other two. However, each student is responsible for making all calculations, answering all questions and drawing maps and profiles INDIVIDUALLY, unless specifically stated otherwise in the lab handout.
- c. Be warned that excessive similarity among the results of group members may be construed as plagiarism.

We do expect groups to share ideas and thoughts, but everyone must participate fairly. If you have any questions about what is appropriate to share and what is not, ASK US.

Spring 2015
 Geology 305
 Lecture: Tu & Th 8-9:15, ST425
 Lab: Tuesday 1:00-2:50; 3:00-4:50, ST 155

Dr. J.P. Gannon
 Office: Stillwell 310
 Ph. 828-227-3813
 Email: jpgannon@wcu.edu
 Office Hrs: T & R 9:15-10:45

Course Schedule (Subject to Change)

Class	Week	Topic	Unit
13-Jan	1	Introduction - What is this class?	
15-Jan	1	Earth Materials: Rocks and Minerals	Drivers of Soil Formation
20-Jan	2	Landforms and Topography	
22-Jan	2	Components of the Water Cycle	
27-Jan	3	Water Budget and Drivers of the Water Cycle	
29-Jan	3	Soil Genesis - Forming Factors	Classifying Soils and Their Hydrology
3-Feb	4	Soil Properties and Classification	
5-Feb	4	Soil Hydrology	
10-Feb	5	Soil Hydrologic Properties	
12-Feb	5	Test 1	
17-Feb	5	Landscape variations in Soils and Hydrology	
19-Feb	6	Weathering Processes	
24-Feb	6	Advising Day - No Class	
26-Feb	7	Weathering Products	
3-Mar	7	Soil Taxonomy	
5-Mar	8	Groundwater Basics	
10-Mar	8	Spring Break	
12-Mar	9	Spring Break	
17-Mar	9	Runoff Generation and GW/SW Interactions	The Bigger Picture
19-Mar	10	Nutrient Cycling	
24-Mar	10	Water Quality	
26-Mar	10	Test 2	
31-Mar	11	Soil Erosion/Loss	
2-Apr	11	Slope Stability and Landslides	
7-Apr	12	No Classes	
9-Apr	12	Groundwater Surface Water Interactions	
14-Apr	13	Applied Hydrology/Hydrogeology	
16-Apr	13	<i>Project Presentations</i>	
21-Apr	14	Regional Groundwater Systems	
23-Apr	14	Environmental Issues in Hydrology	Environmental Issues
28-Apr	15	Environmental Issues in Hydrology	
30-Apr	15	Solving Environmental Problems	
7-May		FINAL EXAM: 3:00-5:30 PM	

Student Learning Objectives:

1. Have a fundamental understanding of basic processes and properties of soils and hydrology and how they interrelate.
2. Be able to interpret fundamental soils and hydrology processes and properties through landscape and data analysis.
3. Understand the relationship and importance of soils and hydrology to your education and career preparation.
4. Understand the mutual interactions of humans and natural systems.
5. Be able to apply standard methods in Soils & Hydrology to basic problems in the field and office.
6. Be able to define and address a research questions in Soils & Hydrology using standard methods and data analysis techniques, and be able to communicate those results to scientific and nonscientific audiences.

Grading

15 %	Exam I
15 %	Exam II
20 %	Final Exam (cumulative)
15 %	Lab & Class assignments & quizzes
35 %	Research Project

Grades and point scale:* 100-97%: A+, 96-94%:A, 92-90%:A-, 89-87%:B+, 86-83%:B, 82-80%:B-, 79-77%:C+, 76-73%:C, 72-70%:C-, 69-67%:D+, 66-63%:D, 62-60%:D-, <60%:F

Class and lab will play an integral role in your success in this course. The assignments will offer you the opportunity to become an active investigator in our field of study as well as let you master basic skills. All work submitted for this course must meet minimum college-level requirements with respect to writing, clarity, and completeness. Work submitted that does not meet minimum expectations will not be accepted for evaluation; work that is not accepted may be corrected and resubmitted but will be considered late. All late work, without an approved excuse, will receive a penalty. Assignments turned in late on the day it is due will lose 10%. After this day, assignments will lose an additional 20 % per day. Unless specified otherwise, all out-of-class written assignments must be word-processed (i.e. typed), 12 point font, double-spaced, and have one inch margins. All references used must be cited in a standard, complete reference format.

Texts

Elements of the Nature and Properties of Soils, 2nd edition, by Brady and Weil. (from Bookstore)

Ground Water and Surface Water: A Single Resource by Winter, Harvey, Franke, & Alley.

online at: <http://pubs.usgs.gov/circ/circ1139/>

Attendance and Classroom/Lab Policy: I expect you to attend all classes unless you have an excused absence, although I will not directly count attendance in your grade. This course is being taught for you—not for me. Your presence, your preparedness, and your participation in all classes are critical to your success in the course as well as the success of the class. Furthermore, there will be some in-class exercises and quizzes—there will be no make-up for these types of assignments. I expect you to be to class on time and ready to participate and learn.

Portable Electronics: Cell phone use is not permitted in class. If I see you using your cell phone you will be asked to leave the class and receive a zero for any assignments during that class period. Students using cell phones in class is extremely distracting and inhibits my ability to effectively run the classroom.

E-mail: Read your e-mail! I will communicate with you often via e-mail. If you miss something because you didn't read the e-mail, it is on you. Additionally, if you send me an e-mail for any reason (even if it is a simple question), include a salutation and a closing (i.e., sign your name). It is unprofessional to do otherwise. I will never send you an e-mail without these components and I expect the same show of respect from you.

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- d. Facilitation of Academic Dishonesty—Intentionally or knowingly helping or attempting to help someone else to commit an act of academic dishonesty, such as knowingly allowing another to copy information during an examination or other academic exercise.

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- c. Be warned that excessive similarity among the results of group members will be treated as plagiarism.

I do expect groups to share ideas and thoughts, but everyone must participate fairly. If you have any questions about what is appropriate to share and what is not, ASK ME.

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Course and Instructor Evaluation: Please take the time to complete CoursEval when open near the close of the semester—they do make a difference, they are anonymous, and they cannot be reviewed until after grades are submitted.

The University Writing Center in Hunter Library offers free, friendly, one-on-one writing feedback for students of all class levels and majors. Visit their online writing resources to find helpful guidelines and other information. Call 828.227.7197 to make individual appointments. There is high demand for tutoring appointments during midterms and at the end of the semester, so plan ahead!

**Chem 330--Aquatic Chemistry
Spring 2015**

Lecture: MWF, 9:05-9:55 a.m., Belk 253

Prerequisites: CHEM 132 & 133 or CHEM 139 & 140

Text: *Environmental Aquatic Chemistry*, 2nd. Ed., Eugene Weiner, CRC Press, 2008.

Instructor: Dr. Cynthia Atterholt, NS 231 and ST 407

Office Hours: M, W, F, 10-11 am, or by appointment

Phone Number: 227-3667 or 227-5402

e-mail: atterholt@email.wcu.edu

Course Description

Aquatic chemistry is the branch of environmental chemistry that deals with chemical phenomena in water. Aquatic chemistry is concerned with the chemical processes affecting the distribution and circulation of chemical compounds in natural waters. One goal is to describe and predict the chemical behavior of oceans, estuaries, rivers, lakes, groundwater, and soil water systems, and to describe the processes involved in water treatment.

The study of aquatic chemistry draws on the fundamentals of chemistry but is also influenced by other sciences, especially geology and biology. Through the hydrologic cycle, water interacts continuously with matter. Because of the complexity of natural systems, simplified models are often used to study factors that affect the chemical composition and behavior of natural waters.

In this course, we will study the fundamentals of aquatic chemistry and some of the applications. Some of the topics covered will be found in the textbook and others will be provided in lecture or through supplemental material. The lab is a separate course.

Tentative Lecture Schedule:

Chapter 1	Water Quality
Chapter 2	Contaminant Behavior in the Environment
Chapter 3	Major Water Quality Parameters
Chapter 4	Behavior of Metal Species in the Natural Environment
Chapter 5	Soil, Groundwater, and Subsurface Contamination
Chapter 6	Nonaqueous Phase Liquids
Chapter 7	Dense Nonaqueous Phase Liquids
Chapter 8	Biodegradation and Bioremediation
Chapter 10	Selected Topics in Environmental Chemistry

Grading:

Homework, Quizzes, Reports, Papers	20%
3 Exams (20% each)	60%
Final Exam	20%

98-100% = A+; 92-97% = A; 90-91% = A-; 88-89% = B+; 82-87% = B; 80-81% = B-; 78-79 = C+; 72-77% = C; 70-71% = C-; 68-69 = D+; 62-67% = D; 60-61 = D-; <60% = F

Attendance:

Attendance in class is mandatory. The first three absences will not affect your grade. However, one point will be deducted from your final average for every absence after three. If there is any reason you will be absent for class or an exam, call me or send me an e-mail *before* you miss class. *If* there is a legitimate absence on the day of an exam (with a written excuse), the make-up exam will need to be scheduled before the exams are returned to the class, which is usually the next class period. If I determine this is not possible, due to some documented emergency, a make-up exam will be given May 1. Last day for Withdrawal is Monday, March 16.

Assignments:

There will be reading and homework questions assigned during the semester. All homework assignments are to be typed (so I can read them). However, you may hand write equations and chemical structures—just make sure they are legible! On the date that the assignment is due, I will collect your papers then we will discuss the questions in class. You may want to keep a copy of your answers so that you have them available during the discussion. You need to be present in class to participate in class discussions.

Water Quality/Chemistry Papers:

Students will report on an article from a current environmental/water quality journal (approved by me) about a current topic related to water quality or water chemistry. A typed (2-3 page) report will be submitted with a summary of the issue, including a discussion about the significance related to water quality.

Exams:

There will be three exams given during the semester plus the final exam. Each exam will cover material from reading assignments, lecture, and homework. The final exam will be cumulative. Test questions will include multiple choice, short answer, short discussion, and problems.

Tentative exam dates are: February 6, March 6, and April 17.

Final Exam:

There will be a comprehensive final exam **Tuesday, May 5, from 8:30 to 11:00 am**. The final will count for 20% of your final grade.

CourseEval Dates: April 5-May 2 (tentative).

Accommodations for Students with Disabilities:

Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities. Students who require reasonable accommodations must identify themselves as having a disability and provide current diagnostic documentation to Disability Services. All information is confidential. Please contact the Office of Disability Services for more information at (828) 227-3886. You may also visit the office's website: disability.wcu.edu.

The Writing and Learning Commons (WaLC) seeks to enhance the academic environment and raise the level of academic discourse at WCU by providing tutoring, academic skills consultations, workshops, online learning resources, and faculty consultations. Writing Assistants collaborate with students from all classes and majors at every stage of the writing process, from brainstorming and prewriting to drafting and revising. Course tutors facilitate

collaborative group sessions and offer strategies for effective study and efficient time management. Call 227-7197 for writing appointments and 227-2274 for course tutoring. Visit the website, <http://walc.wcu.edu>, for additional learning and writing resources, hours of operation, and appointment information. All consultations and tutoring sessions take place in Belk.

Academic Honesty Policy (as described in the Student Handbook):

Western Carolina University, as a community of scholarship, is also a community of honor. Faculty, staff, administrators, and students work together to achieve the highest standards of honesty and integrity. Academic dishonesty is a serious offense at Western Carolina University because it threatens the quality of scholarship and defrauds those who depend on knowledge and integrity. Academic dishonesty includes:

1. *Cheating*—Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise.
2. *Fabrication*—Intentional falsification of information or citation in an academic exercise.
3. *Plagiarism*—Intentionally or knowingly representing the words or ideas of someone else as one's own in an academic exercise.
4. *Facilitation of Academic Dishonesty*—Intentionally or knowingly helping or attempting to help someone else to commit an act of academic dishonesty, such as knowingly allowing another to copy information during an examination or other academic exercise.

Instructors have the right to determine the appropriate sanction or sanctions for academic dishonesty within their courses up to and including a final grade of “F” in the course. Within 5 calendar days of the event the instructor will inform his or her department head (and the Associate Dean of the Graduate School if the student is a graduate student) in writing of the academic dishonesty charge and sanction.

Please refer to the Student Handbook for procedures that will be followed in the event that academic dishonesty has been committed.

Inclement weather policy (as described in the Student Handbook):

The University does not, as a matter of general practice, close its operations or cancel classes in Cullowhee because of bad weather. Many Western students commute from different distances and directions and weather conditions for those students may vary greatly from conditions on the Cullowhee campus. Students are advised to check road conditions in their areas and determine whether it is reasonable for them to drive to campus. The University expects students to make every effort to attend class but not to jeopardize their safety by driving during dangerous conditions. Faculty members will accommodate those students who are unable to attend class because of hazardous weather conditions. Should the decision be reached to modify daily operations, Public Relations will announce modifications to the University schedule via media outlets, the University website and email. In addition, students, faculty and staff are encouraged to check the University website when the possibility of adverse weather arises. Updates about the status of University operations will be posted on a continuing basis. Please refer to the WCU weather policy for more information regarding school closures.



College of Arts & Sciences
Department of Chemistry & Physics
CHEM 331, Environmental Organic Chemistry

Fall 2015
ST 448
MWF 9:05-9:55

Instructor Information

Instructor: Dr. Cynthia Atterholt

Campus Office/Office hours: ST 407, MWF 10-11 a.m. or by appointment

Email: atterholt@email.wcu.edu

Phone Contacts: 828-227-3676, or 828-227-7260 for departmental office

I. Rationale/Purpose

This course is designed to provide an introduction to organic chemistry, with a focus on environmental aspects and behavior of chemicals. Environmental chemistry is defined as *“the study of the sources, reactions, transport, effects, and fates of chemical species in the water, soil, air, and living environments,”* and is thus inherently an interdisciplinary science. In this course, students will learn the fundamentals of environmental organic chemistry.

II. Course Learning Objectives:

- By the end of this course, students will be able to:
 - Identify common functional groups in organic compounds.
 - Name and draw the structures of simple organic molecules.
 - Describe and predict the behavior of common organic compounds in the environment.
 - Recognize common organic environmental contaminants.
 - Describe and predict the physical and chemical properties of common organic compounds.
 - Describe and predict the transport and fate of organic contaminants in the environment.

III. Course Materials

Text: *Organic Chemistry: A Short Course*, 13th Ed.; Hart, Hadad, Craine, Hart; Brooks/Cole, 2012.

Background/supplemental readings: Supplemental reading material or links will be placed on Blackboard.

Additional, Materials, Equipment or Skills: Lab safety goggles and calculators are required.

Accessing Media: Course materials will be placed on Blackboard.

IV. Faculty Expectations of Students/Course Policies

Attendance:

Attendance in class is mandatory. If there is any reason you will be absent from class or an exam, call me or send me an e-mail **before** you miss class. If you have a legitimate, documented absence on the day of an exam, bring a written, documented excuse from your doctor, hospital, funeral home, etc. to me upon

your return. **If** there is a legitimate, documented absence on the day of an exam (with a written excuse), the make-up exam will need to be scheduled before the exams are returned to the class, which is usually the next class period. If I determine this is not possible, due to a documented emergency, a make-up exam will be given the last day of the semester, December 4. Student athletes, band members, or students traveling on a field trip who have a documented absence will need to make arrangements to take their exam **before** their scheduled trip or absence.

Students who miss 3 or fewer class periods will have the option of replacing their lowest exam grade with their final exam grade. The 3 absences will allow for issues related to illness, accidents, death in the family, field trips, inclement weather, etc. Students who miss more than 3 class periods will not have the option of replacing their lowest exam grade with the final exam grade.

Timely Submissions:

Assignments:

There will be reading, homework questions, and reports assigned during the semester. Some of the homework assignments will be completed in Blackboard, and some assignments will be paper assignments to be submitted in class. Due dates will be published in Blackboard. All paper assignments are to be typed (so I can read them). However, you may hand write equations and chemical structures—just make sure they are legible! **Late work will not be accepted.**

Expectations for Submitting Required Work:

On the date that paper assignments are due, I will collect your papers at the beginning of class. Homework not submitted at the beginning of classes will be late. To submit your assignments, you must arrive to class on time or submit your assignments in Blackboard on time. Some assignments will be completed during class and collected at the end of the class period. Students **must be present** in order to complete the in-class assignments and receive credit.

Accommodations for Students with Disabilities:

Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All information is confidential. Please contact the Office of Disability Services at (828) 227-3886 or come by Suite 135 Killian Annex for an appointment.

Student Support Services:

Student Support Services provides support to students who are either first-generation, low-income or those who have disclosed a disability with: academic advising, mentoring, one-on-one tutorial support, and workshops focused on career, financial aid and graduate school preparation. You may contact SSS at (828) 227-7127 or email sssprogram@wcu.edu for more information. SSS is located in the Killian Annex, room 138.

Course Evaluation: Nov. 9-Dec. 5 (tentative).

Civility and Ground Rules:

The Western Carolina University Community Creed states: "I will respect the rights and well-being of others."

Each student may possess different ideas, as well as different ways of communicating those ideas. Because of these differences, respect and civility are integral to maintaining the quality of the academic environment and free inquiry.

(<http://www.wcu.edu/student-life/policies-affecting-students/statement-of-student-rights-and-responsibilities.asp>)

SafeAssign Tool:

All written work submitted for this class is eligible for submission to the SafeAssign tool at the instructor's discretion.

V. Academic Integrity Policy and Reporting Process:

This policy addresses academic integrity violations of undergraduate and graduate students. Graduate students should read inside the parenthesis below to identify the appropriate entities in charge of that step of the process.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of the Academic Integrity Policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community. While academic in scope, any violation of this policy is by nature, a violation of the Code of Student Conduct and will follow the same conduct process (see Article VII.B.1.a.). If the charge occurs close to the end of an academic semester or term or in the event of the reasonable need of either party for additional time to gather information timelines may be extended at the discretion of the Department of Student Community Ethics (DSCE).

I. General:

This policy addresses academic integrity violations of undergraduate and graduate students.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of this policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community.

Instructors have the right to determine the appropriate academic sanctions for violations of the Academic Integrity Policy within their courses, up to an including a final grade of "F" in the course in which the violation occurs.

II. Definitions:

1. Cheating – Using, or attempting to use, unauthorized materials, information, or study aids in any academic exercise.
2. Fabrication – Creating and/or falsifying information or citation in any academic exercise.
3. Plagiarism – Representing the words or ideas of someone else as one's own in any academic exercise.
4. Facilitation – Helping or attempting to help someone to commit a violation of the Academic Integrity Policy in any academic exercise (e.g. allowing another person to copy information during an examination).

III. Undergraduate and Graduate Academic Integrity Process:

1. Within five (5) business days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, s/he will inform his/her department head (or associate Dean of the graduate school when applicable) in writing of the allegation and proposed sanction(s).

2. Within ten (10) business days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, the instructor will inform the student of the allegation, including the proposed sanction(s), in writing. In the written notification, the instructor will inform the student of his/her right to request a meeting with the instructor. During the meeting, the instructor shall complete the Academic Integrity Violation Faculty Resolution Form. If the student does not request a meeting with the instructor within five (5) business days of receipt of the written allegation(s), the student shall be deemed to have mutually resolved the matter and shall be bound to the sanction(s) outlined by the instructor in the written allegation. If the student does not request a meeting, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
3. Within five (5) business days of meeting with the instructor, the student shall either appeal the decision to the department head or mutually resolve the matter by accepting the allegation and proposed sanction(s). No action by the student within five (5) business days of the meeting with the instructor shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the instructor, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
4. Within five (5) business days of receiving a student's appeal, the department head must schedule a meeting with the student. The instructor may be present during the meeting. During the meeting, the department head shall complete the Academic Integrity Violation Department Head Resolution Form. Only information submitted during the meeting with the student, or in the meeting between the instructor and the student, may be considered by the department head. The evidentiary standard for making a decision shall be preponderance of the evidence. The department head may agree or disagree with the allegation(s) of the instructor. The department head may also approve, overturn, or modify the sanction(s) proposed by the instructor. If the student does not attend the scheduled meeting with the department head, the matter will be heard in absentia and shall not be subject to further review and/or appeal.
5. Within five (5) business days of meeting with the department head, the student shall either appeal the decision to an Academic Integrity Board or mutually resolve the matter by accepting the allegation and proposed sanction(s). The student must submit an appeal to the academic Dean listed on the Academic Integrity Violation Department Head Resolution Form. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the department head, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
6. Within seven (7) business days of receiving a student's appeal, the appropriate academic Dean must schedule an Academic Integrity Board hearing with the student. The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. The instructor may be present during the hearing. Only information submitted during the hearing, or in the meetings between the instructor/department head and the student, may be considered by the hearing board. The evidentiary standard for making a decision shall be preponderance of the evidence. The hearing board may agree or disagree with the allegation(s) of the instructor. The hearing board may also approve, overturn, or modify the sanction(s) proposed by the instructor and/or department head. If the student does not attend the scheduled hearing, the matter will be heard in absentia and shall not be subject to further review and/or appeal. Within ten (10) business days of the hearing, the appropriate academic Dean shall review pertinent records and send the student written notification of the decision of the Academic Integrity Board.
7. Within five (5) business days of receiving written notification of the decision of the Academic Integrity Board the student may accept the findings and sanctions of the board or submit an appeal to the designated academic Dean. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of

meeting with the Academic Integrity Board, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.

8. If the student elects to file an appeal of the decision of the Academic Integrity Board, she must submit a written appeal within five (5) business days of receiving written notification of the decision of the Academic Integrity Board to the designated academic Dean. An appeal to an academic Dean must be limited to the following grounds; 1) a violation or due process or 2) a material deviation from Substantive and Procedural Standards by the UNC Board of Governors (as set forth in the UNC Manual 700.4.1).
9. If an appeal is heard by an academic Dean, s/he shall review pertinent records within ten (10) business days of receiving a valid appeal. The academic Dean may agree or disagree with the allegation(s) of the instructor. The academic Dean may also approve, overturn, or modify the sanction(s) proposed by the instructor, department head, and or Academic Integrity Board. Within five (5) days of making a decision, the academic Dean shall provide the student with a written decision. The decision of the academic Dean shall be final.
10. The student must remain enrolled in the course related to the case, and may not be permitted to withdraw from the course related to the case, until all hearing timelines, notifications, and/or appeals have been completed.
11. Upon resolution of each level of the case (no matter the outcome), the instructor, department head, and academic Dean must provide the Department of Student Community Ethics with all materials and documents related to the case (i.e. course syllabus, materials in violation of the Academic Integrity Policy, Instructor Resolution Form, Department Head Resolution Form, Academic Integrity Board decision letter, academic Dean decision letter, etc...). The Department of Student Community Ethics shall serve as the repository for all records associated with allegations and violations associated with the Academic Integrity Policy.

IV. Academic Integrity Board:

The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. Students and faculty members serving on boards for each college will be selected by each college Dean. The Department of Student Community Ethics will train all board members prior to their service on a hearing board. Each academic Dean will convene hearing boards as necessary, and will determine a faculty member to serve as chair prior to a hearing.

V. Sanctions:

The instructor, department head, Academic Integrity Board, and/or academic Dean may impose academic sanctions permitted by the institution (not to exceed receiving a grade of "F" for the course). The instructor, department head, Academic Integrity Board, and/or academic Dean may not permanently remove the student from the course or suspend/expel the student from a program or the University. Student behavior of the magnitude to warrant consideration for permanent removal from the course or suspension/expulsion from a program or the University must be referred to the Department of Student Community Ethics.

VI. Habitual Violations of the Academic Integrity Policy:

Upon receipt of materials associated with violations of the Academic Integrity Policy, the Department of Student Community Ethics will determine if a student has previous violations of University policies. Students with a prior record of violations, or who commits a gross and/or egregious violation of the Academic Integrity Policy, will be referred to the Department of Student Community Ethics for consideration of being subject to hearing proceedings as a habitual violator. Students with three or more violations of the Academic Integrity Policy will automatically be subject to hearing proceedings as a habitual violator. Students in this category are subject to course-related sanctions imposed by the instructor, department head, Academic Integrity Board, and/or academic

Dean and University-level sanctions imposed by the Department of Student Community Ethics for habitual violations of University policies.

Additional information is available on the Student Success website under Student Community Ethics.

VI. Resources

Writing and Learning Commons (WaLC):

The Writing and Learning Commons (WaLC) is a free student service, located in BELK 207, providing course tutoring, writing tutoring, academic skills consultations, international student consultations, graduate and professional exam preparation resources, and online writing and learning resources for all students. To schedule tutoring appointments, visit the WaLC homepage (<http://walc.wcu.edu>) or call 828-227-2274.

Math Tutoring Center:

The Mathematics Tutoring Center provides tutoring in all lower-division math and many CS courses (455 Stillwell, <http://mathlab.wcu.edu>, 828-227-3830), help with mathematical concepts in other disciplines, and workshops on study skills specific to mathematics courses. Tutoring is available on a drop-in basis, 9 am – 5 pm and 6 - 9 pm Monday-Thursday, and 9 am – 5 pm on Friday.

Blackboard Support:

The learning management system for this class is blackboard and can be found at: <http://wcu.blackboard.com>. Additional help with blackboard can be found at: tc.wcu.edu, (828) 227-7487 or by visiting the Technology Commons located on the ground floor of the Hunter Library.

Academic Calendar: includes dates for all breaks, university closures, final exams, etc. The academic calendar can be found at: <http://www.wcu.edu/academics/campus-academic-resources/registrars-office/academic-calendar.asp>.

VII. Grading Procedures:

Homework, Quizzes, Reports, Attendance	20%
3 Exams (20% each)	60%
Final Exam	20%

There will be three exams given during the semester, plus the final exam. Each exam will cover material from reading assignments, lecture, and homework. Test questions will include multiple choice, short answer, short discussion, and problems. The final exam will be cumulative. *Cell phones may **not** be used as calculators on exams, and students may not have any electronic device other than a calculator out (or in their lap) during an exam. Students may **not** leave the classroom during an exam.* If you leave the classroom, you will need to turn in your exam before you leave.

Tentative exam dates are: September 18, October 23, and November 23.

Final Exam:

There will be a comprehensive final exam **Tuesday, Dec. 8**, from **8:30 am to 11:00 am**.

Letter grades will be assigned according to the following:

98-100% = A+; 92-97% = A; 90-91% = A-; 88-89% = B+; 82-87% = B; 80-81% = B-; 78-79 = C+; 72-77% = C; 70-71% = C-; 68-69 = D+; 62-67% = D; 60-61 = D-; <60% = F

VIII. Grading and Quality Point System

Grade	Interpretation	Quality Points per Semester Hour	Grade	Interpretation	Quality Points per Semester Hour
A+	Excellent	4.0	I	Incomplete	[--]
A	Excellent	4.0	IP	In Progress	[--]
A-		3.67	S	Satisfactory	[--]
B+		3.33	U	Unsatisfactory	[--]
B	Good	3.0	W	Withdrawal	[--]
B-		2.67	AU	Audit	[--]
C+		2.33	NC	No Credit	[--]
C	Satisfactory	2.0			
C-		1.67			
D+		1.33			
D	Poor	1.0			
D-		0.67			
F	Failure	0.0			

The grades of A+, A, A-, B+, B, B-, C+, C, C-, D+, D, D- and F indicate gradations in quality from Excellent to Failure. Please note that a C- grade is less than satisfactory and may not meet particular program and/or course requirements.

Students must be familiar with the class attendance, withdrawal, and drop-add policies and procedures.

IX. Tentative Course Schedule

Chapter 1	Bonding and Isomerism (review)
Chapter 2	Alkanes and Cycloalkanes; Conformational and Geometric Isomerism
Chapter 3	Alkenes and Alkynes
Chapter 4	Aromatic Compounds
Chapter 5	Stereoisomerism
Chapter 6	Organic Halogen Compounds; Substitution and Elimination Reactions
Chapter 7	Alcohols, Phenols, and Thiols
Chapter 8	Ethers and Epoxides
Chapter 9	Aldehydes and Ketones
Chapter 10	Carboxylic Acids and Their Derivatives
Chapter 14	Synthetic Polymers
Chapter 15	Lipids and Detergents
Supplemental	Special Topics; some of the topics covered will be found in the textbook and others will be provided in lecture or through supplemental material.

Academic Calendar: includes dates for all breaks, university closures, final exams, etc. The academic calendar can be found at: <http://www.wcu.edu/academics/campus-academic-resources/registrars-office/academic-calendar.asp>.

Final Exam: The university final exam schedule can be found here:
http://www.wcu.edu/registrar/calendars/fall_final_exam.pdf

Important Dates:

First day of Fall classes at WCU: Monday, August 17, 2015

Drop/Add: Monday, August 17, 2015 to Friday, August 21, 2015

University closed: Monday, September 7, 2015

Fall break: Monday, October 12, 2015 to Sunday, October 18, 2015

Last day to withdrawal with a grade of W: Monday, October 19, 2015 at 5 pm

Advising day (no classes): Tuesday, October 27, 2015

Thanksgiving break: Wednesday, November 25, 2015 to Friday, November 27, 2015

Last day of Fall classes at WCU: Friday, December 4, 2015

Final Exams: Saturday December 5, 2015 to Friday, December 11, 2015

Grades due to the Registrar: Monday, December 14, 2015

Tips for Success (Advice from previous students):

Attend class regularly, read textbook, and complete and submit all assignments on time. Use notecards to help learn and review important material.

Syllabus Updates:

This syllabus, with its course schedule, is based on the most recent information about the course content and schedule planned for this course. Its content is subject to revision as needed to adapt to new knowledge or unanticipated events. Updates will remain focused on achieving the course objectives and students will receive notification of such changes. Students will be notified of changes and are responsible for attending to such changes or modifications as distributed by the instructor or posted to Blackboard.

ENVH 450 – Quantitative Air Analysis

Spring 2011

Location:	Moore Hall 316 for laboratories
Meeting times:	Monday 1:25 – 3:20
Instructors:	Dr. Burton Ogle and Dr. Tracy Zontek (primary instructor)
Contact Info:	Bogle@email.wcu.edu (preferred); G-11 Moore Hall; Tel: 227-3517; Fax: 227-7446 Zontek@email.wcu.edu (preferred); G-09 Moore Hall; Tel: 227-2146; Fax: 227-7446 Office Hours: MWF 11:00-12:20 additional times by appointment
Webpages:	http://envh.wcu.edu ;
Prerequisites:	ENVH major or permission of instructor
Co-requisites:	ENVH 440 or ENVH 457 (for ENVH majors)
Credits:	2 semester hours

I. Rationale/Purpose

The disciplines of air quality and industrial hygiene require knowledge and associated skills for characterizing the ambient air environment. A multitude of techniques and methods are available to quantify and qualify ambient chemical contaminants. This course will explore those methods and students will experience hands-on techniques. The use of the information gathered from such methods and techniques can be compared with various consensus standards and regulations such as the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs); Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs); Environmental Protection Agency National Ambient Air Quality Standards (NAAQS) and the National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limits (RELs). Principles and methods of air quality monitoring will be introduced. The course will employ both lecture and laboratory experiences.

II. Course Aims and Objectives

The primary objective of this course is to contribute to student preparation in the environmental health sciences.

Specifically, by the end of this course, students will:

- Evaluate the occupational environment and determine the appropriate air monitoring and analytical technique
- Assess the limitations and sources of error during air monitoring investigations
- Compare results from air monitoring investigations to regulatory limits and other guidelines to determine need for intervention
- Acquire the skills and techniques necessary to collect chemical contaminants in air
- Develop teamwork skills and field techniques when completing air monitoring investigation outside class
- Discern how to write a technical report describing air monitoring investigations
- Demonstrate proficiency during the lab practical in analyzing and interpreting chemical contaminants in air

III. Course Materials

Electronic text and handouts are provided by instructors and distributed via Blackboard.

IV. Faculty Expectations of Students/Course Policies

Instructional Methods:

The student will receive information through readings, case studies, internet sources, PowerPoint presentations, handouts, discussion, video presentation, and projects. In addition, current mass media and peer reviewed journal articles will be discussed as appropriate. Air sampling in real life situational will be utilized.

Accommodations for students with disabilities:

Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation

to Disability Services. All information is confidential. Please contact the Office of Disability Services for more information at (828) 227-3886 or lalexis@wcu.edu. You may also visit the office's website: disability.wcu.edu

Academic Integrity:

Western Carolina University, as a community of scholarship, is also a community of honor. Faculty, staff, administrators, and students work together to achieve the highest standards of honesty and integrity. Academic dishonesty is a serious offense at Western Carolina University because it threatens the quality of scholarship and defrauds those who depend on knowledge and integrity. Academic dishonesty includes: a. **Cheating** -

Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise; b.

Fabrication - Intentional falsification of information or citation in an academic exercise; c. **Plagiarism** -

Intentionally or knowingly representing the words or ideas of someone else as one's own in an academic exercise; and, d. **Facilitation of Academic Dishonesty** - Intentionally or knowingly helping or attempting to help someone else to commit an act of academic dishonesty, such as knowingly allowing another to copy information during an examination or other academic exercise. The procedures for cases involving allegations of academic dishonesty are found in the WCU Student Handbook. Code of Student Conduct: <http://www.wcu.edu/24861.asp>

WCU instructors reserve the right to use plagiarism prevention software (such as SafeAssignment.com) as well as Google, Yahoo, and/or other Internet search engines to determine whether or not student papers have been plagiarized. With plagiarism prevention software, instructors may upload student papers into a searchable database or teach students how to upload their own work as part of the course requirements.

Attendance Policy

Class attendance is required. Students are responsible for the academic consequences of absence. Roll will be taken at the beginning of each class - if you are late to class, you will likely be counted as "absent" unless you bring this to the instructor's attention after class. The WCU policy on excused/unexcused absences will be followed. Students having more than 2 unexcused absences in all likelihood will not meet the requirements of the course and will be assigned a grade of "F" or "I" as appropriate. At a minimum, each unexcused absence will result in 1 point being subtracted from the final course grade - up to 10% of the final grade. If you have a valid excuse for your absence, you must discuss this with your professor no later than the following class period.

Late assignments will receive deductions of up to 10% per day late.

If you are sick or unable to attend class on the day an exam is scheduled, you must notify the instructor *prior* to the time the exam is scheduled. If prior notification of your absence is not given (and received), you will receive a grade of zero on the exam. If you have an acceptable reason, you can make up the exam with no penalty. Missed exams must be made up within one week or you will receive a zero. All make-up exams are essay format.

Classroom Behavior

Disruptive students will be asked to leave the class. Please refer to the WCU Student Handbook for more information about behavior expectations.

Cell Phones

If you carry a cell phone, turn it off or switch to a non-audible mode during class. A one-time warning will be given if a cell phone disrupts class and subsequent disruptions will result in severe deductions in the course grade. Cell phone usage during quizzes/exams, including text-messaging is considered a violation of the Academic Honest Policy (see above) - disciplinary action will be taken.

Inclement weather

Please refer to the WCU Inclement weather webpage: <http://www.wcu.edu/weather/> - commuters should use good judgment is attempting to reach campus during inclement weather. Resident students will be expected to attend all classes regardless of weather. Check the above website and/or Blackboard in the event of inclement weather.

Blackboard, Email, and Contacting your Instructor

Portions of this course will be administered on Blackboard. It is the student's responsibility to maintain access to Blackboard and their Western email account throughout the entire semester. For issues accessing WCU email or Blackboard contact IT Services (828-227-7487, itshelp@email.wcu.edu). Students will be expected to access Blackboard on a daily basis. Blackboard may be accessed via the WCU homepage (www.wcu.edu) or My Cat (<https://mycat1.wcu.edu/cp/home/displaylogin>). Email is the most reliable way to communicate with your instructors outside of class. Students must use their WCU email accounts (Catamount Mail). The university

spam filter most often blocks non-WCU email accounts. Students may contact instructors via telephone; however, your instructors will return messages through email only.

V. Grading Procedures

Assignments and Evaluation Methods:

Each student will complete 5 laboratory reports to describe accurate air analysis. One independent laboratory will be conducted in groups of 2 to 4 students in a real-life scenario with subsequent formal report. Reports will be submitted one week following the laboratory experience. A laboratory practicum will be administered at the end of the semester where students will demonstrate competency on equipment used throughout the semester. All grades will be posted on Blackboard. Students may view their grades at all times and can estimate their overall performance in this class.

Evaluation Instrument	Approximate Points
Lab Reports	550
Independent Research Report	150
Attendance and Participation	50
Homework and Quizzes	150
Lab Practical (must pass to earn course credit)	N/A
Total	900

Grades: Letter grades will be assigned according to the following:

Percentage Grade	Letter grade
97-100	A+
93 – 96.9	A
90 – 92.9	A-
87 – 89.9	B+
83 – 86.9	B
80 – 82.9	B-
77 – 79.9	C+
73 – 76.9	C
70 – 72.9	C-
67 – 69.9	D+
63 – 66.9	D
60 – 62.9	D-
59 and below	F

VI. Student Evaluation of Course

Student course evaluations are accessed through your Catamount email and will be open from April 1 – 28. The course evaluation is completely external to course and instructor has no control over access or availability. Instructor cannot view student evaluations until after final grades are submitted. All student submissions are anonymous and used to improve instruction and materials.

VII. Laboratory Rules

No smoking or chewing tobacco. No food or drink in the laboratory. No bare feet. No pets. You must wear appropriate attire for field and laboratory work. **Safety:** All students will be expected to observe posted and written laboratory safety

procedures. Each laboratory will review the appropriate personal protective equipment required for that lab. Students who arrive to lab unprepared or with inappropriate attire will be asked to leave and the lab may not be made up.

VIII. Tentative Course Schedule – Please be flexible as this schedule may change.

Date	Topic
Jan 9	Lab does not meet – introductory online assignment Introduction to air monitoring -
Jan 23	Infra-Red Spectrometry Lecture and Use of Miran Infrared Spectrometer
Jan 30	Infra-red Spectrometry Lab 1 – Gross Anatomy Laboratory
Feb 6	Colorimetric Detector Tubes – Lecture – Lab 1 report due
Feb 13	Calibration – Lecture – Lab 2 report due
Feb 20	Calibration – Lab 3
Feb 27	No formal lab meeting – Lab report 3 due
March 5	Integrated Air Monitoring Lecture
March 12	Integrated Air Monitoring Lab 4 cal, sampling train
March 19	Gravimetric Sampling Lecture, Lab 4 due
March 26	Gravimetric Sampling Lab
April 2	No lab – spring break
April 9	Direct Reading Analysis Lecture/Lab – Lab 5 due
April 16	Independent Air Quality Analysis / Direct Reading Lab 6 due
April 23	Independent Air Quality Analysis – Lab Practical
Finals week	Independent Lab report due

Geology 465/565: Environmental Geochemistry

Instructor: Dr. Ben Tanner **Office:** Stillwell 307 **Office Hours:** MWF 10-11:00am; R 1:30-2:30pm
e-mail: btanner@email.wcu.edu **Phone:** 227-3915 Also by appointment or “drop in”
Course Text: Ryan - Environmental and Low Temperature Geochemistry, Wiley/Blackwell
Class Meeting Time: MW 9:05–9:55am Stillwell 425; R 3:00-4:50pm Stillwell 425 and ST314 (when announced)

COURSE DESCRIPTION AND OBJECTIVES

This course will demonstrate the interrelated nature of the sciences by tying together aspects of geology, chemistry, and biology in the detection and solution of environmental problems. We will learn and apply stable isotope analysis, organic geochemical analysis, and bulk chemical analysis to topics including environmental contaminants, element cycling, water/rock interactions, environmental reconstruction, climate change and other environmental issues. We will also study equilibrium thermodynamics and kinetics, acid-base equilibria, and oxidation-reduction reactions in order to apply these principles to environmental issues. We will have the opportunity to use atomic absorption spectroscopy, a gas chromatograph-mass spectrometer, an x-ray diffractometer, and a CNS elemental analyzer. Students should leave the course with an improved knowledge of how to apply chemical techniques in the investigation of past and present environments and environmental change. Students will also become familiar with some of the literature on this topic and will gain hands-on experience with practical applications of concepts to real-world problems. In order to meet these objectives, this course will consist of a mixture of lecture, lab, discussion of journal articles, and student projects.

GRADING

Tests (2)	40%	Mid-term and final each worth half.
Assignments	35%	Several in and out of class assignments and labs will be due over the course of the semester. Specific details and expectations will be communicated when the exercises are introduced.
Journal Article Reviews	15%	You will be assigned journal article readings over the course of the semester and will be required to turn in a 1-2 page (12 point font, double-spaced) summary of the articles. Also, you will be responsible (as a group) for leading a discussion of one of the articles. Journal article reviews will be graded using check (85%), check minus (70%) and check plus (100%). Half hearted attempts with major portions missing will be returned without grading (0%).
Final Presentation	10%	Group presentations will result from in depth analysis of a lab topic. I will set aside class time to form groups for this project and will let each group pick a particular lab topic to focus on. Specific details and expectations will be communicated when the assignment is introduced.

100-94%:A, 93-90%:A-, 89-87%:B+, 86-83%:B, 82-80%:B-, 79-77%:C+, 76-73%:C, 72-70%:C-, 69-60%:D, <60%:F

GRADUATE STUDENT ASSIGNMENTS

In keeping with WCU policy, graduate students will be required to complete several additional assignments. For a portion of the “assignment” score, graduate students are required to complete the field-based assignments (half of the 35% indicated) but are additionally required to construct and turn in a grant-style proposal of an original research idea (GSA Style) on a topic that is related to environmental geochemistry (the other half). Additionally, each graduate student will be expected to lead 1 journal article discussion over the course of the semester (as an individual and not as part of a group) for a portion of their journal article review grade.

FIELD TRIPS

Course fieldtrips are mandatory. Students with a schedule conflict or a valid excuse can complete an alternative assignment.

MAKEUP POLICY

Since assignments are given a week in advance of their due date, they must be turned in on time and cannot be made up. Tests can be made up only with a valid, verifiable excuse (i.e. doctor’s note).

FORMAT FOR ASSIGNMENTS

All written assignments must be typed unless I tell you otherwise. Also, please proof read all assignments to make sure that they are free of careless mistakes. Problem sets can be done by hand (these do not need to be typed). I will deduct points for sloppy work.

A NOTE ON CLASSROOM ETIQUETTE

I strive to maintain a learning environment that is comfortable and free from distraction. Electronic devices must be put away before the beginning of class. If you are waiting on an important call (e.g. family member in the hospital), please see me before class for special arrangements. Also, please do what is necessary before class so that you do not have to step out (for water, bathroom, etc.) during class, especially during testing. Students leaving the room during testing will be required to turn their test in to be graded before exiting the classroom.

COMPOSITION CONDITION MARKS

A student whose written work in any course fails to meet acceptable standards will be assigned a composition-condition (CC) mark by the instructor on the final grade report. All undergraduates who receive two CC grades prior to the semester in which they complete 110 hours at Western Carolina University are so notified by the registrar and are required to pass English 300 or English 401 before they will be eligible for graduation. This course must be taken within two semesters of receiving the second CC and must be passed with a grade of C (2.0) or better.

ACADEMIC INTEGRITY POLICY (academicintegrity.wcu.edu)

(Complete policy can be found within the undergraduate catalog – several important points are included here)

Academic dishonesty includes:

Cheating: using or attempting to use unauthorized materials, information, or study aids.

Fabrication: creating and/or falsifying information or citations in an academic exercise.

Plagiarism: representing someone else's words or ideas as one's own.

Facilitation: helping or attempting to help someone violate the Academic Honesty Policy (e.g., allowing another to copy during an exam; ghostwriting another's essay).

The instructor has the right to determine the appropriate sanction(s) for academic dishonesty up to and including a final grade of "F" in the course. Further discipline may be imposed by the university.

ACCOMODATIONS FOR STUDENTS WITH DISABILITIES

Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to Disability Services. All information is confidential. Please contact the Office of Disability Services for more information at (828) 227-3886.

THE WRITING AND LEARNING COMMONS (WaLC)

Located in BELK 207, provides free small-group course tutoring, one-on-one writing tutoring and academic skills consultations, and online writing and learning resources for all students. To schedule tutoring appointments, log in to TutorTrac from the WaLC homepage (<http://walc.wcu.edu/>) or call 828-227-2274

STUDENT SUPPORT SERVICES

Student Support Services provides support to students who are either first-generation, low-income or those who have disclosed a disability with: academic advising, mentoring, one-on-one tutorial support, and workshops focused on career, financial aid and graduate school preparation. You may contact SSS at (828) 227-7127 or email sssprogram@wcu.edu for more information. SSS is located in the Killian Annex, room 138.

CLASS SCHEDULE AND ASSIGNMENTS ARE TENTATIVE AND ARE SUBJECT TO CHANGE DURING THE SEMESTER. YOU WILL BE NOTIFIED OF ANY CHANGES DURING CLASS TIME

WEEK	TOPIC
Week 1	Course Introduction Equilibrium Thermodynamics & Kinetics I No Lab This Week (Lecture Continued During Lab Time)
Week 2	University Closed No Class - Out of Town Journal Article Review/Lab Safety
Week 3	Acids & Bases I Acids & Bases II Fieldtrip to Great Smoky Mountains National Park
Week 4	Oxidation/Reduction I Oxidation/Reduction II YSI Probe and HACH Lab
Week 5	Metal Contaminants I Metal Contaminants II Journal Article Review XRD Mineral Analysis Lab
Week 6	The Continental Environment I The Continental Environment II Flame AA Lab
Week 7	Journal Article Review Winter Break No Class
Week 8	Radioactive Isotopes Review For Exam Midterm Exam
Week 9	Carbon Cycle I Journal Article Review Ion Chromatography Lab
Week 10	Carbon Cycle II - Case Study Organic Geochemistry I CNS Sample Collection and Preparation Lab

WEEK	TOPIC
Week 11	Spring Break
Week 12	Organic Geochemistry II CNS Sample Prep. and Analysis Lab SE GSA
Week 13	Journal Article Review GC-MS Case Study GC-MS Sample Preparation Lab
Week 14	Stable Isotopes I GC-MS Sample Preparation Lab II GS-MS Sample Analysis Lab
Week 15	Stable Isotopes II Isotope Case Study Lab Wrap Up/Group Help
Week 16	Journal Article Review Final Exam Review Presentations
Finals Week 3-May	8:30 - 11:00am - Final Exam

Spring 2016

MWF 9:05-9:55 am McKee 121

Instructor: Joseph H. K. Pechmann, Office 111 NS, Email jpechmann@wcu.edu, Phone 227-3661,
Office hours: M 10:15-12:15, T 12:30-1:30 or by appointment.

Purpose: To provide a basic understanding of ecosystem and population processes, pathways of energy and materials, interactions among organisms and populations, and the human role in the biosphere.

Course Objectives: *By the end of this course, students will:*

- Demonstrate a basic understanding of organism-environment interactions over scales from the individual to the landscape
- Explain current ecological concepts and questions, and their development
- Design basic ecological studies, interpret ecological data, and use them to evaluate hypotheses
- Apply ecological knowledge and concepts to the current environment

Course Materials

- Rental text: Ecology, 3rd ed., by Michael L. Cain, William D. Bowman, and Sally D. Hacker; 2014, Sinauer Associates, Inc, ISBN: 978-0-87893-908-4. Assignments listed on course schedule. The textbook website (<http://sites.sinauer.com/ecology3e> , free access but must register for quizzes) contains abundant supplementary material, including chapter summaries, flashcards and key terms, exercises, and quizzes.
- Supplementary readings: Required reading assignments will be given during class, sent via email, or posted on Blackboard.

IV. Course Policies

- Class etiquette: You are expected to be on time for class and to stay for the entire class. Movement in and out of the room while class is in session is distracting and should be avoided. Cell phones should be out of sight and turned off or silenced during class.
- Attendance: Attendance is required. In order for an absence to be excused, the reason must be documented (in advance when possible) according to the guidelines presented in the Student Handbook. Excuses will be granted in the case of a documented and bona fide medical emergency, death of an immediate family member, required attendance at a university function or competition (not practices or fraternity or sorority activities), or a presentation at an academic conference. Other cases will be judged on an individual basis. All students are responsible for all material, assignments, and announcements made in class whether they were present or not. All students are expected to participate actively in class in order to facilitate learning.
- Blackboard (<http://wcu.blackboard.com>) will be used to post the class syllabus, lecture slides, and other course materials. Help with blackboard can be found at: tc.wcu.edu, (828) 227-7487 or by visiting the Technology Commons located on the ground floor of the Hunter Library.
- Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All information is confidential. Please contact the Office of Disability Services at (828) 227-3886 or come by Suite 135 Killian Annex for an appointment.
- Student Support Services provides support to students who are either first-generation, low-income or those who have disclosed a disability with: academic advising, mentoring, one-on-one tutorial support, and workshops focused on career, financial aid and graduate school preparation. You may contact SSS at (828) 227-7127 or email sssprogram@wcu.edu for more information. SSS is located in the Killian Annex, room 138.

- Environmental Science Program Self-Study (Appendix 3)
Academic Integrity (source: Undergraduate catalog). Students, faculty, staff, and administrators of Western Carolina University strive to achieve the highest standards of scholarship and integrity. Any violation of the Academic Integrity Policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community... Violations of the Academic Integrity Policy include:
 - Cheating—using or attempting to use unauthorized materials, information, or study aids in any academic exercise.
 - Fabrication—Creating and/or falsifying information or citation in any academic exercise.
 - Plagiarism—Representing the words or ideas of someone else as one’s own in any academic exercise.
 - Facilitation—Helping or attempting to help someone to commit a violation of the Academic Integrity Policy in any academic exercise (e. g., allowing another to copy information during an examination).
 ...Faculty members have the right to determine the appropriate sanction(s) for violations of the Academic Integrity Policy within their courses, up to and including a final grade of “F” in the course...” For full information please see <http://catalog.wcu.edu/content.php?catoid=36&navoid=1194#honestypolicy>
- The Writing and Learning Commons (WaLC) is a free student service, located in BELK 207, providing course tutoring, writing tutoring, academic skills consultations, international student consultations, graduate and professional exam preparation resources, and online writing and learning resources for all students. To schedule tutoring appointments, visit the WaLC homepage (<http://walc.wcu.edu>) or call 828-227-2274.
- The Mathematics Tutoring Center provides tutoring in all lower-division math and many CS courses (455 Stillwell, <http://mathlab.wcu.edu>, 828-227-3830), help with mathematical concepts in other disciplines, and workshops on study skills specific to mathematics courses. Tutoring is available on a drop-in basis, 9 am – 5 pm and 6 - 9 pm Monday-Thursday, and 9 am – 5 pm on Friday.
- Academic calendar: includes dates for all breaks, university closures, final exams, etc. The academic calendar can be found at: <http://www.wcu.edu/academics/campus-academic-resources/registrar-office/academic-calendar.asp>.

Grading Procedures:

Grades will be based on homework/class exercises, four exams, and a final presentation and written exam. Test material will be taken from both lecture and textbook material. Lectures will include material that is not in the books.

	<i>Objective or material covered</i>	<i>Percent</i>
Homework/class exercises	In-depth exploration of specific topics	20
Exam I	Physiological ecology, population distributions	15
Exam II	Demography, life histories, population dynamics, metapopulations	15
Exam III	Species interactions: competition, predation, herbivory, parasitism, mutualism, commensalism	15
Exam IV	Communities, diversity, biogeography, ecosystems, and landscapes	15
Final- presentation	Application of ecological concepts to the current environment	5
Final- written	Application of ecological concepts to the current environment	15

- Letter grades will be assigned according to the following percentages: 97-100 A+; 93-96 A; 90-92 A-; 87-89 B+; 83-86 B; 80-82 B-; 77-79 C+; 73-76 C; 70-72 C-; 67-69 D+; 63-66 D; 60-62 D-; 59 and below F

- Final exam: Identify a current, regional ecological question or environmental issue. For the final exam, explain the issue from an ecological perspective and use ecological concepts to design an experiment, sampling scheme, or remediation plan. The design should be your own although it can be modeled on the work of others. You should choose an issue and assemble information during the semester. This should include several articles from peer-reviewed scientific journals. Relevant information (journal articles; books, etc) may be brought to the final exam, however, the written product (ecological explanation and experiment, sampling scheme, or remediation plan) must be completed, from scratch, during the exam. Each student will also do an oral/Powerpoint presentation covering their final exam material during one of the last three classes of the semester. You will be able to incorporate suggestions from Dr. Pechmann, and your fellow students on the material you present into the written version of your final exam.

How to do well in this course:

- Come to class. That's where we will discuss and work with the information you will need to learn. Also, 20% of your course grade is for class exercises and homework ("extra credit"). You will miss the opportunity to earn points if you are not in class.
- Take notes in class. All the information is not on the slides.
- Read the textbook. You can't expect to expect to master the course material by being exposed to it once in class. Reading the book will provide you with a complementary perspective on important concepts and information, fill in gaps in your understanding, and help you remember things for the tests and in the future.
- Do all the homework and do it well. The assignments are designed to help you learn. Homework is also worth points towards your course grade, and usually easier to do well on than tests.
- Start thinking about your final exam topic early- at least a month before the exam. That way you will have plenty of time to gather and read the necessary material. Feel free to ask me what I think of potential topics you are considering.
- Come talk with me if you don't understand any of the course material. I will do my best to help you. Don't wait until the day before the test to ask questions.

Tentative Course Schedule

May change to accommodate guest presenters, student needs, and unanticipated events.

<u>Day</u>	<u>Date</u>	<u>Topic</u>	<u>Reading - Cain et al.</u>
M	11-Jan	Introduction - what is ecology	Chapter 1
W	13-Jan	Environmental variation - climate	Chapter 2
F	15-Jan	Biomes	Chapter 3
M	18-Jan	No Class – MLK Holiday	
W	20-Jan	Environment: temperature and water	Chapter 4
F	22-Jan	Environment: temperature and water- animals	Chapter 4
M	25-Jan	Environment: light	Chapter 5
W	27-Jan	Environment: energy	Chapter 5
F	29-Jan	Population distributions	Chapter 9
M	1-Feb	Exam I	
W	3-Feb	Demography & life tables	Chapter 10
F	5-Feb	Demography & life tables- exercises	Chapter 10
M	8-Feb	Life histories	Chapter 7
W	10-Feb	Population growth, density-dependence	Chapter 10
F	12-Feb	Population growth, density-dependence	Chapter 10
M	15-Feb	Population dynamics-regulation/ fluctuations	Chapter 11
W	17-Feb	Population dynamics-stochasticity/ extinctions	Chapter 11
F	19-Feb	Metapopulations	Chapter 11
M	22-Feb	Exam II	

<u>Day</u>	<u>Date</u>	<u>Topic</u>	<u>Reading - Cain et al.</u>
W	24-Feb	Break – No Class	
F	26-Feb	Break – No Class	
M	29-Feb	Competition- models	Chapter 12
W	2-Mar	Competition- empirical studies	Chapters 12, 19:431-434
F	4-Mar	Competition vs facilitation	Chapter 12
M	7-Mar	Predation- models	Chapter 13
W	9-Mar	Predation- models, empirical studies	Chapter 13
F	11-Mar	Predation- empirical studies	Chapter 13
M	14-Mar	Herbivory	Chapter 13
W	16-Mar	Parasitism	Chapter 14
F	18-Mar	Positive interactions-mutualism, commensalism	Chapter 15
M	28-Mar	Exam III	
W	30-Mar	Communities – Introduction, structure	Chapter 16
F	1-Apr	Communities – species interactions	Chapter 16
M	4-Apr	Species diversity	Chapter 19:426-431, 434-447
W	6-Apr	Community dynamics	Chapter 17
F	8-Apr	Biogeography: local vs regional, island	Chapter 18
M	11-Apr	Biogeography: global	Chapter 18
W	13-Apr	Ecosystem structure, functions, management	Chapter 20
F	15-Apr	Trophic structure	Chapter 21
M	18-Apr	Cycling and carbon structure	Chapter 22
W	20-Apr	Landscape ecology	Chapter 24
F	22-Apr	Exam IV	
M	25-Apr	Final presentations	
W	27-Apr	Final presentations	
F	29-Apr	Final presentations	
T	3-May	Final Exam: 8:30-11 am	

BIOL 438: ECOLOGICAL RESTORATION

SPRING 2015

INSTRUCTOR: Laura E. DeWald

Contact Information: 317 Stillwell, 227-2748, ldewald@wcu.edu

Office Hours: M/T/W/F 11:00-12:00, or by appointment, or whenever my door is open

COURSE DESCRIPTION:

In this course we will examine why ecological restoration is not a panacea for the world's environmental problems, but will also see how it can offer effective guidelines and procedures for making a real difference for ecological recovery. The objective is for you to understand ecological foundations that support restoration of communities and ecosystems. We will examine different ecosystems, restoration projects, and ways in which people agree and disagree about restoration. Restoration theory and concepts will be discussed in a structured seminar format. Journal article discussions and presentations will provide experience to apply ecological restoration principles to selected ecosystem problems or theoretical ecological issues. By the end of the course, you will have read broadly in restoration literature, understand important ecological and social issues related to restoration, and recognize the context and constraints of restoration. Finally, this course will provide practice critical thinking, critical reading, effective oral communication, and scientific inquiry.

LEARNING OUTCOMES:

As a result of this course, you will be able to:

- Read and interpret primary literature (books and scientific articles) that supports the science and practice of ecological restoration (critical reading).
- Understand the backgrounds and themes of major different disciplinary contributions to restoration ecology (critical reading, critical thinking).
- Participate in, and be responsible for guiding thoughtful discussions about a broad spectrum of restoration-related policy and ecology issues (effective oral communication).
- Think critically about competing claims and social decisions related to restoration ecology (critical reading, critical thinking)

REQUIRED TEXT AND MATERIALS:

Greipsson, S. 2011. *Restoration Ecology*. Jones & Bartlett Learning. 408 pages.

Journal articles and other assignments are posted on Blackboard as .doc or PDF files.

ASSESSMENT:

You will demonstrate your understanding of ecological restoration literature and concepts through (1) participation in class discussions, (2) examinations, and (3) a case study paper + presentation.

Successful discussions rely on an active interchange of ideas, so thoughtful participation is highly important. **Typed responses** to questions will be turned in to document your preparation for discussions. Oral presentation of your ideas, supported by visual display materials, is also an important professional skill. The final paper is a critique of the use of ecological principles in an ecological restoration project of your choice.

The rubric below characterizes different levels of excellent academic work:

- (1) **Excellent:** Written or verbal discussion clearly and completely addresses the question, there is thorough and logical development of thoughts, points are supported by literature, with correct grammar, spelling, and citations have proper format.
- (2) **Good:** Written or verbal discussion is complete or nearly complete in addressing the question, thoughts are generally logically and thoroughly expressed, most arguments or questions of fact are supported by the literature, and there are only minor errors of grammar, spelling, or citation format.
- (3) **Needs Improvement:** Discussion is incomplete answer or is tangential to the question, thoughts are sometimes illogical or incomplete, arguments or questions of fact are only sporadically supported by the literature, and there are moderate errors of grammar, spelling, or citation format.
- (4) **Poor:** Answer mostly fails to address the question, thoughts are often illogical or incomplete, arguments or questions of fact rarely supported by the literature, and there are substantial errors of grammar, spelling, or citation format.

Final grades will be assigned according to the following criteria:

Exams: 2 @ 100 points each	200 points
Participation in discussions	100 points
<u>Case Study Presentation and Paper</u>	<u>100 points</u>
Total	400 points

A+ = 99% or above, 93-98%, A- = 90-92%, B+ = 87-89%, B = 83-86%, B- = 80-82%, C+ = 77-79%, C = 73-76%, C- = 70-72%, D+ = 67-69%, D = 63-66%, D- = 60-62%, F = below 60%.

COURSE POLICIES:

Attendance, Exams and Late Work Policy: Attendance is expected and critical to your participation grade. Discussion question answers will only be accepted from students in class on the day of the discussion. Contact the instructor in advance of class to receive an excused absence. *I do not accept* late assignments because it is unfair to your classmates who turn in assignments on time. All writing assignments *must be* typed, double-spaced, and in 12pt font.

Class Environment: I encourage *respectful* disagreement and debate. Listening to different opinions is one of the best ways to learn. Keep an open mind and resist the urge to immediately dismiss a view with which you disagree. Please listen and do not talk when others are talking. **Please turn your cell phone OFF! Thanks!**

Academic Integrity

You are encouraged to share ideas, discuss questions, and work together with your peers in such a way as to further your individual and collective understanding and proficiency of the concepts and skills presented in this course. However, I expect each of you to submit original, independent work and adhere to the policies set forth in the University Catalog and Student Handbook. Academic dishonesty of any kind is not acceptable. Be sure to cite all work and ideas that are not your own and reference all citations. See the University Writing Center website for information regarding plagiarism. Failure to comply with University policies may result in a zero for the assignment, failure of the course, disciplinary action at the University level, or any combination of the three.

Tentative Schedule

Date	Lecture Topic	Assignment
Part I: Introduction and Reference Conditions		
Jan. 12-16	Defining Restoration Ecology	Pages 1-21, 56-61, 352-367
Jan. 19	MLK Holiday	
Jan. 21-23	Reference Conditions, Range of Variability	
Part II: Restoring Composition and Structure		
Jan. 26-30	Genetics and Evolutionary Ecology	Pages 64-71
Feb. 2-6	Populations	Chapter 6
Feb. 9-13	Ecophysiology & Environmental Stress	Pages 101-106
Feb. 16-20	Below-ground Processes	Chapter 8
Take Home EXAM #1: Handed out February 20, DUE February 25		
Part III: Restoring Function		
Feb. 23-27	Community Assembly, Species Interactions	Chapter 5
Mar. 2-4	Succession	Chapter 4
Mar. 6	No Class – credit for Exam #1	
Mar 9-13 Spring Break		
Mar. 16-20	Disturbance Regimes	Chapter 2 and 4
Mar. 23-30	Ecosystems and Biodiversity	Chapter 3
Apr. 1-3 Easter Holiday		
Apr. 6-10	Case Studies	Handouts
Apr. 13-17	Wildlife and Invasive Species	Chapter 7 and 12
Take Home EXAM #2: Handed out April 17, DUE April 22		
Part IV: Applying Restoration Ecology		
Apr. 20	No Class: Work on Exam #2	
April 22-May 1	Case Study Presentations (2 each day @ 25 min each)	Handouts
April 29 Case Study Paper Due		
May 6 8:30-11:00	Case Study Presentations (5 @ 25 min each)	Handouts

Instructor: Laura E. DeWald

Contact Information: Office: 317 ST 227-2478 ldewald@wcu.edu

Office Hours: Mon. thru Thurs. 11:00 am -12:30 pm, by appointment, or anytime my office door is open

Course Description and Objectives: The field of conservation biology describes itself as a multi- and crisis discipline in which immediate action needs to be taken to address the increasing rate of species loss. The purpose of this course is to explore concepts of biodiversity conservation and learn how these concepts can be applied to managed ecosystems to conserve biodiversity. The first third of the course examines components of biodiversity that should be considered in conservation objectives, the middle third of the course focuses on strategies for conserving biodiversity in managed landscapes, and the remainder of the course uses case studies to illustrate conservation of biodiversity in managed landscapes.

Learning Outcomes: students will:

1. Learn about basic components and processes involved in conserving biodiversity in managed ecosystems;
2. evaluate management decisions in light of biodiversity conservation principles;
3. practice written and oral communication as it relates to conserving biodiversity;
4. practice critical thinking, reading and writing;
5. practice applying scholarly information from peer-reviewed journal articles to address biodiversity conservation problems
6. (graduate students only) create and implemented active learning exercises for the class that use peer-reviewed journal articles and integrate previous content from the course.

Pre-requisites:

BIOL441: Junior or Senior status, BIOL241

BIOL541: Graduate Student Status

Reading Assignments:

Required textbook: Groom, M.J., G.K. Meffe, and C.R. Carroll. 2005. Principles of Conservation Biology. 3rd Edition. Sinauer Associates, Inc. Sunderland, MA

Journal Articles: We will be reading literature from peer-reviewed journals as a supplement to the textbook. Articles will be available to you electronically or handed out in class.

Assessment:

BIOL441: Two exams (each 25%), case study (paper + presentation worth 25%), class participation (assignments, contributions to journal article discussions worth 25% total).

BIOL541: Two exams (each 25%), case study (paper + presentation worth 25%), class participation (assignments worth 15% total), journal article selection and development of discussion questions and activities (10%).

The following final averages correspond to the following final grades for BIOL441:

A+ = 98-100%, A = 93-97%, A- = 90-92%, B+ = 87-89%, B = 83-86%, B- = 80-82%, C+ = 77-79%, C = 73-76%, C- = 70-72%, D+ = 67-69%, D = 63-66%, D- = 60-62%, F = <60%

The following final averages correspond to the following final grades for BIOL541:

A = 90-100, B = 80-89, C = 70-79%, D = 60-69%, F = <60%

Exams: will concentrate on material covered since the last exam, though students will be responsible for major concepts presented earlier. Exams will be take-home and essay question format where you will be asked to address a biodiversity problem. The problem is designed to evaluate the students' ability to integrate and apply the lecture and discussion material. Make-up exams will only be given under extreme circumstances for documented absences accepted by the instructor.

Case Study Paper and Presentation: Individual graduate students and teams of two undergraduates will evaluate a case study of biodiversity conservation in a managed ecosystem. The final product will consist of a paper (7 to 10 double-spaced pages, 1-inch margins, 12-point font), and presentation to the class. The oral presentation is 20 minutes long.

Participation: Your participation grade is based on take-home and in-class exercises designed for you to practice concepts introduced in class, and there will be in-class discussions based on assigned journal articles. The graduate students will be selecting the articles, developing discussion questions based on these articles and will be leading the class discussions. In-class work and discussions cannot be made up so if you are absent you will forfeit the points. Late homework will not be accepted.

Final Note:

“In terms of conventional physics, the grouse represents only a millionth of either the mass or the energy of an area. Yet, subtract the grouse and the whole thing is dead...”

Excerpt from "A Sand County Almanac", Aldo Leopold, Forester and author

Class Policies

Attendance: The attendance policy in the WCU student handbook applies to this course. Please keep in mind that it is difficult to have good discussions in class when not everyone is present to participate! Students are responsible for all material presented during lecture and as per WCU policy, it is NOT the instructor's responsibility to get materials, etc. to a student who has missed class. As stated earlier, an exam missed due to an unexcused absence cannot be made up, and in-class work cannot be made up.

Academic Integrity: You are encouraged to share ideas, discuss questions, and work together with your classmates in such a way as to further your individual and collective understanding and proficiency of the concepts and skills presented in this course. However, I expect each of you to submit original, independent work and adhere to WCU's policies and definitions (described on the next pages). Academic dishonesty of any kind is not acceptable. Be sure to cite all work and ideas that are not your own and reference all citations.

Writing and Learning Commons (WaLC): The Writing and Learning Commons (WaLC) is a free student service, located in BELK 207, providing course tutoring, writing tutoring, academic skills consultations, international student consultations, graduate and professional exam preparation resources, and online writing and learning resources for all students. To schedule tutoring appointments, visit the WaLC homepage (<http://walc.wcu.edu>) or call 828-227-2274.

Blackboard Support: The learning management system for this class is blackboard and can be found at: <http://wcu.blackboard.com>. Additional help with blackboard can be found at: tc.wcu.edu, (828) 227-7487 or by visiting the Technology Commons located on the ground floor of the Hunter Library.

Civility and Ground Rules: The Western Carolina University Community Creed states: "I will respect the rights and well-being of others." Each student may possess different ideas, as well as different ways of communicating those ideas. Because of these differences, respect and civility are integral to maintaining the quality of the academic environment and free inquiry. (<http://www.wcu.edu/student-life/policies-affecting-students/statement-of-student-rights-and-responsibilities.asp>)

Cell Phones and Tobacco Products: cell phones must be put away during class and the use of tobacco products is NOT allowed during lecture or lab including when we are outside. This includes chewing tobacco and vaping.

Accommodations for Students with Disabilities: Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All information is confidential. Please contact the Office of Disability Services at (828) 227-3886 or come by Suite 135 Killian Annex for an appointment.

Student Support Services: provides support to students who are either first-generation, low-income or those who have disclosed a disability with: academic advising, mentoring, one-on-one tutorial support, and workshops focused on career, financial aid and graduate school preparation. You may contact SSS at (828) 227-7127 or email sssprogram@wcu.edu for more information. SSS is in 138 Killian Annex.

SafeAssign Tool: All written work submitted for this class is eligible for submission to the SafeAssign tool at the instructor's discretion.

Academic Integrity Policy and Reporting Process:

This policy addresses academic integrity violations of undergraduate and graduate students. Graduate students should read inside the parenthesis below to identify the appropriate entities in charge of that step of the process.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of the Academic Integrity Policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community. While academic in scope, any violation of this policy is by nature, a violation of the Code of Student Conduct and will follow the same conduct process (see Article VII.B.1.a.). If the charge occurs close to the end of an academic semester or term or in the event of the reasonable need of either party for additional time to gather information timelines may be extended at the discretion of the Department of Student Community Ethics (DSCE).

I. General:

This policy addresses academic integrity violations of undergraduate and graduate students.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of this policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community.

Instructors have the right to determine the appropriate academic sanctions for violations of the Academic Integrity Policy within their courses, up to an including a final grade of "F" in the course in which the violation occurs.

II. Definitions:

Cheating – Using, or attempting to use, unauthorized materials, information, or study aids in any academic exercise.

Fabrication – Creating and/or falsifying information or citation in any academic exercise.

Plagiarism – Representing the words or ideas of someone else as one's own in any academic exercise.

Facilitation – Helping or attempting to help someone to commit a violation of the Academic Integrity Policy in any academic exercise (e.g. allowing another person to copy information during an examination).

III. Undergraduate Academic Integrity Process:

1. Within five (5) business days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, s/he will inform his/her department head (or associate Dean of the graduate school when applicable) in writing of the allegation and proposed sanction(s).
2. Within ten (10) business days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, the instructor will inform the student of the allegation, including the proposed sanction(s), in writing. In the written notification, the instructor will inform the student of his/her right to request a meeting with the instructor. During the meeting, the instructor shall complete the Academic Integrity Violation Faculty Resolution Form. If the student does not request a meeting with the instructor within five (5) business days of receipt of the written allegation(s), the student shall be deemed to have mutually resolved the matter and shall be bound to the sanction(s) outlined by the instructor in the written allegation. If the student does not request a meeting, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
3. Within five (5) business days of meeting with the instructor, the student shall either appeal the decision to the department head or mutually resolve the matter by accepting the allegation and proposed sanction(s). No action by the student within five (5) business days of the meeting with the instructor shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the instructor, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.

4. Within five (5) business days of receiving a student's appeal, the department head must schedule a meeting with the student. The instructor may be present during the meeting. During the meeting, the department head shall complete the Academic Integrity Violation Department Head Resolution Form. Only information submitted during the meeting with the student, or in the meeting between the instructor and the student, may be considered by the department head. The evidentiary standard for making a decision shall be preponderance of the evidence. The department head may agree or disagree with the allegation(s) of the instructor. The department head may also approve, overturn, or modify the sanction(s) proposed by the instructor. If the student does not attend the scheduled meeting with the department head, the matter will be heard in absentia and shall not be subject to further review and/or appeal.
5. Within five (5) business days of meeting with the department head, the student shall either appeal the decision to an Academic Integrity Board or mutually resolve the matter by accepting the allegation and proposed sanction(s). The student must submit an appeal to the academic Dean listed on the Academic Integrity Violation Department Head Resolution Form. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the department head, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
6. Within seven (7) business days of receiving a student's appeal, the appropriate academic Dean must schedule an Academic Integrity Board hearing with the student. The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. The instructor may be present during the hearing. Only information submitted during the hearing, or in the meetings between the instructor/department head and the student, may be considered by the hearing board. The evidentiary standard for making a decision shall be preponderance of the evidence. The hearing board may agree or disagree with the allegation(s) of the instructor. The hearing board may also approve, overturn, or modify the sanction(s) proposed by the instructor and/or department head. If the student does not attend the scheduled hearing, the matter will be heard in absentia and shall not be subject to further review and/or appeal. Within ten (10) business days of the hearing, the appropriate academic Dean shall review pertinent records and send the student written notification of the decision of the Academic Integrity Board.
7. Within five (5) business days of receiving written notification of the decision of the Academic Integrity Board the student may accept the findings and sanctions of the board or submit an appeal to the designated academic Dean. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the Academic Integrity Board, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
8. If the student elects to file an appeal of the decision of the Academic Integrity Board, she must submit a written appeal within five (5) business days of receiving written notification of the decision of the Academic Integrity Board to the designated academic Dean. An appeal to an academic Dean must be limited to the following grounds; 1) a violation or due process or 2) a material deviation from Substantive and Procedural Standards by the UNC Board of Governors (as set forth in the UNC Manual 700.4.1).
9. If an appeal is heard by an academic Dean, s/he shall review pertinent records within ten (10) business days of receiving a valid appeal. The academic Dean may agree or disagree with the allegation(s) of the instructor. The academic Dean may also approve, overturn, or modify the sanction(s) proposed by the instructor, department head, and or Academic Integrity Board. Within five (5) days of making a decision, the academic Dean shall provide the student with a written decision. The decision of the academic Dean shall be final.
10. The student must remain enrolled in the course related to the case, and may not be permitted to withdraw from the course related to the case, until all hearing timelines, notifications, and/or appeals have been completed.

11. Upon resolution of each level of the case (no matter the outcome), the instructor, department head, and academic Dean must provide the Department of Student Community Ethics with all materials and documents related to the case (i.e. course syllabus, materials in violation of the Academic Integrity Policy, Instructor Resolution Form, Department Head Resolution Form, Academic Integrity Board decision letter, academic Dean decision letter, etc...). The Department of Student Community Ethics shall serve as the repository for all records associated with allegations and violations associated with the Academic Integrity Policy.

IV. Academic Integrity Board:

The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. Students and faculty members serving on boards for each college will be selected by each college Dean. The Department of Student Community Ethics will train all board members prior to their service on a hearing board. Each academic Dean will convene hearing boards as necessary, and will determine a faculty member to serve as chair prior to a hearing.

V. Sanctions:

The instructor, department head, Academic Integrity Board, and/or academic Dean may impose academic sanctions permitted by the institution (not to exceed receiving a grade of "F" for the course). The instructor, department head, Academic Integrity Board, and/or academic Dean may not permanently remove the student from the course or suspend/expel the student from a program or the University. Student behavior of the magnitude to warrant consideration for permanent removal from the course or suspension/expulsion from a program or the University must be referred to the Department of Student Community Ethics.

VI. Habitual Violations of the Academic Integrity Policy:

Upon receipt of materials associated with violations of the Academic Integrity Policy, the Department of Student Community Ethics will determine if a student has previous violations of University policies. Students with a prior record of violations, or who commits a gross and/or egregious violation of the Academic Integrity Policy, will be referred to the Department of Student Community Ethics for consideration of being subject to hearing proceedings as a habitual violator. Students with three or more violations of the Academic Integrity Policy will automatically be subject to hearing proceedings as a habitual violator. Students in this category are subject to course-related sanctions imposed by the instructor, department head, Academic Integrity Board, and/or academic Dean and University-level sanctions imposed by the Department of Student Community Ethics for habitual violations of University policies.

Additional information is available on the Student Success website under Student Community Ethics.

BIOL 441 and 541

Spring 2016

Instructor: Laura E. DeWald 317 Stillwell 227-2478 ldewald@wcu.edu

Office hours: Mon. thru Thurs. 11:00 am–12:30 pm, by appt., or anytime my office door is open

Tentative Schedule

Date	Topic	Reading
Defining Biodiversity and Threats to Conserving It: Weeks 1-6		
Jan 11 - 20	Defining and Valuing Biodiversity	Chapters 1, 2, 4, 5
Jan 18	No Class MLK Day	
Jan 22	Paper Discussion & Activity - Graduate Student Creates & Facilitates	Handouts
Jan 25 - 29	Genetics of Biodiversity Conservation	Chapter 11
Feb 1 – 5	Threats to Biodiversity – Small Populations	Chapters 3, 12, 8
Feb 8	Paper Discussion and Activity - Graduate Student Creates & Facilitates	Handouts
Feb 10 - 19	Threats to Biodiversity – Habitat Degradation	Chapters 6, 7, 9,10
Feb 22	Paper Discussion and Activity - Graduate Student Creates & Facilitates	Handouts
Feb 24 - 26	No Lecture: Winter Break	
Take-home EXAM #1 Due Mar 2: Which Species to Save?		
Strategies for Conserving Biodiversity in Managed Landscapes: Weeks 7-11		
Feb 29 – Mar 9	Strategies for Conserving Biodiversity	Chapter 13, 15
Mar 11	Paper Discussion and Activity - Graduate Student Creates & Facilitates	Handouts
Mar 14 - 18	Strategies for Conserving Biodiversity – Reserve Design	Chapter 14
Mar 21 - 25	No Lecture: Spring Break	
Mar 28	Paper Discussion and Activity - Graduate Student Creates & Facilitates	Handouts
Mar 30 – Apr 6	Strategies for Conserving Biodiversity – Reserve Design	Chapter 14
Apr 8	Paper Discussion and Activity - Graduate Student Creates & Facilitates	Handouts
EXAM #2 - Due April 15: Designing a Reserve		
Conserving Biodiversity in Managed Landscapes: Success Stories: Weeks 12-15		
Apr 11 – 15	Biodiversity Conservation in Practice Case Studies: Laura's Examples	Handouts
Apr 22	Case Study Written Paper Due	
Apr 18 - 29	Case Study Oral Presentations (2 per day)	Handouts
Wed. May 4	8:30-11:00 Finish Case Study Presentations	

Spring 2016
NS 208

Instructor: James P. Cook
Office: NS-209
Email: jpcook@email.wcu.edu
Phone: 828-227-2695 (My office)
Office Hours: Tuesdays 2:00-4:00 pm
Wednesdays 10:00-11:00 am

I. Rationale/Purpose

This course is an introduction to instrumental analysis Lab. Prerequisites include CHEM-232 (Quantitative Analysis) and CHEM-242 (Organic Chemistry II). Students will be introduced to a wide range of instruments and exposed to realistic scenarios they might encounter in industry. This course will introduce sample analysis and calibration methods utilizing the following instruments: NMR, GC-MS, HPLC, IC, FAAS, and UV-Vis.

II. Course Objectives

By the end of this course, students should be able to:

- Assess which instruments would be useful, given a set of parameters.
- Present a basic understanding of the instruments covered in lab and the concepts that govern their operation.
- Start applying a working knowledge of the instruments covered in lab, to new questions/method development. [NMR, GC-MS, HPLC, IC, FAAS, and UV-Vis]
- Utilize mathematical knowledge gained from previous chemistry courses to perform calculations as applied to instrumentation i.e. calibration curves, basic chemometrics, and statistics.
- Engage in safe laboratory practices by handling laboratory glassware, equipment, and chemical reagents appropriately, using general guidelines and basic knowledge about the common hazards associated with them in a chemistry laboratory.
- Maintain an appropriate scientific notebook using notational and descriptive content containing MSDS information on relevant chemical reagents, experimental procedure followed, data collected, and observations made during the experimental process.
- Use volumetric glassware to make calibration standards.
- Develop the skill set necessary to continue on to advanced laboratory courses and research in chemistry.

III. Course Readings and Materials

Course readings:

Skoog, D. A.; Holler, F. J.; Crouch, S. R. *Principles of Instrumental Analysis 6th ed.*

Required course materials:

- a pair of safety goggles (not glasses)
- a bag of 30 nitrile gloves
- a 50 page carbonless laboratory
- appropriate clothing (i.e., no shorts, open-toed shoes, etc...)

Suggested course materials:

- a black felt-tip pen with permanent ink (Sharpie)
- a lab coat

Each of these items is available at the WCU bookstore.

IV. Faculty Expectations of Students/Course Policies

Pre-requisites and Co-requisite

A grade of "C" or better in Organic Chemistry 2 (CHEM 242), or the equivalent courses, and a grade of "C" or better in Quantitative Chemical Analysis (CHEM 232), or the equivalent courses.

Pregnancy

Any student who is pregnant or may become pregnant should notify her TA or instructor before completing any laboratory work so that proper safety precautions can be taken. (Certain chemicals can harm unborn children.)

Accommodations for students with disabilities

Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to Disability Services. All information is confidential. Please contact the Office of Disability Services for more information at (828) 227-3886.

Academic Integrity Policy and Reporting Process (NEW)

This policy addresses academic integrity violations of undergraduate and graduate students. Graduate students should read inside the parenthesis below to identify the appropriate entities in charge of that step of the process.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of the Academic Integrity Policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community. While academic in scope, any violation of this policy is by nature, a violation of the Code of Student Conduct and will follow the same conduct process (see Article VII.B.1.a.). If the charge occurs close to the end of an academic semester or term or in the event of the reasonable need of either party for additional time to gather information timelines may be extended at the discretion of the Department of Student Community Ethics (DSCE).

I. General:

This policy addresses academic integrity violations of undergraduate and graduate students.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of this policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community.

Instructors have the right to determine the appropriate academic sanctions for violations of the Academic Integrity Policy within their courses, up to an including a final grade of "F" in the course in which the violation occurs.

II. Definitions:

1. Cheating – Using, or attempting to use, unauthorized materials, information, or study aids in any academic exercise.
2. Fabrication – Creating and/or falsifying information or citation in any academic exercise.
3. Plagiarism – Representing the words or ideas of someone else as one's own in any academic exercise.
4. Facilitation – Helping or attempting to help someone to commit a violation of the Academic Integrity Policy in any academic exercise (e.g. allowing another person to copy information during an examination).

III. Undergraduate and Graduate Academic Integrity Process:

1. Within five (5) business days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, s/he will inform his/her department head (or associate Dean of the graduate school when applicable) in writing of the allegation and proposed sanction(s).
2. Within ten (10) business days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, the instructor will inform the student of the allegation, including the proposed sanction(s), in writing. In the written notification, the instructor will inform the student of his/her right to

- request a meeting with the instructor. During the meeting, the instructor shall complete the Academic Integrity Violation Faculty Resolution Form. If the student does not request a meeting with the instructor within five (5) business days of receipt of the written allegation(s), the student shall be deemed to have mutually resolved the matter and shall be bound to the sanction(s) outlined by the instructor in the written allegation. If the student does not request a meeting, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
3. Within five (5) business days of meeting with the instructor, the student shall either appeal the decision to the department head or mutually resolve the matter by accepting the allegation and proposed sanction(s). No action by the student within five (5) business days of the meeting with the instructor shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the instructor, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
 4. Within five (5) business days of receiving a student's appeal, the department head must schedule a meeting with the student. The instructor may be present during the meeting. During the meeting, the department head shall complete the Academic Integrity Violation Department Head Resolution Form. Only information submitted during the meeting with the student, or in the meeting between the instructor and the student, may be considered by the department head. The evidentiary standard for making a decision shall be preponderance of the evidence. The department head may agree or disagree with the allegation(s) of the instructor. The department head may also approve, overturn, or modify the sanction(s) proposed by the instructor. If the student does not attend the scheduled meeting with the department head, the matter will be heard in absentia and shall not be subject to further review and/or appeal.
 5. Within five (5) business days of meeting with the department head, the student shall either appeal the decision to an Academic Integrity Board or mutually resolve the matter by accepting the allegation and proposed sanction(s). The student must submit an appeal to the academic Dean listed on the Academic Integrity Violation Department Head Resolution Form. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the department head, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
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 7. Within five (5) business days of receiving written notification of the decision of the Academic Integrity Board the student may accept the findings and sanctions of the board or submit an appeal to the designated academic Dean. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the Academic Integrity Board, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.

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9. If an appeal is heard by an academic Dean, s/he shall review pertinent records within ten (10) business days of receiving a valid appeal. The academic Dean may agree or disagree with the allegation(s) of the instructor. The academic Dean may also approve, overturn, or modify the sanction(s) proposed by the instructor, department head, and or Academic Integrity Board. Within five (5) days of making a decision, the academic Dean shall provide the student with a written decision. The decision of the academic Dean shall be final.
10. The student must remain enrolled in the course related to the case, and may not be permitted to withdraw from the course related to the case, until all hearing timelines, notifications, and/or appeals have been completed.
11. Upon resolution of each level of the case (no matter the outcome), the instructor, department head, and academic Dean must provide the Department of Student Community Ethics with all materials and documents related to the case (i.e. course syllabus, materials in violation of the Academic Integrity Policy, Instructor Resolution Form, Department Head Resolution Form, Academic Integrity Board decision letter, academic Dean decision letter, etc...). The Department of Student Community Ethics shall serve as the repository for all records associated with allegations and violations associated with the Academic Integrity Policy.

IV. Academic Integrity Board:

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V. Sanctions:

The instructor, department head, Academic Integrity Board, and/or academic Dean may impose academic sanctions permitted by the institution (not to exceed receiving a grade of "F" for the course). The instructor, department head, Academic Integrity Board, and/or academic Dean may not permanently remove the student from the course or suspend/expel the student from a program or the University. Student behavior of the magnitude to warrant consideration for permanent removal from the course or suspension/expulsion from a program or the University must be referred to the Department of Student Community Ethics.

VI. Habitual Violations of the Academic Integrity Policy:

Upon receipt of materials associated with violations of the Academic Integrity Policy, the Department of Student Community Ethics will determine if a student has previous violations of University policies. Students with a prior record of violations, or who commits a gross and/or egregious violation of the Academic Integrity Policy, will be referred to the Department of Student Community Ethics for consideration of being subject to hearing proceedings as a habitual violator. Students with three or more violations of the Academic Integrity Policy will automatically be subject to hearing proceedings as a habitual violator. Students in this category are subject to course-related sanctions imposed by the instructor, department head, Academic Integrity Board, and/or academic Dean and University-level sanctions imposed by the Department of Student Community Ethics for habitual

violations of University policies.

Additional information is available on the Student Success website under Student Community Ethics.

Attendance Policy

Please keep in mind that all lab sections are full and observe the following:

- Attendance is part of participation, you cannot participate if you are absent so 20% of your grade for each lab is based on attendance.
- There will be no make-up labs. If, for some reason, you are unable to attend your assigned lab section during a portion of a multiple-day experiment you will continue working with your group on the assignment with a deduction on that lab's participation.

Writing and Learning Commons (WaLC)

The [Writing and Learning Commons](#) (WaLC), located in **BELK 207**, provides free [small-group course tutoring](#), one-on-one [writing tutoring](#), and online [writing](#) and [learning](#) resources for all students. To schedule tutoring appointments, log in to TutorTrac from the WaLC homepage (<http://walc.wcu.edu/>) or call 828-227-2274. All tutoring sessions take place in the WaLC or in designated classrooms on campus.

Guidelines for classroom behavior

The use of cell phones is acceptable but discouraged; calls must be taken outside the lab in the hallway. Please avoid placing your cell phone in the fume hood. Writing in lab notebooks should also be done on tabletops outside the hood, not in the hood itself. **Personal safety** (especially eye safety) and **writing in the lab notebook** are important themes in this course. Both of these issues will be discussed in more detail during the first lab meeting. Once you enter the lab you will be expected to follow the safety guidelines at all times.

Inclement weather policy

In case of inclement weather, especially during the late fall and winter months, please consult the WCU webpage about how the forecasted weather will affect the university class schedule. Use common sense when traveling to and from campus. That said, keep in mind that some of your instructors live in Waynesville and Asheville.

Use of Blackboard or other software

All assignments will be available on blackboard. Assignments will be due 1 week after the instrument data has been gathered. You might need to come back after lab to export the data from the instrument. All assignments will be turned in via word/excel documents onto the NEON drive where I will gather them for grading.

V. Grading Procedures

There will be no exams in this course. The final grade will be based upon a combination of your lab work, accuracy, and participation. Point allocations for each type of evaluation are listed below:

Assignment	Point allocation	Total points
Lab 1	100	100
There are 6 instrument labs each lab has 4 graded parts		
Participation (clean up)	30	180
Instrument assessment	40	240
Calculations	40	240
Report	40	240
TOTAL		1000

Assignments

Safety quiz: Prior to beginning of any experimental work in the organic lab, everyone must view the lab safety orientation that is posted on Blackboard and then take the lab safety quiz. The safety quiz (there is just 1) will be administered online via the Blackboard site for the class and you have several opportunities to pass it. The safety quiz is not graded and is not part of the final grade in this course. *Once again, you may not begin any work in the lab until you have successfully completed the online safety quiz.*

Grades

The grade scheme for the course is as follows;

A+	= 100-97,
A	= 96.9-93,
A-	= 92.9-90,
B+	= 89.9-87,
B	= 86.9- 83,
B-	= 82.9-80,
C+	= 79.9-77,
C	= 76.9-73,
C-	= 72.9-70,
D+	= 69.9-67,
D	= 66.9-63,
D-	= 62.9-60,
F	= 59.9 and below.

The grades of A+, A, A-, B+, B, B-, C+, C, C-, D+, D, D- and F indicate gradations in quality from Excellent to Failure; the Quality Points/Semester Hour for each letter grade are explained in detail in the current WCU undergraduate catalog. Please note that a C- grade is less than satisfactory and may not meet particular program and/or course requirements.

Composition-Condition Marks

Writing of lab reports is a significant component of your grade. A student whose written work in any course fails to meet acceptable standards will be assigned a composition-condition (CC) mark by the instructor on the final grade report. All undergraduates who receive two CC grades prior to the semester in which they complete 110 hours at Western Carolina University are so notified by the registrar and are required to pass English 300 or English 401 before they will be eligible for graduation. This course must be taken within two semesters of receiving the second CC and must be passed with a grade of C (2.0) or better.

Students must be familiar with the class attendance, withdrawal, and drop-add policies and procedures.

VI. Tentative Course Schedule and description

The first portion of the semester is going to be Introduction/safety and your first assignment. Lab 1 is a data analysis lab where you will be asked to analyze some data and build some tools to help you throughout the semester. This should be a nice refresher of past concepts.

The main part of this course will be taught in a "round robin" fashion where students will be placed in groups of 3-4 at an instrument and rotate to the next instrument once the allotted time has passed.

The instrument assessment will be a prequel to the quantitative portion of the semester. You will spend 1.5 hours at one instrument and run some standards that will be given to you and export the data to the NEON drive. This will be your first time using these instruments so the focus should be on learning the software and how samples are delivered into the instruments and what kind of data you receive from the instrument. This will take 3 weeks to complete.

The quantitative portion of the semester focuses on your work at a fictional pharmaceutical company. Three of the instruments will focus on the purity of either raw materials or a synthesized product. Two of the instruments will assess the total concentrations of components in the final product and the last instrument will assess the sulfate concentration of the waste water leaving the facility. This will take 6-7 weeks depending on how smoothly the first week goes.

Date	Week	Monday	Tuesday	Wednesday	Thursday	Friday	
11-Jan	1		Introduction / Safety		Introduction / Safety		
18-Jan	2	MLK-NoClass	Lab 1		Lab 1		
25-Jan	3						
1-Feb	4		instrument assessment		instrument assessment		
8-Feb	5	5th week grades					
15-Feb	6						
22-Feb	7		Lab 2 Round Robin 1/6	No Class			
29-Feb	8		Lab 2 extra day Round Robin 1/6		Lab 2 Round Robin 1/6		
7-Mar	9		Advising Day No Class		Lab 2 extra day Round Robin 1/6		
14-Mar	10		Lab 3 Round Robin 2/6		Lab 3 Round Robin 2/6		
21-Mar	11	Spring Break					
28-Mar	12		Lab 4 Round Robin 3/6		Lab 4 Round Robin 3/6		
4-Apr	13		Lab 5 Round Robin 4/6		Lab 5 Round Robin 4/6		
11-Apr	14		Lab 6 Round Robin 5/6		Lab 6 Round Robin 5/6		
18-Apr	15		Lab 7 Round Robin 6/6		Lab 7 Round Robin 6/6		
25-Apr	16		cleanup		cleanup	Last day of Class	
2-May	17	FINAL EXAMS					

Good luck and enjoy the Instruments!

SYLLABUS – CHEM-370 (Instrumental Analysis I) Spring 2016

Lecture Schedule: Mon., Wed., Fri.: 9:05 – 9:55 a.m. in CO-204

Instructor: David Butcher

Office: Stillwell 417/420

Email: butcher@email.wcu.edu

Office Hours: Monday, Wednesday, and Friday from 10:10 – 11:00 a.m. Please feel free to contact me at your convenience.

Required Materials

- Textbook (available from WCU book rental): Principles of Instrumental Analysis, 6th Edition by Skoog, Holler and Crouch, Brooks-Cole, 2007.
- Safety Goggles and Gloves (available from WCU bookstore for purchase).
- Scientific calculator.

Course Description

This course is an introduction to instrumental analysis. Prerequisites include CHEM-232 (Quantitative Analysis) and CHEM-241 (Organic Chemistry I). This course includes calibration methods, spectrometric methods, optical instrumentation, atomic spectroscopy, optical molecular spectroscopy, atomic and molecular and mass spectrometry, and separation methods.

Course Learning Objectives

- (1) An understanding of analytical calibration procedures.
- (2) An understanding of spectrometric methods and optical instrumentation with application to atomic and molecular spectroscopy.
- (3) An understanding of atomic and molecular spectrometry and applications.
- (4) An understanding of separation methods, including gas and liquid chromatography, and their applications.
- (5) The development of practical experience in instrumental analysis in the accompanying laboratory.

Grading Scale and Grade Determination

Final grades will be determined based on the total points from four hour exams, a final exam, the laboratory, homework, and quizzes as shown below. Your grade will be based on the total number of points out of 1000 that you earn from the course activities.

Grading Scale		
900-1000	points	A
800-899	points	B
700-799	points	C
600-699	points	D
< 600	points	F

Grade Determination		
Hour Exams	400	points
Laboratory	250	points
Homework	100	points
Final Exam	250	points
TOTAL	1000	1000

Course Assignments and Policies

Summary: Your grade will be determined by the hour exams, homework, laboratory, and final exam listed above and described below. Please note that **NO ADDITIONAL WORK** is available to enhance your grade. Please do your best work on all assignments and complete them on time to ensure you obtain a good grade in this course.

Preparation for Class: Reading material for each class will be available in Blackboard. You are expected to read and study the textbook as preparation for class. Class participation and attendance are mandatory. One of the most significant indicators of academic success is engagement in the classroom. Your grade may be reduced if you miss an excessive number of classes.

Hour Examinations: Four exams will be given in class: Feb 1, Feb 22, March 28, and April 18.

No make-up exams will be given without a valid excuse. Except for illness or emergency, you must arrange for a make-up with me by the class period before the exam date.

Cell phones may not be used as calculators on hour examinations. Violations of the WCU Integrity Policy on hour examinations, such as cheating or facilitation, may lead to a grade of "F" in the course. Please see below for additional details on the WCU Integrity Policy.

Exams are graded using a ten- point grading scale: A = 90 – 100 %, B = 80 – 89 %, C = 70 – 79 %, D = 60 – 69 %, F < 60 %. No adjustment to exam scores will be made until after the final exam.

Electronic Communication: Blackboard, an online course management system, will be used as the source for important announcements, class handouts, review material, and homework. To access Blackboard, log into MyCat using your 92-number and your PIN. Click the Blackboard link on the left side of the screen, or under the Personal Services tab, select Student Main Menu and follow the Blackboard link. You will see all of your courses including Chemistry 370 lecture. Please let your instructor know if you have trouble accessing the course in Blackboard. Your instructor will communicate important class information to you via Blackboard. Please check Blackboard regularly during the semester.

Class Schedule: The detailed course schedule will be available in Blackboard.

Homework: Homework will be assigned through Blackboard and given to the instructor by the end of the class. Alternatively, homework may be submitted as a **legible** attachment through email. Assignments must be completed by the deadline. No extensions will be given on homework.

Homework Rules: assignments must be submitted on one piece of 8.5” x 11” white paper in black pencil or ink (use both sides!); no frayed edges on the paper; must include your first and last name; must be legible. Please do not use highlighters: please draw a box around your answer if you wish to emphasize it. Please do not show spreadsheet data or calibration graphs; you may simply write the equation of the line as $y = mx + b$. Email submissions are due at the same date and time submitted as only one attachment; text must go from top to bottom. Homework that does not follow the guidelines will not be accepted.

Final Exam: A comprehensive final will be given on Tuesday, May 3 from 8:30 – 11:00 a.m. in CO-204. Cell phones may not be used as calculators for the final examination. Violations of the WCU Integrity Policy on hour examinations, such as cheating or facilitation, may lead to a grade of “F” in the course. Please see below for additional details on the WCU Integrity Policy.

Laboratory: The procedures for laboratory will be covered in the separate laboratory syllabus.

Instructor: Prof. James Cook. Location: NS-208.

CHEM-370-30: Tuesday, 8:00 a.m. – 10:50 a.m. CHEM-370-31: Thursday, 8:00 a.m. – 10:50 a.m.

Course Repeaters: Even if you have taken the laboratory before, it is my policy that you must take the laboratory this semester. I will not accept lab grades from previous semesters.

Classroom Etiquette: Please be respectful of your fellow students as well as your instructor and avoid behavior that may disrupt the class during recitation. Please arrive on time and stay in your seat for recitation. It is recommended that you bring your calculator to class for use, but please do not use any other electronic devices during class (computers, cell phones, mp3 players). An exception may be made for a computer used to take notes, but computers should not be used for any other purpose in class. If you have questions or comments, please direct them to me. Please do not engage in side conversations with neighboring students during this period. If you have any questions about these guidelines, please let me know.

Class Topics Organized from the Textbook

Chapter 1: Introduction

Chapter 6: An Introduction to Spectrometric Methods

Chapter 7: Components of Optical Instruments

Chapter 8: An Introduction to Optical Atomic Spectrometry

Chapter 9: Atomic Absorption and Atomic Fluorescence Spectrometry

Chapter 10: Atomic Emission Spectrometry

Chapter 11: Atomic Mass Spectrometry

Chapter 13: An Introduction to Ultraviolet-Visible Molecular Absorption Spectrometry

Chapter 14: Applications of Ultraviolet-Visible Molecular Absorption Spectrometry

Chapter 15: Molecular Luminescence Spectrometry

Chapter 20: Molecular Mass Spectrometry
Chapter 26: An Introduction to Chromatographic Separations
Chapter 27: Gas Chromatography
Chapter 28: Liquid Chromatography
Chapter 29: Supercritical Fluid Chromatography and Extraction
Chapter 30: Capillary Electrophoresis
Chapter 7I: Fourier Transform Optical Measurements
Chapter 16: Introduction to Infrared Spectroscopy
Chapter 17: Applications of Infrared Spectroscopy

University Resources and Guidelines Pertinent to Chemistry 370

Academic Honesty Policy

<http://www.wcu.edu/26163.asp>.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of the Academic Integrity Policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community. While academic in scope, any violation of this policy is by nature, a violation of the Code of Student Conduct and will follow the same conduct process described at <http://www.wcu.edu/26163.asp>.

Violations of the Academic Integrity Policy include:

1. *Cheating*—Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise.
2. *Fabrication*—Intentional falsification of information or citation in an academic exercise.
3. *Plagiarism*—Intentionally or knowingly representing the words or ideas of someone else as one's own in an academic exercise.
4. *Facilitation of Academic Dishonesty*—Intentionally or knowingly helping or attempting to help someone else to commit an act of academic dishonesty, such as knowingly allowing another to copy information during an examination or other academic exercise.

Instructors have the right to determine the appropriate sanction or sanctions for academic dishonesty within their courses up to and including a final grade of "F" in the course.

Inclement Weather Policy

The University does not, as a matter of general practice, close its operations or cancel classes in Cullowhee because of bad weather. Many Western students commute from different distances and directions and weather conditions for those students may vary greatly from conditions on the Cullowhee campus. Students are advised to check road conditions in their areas and determine whether it is reasonable for them to drive to campus. The University expects students to make every effort to attend class but not to jeopardize their safety by driving during dangerous conditions. Faculty members will accommodate those students who are unable to attend class because of hazardous weather conditions.

Should the decision be reached to modify daily operations, Public Relations will announce modifications to the University schedule via media outlets, the University website and email. In addition, students, faculty and staff are encouraged to check the University website when the possibility of adverse weather arises. Updates about the status of University operations will be posted on a continuing basis. Please refer to the WCU weather policy for more information regarding school closures.

Accommodations for Students with Disabilities

Accommodations for Students with Disabilities: Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities. Students who require reasonable accommodations must identify themselves as having a disability and provide current diagnostic documentation to Disability Services. All information is confidential. Please contact Disability Services for more information at (828) 227-2716 or 144 Killian Annex. You can also visit the office's website: <http://disability.wcu.edu>.

CHEM 435/535: Instrumental Analysis II

Department of Chemistry & Physics, Western Carolina University, Cullowhee, NC

Fall 2015

Natural Sciences 308 or 227

MW(F) 10:10am – 11:00am

Instructor: Dr. David D. Evanoff, Jr.

Phone: x3667

Office: NS 231A

Office Hours: T 8:30 AM – 10:00 AM

Email: devanoff@email.wcu.edu

R 3:30 PM – 5:00 PM

I. Rationale/Purpose

The purpose of this course is twofold: 1. Develop an understanding of the effects of outside stimuli on a material of interest, and how we as scientists can gather useful information from the material's response and 2. Get beyond the 'black box' attitude and come to an understanding of the general principles involved in designing and operating scientific instrumentation.

II. Course Aims and Objectives:

- The basic aim of this course, as is the case of any chemistry course for majors, is to make you a better chemist. In this course, I hope that you will develop some deeper understanding of how instruments work and how they can work for you, i.e. how you can utilize a piece of instrumentation to solve your particular chemistry-related problem. The bottom line is that in practically any chemistry-related profession you will at some point be required to troubleshoot either an instrumental method for a particular experiment or the instrument itself. You won't get very far if all you know is the location of the green 'GO' button.

- Specific Learning Objectives:

By the end of this course, students will:

- Demonstrate an understanding of the fundamentals of chemical instrumental analysis and the underlying physical phenomena associated with various measurements
- Demonstrate developed skills to solve problems in analytical chemistry with an emphasis on instrumental methods
- Demonstrate an ability to thoroughly analyze instrument-acquired data as well as distinguish between 'good data' and noise/interference
- Demonstrate the ability to distinguish the value and limitations of instrumental techniques
- Demonstrate an appreciation of the state-of-the-art of instrumental analysis

III. Course Materials

Course readings:

- Required text: Principles of Instrumental analysis, 6th Ed., by D. A. Skoog et al. (available for rent via bookstore)
- Background/supplementary readings: We will also be using additional texts throughout the semester. I will post scanned copies of the relevant chapters of these books on Blackboard as needed.

IV. Course Policies

- Attendance Policy
 - You are expected to attend and actively participate in each lecture. In general, completion of homework will be assessed by short, in-class assignments. Students who fail to attend class on the day of an in-class exercise forfeit the opportunity to complete the assignment, i.e. except for extraordinary circumstances, **late assignments will not be accepted**. I understand that inclement weather may cause absence for commuters and will be accommodating in those cases, although students are expected to make every reasonable effort to attend class. Students attending Friday sessions are required to attend those dates (see Course Content).

- Please note that we will occasionally meet in Natural Sciences 227 on days when we integrate instrumentation into the lecture. I will announce these meetings in advance.
- Graduate students & Honor's Contract students will be required to attend some class meetings on Fridays from 10:10 – 11:00am to complete the bonus learning portion of the course. Friday meetings will be announced at least 3 weeks in advance to allow ample time for student planning.
- Email Communication
 - Student catamount email accounts will be used to distribute important materials you need for this course. Email will be sent to your WCU account only. A test email will be sent early in the semester to verify the class roll. Please check your email regularly during the semester.
- Mobile Device Policy
 - Students may not use mobile phones or other devices during any in class assessment for any reason. Students found to be in violation of this policy will receive a zero grade on the assessment.
- Civility and Ground Rules:
 - The Western Carolina University Community Creed states: "I will respect the rights and well-being of others."
 - Each student may possess different ideas, as well as different ways of communicating those ideas. Because of these differences, respect and civility are integral to maintaining the quality of the academic environment and free inquiry.
 - <http://www.wcu.edu/student-life/policies-affecting-students/statement-of-student-rights-and-responsibilities.asp>
- SafeAssign Tool:
 - All written work submitted for this class is eligible for submission to the SafeAssign tool at the instructor's discretion.
- Assignments
 - Suggested problem sets and reading assignments will be placed in Blackboard. I strongly encourage teamwork on the homework sets. Homework competency will be assessed by individual in-class exercises.
- Celebrations of learning
 - Two celebrations will occur during the semester as well as a comprehensive final bonanza of learning. The final bonanza will include new material that will be counted as a separate celebration grade. Tentative exam dates are below. Students may choose to have their lowest celebration grade dropped from consideration in the final grade.

Celebration #	Day	Date	Topics
1	Wednesday	30-Sep	TBD
2	Wednesday	4-Nov	TBD
3	Wednesday	9-Dec	8:30 AM – 11:00 AM; Cumulative Final

- The WCU academic calendar can be found at: <http://www.wcu.edu/academics/campus-academic-resources/registrars-office/academic-calendar.asp>
- Statement on Accommodations for Students with Disabilities:
 - Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All information is confidential. Please contact the Office of Disability Services at (828) 227-3886 or come by Suite 135 Killian Annex for an appointment.*
- Statement on Student Support Services:
 - Student Support Services provides support to students who are either first-generation, low-income or those who have disclosed a disability with: academic advising, mentoring, one-on-one tutorial support, and workshops focused on career, financial aid and graduate school preparation. You may contact SSS at (828) 227-7127 or email sssprogram@wcu.edu for more information. SSS is located in the Killian Annex, room 138.*

- Statement on Academic Integrity (source: WCU Catalog):

This policy addresses academic integrity violations of undergraduate and graduate students. Graduate students should read inside the parenthesis below to identify the appropriate entities in charge of that step of the process.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of the Academic Integrity Policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community. While academic in scope, any violation of this policy is by nature, a violation of the Code of Student Conduct and will follow the same conduct process (see Article VII.B.1.a.). If the charge occurs close to the end of an academic semester or term or in the event of the reasonable need of either party for additional time to gather information timelines may be extended at the discretion of the Department of Student Community Ethics (DSCE).

I. General:

This policy addresses academic integrity violations of undergraduate and graduate students.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of this policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community.

Instructors have the right to determine the appropriate academic sanctions for violations of the Academic Integrity Policy within their courses, up to an including a final grade of "F" in the course in which the violation occurs.

II. Definitions:

1. Cheating – Using, or attempting to use, unauthorized materials, information, or study aids in any academic exercise.
2. Fabrication – Creating and/or falsifying information or citation in any academic exercise.
3. Plagiarism – Representing the words or ideas of someone else as one's own in any academic exercise.
4. Facilitation – Helping or attempting to help someone to commit a violation of the Academic Integrity Policy in any academic exercise (e.g. allowing another person to copy information during an examination).

III. Undergraduate and Graduate Academic Integrity Process:

1. Within five (5) business days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, s/he will inform his/her department head (or associate Dean of the graduate school when applicable) in writing of the allegation and proposed sanction(s).
2. Within ten (10) business days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, the instructor will inform the student of the allegation, including the proposed sanction(s), in writing. In the written notification, the instructor will inform the student of his/her right to request a meeting with the instructor. During the meeting, the instructor shall complete the Academic Integrity Violation Faculty Resolution Form. If the student does not request a meeting with the instructor within five (5) business days of receipt of the written allegation(s), the student shall be deemed to have mutually resolved the matter and shall be bound to the sanction(s) outlined by the instructor in the written allegation. If the student does not request a meeting, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
3. Within five (5) business days of meeting with the instructor, the student shall either appeal the decision to the department head or mutually resolve the matter by accepting the allegation and proposed sanction(s). No action by the student within five (5) business days of the meeting with the instructor shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the instructor, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.

4. Within five (5) business days of receiving a student's appeal, the department head must schedule a meeting with the student. The instructor may be present during the meeting. During the meeting, the department head shall complete the Academic Integrity Violation Department Head Resolution Form. Only information submitted during the meeting with the student, or in the meeting between the instructor and the student, may be considered by the department head. The evidentiary standard for making a decision shall be preponderance of the evidence. The department head may agree or disagree with the allegation(s) of the instructor. The department head may also approve, overturn, or modify the sanction(s) proposed by the instructor. If the student does not attend the scheduled meeting with the department head, the matter will be heard in absentia and shall not be subject to further review and/or appeal.
5. Within five (5) business days of meeting with the department head, the student shall either appeal the decision to an Academic Integrity Board or mutually resolve the matter by accepting the allegation and proposed sanction(s). The student must submit an appeal to the academic Dean listed on the Academic Integrity Violation Department Head Resolution Form. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the department head, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
6. Within seven (7) business days of receiving a student's appeal, the appropriate academic Dean must schedule an Academic Integrity Board hearing with the student. The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. The instructor may be present during the hearing. Only information submitted during the hearing, or in the meetings between the instructor/department head and the student, may be considered by the hearing board. The evidentiary standard for making a decision shall be preponderance of the evidence. The hearing board may agree or disagree with the allegation(s) of the instructor. The hearing board may also approve, overturn, or modify the sanction(s) proposed by the instructor and/or department head. If the student does not attend the scheduled hearing, the matter will be heard in absentia and shall not be subject to further review and/or appeal. Within ten (10) business days of the hearing, the appropriate academic Dean shall review pertinent records and send the student written notification of the decision of the Academic Integrity Board.
7. Within five (5) business days of receiving written notification of the decision of the Academic Integrity Board the student may accept the findings and sanctions of the board or submit an appeal to the designated academic Dean. No action by the student within five (5) business days of the meeting with the department head shall constitute a mutual resolution and waiver of the student's rights to appeal pursuant to the Academic Integrity Policy. If the student does not respond within five (5) business days of meeting with the Academic Integrity Board, the alleged violation of the Academic Integrity Policy shall not be subject to further review and/or appeal.
8. If the student elects to file an appeal of the decision of the Academic Integrity Board, she must submit a written appeal within five (5) business days of receiving written notification of the decision of the Academic Integrity Board to the designated academic Dean. An appeal to an academic Dean must be limited to the following grounds; 1) a violation or due process or 2) a material deviation from Substantive and Procedural Standards by the UNC Board of Governors (as set forth in the UNC Manual 700.4.1).
9. If an appeal is heard by an academic Dean, s/he shall review pertinent records within ten (10) business days of receiving a valid appeal. The academic Dean may agree or disagree with the allegation(s) of the instructor. The academic Dean may also approve, overturn, or modify the sanction(s) proposed by the instructor, department head, and or Academic Integrity Board. Within five (5) days of making a decision, the academic Dean shall provide the student with a written decision. The decision of the academic Dean shall be final.
10. The student must remain enrolled in the course related to the case, and may not be permitted to withdraw from the course related to the case, until all hearing timelines, notifications, and/or appeals have been completed.
11. Upon resolution of each level of the case (no matter the outcome), the instructor, department head, and academic Dean must provide the Department of Student Community Ethics with all materials and documents related to the case (i.e. course syllabus, materials in violation of the Academic Integrity Policy, Instructor Resolution Form, Department Head Resolution Form, Academic Integrity Board decision letter, academic Dean decision letter, etc...). The Department of Student Community Ethics shall serve as the repository for all records associated with allegations and violations associated with the Academic Integrity Policy.

IV. Academic Integrity Board:

The Academic Integrity Board shall consist of a minimum of two (2) currently enrolled students and/or faculty members (with a minimum of one faculty member). A faculty member will serve as chair of the board. Students and faculty members serving on boards for each college will be selected by each college Dean. The Department of Student Community Ethics will train all board members prior to their service on a hearing board. Each academic Dean will convene hearing boards as necessary, and will determine a faculty member to serve as chair prior to a hearing.

V. Sanctions:

The instructor, department head, Academic Integrity Board, and/or academic Dean may impose academic sanctions permitted by the institution (not to exceed receiving a grade of "F" for the course). The instructor, department head, Academic Integrity Board, and/or academic Dean may not permanently remove the student from the course or suspend/expel the student from a program or the University. Student behavior of the magnitude to warrant consideration for permanent removal from the course or suspension/expulsion from a program or the University must be referred to the Department of Student Community Ethics.

VI. Habitual Violations of the Academic Integrity Policy:

Upon receipt of materials associated with violations of the Academic Integrity Policy, the Department of Student Community Ethics will determine if a student has previous violations of University policies. Students with a prior record of violations, or who commits a gross and/or egregious violation of the Academic Integrity Policy, will be referred to the Department of Student Community Ethics for consideration of being subject to hearing proceedings as a habitual violator. Students with three or more violations of the Academic Integrity Policy will automatically be subject to hearing proceedings as a habitual violator. Students in this category are subject to course-related sanctions imposed by the instructor, department head, Academic Integrity Board, and/or academic Dean and University-level sanctions imposed by the Department of Student Community Ethics for habitual violations of University policies.

Additional information is available on the Student Success website under Student Community Ethics.

V. Course Content:

This course will consist of a variety of instrumental topics. The lecture and lab components of the course will, in many ways, operate independently from each other as the pedagogical goals of each component are somewhat different. The lecture component will be more focused on ensuring *your fundamental understanding* of the physics of instrumental design and the physical chemistry of sample/stimuli interaction. The purpose of the lab component of the course is to hone and practice the skills necessary to be an *independent*, professional scientist *fully capable* of designing, executing, and reporting on meaningful measurement experiments. Topics chosen for Instrumental Analysis II will depend on previous student knowledge and interest. The instructor will keep students apprised of upcoming topics.

Bonus Learning: graduate students and undergraduates who wish to complete an Honor's Contract will participate in a semester-long project. Through presentations, round table discussions, and films, we will discuss the historical and cultural context surrounding the development of a few key pieces of chemical instrumentation. Other undergraduates that wish to participate are welcome, but once opted in, you cannot choose to discontinue. **Dates for bonus learning are 9/11/15, 9/25/15, 10/9/15, 10/23/15, 11/6/15, 11/20/15, 12/4/15.**

VI. Grading Procedures:

Instrumental analysis requires a firm grasp of both the lecture material as well as laboratory material. The class is divided such that 70% of your grade is based on lecture material and 30% on the laboratory. The point system used to calculate a student's earned grade is as follows:

		<i>% of final grade</i>	<i>% of final grade</i>
Lecture components: (350 points possible)	Celebrations of Learning	30%	35%
	Participation & Homework	10%	20%
	Bonus Learnin'	15%	---
	Comprehensive Final	15%	15%
Lab component: (100 points possible)	Laboratory Grade	30%	30%

Letter grades will be determined using the following scale (graduate students are not graded on the +/- scale and thus the total range of a letter grade is determined by adding in the + and - ranges):

A	100% – 93%	C	76% – 73%
A-	92% – 90%	C-	72% – 70%
B+	89% – 87%	D+	69% – 67%
B	86% – 83%	D	66% – 63%
B-	82% – 80%	D-	62% – 60%
C+	79% – 77%	F	59% – 0%

CONFLICT RESOLUTION
COMM 313 – 81323 - 01
Western Carolina University
Fall 2016

TIME & LOCATION:	Monday, Wednesday, Friday 1:25pm -2:15pm McKee – Room 220
INSTRUCTOR:	Dr. Scott A. Eldredge
OFFICE:	235 Stillwell
OFFICE PHONE:	(828) 227-3425
CELL:	(615) 504-8299
E-MAIL:	saeldredge@wcu.edu
OFFICE HOURS:	TBD Other times available by appointment

Course Description:

This course approaches conflict resolution from a relational perspective and is designed to help students understand how conflict arises and is managed within the context of family relationships, love relationships, workplace relationships, and other relationships in which we engage. Understanding conflict, and learning to develop the skills associated with effective conflict management, is an analytical and self-reflective process. Throughout the course, students will be challenged to understand not only the overall dynamics associated with conflict, but also how their own behaviors contribute to, or detract from, the effective resolution of conflict.

Course Objectives:

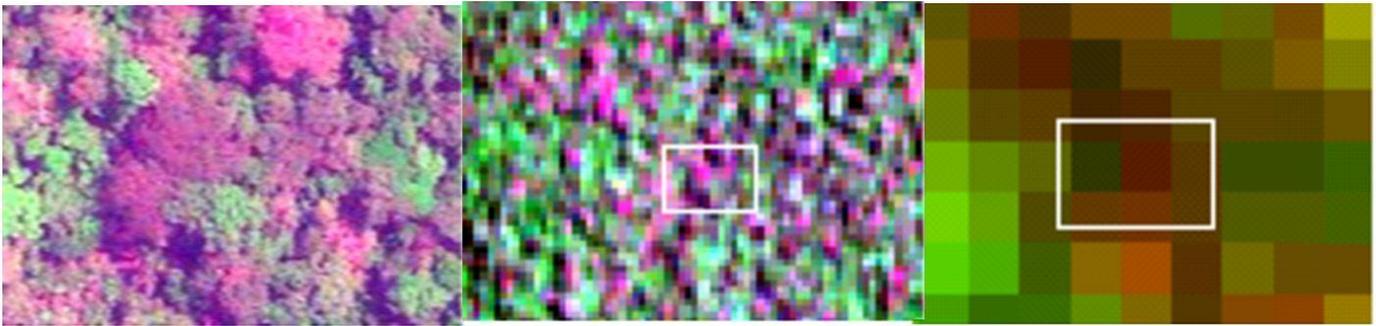
At the end of this course, students should be able to:

1. Outline the nature of conflict
2. Identify the components of conflict
3. Understand the dynamics of conflict and its resolution
4. Understand the role of communication in conflict and conflict management
5. Identify conflict management styles in themselves and others
6. Improve their skills in self-reflection and self-awareness in the face of conflict
7. Understand the processes of negotiation, mediation, facilitation, and consensus building
8. Understand the practice of forgiveness and reconciliation
9. Understand how to analyze conflict

Required Texts:

Hocker, J. L., & Wilmot, W. W. (2013). *Interpersonal Conflict* (8th ed.). New York: McGraw-Hill.

Additional readings will be posted to Blackboard.



Upscaling through decreasing spatial resolution from GeoEye (left) to MODIS (right) in a mixed deciduous-evergreen forest in Southern Cameroon.

Fall 2015 Lecture: TR 10:10-11:00, Lab: R 1:00-2:50; both are in Stillwell 354

Professor: Dr. Diane Styers - dmstyers@wcu.edu, 828-227-3819, Office: Stillwell 320

Office Hours: Monday and Wednesday 8:00 - 8:30, by appointment, & when door is open

Course Description

Interpretation and applications of remote sensing; satellite and aerial imagery; LiDAR. 3 Lec/2 Lab. PREQ: GEOG 221 or permission of instructor. Credits: (4). GEOG 324 is a required course for all NRCM majors and a pre-requisite for those students wanting to take NRM 472: Advanced Geospatial Analysis.

Course Goals and Objectives

- ❖ This course presents an introduction to computer-based methods for information extraction from remotely sensed data to support environmental and cultural applications. Specifically, the course has three major components: (1) an overview of the remote sensing process and major sensing systems, (2) an in-depth review of the major digital image processing techniques, and (3) an introduction to the LiDAR remote sensing system. The course consists of instructor-led lectures, lab assignments, and an independent research project. The course emphasizes a hands-on learning environment with a substantial amount of computer-based lab assignments that largely involve application of the principles and methods introduced in the lectures.

By the end of this course, students will:

- develop a working knowledge of the remote sensing process including concepts such as spatial scale, resolution, electromagnetic radiation, instrumentation, accuracy and sources of error,
- be able to conduct basic image interpretation and perform processing techniques including creating sub-images, image classifications, and vegetation indices, and
- be able to conduct basic LiDAR point cloud processing and measurement including creating surface and canopy models and density slices, and importing these data into ArcMap.

Course Materials

- ❖ **Required Text:** J.B. Campbell and R.H. Wynne (2011) Introduction to Remote Sensing, 5th ed., The Guilford Press, New York, NY.
- ❖ Other supplemental readings will be provided by the professor or gathered by students.
- ❖ I will post all course materials to Blackboard. **Please learn how to access and use this resource.**
- ❖ You will need a **USB flash drive** (minimum 8GB) to back up your work. If this is a hardship, see me.

Faculty Expectations of Students/Course Policies

❖ Statement of classroom behavior

***Respect for all individuals and their opinions in the class.**

***Absolutely NO tobacco use in the computer lab.**

***Turn off cell phones before entering class. Anyone caught using a phone during an exam will receive a "0" for that exam grade.**

❖ **Statement of expectations for attendance and participation**

All undergraduates are expected to attend and participate in all meetings of the courses in which they are enrolled; any absence is incurred at the student's own risk. **A student with more unexcused absences than the semester hours given for a course can expect the instructor to lower their final grade.** Missing 10% or more of class meeting times (e.g. 4 MWF classes or 2 labs) constitutes a significant amount of materials and experience and is very difficult, if not impossible, to make up.

❖ **Statement on late and/or makeup assignments**

I expect all assignments to be handed in on time (unless you have a legitimate excuse).

Assignments received within 48 hours of the due date/time will incur a 25% grade reduction.

Assignments received after 48 hours of the due date/time will not be accepted.

❖ **Weather Policy**

If the University closes for inclement weather, class will be canceled. **If there is another reason to cancel class, then I will notify everyone via Catamount email.**

Grading and scale*: 100% A+, 99-93% A, 92-90% A-, 89-88% B+, 87-83% B, 82-80% B-, etc.

Assignment	% Grade	Purpose
Quizzes	10%	Designed to evaluate student's daily understanding of course material
Exams	20%	Foundations of remote sensing; Applications in remote sensing
Labs/Exercises	40%	Designed to evaluate student's software skills and application of theoretical knowledge to real world applications
Research Project	30%	Large group project that requires team effort, research, and writing
Effort & Attitude	Incl. in all	<i>Class participation, effort, and attitude are important!</i>

***In order to pass this course (i.e., earn a grade of D- or higher), you must have a passing score (>60%) for your exam average and non-exam average (ex. labs & projects).**

Tentative Course Schedule

Projects make the world go 'round. For almost any endeavor - whether it's launching a space shuttle, designing a marketing campaign, conducting a trial, or staging an art exhibit - you will find a team working together to make it happen. This course uses a project-based learning model, which is a dynamic approach to teaching in which students explore real-world problems and challenges in NRM, simultaneously developing cross-curriculum skills while working in small collaborative groups.

Schedule
Aug 17 - Sept 18: Foundations of Remote Sensing
Sep 21 - Oct 16: Lidar and Advanced RS Methods
Oct 19 - Dec 4: Remote Sensing Project and Wrap-up

Note: Lab data can be found on the network drive at: [students \(\\gamma\gis\Share_D\GEOG_324\)](\\gamma\gis\Share_D\GEOG_324).

Important Dates at a glance			
Aug 17	Classes Begin	Sep 7	Labor Day Holiday - No classes
Sep 16	Exam 1	Oct 8-10	NRM 210 Camping Trip
Oct 12-16	Fall Break - No classes	Oct 19	Last day to drop with a "W"
Oct 23	Exam 2 due	Oct 27	Advising Day - No classes
Nov 20	Project Paper due	Nov 25-27	Thanksgiving Break - No classes
Dec 4	Data packages due	Dec 4	Last Day of Classes

Student Resources:

Academic Calendar includes dates for all breaks, university closures, final exams, etc. The academic calendar can be found at: <http://www.wcu.edu/academics/campus-academic-resources/registrar-office/academic-calendar.asp>

Student Support Services:

Student Support Services provides support to students who are either first-generation, low-income or those who have disclosed a disability with: academic advising, mentoring, one-on-one tutorial support, and workshops focused on career, financial aid and graduate school preparation. You may contact SSS, located in 138 Killian Annex, via phone at 828-227-7127 or email sssprogram@wcu.edu for more info.

Writing and Learning Commons (WaLC):

The Writing and Learning Commons (207 Belk, walc.wcu.edu, 828-227-2274) provides free small-group course tutoring, one-on-one writing tutoring and academic skills consultations, and online writing and learning resources for all students. All tutoring sessions take place in the WaLC or in designated classrooms on campus. To schedule for tutoring, call or log in to TutorTrac from the WaLC homepage. Distance students and students taking classes at Biltmore Park are encouraged to use Smarthinking and the WaLC's online resources. Students may also take advantage of writing tutoring offered at the Biltmore Park campus on certain days of the week; call log in to TutorTrac and select "Biltmore Park Writing Tutoring" for availabilities.

Mathematics Tutoring Center:

The Mathematics Tutoring Center (455 Stillwell, <http://mathlab.wcu.edu>, 828-227-3830) provides tutoring in all lower-division math and many CS courses, help with mathematical concepts in other disciplines, and workshops on study skills specific to mathematics courses. Tutoring is available on a drop-in basis, 9-5 and 6-9 pm Monday-Thursday, and 9-5 on Friday or by appointment.

Office of Disability Services:

Accommodations for Students with Disabilities: Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All information is confidential. Please contact the Office of Disability Services, located in 135 Killian Annex, via phone at 828-227-3886 or come by for an appointment.

Academic Integrity Policy:

Western Carolina University, as a community of scholarship, is also a community of honor. Faculty, staff, administrators, and students work together to achieve the highest standards of honesty and integrity. Academic dishonesty is a serious offense at Western Carolina University because it threatens the quality of scholarship and defrauds those who depend on knowledge and integrity. Violations include:

Cheating - Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise.

Fabrication - Intentional falsification of information or citation in an academic exercise.

Plagiarism - Intentionally or knowingly representing the words or ideas of someone else as one's own in an academic exercise.

Facilitation - Intentionally or knowingly helping or attempting to help someone else to commit an act of academic dishonesty, such as knowingly allowing another to copy information during an examination or other academic exercise.

WCU's Full Statement on Academic Integrity (including plagiarism) can be found here: <http://catalog.wcu.edu/content.php?catoid=20&navoid=346#honestypolicy>

Online course evaluations will be open from November 9 – December 4.

Geology 405: Hydrogeology
 Fall 2012
 Lecture: TR 8-9:15 ST155
 Lab: M 2:05-4:50 ST155

Dr. Mark Lord, mlord@wcu.edu
 ST353 (HFR 560); ph: 227-2271 (7495)
 Office Hrs: Tu & Th 9:15-9:45, M 1:00
Dr. Dave Kinner (research proj. & soil hydro.)
Mark Padgett (teaching & research assist.)

HYDROGEOLOGY

Purpose and Objectives:

The purpose of this course is to provide an introduction to hydrogeology with emphasis on groundwater, groundwater-surface water interactions, geologic controls, water quality, field investigations, and environmental problems. At the end of this course you should

- know, understand, and master fundamental qualitative and quantitative principles of hydrogeology
- know how to approach and solve basic problems in field hydrogeology
- know locations of hydrogeologic data and how to use them in hydrologic investigations
- understand how hydrogeology is interrelated with other aspects of the geosciences as well as other environmental science disciplines
- know how to define and address a hydrogeologic research question using standard methods and data analysis techniques

Course Outline:

The outline below shows course topics and the order that we will address them in Hydrogeology; most topics will require about one week to cover. The course will also have a significant small group research project, which will be intertwined with the course topics over much of the semester.

Topic	Chapter in Fetter*
Introduction to hydrogeology and course	1
Set-up: Western Carolina Hydrologic Research Station	
Hydrologic cycle with emphasis on stream flow	2
Hydrogeologic properties of earth materials	3
Darcy's Law and principles of groundwater flow	4
Groundwater flow solutions: flow nets, regional flow systems, and modeling	4.11-4.14, 7
Stream, groundwater, and ecosystem interactions	7.7, 6
Hydrogeologic settings	8
Groundwater flow to wells	5
Water chemistry—introduction	9
Groundwater Contamination & Water quality	10
Hydrology management	11
*** Cumulative Final Exam on Monday, December 10th, 8:30-11 *****	

* The chapters listed in Fetter are those most directly related to the topic we will be discussing. In some cases, the entire chapter will not be directly relevant to our class. In addition to readings in Fetter, there will be outside readings.

Course Text: Applied Hydrogeology, (4th edition), by C.W. Fetter

Course Overview:

Many of the principles and concepts of hydrogeology are difficult and require hands-on effort for full comprehension. Furthermore, many of the principles and concepts of hydrogeology are conveyed quantitatively. Thus, to maximize the value of this course to your education, your full participation (e.g. attendance, preparedness, effort, attitude) in the course is essential. Field investigations, student research

projects, homework, and other problem solving exercises will make up a significant part of our exploration of hydrogeology. There is a very practical side to this too: hydrogeology is embedded into many of our nation's (and world's) environmental problems. There is a high probability that those of you who pursue careers in environmental work will be involved in hydrogeologic studies. Therefore, your ability to get a job related to hydrogeology and to do well at the job will be linked to how much you take from this course.

And last, this is an upper-level course. As such, I have high expectations for students in this class. I expect students to demonstrate appropriate resourcefulness, independence, and dedication.

Grading:

Labs, projects, homework, etc. will make up a significant portion of this course; because of this, we will only have two full exams (a midterm and a final). In addition to the two exams, there will be several mastery quizzes. The focus of quizzes will be on skills (e.g. problems) rather than concepts and will be mostly based on homework. The date of the midterm will be set at least one week in advance of the exam.

25 % Midterm Exam

30 % Final Exam (cumulative)

30 % Labs and Research Project

15 % Class assignments, quizzes, class participation & preparedness

Exams will consist of essays, quantitative problems, and short answer questions; exams may include a take-home portion.

All work submitted for this course must meet minimum college-level requirements with respect to writing, clarity, and completeness. Work submitted that does not meet minimum expectations **will not be accepted** for evaluation, but may be corrected and resubmitted with a late penalty (*see below*).

All work must be turned in on the assigned due dates by 4:00 pm to be considered for full credit. Late work that is not excused will be penalized at 10% per day (including Saturday and Sunday). All out-of-class written assignments, unless stated otherwise, must be typed, 12 point font, double-spaced, and have one inch margins. All references used must be cited in a standard reference format. A general exception to required typing is problem solving homework. All written work must be neat and clearly labeled. Problems involving math should show all work and have all units labeled.

Grades and point scale: 100-97%:A+, 96-93%:A, 92-90%:A-, 89-87%:B+, 86-83%:B, 82-80%:B-, 79-77%:C+, 76-73%:C, 72-70%:C-, 69-60%:D, <60%:F

Attendance and Expectations:

I expect each of you to attend all classes unless you have an excused absence, although I will not directly count attendance in your grade. This course is being taught for you—not for me. Your presence, your preparedness, and your participation in all classes are critical to your success in the course as well as the success of the class. Furthermore, there will be in-class exercises and quizzes. There will be no make-up work permitted for unexcused absences. Labs are essential to this course and most will require material to be submitted for evaluation. Obviously then, missing a lab will directly impact your grade as well as your understanding of course material.

- **Bring your text and a calculator to all class and lab meetings.**

Hydrogeology Lab:

Many of our labs will be field labs and will study/research some aspect of hydrogeology at WCU utilizing campus groundwater wells and hydrology equipment. In addition, because this course involves the study of water, you can count on getting wet (Also, you can count on getting dirty). The point is be prepared for the field--lab time can go miserably slow for the unprepared. Most labs will require a standard lab report write-up; the details for the lab reports will be described in our first lab. Probable lab activities are *Lab determination of hydraulic conductivity, moisture, porosity; *stream discharge measurement; *Install groundwater wells; *Determine aquifer parameters (bail and pump test); *Conduct geophysical survey and dilution tracing experiment; *Contaminant movement processes and monitoring; *Computer modeling of groundwater flow

systems; *Analysis of groundwater using groundwater-tank models; *Water sampling and chemical analysis
*Visit groundwater contamination site

Research Project

You will conduct hydrogeologic research in the class as part of the class. This research is focused around a new hydrologic research station that has been supported by the National Science Foundation (NSF) and NC Dept. of Env. & Natural Resources. This semester, research will be related to evaluation of the interaction of groundwater and stream water in different reaches (geomorphic settings) of the research station. In our opinion, research is that the best way to train to a geoscientist. Note that this project is real research—it is part of a larger effort to learn about the region, and we don't know what the results will be. Some of you may even be able to present the results of your semester's work at a professional conference. Research will be completed during class, labs and in some cases your own time. More information will be given about this effort as the semester continues.

NSF Grant Information (IRB Approved)

As part of this class, all students will participate in scientific research related to the course topic. Together, we will be investigating the how different elements of the landscape in the Southern Appalachians can be used to develop predictive models of the quality and quantity of stream water and groundwater. This type of knowledge is important to understanding aquatic ecosystems and to environmentally sound land-use planning.

Separate from the class scientific research project, we (Dave Kinner & Mark Lord) are carrying out a study to evaluate the role of authentic (i.e. real) research experiences on student learning, especially in the sciences. Lots of data show that individual research by college seniors provides benefits to understanding science and careers. For our study, we want to test the role of research-based learning by small groups of students in a wide variety of classes. To best test this, we hope that you will permit us to use your feedback on the value of research-based learning. Your feedback will be collected during class time in two primary ways: 1) In two small-group discussions led by member of the WCU faculty center who specializes in educational assessment. 2) By completing an online questionnaire related to undergraduate research.

All students in this class must take part in the group discussions and complete the survey. However, only the feedback by students who provide consent will be included in our research-based learning study. We will analyze the data from these assessments to better understand the value of research-based learning. If all goes well, you can help us advance the understanding of science education in general. Be assured that your answers are completely confidential and will be reported only as summaries in which no individual's answers will be identified.

Permitting us to use your feedback as part of our study on research-based learning is completely voluntary. It will have no impact on your course grade, our view of you, or any future opportunities.

If you have any questions or comments about this study, we would be happy to talk with you. Please be aware that this questionnaire has been approved by the University's Institutional Review Board. If you have any questions about this approval process, please contact the IRB at 227-317

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities. Students who require disability services or reasonable accommodations must identify themselves as having a disability and provide current diagnostic documentation to Disability Services. All information is confidential. Please contact Disability Services for more information at (828) 227-2716 or 144 Killian Annex.

ACADEMIC INTEGRITY

Western Carolina University, as a community of scholarship, is also a community of honor. Faculty, staff, administrators, and students work together to achieve the highest standards of honesty and integrity. Academic dishonesty is a serious offense at Western Carolina University because it threatens the quality of scholarship and defrauds those who depend on knowledge and integrity. Academic dishonesty includes:

- a. **Cheating**—Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise.
- b. **Fabrication**—Intentional falsification of information or citation in an academic exercise.
- c. **Plagiarism**—Intentionally or knowingly representing the words or ideas of someone else as one's own in an academic exercise.
- d. **Facilitation of Academic Dishonesty**—Intentionally or knowingly helping or attempting to help someone else to commit an act of academic dishonesty, such as knowingly allowing another to copy information during an examination or other academic exercise.

Instructors have the right to determine the appropriate sanction or sanctions for academic dishonesty within their courses up to and including a final grade of "F" in the course. Within 5 calendar days of the event the instructor will inform his/her department head, and the Associate Dean of the Graduate School when the student is a graduate student, in writing of the academic dishonesty charge and sanction. For more information on academic integrity, visit the Student Handbook.

Statement on Group Work and Plagiarism: In the modern work environment we are often called upon work as teams. Teamwork facilitates the exchange of ideas and helps us learn from one another. Different people bring different ideas to the group. However, teamwork does not eliminate the need for personal accountability, and individual responsibility. Some exercises in this course will require you to work in peer groups. Each student is expected to participate fully in the work of the group:

- a. It is not acceptable to sit by the sidelines while your group works, and then copy the data or duplicate the results later.
- b. It is permissible, and sometimes advisable, for a group to split up work. *For example*, in a stream profiling lab, two group members might take measurements for a profile while two others take measurements for calculating the velocity of a stream. In this case, the two who gathered profile data may copy velocity from the other two. However, each student is responsible for making all calculations, answering all questions and drawing maps and profiles INDIVIDUALLY, unless specifically stated otherwise in the lab handout.
- c. Be warned that excessive similarity among the results of group members may be construed as plagiarism.

We do expect groups to share ideas and thoughts, but everyone must participate fairly. If you have any questions about what is appropriate to share and what is not, ASK US.

FLUVIAL GEOMORPHOLOGY - COURSE INFORMATION

Instructor:

Dr. Jerry Miller

Office: ST302

Phone: 227-2269

jmiller@wcu.edu

MW – ST143, 10:10-11 am (Lecture)

T – ST354, 1:25-3:15 pm (Lab)

Office Hours: Monday, Wednesday 9-10 or by appointment

Text: Knighton, David, 1998. Fluvial Forms and Processes, A New Perspective. Arnold Publishers, London.

Suggested supplemental texts:

Ritter, D.F., Kochel, R.C., and Miller, J.R., 2006. Process Geomorphology, Waveland Press. A copy of Process Geomorphology will be put on reserve in Hunter Library.

Miller, J.R. and Orbock Miller, S.M., 2007. Contaminated Rivers: A Geomorphological-Geochemical Approach to Site Assessment and Remediation. Springer Publishers.

Downs, P. W. and Gregory, K.J., 2004. River Channel Management. Arnold Publishers, London.

Grading:

Geol. 410

Exam I: 15 %

Exam II: 15 %

Final: 20%*

Quizzes: 10 %

Homework & Project: 35%

Class Participation: 5%

Geol. 510

Exam I: 10%

Exam II: 10%

Final: 20%

Quizzes: 10 %

Homework & Project: 35%

Paper: 10 %**

Class Participation: 5%

*- The final exam is comprehensive. Approximately 20 % of the final will be related to materials covered during Exams I and II. ** In keeping with WCU policy, graduate students will be required to complete additional assignments, including a review of a topic that is related to fluvial geomorphology.

Quizzes may periodically be given with little or no warning. They will generally cover the materials discussed during the previous 2 to 3 lectures, and may include materials contained within the assigned readings (e.g., scientific papers)!

Thursday afternoon class/lab: The best way to learn fluvial geomorphology is to actually do it. The purpose of the labs on Wednesday afternoon is to gain experience in performing basic analyses which are critical to fluvial geomorphology. The expectations for the labs will vary. On some occasions there will

be not be an assigned problem, but on other days, you will be given an assignment that must be turned in the following week unless otherwise instructed. You should always bring a calculator to lab.

Field Trip: You will be applying the methods you learn in the lectures and labs to a field situation as part of your homework assignments. This year's projects will likely focus on Big Harris Creek located near Polkville, NC. Thus, an all day field trip *is required* for you to collect the necessary data for your project. I will try to schedule it as soon as possible. The trip will likely be scheduled toward the end of September or the first to middle of October.

Attendance: You are expected to attend class unless you have an excused absents. Although attendance is not directly counted as part of your grade, there is no doubt that your presence, preparedness, and participation in all classes and labs are important to your success in this course. Any absence that you incurred is at your own risk. There will be no make-up work permitted for unexcused absences!

Excused absences are given for a documented and bonafide medical emergency or the death of an immediate family member. Excused absences are also granted for university events that include performances and events sanctioned by the Chancellor to promote the image of the university, regularly scheduled university team competitions (athletic and otherwise) including postseason play (practices and training sessions are excluded) and student engagements sponsored by the institution and approved by the Provost (e.g. research presentations and performances at national conferences or events).

If you anticipate missing a high number of classes (i.e. 10% or more of class time) for excused absences, please discuss this issue with me as soon as possible.

Note that the Instructor has the discretion to cancel a student's registration for a course if the previously registered student fails to attend the first class meeting and fails to notify the instructor prior to the end of the first day of class. Students may re-register for the course on a seats-available basis up through the end of drop/add (5th day of semester).

Although instructors may drop students for non-attendance, students should not assume that this will occur. The student is responsible to drop a course, if that is their intent, to avoid a grade of W or F. Student appeals resulting from emergencies or other extenuating circumstances will be considered on a case-by-case basis by the department head or in the appropriate dean's office. Re-registration will not be permitted for any reason after census day (10th day of semester).

Makeup Policy

Assignments must be turned in on time and cannot be made up unless you are given permission by the instructor. It is possible that you will be allowed to turn in an assignment late, but do not count on it. Moreover, if you are allowed to turn in an assignment late, there will undoubtedly be a penalty for doing so. Tests can be made up only with a valid, verifiable excuse (e.g., a doctor's note), or by prior approval.

Cell Phone Use

The use of cell phones in class is PROHIBITED! Simply put, cell phones are a distraction to the other students in the class and to the instructor. The first time you are caught using one in class, I will give you a warning. After that, you may be docked half-a-letter-grade for each violation.

Academic Integrity

As defined in the Student Handbook:

Cheating: Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise

Fabrication: Intentional falsification of information or citation in an academic exercise.

Plagiarism: Intentionally or knowingly representing the words or ideas of someone else as one's own in an academic exercise.

Facilitation of Academic Dishonesty: Intentionally or knowingly helping or attempting to help someone else to commit an act of dishonesty, such as knowingly allowing another to copy information during an examination or other academic exercise.

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- a. It is not acceptable to sit by the sidelines while your group works, and then copy the data or duplicate the results later.
- b. It is permissible, and sometimes advisable for a group to split up work. However, each student is responsible for making all calculations, answering all questions, and drawing all maps, etc., unless otherwise instructed in the lab.
- c. Excessive similarities among the results of group members may be construed as plagiarism

I do expect groups to share ideas and thoughts, but everyone must participate fairly. If you have any questions about what is appropriate to share and what is not, ask me about it.

Accommodations for Students with Disabilities

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Study Suggestions

- (1) Read the assigned chapters in the text (and make up a list of questions regarding these materials) prior to coming to lecture.
- (2) Go over your notes on a regular basis - preferably after every lecture. Compare your notes with those of your classmates to insure that they are complete. If you have questions, write them down and bring them to class. We will start every lecture with a question and answer session. If you miss a class, make sure you arrange to borrow another student's notes. **Note that it is your responsibility to find out what was discussed.**

Fluvial Geomorphology

Fall, 2013

Tentative Lecture (Monday/Wed) Schedule

Month/Day	Topic	Readings
Monday, Aug., 19	Course Introduction	
Wed., Aug., 21	Paleoflood Video	
Mon., Aug., 26	Modern concepts in geomorphology; equilibrium, thresholds, complex response, and process linkages (lecture and lab)	Ritter et al., chapter 1(p. 2-23) (on reserve in Hunter Library)
Wed., Aug., 28	Putting fluvial geomorphology to work – environmental issues and stream restoration	Ritter, 1986 (on reserve in Hunter Library)
Mon., Sept., 2	<i>No class (Labor Day)</i>	Knighton, p. 96-107
Wed., Sept., 4	Intro to open channel flow; hydrographs, and the controlling factors	Ritter et al., Chapter 5
Mon., Sept., 9	Modes of sediment transport; processes of entrainment	Ritter et al., Chapter 6, Sediment transport
Wed., Sept., 11	Discussion of tractive force, critical bed velocity, and stream power continued	Knighton, p. 107-113; Knighton, p. 118-141
Mon., Sept. 16	Equal mobility hypotheses; prediction of channel bed scour; bedload transport models	Same as for Sept., 9
Wed., Sept., 18	<i>Exam I</i>	
Mon., Sept., 23	Erosion of bedrock channels; bank erosion – processes and mechanisms	Knighton, p. 113-118
Wed., Sept., 25	Bank erosion models	To be assigned
Mon., Sept., 30	Channel patterns - meandering rivers	Knighton, p. 205-230
Wed., Oct., 2	Meandering rivers continued	Same as for Sept. 30
Mon., Oct., 7	<i>Fall Break, no class</i>	
Wed., Oct., 9	<i>Fall Break, no class</i>	
Mon., Oct., 14	Braided and anabranching channels	Ritter et al., chapter 6
Wed., Oct., 16	Controls on channel slope; reach scale bed configuration and deposits, including pool-riffle and step-pool sequences	Ritter et al., chapter 6
Mon., Oct., 21	Controls on channel width, depth, and width to depth ratio; hydraulic geometry; regional curves	Ritter et al., chapter 6

Schedule - continued

Wed., Oct., 23	Review of channel form; review for exam	
Mon., Oct., 28	Exam II	
Wed., Oct., 30	Floodplains definition and formation; Floodplain deposits; terraces	Miller and Orbock Miller (2007) Chapter 6; Ritter et al., 2006, Chapter 7 (terraces)
Mon., Nov., 4	Constructing geomorphic histories; dating methods	Miller and Orbock Miller, Appendix C
Mon., Nov., 11	Channel response and recovery; concept of event ordering	Ritter et al., chapter 6
Wed., Nov., 13	Geomorphic responses to disturbance; methods of assessing channel changes	Knighton, p. 261-295
Mon., Nov., 18	Geomorphic responses to land-use change; legacy sediments	To be assigned
Wed., Nov., 20	Common responses to climate change and land-use alterations	Knighton, p. 302-307; Knighton, p. 316-322
Mon., Nov., 25	Fluvial responses to channelization	To be assigned
Wed., Nov., 27	<i>No class; Thanksgiving Break</i>	
Mon., Dec., 2	Assessing the impacts of dams	To be assigned
Mon., Dec., 4	Final thoughts	
Wed., Dec., 11	Final Exam, 8:30-11:00 (in ST143)	

Note: schedule may be adjusted slightly during the course of the semester.

Thursday Lab Schedule

Date	Topic
Aug., 22	No Class
Aug., 29	Basin morphometry; Horton/Strahler analysis
Sept., 5	Horizontally integrated method of discharge measurement. Measurement of bed and bank material size distributions
Sept., 12	Cullowhee Creek data collection and analysis
Sept., 19	Hydrologic modeling of stage-discharge relations
Sept., 26	Flood frequency analysis – basic concepts; analyzing flood frequency in ungaged basins with NFF
Oct., 3	Project discussion and data collection
Oct., 10	<i>Fall Break, no class</i>
Oct., 17	Computation of shear stress and particle entrainment
Oct., 24	Stratigraphic analyses and deposit dating methods
Oct., 31	Aerial photographic mapping
Nov., 7	Project analysis
Nov., 14	<i>Spring Break, no class</i>
Nov., 21	Project analysis
Nov., 28	Thanksgiving break, no class
Dec., 5	Project presentations

Geology 455/555: Wetlands

Instructor: Dr. Ben Tanner **Office:** Stillwell 307 **Office Hours:** MWF 10-11; R 1:30-2:30
e-mail: btanner@email.wcu.edu **Phone:** 227-3915 Also by appointment or “drop in”
Course Text: Mitsch and Gosselink (2015), Wetlands **Class Meeting Time:** W, F 3:00 – 4:15 Stillwell 155

COURSE DESCRIPTION AND GOALS

Wetlands are important components of the landscape that provide a refuge for a diversity of plant and animal species. Wetlands also play a role in flood mitigation, storm abatement, aquifer recharge, and they provide a “natural filter” by removing excess nutrients and toxic materials from the water. Despite their importance, wetland destruction has been a significant problem historically. This course will cover many issues dealing with wetlands and wetland science including wetland delineation, hydrology, and biogeochemistry. The course will consist of a mixture of readings from several texts, lectures on important topics, field-based exercises, journal article reviews, and class discussion. There will be several fieldtrips over the course of the semester that will allow students to directly explore the topics that are covered in class. At the end of the course you should have a fundamental understanding of how wetlands are defined, how we identify them in the field, what functions they serve, how they function internally, how we derive environmental information from them, and what the societal issues are concerning wetlands and their preservation.

GRADING

Tests (2)	45%	Mid-term and final worth ½ each.
Assignments	40%	Field and lab-based exercises will be assigned over the course of the semester and will be due 1 week after they are introduced. Specific details and expectations will be communicated when the exercises are assigned.
Journal Article Reviews	10%	You will be assigned journal article readings over the course of the semester and will be required to turn in a 1 to 2page (12 point font, double-spaced) summary of the articles. Also, you will be responsible (as a group) for leading a discussion of one of the articles.
Participation	5%	Attendance, field trip participation, and participation in discussion and group work will be considered.

100-94%:A, 93-90%:A-, 89-87%:B+, 86-83%:B, 82-80%:B-, 79-77%:C+, 76-73%:C, 72-70%:C-, 69-60%:D, <60%:F

GRADUATE STUDENT ASSIGNMENTS

In keeping with WCU policy, graduate students will be required to complete several additional assignments. For a portion of the “assignment” score, graduate students are required to complete the field-based assignments (17.5% of the 35% indicated) but are additionally required to construct and turn in a grant-style proposal of an original research idea (GSA Style) on a topic that is related to wetlands (the other 17.5%). Additionally, each graduate student will be expected to lead 1 journal article discussion over the course of the semester (as an individual and not as part of a group) for a portion of their journal article review grade.

FIELD TRIPS

All field trips for the course are mandatory. You will be given an alternative assignment if you cannot attend one of the field trips, but this needs to be arranged in advance.

MAKEUP POLICY

Since assignments are given a week in advance of their due date, they must be turned in on time and cannot be made up. Tests can be made up only with a valid, verifiable excuse (i.e. doctor’s note).

FORMAT FOR ASSIGNMENTS

All written assignments must be typed unless I tell you otherwise. Also, please proof read all assignments to make sure that they are free of careless mistakes. I will deduct points for sloppy work.

A NOTE ON CLASSROOM ETIQUETTE

I strive to maintain a learning environment that is comfortable and free from distraction. Electronic devices must be put away before the beginning of class. If you are waiting on an important call (e.g. family member in the hospital), please see me before class for special arrangements. Also, please do what is necessary before class so that you do not have to step out (for water, bathroom, etc.) during class, especially during testing. Students leaving the room during testing will be required to turn their test in to be graded before exiting the classroom.

ACADEMIC HONESTY POLICY

(Complete policy can be found within the undergraduate catalog – several important points are included here)

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of the Academic Integrity Policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community. While academic in scope, any violation of this policy is by nature, a violation of the Code of Student Conduct and will follow the same conduct process.

Violations of the Academic Integrity Policy include:

Cheating - Using or attempting to use unauthorized materials, information, or study aids in any academic exercise.

Fabrication – Creating and/or falsifying information or citation in any academic exercise.

Plagiarism - Representing the words or ideas of someone else as one's own in any academic exercise.

Facilitation - Helping or attempting to help someone to commit a violation of the Academic Integrity Policy in any academic exercise (e.g. allowing another to copy information during an examination)

Faculty members have the right to determine the appropriate sanction(s) for violations of the Academic Integrity Policy within their courses, up to and including a final grade of “F” in the course. Within five (5) days of the instructor's knowledge of the alleged violation of the Academic Integrity Policy, the instructor will inform his/her department head in writing of the allegation and proposed sanction(s).

Subsequent procedures for cases involving allegations of academic dishonesty can be found in the student handbook.

Office of Disability Services

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Student Support Services

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Writing and Learning Commons (WaLC)

The Writing and Learning Commons (WaLC), located in BELK 207, provides free small-group course tutoring, one-on-one writing tutoring and academic skills consultations, and online writing and learning resources for all students. All tutoring sessions take place in the WaLC or in designated classrooms on campus. To schedule tutoring appointments, log in to TutorTrac from the WaLC homepage (<http://walc.wcu.edu>) or call 828-227-2274. Distance students and students taking classes at Biltmore Park are encouraged to use Smarthinking and the WaLC's online resources. Students may also take advantage of writing tutoring offered at the Biltmore Park campus on certain days of the week; call 828-227-2274 or log in to TutorTrac and select “Biltmore Park Writing Tutoring” for availabilities. Math Tutoring Center (usually included in Math department lower division courses)

The Mathematics Tutoring Center (455 Stillwell, <http://mathlab.wcu.edu>, 227-3830) provides tutoring in all lower-division math and many CS courses, help with mathematical concepts in other disciplines, and workshops on study skills specific to mathematics courses. Tutoring is available on a drop-in basis, 9-5 and 6-9 pm Monday-Thursday, and 9-5 on Friday or by appointment.

Academic Calendar includes dates for all breaks, university closures, final exams, etc. The academic calendar can be found at: <http://www.wcu.edu/academics/campus-academic-resources/registrars-office/academic-calendar.asp>.

CLASS SCHEDULE AND ASSIGNMENTS ARE TENTATIVE AND ARE SUBJECT TO CHANGE DURING THE SEMESTER. YOU WILL BE NOTIFIED OF ANY CHANGES DURING CLASS TIME

NRM 320
Soil Conservation
Spring 2016

Lecture/Discussion: T & R, 12:20 – 1:10; Coulter 102

Lab: T, 3:00 – 4:50; Belk 253

“Be it deep or shallow, red or black, sand or clay, the soil is the link between the rock core of the earth and the living things on its surface...therein lies the main reason for our interest in soils.”

– Roy W. Simonson, 1957 — Soil Scientist

Professor: Dr. Robert “Trip” Krenz
336 Stillwell Building
rjkrenz@email.wcu.edu
828-227-3817

Office Hours: MWF 10:00-11:00 or by appointment

Rationale/Purpose:

To familiarize students with analysis and characterization of soils for the purposes of maintaining, restoring, or enhancing productivity, and to foster an understanding of soil resources in the context of science-based environmental management.

Course Aims and Objectives:

The aims of this course are to introduce the importance of soils in the context of sustainable utilization; to discuss common threats to and impacts on soil resources; and to analyze and evaluate implications of soil management, conservation, and restoration actions on ecosystem health and productivity. By the end of this course, students will:

- Understand the services that soils provide, the intensity of soil utilization, and the value of soil fertility and productivity at multiple spatial scales.
- Understand factors and processes that contribute to soil erosion, as well as the degradation of soils and other natural resources (e.g., surface waters) as a result of erosion.
- Understand and demonstrate an ability to recommend soil conservation and management strategies that can ameliorate impacts to soils and restore degraded soils.
- Cohesively integrate a knowledge of soil science, utilization, and management practices with their implications for water resource conservation and management.
- Appreciate the need for effective, science-based conservation and management of soils to achieve environmental, social, and economic sustainability goals.

Required Text: *Soil and Water Conservation for Productivity and Environmental Protection, 4th edition.* By Frederick R. Troeh, J. Arthur Hobbs, and Roy L. Donahue. Pearson Prentice Hall, Upper Saddle River, New Jersey. ISBN 0-13-096807-2

Other Required Materials: I will post readings, videos, multimedia materials, and assignments to the course Blackboard page as the semester progresses. *It is your responsibility to learn how to access these resources on Blackboard (<http://wcu.blackboard.com>) and to print anything I ask you to before coming to class!*

Grading/Student Evaluations:

Assignment	Percentage of Grade	Description
Lab Exercises/Participation	30	Lab exercises and assignments.
Quizzes*	10	<u>10</u> quizzes on lectures, labs, and readings
Thursday Discussions	10	Participation in and leading discussion based on weekly readings
Exams (2)	30	Two intermittent exams during semester.
Final Examination	20	Final exam – comprehensive
Total	100%	

* I will give more than 10 quizzes, however, only your best 10 will be used to calculate your grade. This is meant as a built-in safeguard for your grade against unforeseen and unavoidable absences.

Grade	Letter	Quality Points
99-100	A+	4.0
92-98	A	4.0
90-91	A-	3.67
88-89	B+	3.33
82-87	B	3.0
80-81	B-	2.33
78-79	C+	2.33
72-77	C	2.0
70-71	C-	1.67
68-69	D+	1.33
62-67	D	1.0
60-61	D-	0.67
60 or lower	F	0

Please note that a C- grade is less than satisfactory and may not meet particular program and/or course requirements.

Composition-condition marks. A student whose written work in any course fails to meet acceptable standards will be assigned a composition-condition (CC) mark by the instructor on the final grade report. All undergraduates who receive two CC grades prior to the semester in which they complete 110 hours at Western Carolina University are so notified by the registrar and are required to pass English 300 or English 401 before they will be eligible for graduation. This course must be taken within two semesters of receiving the second CC and must be passed with a grade of C (2.0) or better.

Attendance and in-class evaluations: You are expected to come to class on time, prepare ahead of time, and complete all assignments by the time they are due. *As you can see, I rely heavily on in-class work* (which include activities, discussion, and short in-class “quizzes”) to evaluate you. *Together, in-class quizzes, discussion, and exercises make up a large portion of your grade*; as a result, repeated absences will substantially hurt your grade. These exercises are intended to evaluate your understanding of concepts from in-class materials and those assigned outside of class. Unless previously approved by me with an official university excuse, in-class evaluations that you miss will receive a score of “0”. *I will only use the 10 highest in-class quiz scores to calculate your final grade.* This is a built-in safeguard against the unforeseen. So if something crazy happens, just relax, there’s a bit of wiggle room. As a result of these quiz drops *there is no “make-up” for in-class work.* Regardless, if you miss a class it would be wise to get notes from a classmate.

Homework assignments: Any work to be completed outside of class should be turned in on time. *Late assignments will be penalized 15% per day through the third day, after which they will be marked as “0”.*

Group presentations/projects: Each group will present their findings to the class following the rules I outline. More details later. **NO MAKE-UP!**

Exams: There are three exams during the semester (2 intermittent and 1 final) that are each worth 15% of your total grade. *No make-up exams will be permitted for intermittent exams* unless I am contacted at least the day before the exam (before 4 PM) with a legitimate and official university excuse. Final exams can only be rescheduled with a legitimate university-approved excuse prior to the posted date.

Academic Integrity Policy:

**** Please take this seriously. For your sake.****

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Faculty have the right to determine the appropriate sanction(s) for violations of the Academic Integrity Policy within their courses, up to and including a final grade of “F” in the course.

Please refer to the student handbook regarding the policies and consequences of academic honesty at Western Carolina University.

Classroom Etiquette and Environment:

DO NOT use personal electronic devices (e.g., cell phones, tablets, laptops) without my explicit permission or instruction. This is to prevent any suspicion of academic dishonesty (see Academic Integrity section above). Anyone caught using a phone or any internet capable device during an exam or any in-class exercises without approval will receive a “0”, or worse if violations of Academic Integrity policies are violated.

Mutual Respect and Civility:

The Western Carolina University Community Creed states: “I will respect the rights and well-being of others”. Each student may possess different ideas, as well as different ways of communicating those ideas. Because of these differences, respect and civility are integral to maintaining the quality of the academic environment and free inquiry.

This is perhaps the most important “policy” in the syllabus. Though this seems obvious to most (hopefully all) of you, it is essential that we treat everyone with mutual respect and decency regardless of background. This is something that you should do on a daily basis inside and outside class. I want everyone to not only learn what they came to learn in this class, but to have a comfortable, safe, and fun environment in which to do it. This includes tolerance, but as important, it encompasses the notion that you need to treat others with respect, decency, and a smile doesn't hurt. You might even make a new friend. I will do the same for all of you. If anyone proves that they are incapable of this, I will be forced to dismiss you. I doubt that will happen, as this is pretty simple stuff.

In case of adverse weather:

If the University closes for inclement weather, class will be canceled. If there is another reason to cancel class, then I will notify everyone by email

Other Useful University Resources

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The Mathematics Tutoring Center: The Mathematics Tutoring Center is located in 455 Stillwell and provides tutoring on a drop-in basis during posted hours, as well as by appointment. Tutoring is available for math courses as well as for *mathematical concepts in other disciplines*. Check <http://mathlab.wcu.edu> or call 828-227-3830 for hours and appointments.

Technology Commons: Technology commons provides students help with software, technology, Blackboard learning management system, and eBriefcase via one-on-one appointments, walk-ups, workshops, and tutorials. It is located on the ground floor of Hunter Library. Check tc.wcu.edu or call 828-227-7487 for more information.

Academic Calendar: This includes dates for all breaks, university closures, final exams, etc. The academic calendar can be found at <http://www.wcu.edu/academics/campus-academic-resources/registrars-office/academic-calendar.asp>.

Tentative Course Schedule:

****May change to accommodate guest presenters & student needs****

Please access additional online course material via **Blackboard** as assigned and follow all posted instructions to find readings and supplemental material necessary to complete the posted assignments and to lead discussions.

Wk.	Dates	Tuesday (12:20 – 1:10) Lecture Topic	Textbook Chapter/Readings Assigned [†]	Tuesday (3:00 – 4:50) Lab Activity	Thursday (12:20 – 1:10) Discussion Leaders
1	Jan. 12-14	Intro and Historical perspectives	Ch. 1	#1 Intro to soil and ecosystem services	Dr. Krenz
2	Jan. 19–Jan. 21	Factors of soil formation, profiles, and horizons	Soil formation and soil profiles readings (BB)	#2 Soil surveys	Agner, Combs
3	Jan. 26-Jan. 28	Soil classification and orders	Soil orders reading (BB)	#3 Intro to soil taxonomy	Cornelius, Covington
4	Feb. 2- Feb. 4	Soil texture, density, porosity	Soil density reading (BB)	#4 Lab Project: Soil quality quest., hypoth., & plan	Donohue, Hartshorn
5	Feb. 9-Feb. 11	Soil fertility and nutrient cycling	Soil properties and nutrient availability (BB)	#5 Soil analysis lab practice	Hellinger, Hiltbrand, Wilkins
6	Feb. 16-Feb. 18	Soil loss – wind and water erosion	Ch. 4	#6 Lab Project: Soil quality group work time	Exam 1
7	Feb. 23-Feb. 25	Infiltration and runoff	Ch. 13	#7 Infiltration (may float as needed)	-----No class-----
8	Mar. 1-Mar. 3	Predicting soil loss	Ch. 6	#8 Field predictions of erosion, USLE	Hooker, Horne
9	Mar. 8-Mar. 10	---Advising day--No class---	Forest fire and infiltration reading (BB)	---Advising day--No class---	Kiser, Layman
10	Mar. 15-Mar. 17	Forest management and soil conservation-harvest methods	Ch. 12-4	#9 Forest Site Quality Index (FSQI)	Mang, May, Wantz
11	Mar. 22-Mar. 24	-----Spring Break – no classes -----			

12	Mar. 29-Mar. 31	Forest management and soil conservation-roads and culverts		#10 Road and culvert design	Exam 2
13	Apr. 5-Apr. 7	Other conservation structures	Ch. 10	#13 Streams and riparian zones (may float as needed)	Schreiber, Schumaker
14	Apr. 12-Apr. 14	Wetlands and water quality	Ch. 17	#12 Wetlands	Priest, Proctor
15	Apr. 19-Apr. 21	Agriculture and soil conservation	Ch. 8 Ch. 9	#11 Agricultural soil conservation (may float as needed)	McKinney, Peterson
16	Apr. 26-Apr. 28	Reclamation of disturbed soils	Ch. 11	#14 Restoration and reclamation	Stevens, Stock, Tallent
17	Apr. 30-May 6	----- Final Exam Week ----- (Take-home Exam)			

†Assigned readings are in addition to the student-led discussion readings listed on the following page. Additional readings may also be posted at a later date. Materials from all readings are important for classroom discussions and student evaluations (i.e., tests and quizzes).

Thursday student-led discussion readings:

Weekly discussions on Thursday will be led by the students listed in the schedule as above.

Each group of student leaders for that date will briefly summarize the paper (environmental issue, research questions/hypotheses, research approach/methods, results, and take-home message). Leaders will then pose discussion questions to the class and guide the discussion among all students. The questions you ask can be about the reading specifically, or they can concern how the reading relates to the broader context of issues that we covered in lecture and lab.

All discussion readings will be posted a minimum of 1 week prior to the scheduled day for the discussion.

→ ***Discussion leaders: Must turn in typed summary of the paper (outline format) and 4 discussion questions or prompts for the class to discuss.***

→ ***Remainder of class: Must have read the paper, AND come prepared with one discussion question from the reading that you will turn in. Participation points will be awarded.***

Natural Resource Management 330: Introduction to Wildlife Ecology and Management

Fall 2012

Killian 107

Tues-Thurs 9:30-10:45

Lab: Friday 1-2:50

Instructor: Dr. Ron Davis
Office: Stillwell 318
Office Hours: Monday 8:30-10:00, Tues 2-3:30

NOTE: I have an open door policy and am generally in my office when not teaching. Please feel free to stop by my office any time if you have questions.

I. Purpose

To provide an introduction to the major ecological concepts involved in the management of natural resources for wildlife management.

NOTE: Service Learning---this class is being developed as a designated service learning course at WCU. This will require student to spend 15 hours working with a community stakeholder on some project related to wildlife, habitat, management etc.

Specific details will be provided ASAP

II. Course Objectives:

Students will be able to apply critical thinking skills to the understanding of ecologic, economic, and ethical aspects of wildlife management and conservation.

III. Course Materials

- Required text(s): Wildlife Ecology Conservation and Management 2n Ed. 2006. Sinclair, Fryxell, and Caughley. Blackwell Publishing
- Other readings will be provided as needed.

IV. Expectations of Students/Course Policies (Amendments will be announced in class)

- Attend and be engaged in class. Attendance is not mandatory but some activities will be completed in class and so excessive absences will impact your grade.
- Complete assignments on time. Late work will be penalized 20% of the total points possible for each day late. After 5 days the assignment will receive a grade of zero.

- Exams, in class-exercises and quizzes are not available for make up. If you **MUST** miss an exam make arrangements ahead of time to take it early.
- Be **COURTEOUS** to other students **AND** the instructor. This includes but **IS NOT LIMITED TO** getting to class on time, avoid excessive talking, keeping cell phone **OFF** etc. Put simply, avoid things that interfere with my teaching or student learning.

- **Academic Integrity:** You are encouraged to share ideas, discuss questions, and work together with your classmates in such a way as to further your individual and collective understanding and proficiency of the concepts and skills presented in this course. However, I expect each of you to submit original, independent work and adhere to the policies set forth in the University Catalog and Student Handbook. Academic dishonesty of any kind is not acceptable. Be sure to cite all work and ideas that are not your own and reference all citations. See the University Writing Center website for information regarding plagiarism. *Failure to comply with the University policy on academic integrity can result in a zero for the specific assignment, a failing grade for the course, University disciplinary action or any combination thereof.*

What you should expect from me:

- I am readily available to answer questions and help with assignments. I have office hours but feel free to stop by at any time or call/email to set up an appointment. **NOTE:** Talk to me as soon as you are having problems or questions. If you wait until the day before something is due or the end of the semester to ask for help there will be little I can do for you.
- I will strive to get your graded work back to you in a timely fashion. Handing assignments in on time and in a presentable fashion will help with this tremendously.
- Expectations (i.e. such as what you need to “know” for a test or quiz) are clear. Grading and course policies are implemented fairly.

Writing Assistance: The Writing Center which is located on the first floor of Hunter Library assists students with papers and written assignments. See their website for additional information at www.wcu.edu/WritingCenter

Accommodations for Students with Disabilities: Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities. Students who require disability services or reasonable accommodations must identify themselves as having a disability and provide current diagnostic documentation to Disability Services. All information is confidential. Please contact Disability Services for more information at (828) 227-2716, lalexis@wcu.edu or 144 Killian Annex.

V. Grading Procedures: With the exception of some in class exercises used for discussions, all work will be graded and returned to you. Assignments will be designed to provide a variety of approaches to learning.

<i>% of Grade</i>	
Hourly Exams (4)	60
Quizzes, Assignments, Labs	20
Service Learning & Report	20

Grading Scale: Grades will be assigned according to the scale shown below.

Percentage Grade Letter grade

93-100	A
90 – 92	A-
87 – 89	B+
83 – 86	B
80 – 82	B-
77 – 79	C+
73 – 76	C
70 – 72	C-
67–69	D+
63–66	D
60–62	D-
Below 60	F

- **NOTE: I do not disclose/discuss grade information by email or phone so if you need to discuss your grade please see me in person.**

	Date	Topic	Reading Assignment
1	Tues, Aug 21	Introduction	Morrison 2002 (Chapters 2-3)
2	Thurs, Aug 23	Characteristics of Wildlife	
3	Tues, Aug 28	Introduction to Wildlife Ecology and Management	
4	Thurs, Aug 30	Introduction to Wildlife Ecology and Management	
5	Tues, Sep 4	Introduction to Wildlife Ecology and Management	
6	Thurs, Sep 6	TEST 1	
7	Tues, Sep 11	Food and Nutrition	C and S chapter 4-5
8	Thurs, Sep 13	Animal Behavior	
9	Tues, Sep 18	Habitat Evaluation, Management	Morrison et al. (1998) Chapter 5
10	Thurs, Sep 20	Habitat Evaluation, Management	
11	Tues, Sep 25	Habitat Evaluation, Management	
12	Thurs, Sep 27	Habitat Evaluation, Management	
13	Tues, Oct 2	Habitat Loss and Fragmentation	
14	Thurs, Oct 4	Habitat Loss and Fragmentation	
15	Tues, Oct 9	Wrap Up/Review	
16	Thurs, Oct 11	TEST 2	
	Tues, Oct 16	Fall Break – No Classes	
	Thurs, Oct 18	Fall Break – No Classes	
17	Tues, Oct 23	Population Size and Growth	C and S Chapters 5-6
18	Thurs, Oct 25	Population Size and Growth	
	Tues, Oct 30	Advising Day – No Classes	
19	Thurs, Nov 1	Population Limits to Growth	C and S Chapters 7-11
20	Tues, Nov 6	Population Limits to Growth	
21	Thurs, Nov 8	Population Limits to Growth	
22	Tues, Nov 13	Wrap up/Review	
23	Thurs, Nov 15	TEST 3	
24	Tues, Nov 20	TBA	
	Thurs, Nov 22	Thanksgiving – No Classes	
25	Tues, Nov 27	Integrated Management	
26	Thurs, Nov 29	Integrated Management	
27	Tues, Dec 4	Integrated Management	
28	Thurs, Dec 6	Integrated Management	
	WED Dec 12	Final Exam	12:00-2:30 PM

Introduction to GIS

NRM 344

Spring 2013

Stillwell 354

Tues and Thurs 9:30-10:45

Lab Monday: 1:00-3:00

Instructor: Ron Davis
Office: Stillwell 318
Phone: x2726
Office Hours: Wed and Thurs 12:00-2:00pm

I am usually in my office whenever I'm not teaching so if the door is open feel free to stop by with questions.

I. Purpose

The purpose of this class is to allow you to develop the knowledge and the skills required to apply GIS analyses to the study, conservation and management of natural resources and ultimately to be able to apply concepts and methods to real world problems INDEPENDENTLY.

II. General Course Objectives (More detailed objectives will be provided in class): By the end of this course students should be able to:

- Develop a spatial question (i.e. purpose statement or research question) applying geospatial analysis to a realistic scientific (NRCM) problem.
- Develop a set of measurable objectives needed to address the problem or answer the research question.
- Develop a sequence of GIS methods suitable for meeting scientific/research objectives
- For the major GIS methods covered in this class be able to describe the purpose of each and the type of information/output as (and how it may relate to spatial questions, objectives and the overall problem)
- Be able to generate the necessary outputs from GIS analysis (maps, tables, graphs, calculations etc.) needed for data analysis and interpretation and application of results.

III. Tips for Success: Given the amount of information, and the complexity of GIS software the best advice I can give for this class is:

- Don't let the work get ahead of you—if you wait until the day an assignment is due then something WILL go wrong. This will only add to the frustration and takes away from learning.
- Always keep in mind the purpose of your work and the question you're asking. As you'll hear me say ad nauseum: **If you don't know what you need the GIS program to do, you'll have no way of knowing whether it's done it!**
- The weekly labs are intended to give you practice with the software and concepts and often can be finished in a lab session. HOWEVER, don't just rush through them to finish. GIS is like learning a big clunky out of tune instrument and takes PRACTICE. Each new concept depends on earlier ones. Racing to finish an exercise might mean you get out of class sooner but remember you WILL need to use each method or apply each concept later.

- Try to have some fun with the problem solving. GIS is a lot like a big puzzle.
- Ask for help when you need it. The course builds on itself so telling me the day something is due that “I didn’t understand” is too late.

III. Course Materials

- Required text(s): Required text(s): Bolstad, P. 2005. GIS Fundamentals: A First Text on Geographic Information Systems.
- Other readings will be provided as needed.

IV. Expectations of Students/Course Policies (Amendments will be announced in class)

- **ATTENDANCE:** As with any class your work will reflect the amount of time you put into the course. While I don’t have a formal attendance requirement I do penalize for late work and view it as YOUR responsibility to ensure that you catch up on any materials or assignments missed.
- **LATE WORK:** Late work will be penalized 20% of the total points possible for each day late. After 5 days the assignment will receive a grade of zero.
- If you **MUST** miss an exam or other assignment due in class please make arrangements ahead of time to take it early.
- Be **COURTEOUS** to other students **AND** the instructor. This includes but **IS NOT LIMITED TO** getting to class on time, avoid excessive talking, keeping cell phone **OFF** and not browsing the web during lectures etc.
- Put simply; avoid things that interfere with my teaching or student learning.

ACADEMIC INTEGRITY: Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of the Academic Integrity Policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community. While academic in scope, any violation of this policy is by nature, a violation of the Code of Student Conduct and will follow the same conduct process (see Article VII.B.1.a.). If the charge occurs close to the end of an academic semester or term or in the event of the reasonable need of either party for additional time to gather information timelines may be extended at the discretion of the Department of Student Community Ethics (DSCE).

<http://catalog.wcu.edu/content.php?catoid=20&navoid=346#honestypolicy>

Violations of the Academic Integrity Policy include:

Cheating - Using or attempting to use unauthorized materials, information, or study aids in any academic exercise.

Fabrication – Creating and/or falsifying information or citation in any academic exercise.

Plagiarism - Representing the words or ideas of someone else as one’s own in any academic exercise.

Facilitation - Helping or attempting to help someone to commit a violation of the Academic Integrity Policy in any academic exercise (e.g. allowing another to copy information during an examination)

According to WCU regulations: “Faculty members have the right to determine the appropriate sanction(s) for violations of the Academic Integrity Policy within their courses, up to and including a final grade of “F” in the course.”

My general policy is that a score of zero be assigned for the work in question although I consider each case and sanction individually. Depending on the severity of the offence and the impact on student grades these incidents are to be reported in each case.

I sincerely hope this will not be an issue but unfortunately it does occur. Generally some in class activities and projects might have a group-work component (i.e. data collection) but I very seldom use a group grade for any major assignments, tests, quizzes or written reports. **It is MUCH easier just to avoid these things in the first place. If you have questions regarding my policy for any given assignment (group vs. individual work) please ask.**

What you should expect from me:

- I am readily available to answer questions and help with assignments. I have office hours but feel free to stop by at any time or call/email to set up an appointment. NOTE: Talk to me as soon as you are having problems or questions. If you wait until the day before something is due or the end of the semester to ask for help there will be little I can do for you.
- I will strive to get your graded work back to you in a timely fashion. Handing assignments in on time and in a presentable fashion will help with this tremendously.
- Expectations (i.e. such as what you need to “know” for a test or quiz) are clear. Grading and course policies are implemented fairly.

Use of the GIS Lab: Priority use of the GIS lab is for those students enrolled in the GIS or Remote Sensing courses. Occasionally, other classes will use the lab though it will be open regularly for you to work on class projects. Specific hours will be posted. NOTE: Use of the lab for other class work, email, internet etc. is fine UNLESS it interferes with someone else’s access for GIS or Remote Sensing related work.

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V. Grading Procedures: With the exception of some in class exercises used for discussions, all work will be graded and returned to you. Assignments will be designed to provide a variety of approaches to learning.

	Percent
Labs/Assignments/Quizzes etc.	25
Midterm and Final Exam	50
Final Project	25

Grading Scale: Grades will be assigned according to the scale shown below.

Percentage Grade Letter grade

93-100	A
90 – 92	A-
87 – 89	B+
83 – 86	B
80 – 82	B-
77 – 79	C+
73 – 76	C
70 – 72	C-
67–69	D+
63–66	D
60–62	D-
Below 60	F

Class	Date	Topic	Reading, Labs, Notes
1	Tues, Jan 15	Introduction to GIS	
2	Thurs, Jan 17	Geospatial data and basic spatial questions	Chapters 1-2
3	Tues, Jan 22	Geospatial data and basic spatial questions	LAB: Introducing ArcMap I
4	Thurs, Jan 24	Geospatial data and basic spatial questions	Chapters 1-2
5	Tues, Jan 29	Geospatial data and basic spatial questions	LAB: Introducing ArcMap II
6	Thurs, Jan 31	Geospatial data and basic spatial questions	Chapters 1-2
7	Tues, Feb 5	Projections and coordinate systems	Chapter 3, LAB: Projections
8	Thurs, Feb 7	Projection systems continued	Chapter 3
9	Tues, Feb 12	Projection systems continued	Chapter 3, LAB: Projections II
10	Thurs, Feb 14	Projection systems continued	Chapter 3
11	Tues, Feb 19	Vector Data, Tables and Data Management	Chapters 7-9, LAB: Vector Data Management
12	Thurs, Feb 21	Vector Data and Analyses Tools	Chapters 7-9
	Tues, Feb 26	Vector Data and Analyses Tools	Chapters 7-9 LAB: Analysis Tools
13	Thurs, Feb 28	Vector Data and Analyses Tools	Chapters 7-9
14	Tues, Mar 5	Review	
15	Thurs, Mar 7	EXAM 1	
16	Tues, Mar 12	Raster Data and Analyses	Chapters 10-11, LAB: Raster Data
17	Thurs, Mar 14	Raster Data and Analyses	Chapters 10-11
18	Tues, Mar 19	Raster Data and Analyses	Chapters 10-11, LAB: Raster Spatial Analyst Tools
19	Thurs, Mar 21	Predictive Modeling	Chapter 13
	Tues, Mar 26	Spring Break – No Classes	
	Thurs, Mar 28	Spring Break – No Classes	
20	Tues, Apr 2	GIS Data Management	LAB: Introducing ArcCatalog
21	Thurs, Apr 4	GIS Data Management	
22	Tues, Apr 9	Applied GIS	LAB: Project Work
23	Thurs, Apr 11	Applied GIS	
24	Tues, Apr 16	Applied GIS	LAB: Project Work
25	Thurs, Apr 18	Applied GIS	
26	Tues, Apr 23	Applied GIS	LAB: Project Work
27	Thurs, Apr 25	Applied GIS	
28	Tues, Apr 30	Wrap-up and Review	LAB: Project Work
29	Thurs, May 2	EXAM 2	
30	Wed, May 8	PROJECT PRESENTATIONS	12:00pm

**NRM 351: FOREST ECOLOGY****Spring 2013**

Instructor: Laura E. DeWald 316 Natural Science 227-2478 ldewald@wcu.edu
Office hours: M Noon - 1:00 pm, T/Th 1:00-2:30 pm, or by appt.

Learning Outcomes:

Students will:

1. Understand how tree species respond to micro-environmental factors including light, temperature, water and soil characteristics;
2. Understand relationships within and between woody plant species in communities;
3. Understand the role of disturbance and change within forest ecosystems;
4. Practice applying forest ecology principles to sustainable forestry practices including uses such as carbon sequestration and cellulosic biofuels production;
5. Practice evaluating forest management decisions in light of ecological principles;
6. Practice critical thinking, reading and writing; applying scholarly information and methods to understand complex issues; oral communication; integrating concepts; and teamwork involved with solving forest ecological problems

Required Text: Barnes, J.P., D.R. Zak, S.W. Denton, and S.H. Spurr 1998. *Forest Ecology 4th edition*. John Wiley & Sons, New York. 774 pages.

Evaluation:

3 Exams	50%
Assignments	25%
<u>Technical Reports</u>	<u>25%</u>
Total	100%

A+ = 99% or above, A = 93-99%, A- = 90-92%, B+ = 87-89%, B = 83-86%, B- = 80-82%, C+ = 77-79%, C = 73-76%, C- = 70-72%, D+ = 67-69%, D = 63-66%, D- = 60-62%, F = <60%

Exams concentrate on material covered since the last exam, though students will be responsible for major concepts presented earlier. Exams are take-home, essay question format. Questions are designed to evaluate students' ability to integrate and apply the material presented. Late exams will not be accepted.

Laboratory Exercises are intended to illustrate and reinforce concepts discussed in class. Labs where data are collected will require students to write a formal scientific report. Late reports will only be accepted with prior approval of the instructor. Writing quality counts significantly in report grade and it is STRONGLY suggested you visit the writing center prior to turning your reports in. A template for technical reports will be handed out in class and reports will be graded based on completeness, scientific merit and writing quality.

Class Participation through in-class exercises and homework assignments are designed to help you evaluate how well you are understanding lecture material and reading assignments. These assignments can not be made up; students who are not present will receive a 0.

Attendance Policy: Students are responsible for all material presented during lecture and lab periods and as per WCU policy. It is NOT the instructor's responsibility to get materials, etc. to a student who has missed class. Attendance during labs is required because labs involve working in teams. ***Students who do not collect data because they missed lab will be penalized 10% on report due for that lab.***

Accommodations for Students with Disabilities:

Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to Disability Services. All information is confidential. Contact the Office of Disability Services for more information at: 227-3886 or lalexis@wcu.edu You may also visit the office's website: www.disability.wcu.edu

Expectations: I expect students to practice professionalism during class and work turned in. Professional conduct includes being prepared for class (i.e., reading assigned materials and reviewing recent notes before each class, etc.), acting appropriately during laboratory and in class (i.e., no checking cell phones, no talking while others are talking, being respectful of others), being on time, etc. My goal is to present useful information in an understandable format; create assignments that help synthesize information and return them in a timely fashion; be fair to all students. I expect you to work to your potential by coming to class prepared to be actively involved in your education; asking questions, studying, completing assignments, and taking responsibility for your performance

Cell Phones: must be turned OFF (not on vibrate) during class

Tobacco Products: the use of all types of tobacco products is NOT allowed during class, which includes when we are outside for lab. This includes chewing tobacco.

Academic Integrity: You are encouraged to share ideas, discuss questions, and work together with your classmates to further your individual and collective understanding and proficiency of the concepts and skills presented in this course. However, I expect each of you to submit original, independent work and adhere to the policies set forth in the University Catalog and Student Handbook. Academic dishonesty of any kind is not acceptable. Be sure to cite all work and ideas that are not your own and reference all citations. See the University Writing Center website for information regarding plagiarism. Failure to comply with University policies may result in a zero for the assignment, failure of the course, disciplinary action at the University level, or any combination of the three.

Tentative Schedule

Date	Lecture/Lab Topic	Assignment
Jan. 14 Jan. 15 & 17	Lab: Writing Scientific Reports – Review Lecture: Cell Review, Adaptation – Genetic Basis	Chapter 4 & Slide Set
Jan. 21 Jan. 22 & 23	No Lab: MLK Holiday, set up Phenology Study Lecture: Adaptation – Light	Chapter 8
Jan. 23 Jan. 24 & 26	Lab: Genetic Adaptation Lecture: Adaptation – Water	Chapters 6 & 7
Jan. 28 Jan. 30 Jan. 31	Lab: Energy Flow Lecture: Adaptation – Temperature No Class: Laura at APSAF	Chapters 7 & 9
Feb. 4 Feb. 5 & 7	Lab: Forest Ecological Inventory Lecture: Nutrients	Chapter 11
Feb. 14	Exam #1 DUE (Jan. 14 – Feb. 7 materials)	Study Hard
Feb. 11 Feb. 12 & 14	Lab: Forest Ecological Inventory Lecture: Soils	Chapter 11
Feb. 18 Feb. 19 & 21	Lab: Forest Ecological Inventory Lecture: Site Evaluation	Chapters 5, 10, 13
Feb. 25 Feb. 26 Feb. 28	Lab: Productivity No Lecture: Advising Day Lecture: Populations	Chapter 15
March 4 March 5 & 7	Lab: Estimating Population Structure Lecture: Communities	Chapter 15
March 11 March 12 & 14	Lab: Estimating Community Structure Lecture: Disturbance – Succession	Chapters 16 & 17
March 21	Exam #2 DUE (Feb. 11 – Mar. 14 materials)	Study Hard
March 18 March 19 & 21	Lab: Estimating Stage of Succession Lecture: Disturbance – Fire	Chapters 16 & 12
March 25, 26, 28	No Class: Spring Break	Have Fun
April 1 April 2 & 4	Lab: Calculating Biodiversity Lecture: Biodiversity	Chapter 20
April 8 April 9 & 11	Lab: Forest Structure Lecture: Ecological Forestry	Chapter 21
April 15 April 16 & 18	Lab: Forest Structure Lecture: Ecological/Sustainable Forestry	Handouts
April 22 April 23 & 25	Lab: Phenology Study Wrap-Up Lecture: Teakettle Experiment	DVD, handouts
April 29 April 30 & May 2	Lab: Carbon Cycling Lecture: Carbon Sequestration	Handouts
Wed., May 8	Final Exam: Noon – 2:30 pm	Study Hard

LANDSCAPE ECOLOGY
NRM 371
SPRING 2013
Lecture: MW 10:10-11:50
Lab T: 12:35—2:25

Instructor: Dr. Ron Davis
Office: Stillwell 318
Phone: x2726
Office Hours: Wednesdays and Thursdays 12:00-2:00pm

NOTE: I have an open door policy and am frequently in my office when not teaching. Please feel free to stop by my office.

I. Purpose

To provide students the knowledge and skills needed to apply spatial aspects of ecology to the evaluation and management of natural resources.

II. Course Objectives:

1. Explain the relationship between landscape scale, pattern, and processes and the functioning of terrestrial ecosystems.
2. Be able to describe and quantify landscape composition, pattern and processes. **
3. Apply landscape ecology concepts to the management of natural resources including forests, soil, water, and wildlife habitat.

**Basic GIS skills required.

III. Course Materials

- Basic Landscape Ecology (2010) by Robert Colson and Maria Tchakerian
- Other readings will be provided as needed.

IV. Expectations of Students/Course Policies

Attendance: I do not take attendance after the first 2 weeks of class however please consider the following

- You are responsible for ALL concepts covered in lecture and lab even if you are absent.
- **Tests and in-class assignments or labs are NOT available for makeup** unless you have a valid documented excuse and have contacted me either ahead of time or as soon as you get back.

- Late work (out of class assignments) will be penalized 25% of the total points possible for each day late. After **4 days** the assignment will receive a grade of zero.
- All written assignments completed outside of class **MUST** be typed using a standard font.
- Be **COURTEOUS** to other students **AND** the instructor. This includes but **IS NOT LIMITED** TO getting to class on time, avoid excessive talking, keeping cell phone **OFF** and not browsing the web during lectures etc.
- Put simply, avoid things that interfere with my teaching or student learning.

IV. WCU Academic Integrity Policy: This policy addresses academic integrity violations of undergraduate and graduate students. Graduate students should read inside the parenthesis below to identify the appropriate entities in charge of that step of the process.

Students, faculty, staff, and administrators of Western Carolina University (WCU) strive to achieve the highest standards of scholarship and integrity. Any violation of the Academic Integrity Policy is a serious offense because it threatens the quality of scholarship and undermines the integrity of the community. While academic in scope, any violation of this policy is by nature, a violation of the Code of Student Conduct and will follow the same conduct process (see Article VII.B.1.a.). If the charge occurs close to the end of an academic semester or term or in the event of the reasonable need of either party for additional time to gather information timelines may be extended at the discretion of the Department of Student Community Ethics (DSCE).

Violations of the Academic Integrity Policy include:

- Cheating - Using or attempting to use unauthorized materials, information, or study aids in any academic exercise.
- Fabrication – Creating and/or falsifying information or citation in any academic exercise.
- Plagiarism - Representing the words or ideas of someone else as one's own in any academic exercise.
- Facilitation - Helping or attempting to help someone to commit a violation of the Academic Integrity Policy in any academic exercise (e.g. allowing another to copy information during an examination)

V. Accommodations for Students with Disabilities: Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to Disability Services. All information is confidential. Please contact the Office of Disability Services for more information at (828) 227-3886 or lalexis@wcu.edu. You may also visit the office's website: disability.wcu.edu

VI. What you should expect from me:

- I am readily available to answer questions and help with assignments. I have office hours but feel free to stop by at any time or call/email to set up an appointment.
 - This class will emphasize practical applications of course concepts to NRCM. This means you'll spend much more time applying critical thinking and problem solving skills than memorizing. Talk to me as soon as you are having problems or questions. If you wait until the day before something is due or the end of the semester to ask for help there will be little I can do for you.

- I strive to make learning objectives (i.e. such as what you need to “know” for a test or quiz) clear
- Grading and course policies are implemented fairly.

V. Grading Procedures:

Some assignments be in class and used for discussion/demonstration. These are effort based (you were there and completed it) while others will be completed outside of class or lab and graded based upon performance and accuracy.

	<i>Percentage of Final Grade</i>
In-Class Exams (3)	60
Lab Exercises, Class Assignments, Quizzes etc.	40

- Exams and Assignments are scored based on points but then converted to a percentage
- Assignments are weighted according to the percentage shown above.
- For example, if your average % score for the 3 class exams is 85% and your labs/assignments was 90% then your final exam grade would be $(0.85*60) + (0.9*40) = 51+36 = \underline{\underline{87/100}}$.
- Your total out of 100 will be graded according to the scale shown below

<i>Percentage</i>	<i>Grade</i>	<i>Letter grade</i>
93-100	A	
90 – 92	A-	
87 – 89	B+	
83 – 86	B	
80 – 82	B-	
77 – 79	C+	
73 – 76	C	
70 – 72	C-	
67–69	D+	
63–66	D	
60–62	D-	
Below 60	F	

**** PLEASE NOTE: I do not disclose/discuss grade information by email or phone so if you need to discuss your grade please see me in person.**

Tentative Schedule Spring 2013

DATE	LECTURE TOPIC	READING	LAB TOPIC/Notes
Mon, Jan 14	Introduction to Landscape Ecology	Chapter 1	No Lab week 1
Wed, Jan 16	Levels of Organization	Chapter 2	
Mon, Jan 21	MLK Holiday – No Classes		Lab Week 2: GIS Review
Wed, Jan 23	Levels of Organization	Chapter 2	
Mon, Jan 28	Scale and Ecology	Chapter 3	Lab Week 3: Levels of Organization
Wed, Jan 30	Scale and Ecology	Chapter 3	
Mon, Feb 4	Ecology	Chapter 4	Lab Week 4: Ecosystems--structure
Wed, Feb 6	Ecology	Chapter 4	
Mon, Feb 11	Wrap up-Review		Lab Week 5: Ecosystems—function
Wed, Feb 13	Test		
Mon, Feb 18	Wrap up		Lab Week 6: no lab
Wed, Feb 20	Test 1		
Mon, Feb 25	Landscape Structure, Pattern, Processes	Chapter 5 & 7	Lab Week 7: no lab—Advising Day
Wed, Feb 27	Landscape Structure, Pattern, Processes	Chapter 5 & 7	
Mon, Mar 4	Landscape Structure, Pattern, Processes	Chapter 5 & 7	Lab Week 8: Landscape Pattern
Wed, Mar 6	Landscape Structure, Pattern, Processes	Chapter 5 & 7	
Mon, Mar 11	Landscape Function	Chapter 8	Lab Week 9: Landscape Process
Wed, Mar 13	Landscape Function	Chapter 8	
Mon, Mar 25	Spring Break – No Classes		
Wed, Mar 27	Spring Break – No Classes		
Mon, Apr 1	Review		Lab Week 11: Linking Pattern and Process
Wed, Apr 3	Test 2		
Mon, Apr 8	Landscape Change	Chapter 9	Lab Week 12: Quantifying land use-land cover change
Wed, Apr 10	Landscape Change	Chapter 9	
Mon, Apr 15	NRCM and Landscape Ecology	Chapter 10	Lab Week 13: Managing Landscapes I
Wed, Apr 17	NRCM and Landscape Ecology	Chapter 10	
Mon, Apr 22	NRCM and Landscape Ecology	Chapter 10	Lab Week 14: Managing Landscapes II
Wed, Apr 24	NRCM and Landscape Ecology	Chapter 10	
Mon, Apr 29	NRCM and Landscape Ecology		Lab Week 15: no lab
Wed, May 1	NRCM and Landscape Ecology		

Advising Day	Tuesday	February 26
Final Exam (TEST 3) in this course	Wed May 8 th	8:30-11:00

NRM 460 – Watershed Management

Spring 2015

Lecture: WF 9:05 – 9:55, Coulter 204
Lab: Thursday 2:30 – 4:20, Stillwell 143

"When we try to pick out anything by itself, we find it hitched to everything else in the universe."

— **John Muir**, from *My First Summer in the Sierra*

Professor: Dr. Charley Kelly

Office: 336 Stillwell Building,
cnkelly@email.wcu.edu,
828-227-3817

Office Hours: MWF 10:00-11:00 + anytime by appointment

I. Rationale/Purpose

The purpose of this course is to familiarize students with the complexity of factors influencing watershed management for the provision of an adequate and clean water supply.

II. Course Objectives:

By the end of this course, students will demonstrate that they:

- Understand the major pieces of the hydrologic cycle and ecosystem water budgets, and the tools, equipment, and data used to determine each portion of the water budget.
- Understand how land use and surface cover affects water availability and water quality.
- Understand the major parts of a Watershed Management plan and the community of people involved and the actions necessary in enacting such a plan.
- Understand the variety of problems and issues facing watershed managers and the associated Best Management Practices used to maintain water quality.

III. Course Resources

Required text: Hydrology and the Management of Watersheds, 4th edition. Brooks, Ffolliott, and Magner.

I will post additional resources to the course Blackboard page as the semester goes on.

IV. Faculty Expectations of Students/Course Policies

Statement on Accommodations for students with disabilities: Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities. Students who require disability services or reasonable accommodations must identify themselves as having a disability and provide current diagnostic documentation to Disability Services. All information is confidential. Please contact Disability Services for more information at (828) 227-2716 or 144 Killian Annex.

Statement on Academic Integrity (including plagiarism): Academic Honesty Policy Western Carolina University, as a community of scholarship, is also a community of honor. Faculty, staff, administrators, and students work together to achieve the highest standards of honesty and integrity. Academic dishonesty is a serious offense at Western Carolina University because it threatens the quality of scholarship and defrauds those who depend on knowledge and integrity. Academic dishonesty includes:

a. **Cheating**—Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise. b. **Fabrication**—Intentional falsification of information or citation in an academic exercise. c. **Plagiarism**—Intentionally or knowingly representing the words or ideas of someone else as one's own in an academic exercise.

b. **Facilitation of Academic Dishonesty**—Intentionally or knowingly helping or attempting to help someone else to commit an act of academic dishonesty, such as knowingly allowing another to copy information during an examination or other academic exercise.

Instructors have the right to determine the appropriate sanction or sanctions for academic dishonesty within their courses up to and including a final grade of "F" in the course. Within 5 calendar days of the event the instructor will inform his/her department head, and the Associate Dean of the Graduate School when the student is a graduate student, in writing of the academic dishonesty charge and sanction.

Please refer to the student handbook regarding the policies and consequences of academic honesty at Western Carolina University.

- **Statement on late and/or makeup assignments** Each day that papers are late will result in a reduction of 15% per day. Papers that are more than three days late will automatically receive an F. Exams can only be made up if I am contacted at least by the day before the exam (before 4 PM) and the student has a legitimate excuse for missing the exam.

- **Statement of expectations for attendance and participation** I expect students to be in class and actively participating in discussions and activities. I may call on you to offer an answer, your opinion, or some insight. If you are doing a group or in-class exercise and someone is not participating in the work, please let me know so that we can make sure that everyone is doing their share to meet the stated learning goals.

- **Statement of classroom behavior**

**** Turn off phones and laptops before entering the class.**** - Anyone caught using a phone or any internet capable device during an exam or any in-class exercises without approval will receive a "0" for that exam grade.

- **Statement of weather policy** If the University closes for inclement weather, class will be canceled. If there is another reason to cancel class, then I will notify everyone by email.

Composition-Condition Marks. A student whose written work in any course fails to meet acceptable standards will be assigned a composition-condition (CC) mark by the instructor on the final grade report. All undergraduates who receive two CC grades prior to the semester in which they complete 110 hours at Western Carolina University are so notified by the registrar and are required to pass English 300 or English

401 before they will be eligible for graduation. This course must be taken within two semesters of receiving the second CC and must be passed with a grade of C (2.0) or better.

Accommodations for Students with Disabilities: Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities and/or medical conditions. Students who require reasonable accommodations must identify themselves as having a disability and/or medical condition and provide current diagnostic documentation to the Office of Disability Services. All information is confidential. Please contact the Office of Disability Services at (828) 227-3886 or come by Suite 135 Killian Annex for an appointment.

Student Support Services provides support to students who are either first-generation, low-income or those who have disclosed a disability with: academic advising, mentoring, one-on-one tutorial support, and workshops focused on career, financial aid and graduate school preparation. You may contact SSS at (828) 227-7127 or email sssprogram@wcu.edu for more information. SSS is located in the Killian Annex, room 138.

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VIII. Grading Procedures:

Assignment	Percentage of Grade	Description
Lab exercises/Participation	30	Lab exercises and assignments.
Weekly quizzes	10	<u>10 Weekly</u> quizzes on lectures, labs, and readings
Friday Discussions/Activities	10	Participation in discussions from weekly readings
Group Presentation	5	Class Presentation on assigned topic
Group Project	10	Group writing and presentation assignment
Exams (2)	20	Two exams during the semester.
Final Examination	15	Final exam – comprehensive
Total	100%	

Grade	Letter	Quality Points
99-100	A+	4.0
92-98	A	4.0
90-91	A-	3.67
88-89	B+	3.33
82-87	B	3.0
80-81	B-	2.33
78-79	C+	2.33
72-77	C	2.0
70-71	C-	1.67
68-69	D+	1.33
62-67	D	1.0
60-61	D-	0.67
60 or lower	F	0

Please note that a C- grade is less than satisfactory and may not meet particular program and/or course requirement.

IX. Tentative Course Schedule

May change to accommodate guest presenters & student needs. ** I reserve the right to add a Saturday field trip if schedules require amendments**

Please access online course material via **Blackboard (BB)** and follow all posted instructions to find readings and supplemental material necessary to complete the posted assignments.

Week	Dates	Thursday Lab Topic	Textbook Chapter Assigned	Wednesday Lecture Topic	Friday Discussion/ Activity
1	Jan 14 – Jan. 16	#1 Precipitation and Databases	Ch. 1 - 3	Course Overview – Why we care!	Precipitation Lecture
2	Jan. 21 – Jan. 23	#2 Evaporation	Ch. 4	Evaporation, Interception, Transpiration	Evap, Int., Transp. Discussion
3	Jan. 28 – Jan. 30	#3 Soil Moisture	Ch. 5	Throughfall, Infiltration, Runoff	Inf., Runoff Discussion
4	Feb. 4 – Feb. 6	#4 WCU Water Treatment Tour	Ch. 7	Groundwater and Recharge	Groundwater Discussion
5	Feb. 11 – Feb. 13	#5 Vegetation Type	Reading on BB	Vegetation Type and Water Yield	Veg. Discussion
6	Feb. 18 – Feb. 20	#6 Forest Density	Reading on BB	Forest Density and Water Yield	Exam 1
7	Feb. 25 – Feb. 27	#7 USGS Water Data	Ch. 3	Snow Hydrology and Runoff	Watershed Management Plans
8	Mar. 4 – Mar. 6	#8 NRCS Watershed Tour	Ch. 14	Steps of a Watershed Management Plan **Student Presentations	
9	Mar. 9 – Mar. 13	----- Spring Break - no classes -----			
10	Mar. 18 – Mar. 20	#9 Erosion and Sediment measures	Ch. 8 -9	Erosion and Sediment	Erosion and Sediment
11	Mar. 25 – Mar. 27	#10 Water Quality	Ch. 11	Water Quality	Exam 2

12	Apr. 1 – Apr. 3	-----Easter Break - no classes -----			
13	Apr. 8 – Apr. 10	#11 RiverLink Watershed Tour	Ch. 10	Stream Classification	Water Usage and Management
14	Apr. 15 – Apr. 17	#12 Stream Classification	Reading on BB	Watershed Issues and BMPs	Watershed Issues and BMPs
15	Apr. 22 – Apr. 24	#13 Work on Group Project		Watershed Issues and BMPs	Watershed Issues and BMPs
16	Apr. 29 – May 1	#14 Peer review of writing		<i>**Student Presentations -Evaluating the effectiveness of BMPs**</i>	
17	May 4 – May 8	-----Final Exam Week -----			

MATH 375 Syllabus

Statistical Methods II

Revised: February, 2015

Course Description

Analysis of variance, regression, and correlation; analysis of categorical data; distribution free procedures.

Prerequisites: MATH 270. Three semester hours.

Objectives

By the end of the course students will be able to

- Test models used for nominal and ordinal data scales;
- Fit data to linear and non-linear regression curves and test the appropriateness of the model;
- Compare means from several populations simultaneously and examine ways to describe variation in the data when fitted to the various models; and
- Interpret the results of statistical analyses

Text

Roxy Peck, Chris Olsen, and Jay DeVore. *Introduction to Statistics and Data Analysis, Fourth Edition.*(Brooks-Cole/Cengage Learning), 2011.

Grading Procedure

Grading procedures and factors influencing course grade are left to the discretion of individual instructors, subject to general university policy.

Attendance Policy

Attendance policy is left to the discretion of individual instructors, subject to general university policy.

Course Outline

- **Since Chapters 1 through 10 are covered in Math 270, they should be briefly reviewed as needed.**
 - o Chapter 1: The Role Of Statistics.
 - o Chapter 2: The Data Analysis Process And Collecting Data Sensibly.
 - o Chapter 3: Graphical Methods For Describing Data.
 - o Chapter 4: Numerical Methods For Describing Data.
 - o Chapter 5: Summarizing Bivariate Data.
 - o Chapter 6: Probability.
 - o Chapter 7: Population Distributions.
 - o Chapter 8: Sampling Variability And Sampling Distributions.

- o Chapter 9: Estimation Using A Single Sample.
- o Chapter 10: Hypothesis Testing Using A Single Sample.
- **Chapter 11 Comparing Two Populations Or Treatments. (6 days)**
Inferences Concerning the Difference Between Two Population Means or Treatments Using Independent Samples. Inferences Concerning the Difference Between Two Population Means Using Paired Samples. Large-Sample Inferences Concerning a Difference Between Two Population Proportions. Distribution-Free Procedures for Inferences Concerning a Difference Between Two Population Means Using Independent Samples (Optional). Interpreting the Results of Statistical Analyses.
- **Chapter 12 The Analysis Of Categorical Data And Goodness-Of-Fit Tests. (6 days)**
Chi-squared Tests for Univariate Categorical Data. Tests for Homogeneity and Independence in a Two-Way Table. Interpreting the Results of Statistical Analyses.
- **Chapter 13: Simple Linear Regression And Correlation Inferential Methods. (8 days)**
The Simple Linear Regression Model. Inferences Concerning the Slope of Population Regression Line. Checking Model Adequacy. Inferences Based on the Estimated Regression Line (Optional). Inferences About the Population Correlation Coefficient (Optional). Interpreting the Results of Statistical Analyses.
- **Chapter 14: Multiple Regression Analysis. (6 days)**
Multiple Regression Models. Fitting a Model and Assessing its Utility. Inferences Based on an Estimated Model. Other Issues in Multiple Regression.
- **Chapter 15: The Analysis Of Variance. (6 days)**
Single Factor ANOVA and the F Test. Multiple Comparisons. The F Test for a Randomized Block Experiment. Two-Factor ANOVA. Interpreting the Results of Statistical Analyses.
- **Chapter 16: Nonparametric (Distribution-Free) Statistical Methods (8 days)**
Distribution-Free Procedures for Inferences About a Difference Between Two Population or Treatment Means Using Independent Samples (Optional). Distribution-Free Procedures for Inferences About a Difference Between Two Population or Treatment Means Using Paired Samples. Distribution-Free ANOVA.

Most instructors for this course require the use of statistical calculators.

Soc 385
Methods of Social Research
Fall 2015

A.A. Hickey
107B McKee
227-3832
hickey@wcu.edu

This course will introduce you to part of the sociologist's "tool-kit", the knowledge and skills related to the process of social research. The idea is not to turn you into researchers, but rather to allow you to become better consumers of research. In this way, your ability to understand readings in your other sociology classes will be enhanced.

We will take a hands-on approach to the various types and stages of the research process. You will choose a research question and complete assignments concerning conceptualization and measurement, research design, sampling and data collection, and finally, analytical techniques.

Required Text

Babbie, Earl, *The Basics of Social Research*, 6th Edition Wadsworth (Cengage Learning) 2014. Rental
Mindtap Cengage. Purchase.

It is your responsibility to read the assigned chapters of the text before we cover the material in class. It is critical that you keep up with the reading because the material builds on earlier material and it is impossible to play "catch-up". I can't stress this point enough. The quizzes for each chapter will be completed in Mindtap. These will be graded and will be part of your grade. I am still working on how to use this software so please be patient.

Course requirements

One (1) exercise. See attached. Due at the beginning of class on the assigned date (see schedule). 10 % of your grade.

Five (5) assignments. See attached and due dates on the schedule. 50% of your grade.

Two (2) exams. 20% of your grade.

Mindtap Quizzes. 20% of your grade.

All assignments should resemble professional documents at the time they are turned in. No “do-overs”. They must be word processed, in 12 point font, double spaced with one inch margins on the top, bottom and sides of the page. Each assignment should be at least three pages (no more than five) unless instructed differently. A reference page following ASA format guidelines must be included. Late assignments will be penalized one letter grade for each day (not each class and starting when class ends) that they are late.

There is no such thing as extra credit (which an oxymoron).

Course Policies

This is a large class and I don't intend to be a police person. Please behave respectfully. Don't talk when someone else is talking. Don't leave the room without permission. Turn off cell phones and put them away. No hats (you are in my house), food (this is not a café), tobacco (it's obvious) will be allowed in class. Additionally, laptops will not be in use in class.

Make-up exams will not be given. If you have a legitimate reason (documentation required) not to take an exam on the day scheduled, it your responsibility to contact me ahead of time so that alternative arrangements can be made.

My office hours will be posted once the semester settles down but you can always make an appointment. I am around the office most days...if the door is open you are welcome to stop in.

Office of Disability Services

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Writing and Learning Commons (WaLC)

Electronic format (with hyperlinks):

The [Writing and Learning Commons](#) (WaLC), located in **BELK 207**, provides free [small-group course tutoring](#), one-on-one [writing tutoring](#) and [academic skills consultations](#), and online [writing](#) and [learning](#) resources for all students. All tutoring sessions take place in the WaLC or in designated classrooms on campus. To schedule tutoring appointments, log in to TutorTrac from the WaLC homepage (walc.wcu.edu) or call 828-227-2274. Distance students and students taking classes at Biltmore Park are encouraged to use [Smarthinking](#) and the WaLC's online resources. Students may also take advantage of writing tutoring offered at the Biltmore Park campus on certain days of the week; call 828-227-2274 or log in to TutorTrac and select "Biltmore Park Writing Tutoring" for availabilities.

Lastly, I take Western's academic honesty policy very seriously. The policy is stated at academicintegrity@wcu.edu. and refers to four areas; cheating, fabrication, plagiarism and the facilitation of academic dishonesty. Ignorance is not an excuse and I have no pity. Be forewarned.

Tentative Schedule

Note: This schedule is subject to change. Something always comes up. Any changes will be announced and you are responsible for keeping track of where we are.

Week	Topic	Reading Assignment
Aug. 17	Introduction to the class Human Inquiry and Science	Chapter 1
Aug. 24	Theory and Research Fri: Preliminary Assignment due	Chapter 2
Aug. 31	Ethics	Chapter 3
Sept. 7 No class Monday	Reviewing Literature/Planning	Chapter 15
Sept. 14	Reviewing Cont. Fri.: Assignment 1 due	Chapter 15
Sept. 21	Research Design.	Chapter 4

Sept 28	Wed.: Assignment 2 due Measurement	Chapter 5,6
Oct. 5	Sampling Midterm	Chapter 7
Oct 12	Fall Break	
Oct. 19	Experimental Research Fri: Assignment 3 due Mon: last day for a W	Chapter 8
Oct 26	Survey Research	Chapter 9
Nov. 2	Field Research Fri: Assignment 4 due	Chapter 10
Nov. 9	Unobtrusive and Evaluation	Chapter 11,12
Nov. 16	Qualitative Analysis	Chapter 13
Nov. 25	Qualitative Analysis , continued	Chapter 13
Dec. 2	Quantitative Analysis Assignment 5 due	Chapters 14
Dec. 9	Final Exam: 8:30-11 AM	

Key Dates

Labor Day-no classes-Monday, September 7

Fall Break-Oct. 12-16

Advising Day-Oct. 27

Last day to drop with a “w”-Oct. 19

Thanksgiving- Nov25-27

Last day of class-Dec 4

ASSIGNMENT 1: PROBLEM DEFINITION AND LITERATURE REVIEW

Defining the sociological problem to be examined allows the researcher to specify and limit the topic of the study. The literature review gives the reader and researcher a clear understanding of how the topic has been previously explored, what the findings have been, and what directions others suggest future research should take. Refer to published articles, class notes, and your text for format guidelines. This assignment is worth 10% of your grade and should be written in essay format. Follow the outline below to complete the assignment:

Select a Problem (Objective): State and explain the overall or long-term goal of the proposed research. This will be the specific problem you are planning to examine.

- What exactly do you want to study?
- Frame the central research question in a precise, answerable manner.
- What may be problematic about the proposed research topic?

Review (Background): Review the most significant previous work and describe the current status of sociological research in this field. Document your findings with references. Your review should include **at least 10 sources, all derived from scholarly journals and appropriate texts**. Ask if you are unsure of the suitability of the source. The reviewed articles should be well-integrated. Avoid writing a “serial review”. Suggested questions to address:

- What research has been done previously?
- What have others said about the topic?
- What theories are represented in previous research about your topic and what do they say?
- Are there consistent findings or do past studies disagree?
- Explain, if appropriate, why different studies give different results. Articulate any trends that emerge from various lines of research.
- Are there flaws in the body of existing research that you feel you can remedy in your study?

Key Terms or Variables: List **three key terms or variables** that will be the essence of what you intend to study and summarize each term/variable with a brief description. These should be concepts or variables expressed in sociological language.

Rationale: Present concisely the rationale behind the proposed approach to the problem.

- Why is the problem worth studying i.e., who cares??
- Does the problem have practical significance?
- To what will your review of this problem contribute?

Refer to and cite material from relevant chapters in the text AND cite sources other than the text.

ASSIGNMENT 2: RESEARCH QUESTIONS AND CONCEPTUALIZATION

In this assignment, you will give specific research questions or hypotheses and the conceptualization of how they will be tested. Hypotheses are tentative answers to research questions. Your hypotheses will clearly state what you expect to find from your research. Conceptualization is the process of taking a construct or concept and refining it by giving it a conceptual or theoretical definition. A conceptual definition is a definition of abstract, theoretical terms. This assignment is 10% of your grade. Follow the steps below to complete the assignment.

State specific research questions concerning your research project: The research questions should derive from the literature review and the statement of the problem that you offered in Assignment 1.

Provide hypotheses concerning your research project: The hypotheses should be clearly linked to the literature review and statement of the problem. There are a variety of methods to present hypotheses – refer to published articles, class notes, and your text for guidelines. You must provide **at least three hypotheses** about the outcome of your project, but you will most likely have more than three. Your hypotheses must reflect each component of your conceptualization. Each hypothesis should be a feasible target for investigation; a statement to be confirmed or denied in terms of the evidence.

Refer to and appropriately cite relevant chapters in your text.

ASSIGNMENT 3: SAMPLING, DATA COLLECTION METHODS, AND ETHICS

Data collection methods outline the procedure in which data will be collected for the research project. This assignment is 10 % of your grade. Follow the steps below the complete the assignment.

Give details of the research plan, including a description of the work proposed:

- What social phenomena will be studied?
- What are your variables of interest?
- What will be measured or observed?
- What are your variables' measurable attributes (e.g., number of visits to the psychologist per month, number of cigarettes smoke per day)?
- What will your source of data be (questionnaire)?
- How will you go about collecting your data?
- What are the limitations of the procedure proposed? What problems might be encountered during the data collection?

Explain how you will go about selecting a sample:

- **Specify, population, frame, and sample paying attention to the following:**

- Give a description of the population to whom the study's findings will be generalized.
- Will it be appropriate to select a sample from the larger population?
- From whom or what will you collect data?
- How will you identify the subjects? Who is available for study and how will you reach them?
- If you are collecting a sample, what will your sample size be? Why?

Ethical Considerations: Point out any procedures, situations, or materials that may be hazardous to study participants or personnel and the precautions to be exercised.

- What are all the possible consequences of this research for the people involved or affected?
- If there is any possibility that your research will have an impact on those you study, how will you ensure that they are not harmed by your research?
- How will you ensure that the information you obtain from your research participants will be kept confidential?
- What political issues will you need to consider when doing this research?
- How will you work within the structural and political confines of your research setting?

List and describe the principal observations in the sequence in which you plan to carry them out, and indicate a tentative schedule of the main steps of the investigation within the project period.

Appropriately reference and cite relevant chapters from your text.

ASSIGNMENT 4: QUESTIONNAIRE DESIGN

This assignment requires the construction of your questionnaire. Your questionnaire should be a full, completed questionnaire, not simply a list of questions for your sample. A cover letter to accompany your questionnaire is NOT required for this assignment however; you do need to include instructions to your respondents. Your completed questionnaire is 10 % of your grade.

Your questionnaire should be designed to meet the purposes of your study. For my benefit restate your research question. It should be integrative and make sense. Each question must have a clear purpose and complement the other included questions. Follow the suggestions below to complete this assignment:

- Clearly divide the topics covered in the questionnaire in a logical manner.
- Look, review, reorder until there is a flow.
- Make sure questions are appropriate for your research questions and hypotheses.
- Make sure the questions have apparent answers and are as easy to understand as possible. Make the questions as clear as possible – good grammar, no double negatives.
- Reduce the risk of bias. No loaded questions. Also focus on only one issue per question.
- Don't reinvent the wheel. If there are published questions that fit your study, use them (and reference them).
- Numerically PRE-CODE each question (see me if you need clarification).
- Use the response format in a careful way – open or closed-ended.
- Make the questionnaire as long as necessary, but as short as possible.

- **PRE-TEST the questionnaire on at least two people similar to your population to find problems. On pages separate from the questionnaire, briefly DISCUSS problems and/or issues related to your questionnaire (based on your pretest).**
- Check for overall good questions.
- Check for overall good response categories.

Appropriately reference and cite relevant chapters in your text.

ASSIGNMENT 5: SO WHAT? AND ALTERNATIVE RESEARCH DESIGN

Now that you've completed major steps in the research process as related to research area you selected, I ask you to reflect on the potential contributions of your research and to consider an alternative design. This assignment is 10% of your grade.

So What?

- What do you expect your most significant findings to be?
- How will your findings contribute to previous work in this area of research?
- Where do you expect your findings will lead the current body of scholarship in this area?
- What, if any, is the practical significance of your research? Why is it worthwhile? How will it be applied?
- How do you anticipate your findings will contribute to our general understanding of this area?
- How might this study contribute to the improvement of the human condition ("the real world") in the short and long run?

Alternate Design: Think about your proposed study. Propose a qualitative, experimental OR non-reactive design that focuses on the same research question.

- Propose the role you (the researcher) will play in the setting, along the participant-observation continuum or in experimental context. Explain why you might favor this role.
- Discuss what this alternative design will add to the findings of your proposed study that might not be addressed by doing a survey. What will this type of alternative lack? What will the limitations be?

Appropriately reference and cite relevant chapters in your text.

Preliminary assignment: Article & Research Statement

This exercise has several purposes. The main purpose is to help you choose a focused research topic for the semester. Other purposes include familiarizing you with the most notable refereed sociological journals and giving you some experience reading professional journal articles. To complete this exercise, you need to follow the steps below. The format for this exercise is essay..

Step 1 → Using the library's resources, either physical or electronic, page through one or more of the following sociological journals: American Sociological Review (ASR), American Journal of Sociology (AJS), and/or Social Forces or any journal listed on the back cover of your text.

Note: Some of you may already have a general topic in mind. Excellent! But I still expect you to flip through some journals to better familiarize yourself with the above sociological journals. You must provide a photocopy of your article with your completed exercise.

Step 2 → Once you have found an article that falls under a general topic that you would like to research this semester, make a photocopy of the article. I strongly suggest that you do not make a hasty article choice because you will not be able to change your general topic area once you turn in this exercise. It is well worth it to spend more time looking through journals if you are having a tough time finding a general topic of interest.

Step 3 → Now that you have chosen a general topic of interest that you would like to pursue this semester, write a 1-3 sentence research statement about the topic. This statement should be relatively broad at first. You will be responsible for coming up with a central research question and specific research questions in later assignments.

Step 4 → You will be using this article for your literature review (assignment 1), so you need to know its content. Complete the following:

1. Provide the citation for your article (i.e., author(s), year of publication, title, journal name and issue, and page numbers. Use the professional format provided by ASA (available on the Library webpage).
2. In your own words – what is the objective of the article?
3. What research question(s) does the author(s) aim to answer?
4. What is the population or sample of interest in the article?
5. Is a theoretical perspective(s) represented in the article? What is the perspective?
6. What method is employed to study and/or test the topic?
7. What is the level of analysis of the study? What type of data?
8. What are the findings?

Step 5 → Your completed exercise is **due at the start of class on Friday, August 28**. At this time you must also turn in your photocopied article. Your completed exercise should resemble a professional document at the time it is turned in. It must be typed with 12 point font and have one inch margins at the top, bottom, and sides of the page. This assignment should be no more than 1-2 pages in length and is worth 10% of your grade.

CURRICULUM VITAE: Laura E. DeWald**EDUCATION**

Ph.D., 1986, Forestry (genetics/tree physiology), Virginia Tech., Blacksburg, VA

Dissertation: Changes in Loblolly Pine Seedling Root Growth Potential: Over Time, During Cold Storage, and Among Half-Sib Families

M.S., 1982, Forest Resources (genetics), Pennsylvania State University, University Park, PA

Thesis: Juvenile Performance in a Range-Wide Provenance Study of *Alnus glutinosa* (L.) Gaertn.

B.S., 1980, Forestry, Michigan Technological University, Houghton, MI

EMPLOYMENT HISTORY

August 2004 – Present: Western Carolina University, Cullowhee, NC

Current position: Graduate Faculty, Professor and Director, Environmental Science Program.

Interdisciplinary appointment (Environmental Science Program, Natural Resources Conservation & Management Program both in the Geoscience & Natural Resources Dept., and Biology Department).

Assistant Professor 2004-2007, Associate Professor with tenure 2007-2011, Full Professor 2011-present.

August 1994 – July 2004: School of Forestry, Northern Arizona University, Flagstaff, AZ

July 2003 – July 2004: Associate Dean, Associate Professor, and Program Director, AZ Bureau Forestry and USDA McIntire-Stennis Funds

Aug. 1994 – July 1998 and Aug. 1998 - June 2003: Assistant and Associate Professor, respectively, Conservation Genetics/Biology

September 1992 - July 1994: Green River Community College, Auburn, WA

Sept. 1992 – July 1994: Forest Resources Technology Faculty (Dept. Chair 1993-1994)

July 1989 - August 1992: Warren Wilson College, Asheville, NC

July 1989 – August 1992: Forest Biology Faculty and Forest Supervisor

November 1987 - June 1989: Dept. Forestry, University of Florida, Gainesville, FL.

Post-Doctoral Research Associate: Nitrogen and seedling carbon allocation in fast- and slow-growing half-sib families of slash pine

July 1986 - November 1987: Forest Resources Dept., University of Minnesota, St. Paul, MN

Post-Doctoral Research Associate: Effects of soil aluminum on nutrition, water relations and growth on red and white spruce, and northern red oak seedlings

September 1982 - June 1986: Dept. Forestry, Virginia Tech, Blacksburg, VA.

Research Assistant: Loblolly pine root growth potential, Appomattox Court House National Historical Park Forest Management Plan, Fraser fir genetics and physiology studies

September 1980 - May 1982: School Forest Resources, Penn State Univ., University Park, PA

Research Assistant: graduate research and teaching

May – August 1979 & 1980: Forest Technician, US Forest Service, Payette National Forest, Idaho.

RESEARCH EXPERIENCE – PUBLICATIONS

a) Peer-Reviewed Journals (*publications in italic are related to teaching*) * = student

Torgerson*, J and LE DeWald. 2016. Genetic variation among *Hydrastis canadensis* populations in western North Carolina. *Castanea*. In review

Montgomery*, AD and LE DeWald. 2015. Predicting threatened orchid (*Isotria medeoloides* [Pursh] Raf.) habitat in the Southern Appalachian region using Maxent. Favorable reviews from Biological Conservation. In revision.

Hillard*, LE, LE DeWald and J Yarkovich. 2015. Elk (*Cervus elaphus* L.) habitat selection in Great Smoky Mountains National Park. Favorable reviews from Journal of Wildlife Management. In revision

- Punsalan*, A, B Collins and LE **DeWald**. 2015. The germination of the federally threatened *Helonias bullata* L. (swamp pink) in response to flooded, saturated, and dry conditions. Aquatic Botany. Accepted pending revision
- Dixon*, GB and LE **DeWald**. 2015. Microsatellite survey of aspen in the Kaibab National Forest suggests link between triploidy and mortality. Canadian Journal of Forest Research 45:1369–1375
- Lett*, CN, LE **DeWald** and J Horton. 2011. Mycorrhizae and soil phosphorus affect growth of *Celastrus orbiculatus*. Biological Invasions 13:2339-2350
- Zhang*, H., LE **DeWald**, TE Kolb, DF Keopke. 2011. Genetic variation in ecophysiological and survival responses to drought in two native grasses: *Koeleria macrantha* and *Elymus elymoides*. Western North American Naturalist 71:25-32
- Torgerson*, J and LE **DeWald**. 2011. Genetic variation in *Hydrastis canadensis* populations in western North Carolina. Abstract in United Plant Savers Winter Journal www.UnitedPlantSavers.org
- Falcone*, JF, and LE **DeWald**. 2010. Comparisons of arthropod and avian assemblages in insecticide-treated and untreated eastern hemlock stands in Great Smoky Mountains National Park, USA. Forest Ecology and Management 260:856-863
- DeWald**, LE and MF Mahalovich. 2008. Historical and contemporary lessons from ponderosa pine studies at the Fort Valley Experimental Forest. Pages 204-213 *In*: Olberding, SD and MM Moore, tech. coords. 2008. Fort Valley; Experimental Forest – A Century of Research 1908-2008. RMRS-P-53CD. Fort Collins, CO. USDA Forest Service, 408 pages. On-line, peer-reviewed manuscript (www.fs.fed.us/rm/pubs/rmrs_p053.pdf)
- Extine*, JL and LE **DeWald**. 2008. Comparison of potential habitat among golf courses in western North Carolina. Southeastern Biology 55(3):282
- Falcone*, JF and LE **DeWald**. 2008. Effects of a hemlock woolly adelgid (*Adelges tsugae*) insecticide treatment on arthropod community diversity and food availability for insectivorous birds in GSM National Park. Southeastern Biology 55(3):283
- Grant*, S and LE **DeWald**. 2008. Changes in genetic diversity of *Quercus rubra* following different harvesting regimes and the decline of *Castanea dentata* in Western North Carolina. Southeastern Biology 55(3):254
- Lett*, C and LE **DeWald**. 2008. Effects of mycorrhizae fungi on the growth of *Celastrus orbiculatus*. Southeastern Biology 55(3):245
- McRae*, BH, P Beier, LY Huynh, L **DeWald**, and P Keim. 2005. Habitat barriers limit gene flow and illuminate historical events in a wide ranging carnivore, the American puma. Molecular Ecology 14:1965-1977
- Steed*, JE and LE **DeWald**. 2003. Transplanting Sedges (*Carex* spp.) in southwestern riparian meadows. Restoration Ecology 11:247-256
- Steed*, JE, LE **DeWald**, and TE Kolb. 2002. Physiological and growth responses of riparian sedge transplants to groundwater depth. International Journal of Plant Science 163:925-936
- Fischer*, DG, TE Kolb and LE **DeWald**. 2002. Changes in whole-tree water relations during ontogeny of *Pinus flexilis* and *Pinus ponderosa* in a high-elevation meadow. Tree Physiology 22:675-685
- Chen*, Z, TE Kolb, KM Clancy, VD Hipkins and LE **DeWald**. 2001. Allozyme variation in interior Douglas-fir: association with growth and resistance to western spruce budworm herbivory. Canadian Journal of Forest Research 31:1691-1700
- Kolb, TE, PJ Daugherty and LE **DeWald**. 2001. Paving the way from school to work: Core graduate education at Northern Arizona University. Journal of Forestry 99:11-15.
- Naumburg*, E, LE **DeWald**, and TE Kolb. 2001. Shade responses of five grasses native to southwestern US *Pinus ponderosa* forests. Canadian Journal of Botany 79:1001-1009
- Namburg*, E and LE **DeWald**. 1999. Relationships between *Pinus ponderosa* forest structure, light characteristics, and understory graminoid species presence and abundance. Forest Ecology and Management 124:205-215

- DeWald**, LE and AE Springer. 1999. Riparian restoration improves a rare Bebb willow community (Arizona). *Ecological Restoration - Research Notes*. Dec. 1999
- Zimmerman*, JAC, LE **DeWald** and PG Rowlands. 1999. Vegetation diversity in an interconnected ephemeral riparian system of north-central Arizona, USA. *Biological Conservation* 90:217-228
- DeWald**, LE and MF Mahalovich. 1997. The role of forest genetics in managing ecosystems. *Journal of Forestry* 95:12-16
- DeWald**, LE, T White and ML Duryea. 1992. Performance of four slash pine families grown in different nitrogen regimes. *Tree Physiology* 11:255-269
- DeWald**, LE, EI Sucoff, and T Ohno. 1990. Response of northern red oak seedlings to soil solution aluminum. *Canadian Journal of Forest Research* 20:331-336
- DeWald**, LE and PP Feret. 1988. Changes in loblolly pine seedlings during cold storage. *Forest Science* 34:41-54
- DeWald**, LE and PP Feret. 1987. Changes in loblolly pine seedling root growth potential from Sept. to April. *Canadian Journal of Forest Research* 17:635-643
- DeWald**, LE and KC Steiner. 1986. Phenology, height increment and cold tolerance of *Alnus glutinosa* populations in a common environment. *Silvae Genetica* 35:205-211

b) Books and Book Chapters

- DeWald**, LE 2003. Conserving genetic diversity during restoration thinning. Pages 226-227 In: Peter Friederici (editor) *Ecological Restoration of Southwestern Ponderosa Pine Forests*. Island Press
- Shamoun, SF and LE **DeWald**. 2003. Management strategies for dwarf mistletoes: Biological, chemical and genetic approaches. Chapter 7 In: Geils, BW, JC Tovar and B Moody (eds.) *Mistletoes of North American Conifers*. USDA Forest Service, Gen. Tech. Report RMRS-GTR-98, Ogden, UT. 123 pp.

c) Other Publications (not peer-reviewed)

- Falcone, JF and LE **DeWald**. 2007. Relationships between stand density and morphological characteristics in *Arundinaria gigantea*. Cherokee Preservation Foundation Final Report
- DeWald**, LE and J F Falcone. 2007. Effects of hemlock woolly adelgid (*Adelges tsugae*) and an insecticide treatment on food availability for the black-throated green warbler (*Dendroica virens*) in GSM National Park. Final Report
- DeWald**, LE and K Elliott. 2006. Seeking clear indicators for effective new changes in education students. Progress Report, NC QUEST. Raleigh, NC
- DeWald**, LE 2004. Strategic Plan for the School of Forestry, Northern Arizona University
- Machina, LM, MM Moore and LE **DeWald** 1999-2003. Herbaceous understory phenology, growth, reproduction, and germination response to forest restoration treatments. USFS Research Joint Venture Agreement No. RMRS-99159-RJVA Interim and Final Reports. Flagstaff, AZ
- DeWald**, LE, AE Springer, and S Gary. 1999-2004. Watershed restoration of a high-elevation riparian community. AZ Dept. Water Resources, Water Protection Fund. Interim and Final Reports
- DeWald**, LE and KM Kolanoski. 1999-2002. Effects of stand density reduction treatments on genetic variation of ponderosa pine in northern Arizona. USFS Research Joint Venture Agreement Interim and Final Reports. Rocky Mountain Research Station, Flagstaff, AZ
- DeWald**, LE and JE Steed. 1999-2002. Evaluation of *Carex* species for use in riparian restoration. Arizona Water Protection Fund, Interim and Final reports
- Steed, JE and LE **DeWald**. 2002. Re-vegetation guidelines for sedges (*Carex* spp.) in southwestern riparian meadows. AZ Dept. Water Resources, Phoenix, AZ
- DeWald**, LE 2002. "Technology Corner". AZ Water Protection Fund Newsletter. May 2002
- DeWald**, LE and AE Springer. 2000. Incorporating ecological and non-ecological concerns in the restoration of a high-elevation Bebb willow riparian community. USFS RMR-GTR

Kolb, TE, LE DeWald and PJ Daugherty. 2000. Core education for forestry graduate students at Northern Ariz. Univ. Abstract page 80 In: Proc. 3rd Biennial Conf. Univ. Education in Natural Resources. Full 13-page paper available at <http://www.snr.missouri.edu/meetings/uenr/kolb.pdf>.

RESEARCH EXPERIENCE - Research Grant History (*teaching grants in italics*)

- 1) Effects of dormant season versus growing season prescribed burning on vegetation, fuels, and wildlife communities in mixed hardwood forests of the Southern Appalachians. USDA Joint Fire Science Program. CH Greenberg, TL Keyser, H McNab, P Scott (US Forest Service), CH Moorman NCSU and LE DeWald (WCU). 2015-2018 \$199,066 Pending
- 2) Effects of fire severity on the herbaceous plant species of xeric pine-oak forests in the Great Smoky Mountains National Park. S Binniger and LE DeWald. Great Smoky Mountains Conservation Association. 2015 \$5000
- 3) Habitat use by elk in Great Smoky Mountains National Park. LE DeWald. Rocky Mountain Elk Foundation. 2012-2013 \$11,378
- 4) Landscape-scale thresholds of early successional habitat: Reconciling biodiversity, public perception and timber yield in managed forests. Co-PI with S Loeb (USFS Research), B Collins and J Hyman (WCU Biology), E Baldwin and T Cushing (Clemson), and D Rankin (USFS Nantahala NF). USDA-AFRI 2012-2017. \$449,148
- 5) Investigating near-ground climate in contrasting sites. Co-PI B Collins (WCU Biology). National Oceanic and Atmospheric Administration 2011-2012 \$11,340
- 6) Mapping elk trails in the Great Smoky Mountains National Park. LE DeWald. WCU Graduate School Research Assistant Employment Grant. 2011 \$1000
- 7) Effects of hemlock woolly adelgid (*Adelges tsugae*) and an insecticide treatment on food availability for the black-throated green warbler (*Dendroica virens*) in Great Smoky Mountains National Park. Co-PI JF Falcone (WCU Biology), 2007 Network Research Grant Program, Appalachian Highlands Science Learning Center Seed Grants, USDI Great Smoky Mountains National Park. May-August 2007. \$2000
- 8) *Sciences: Seeking clear indicators for effective new changes in educating students. Co-PI Kim Elliott (College of Education and Allied Professions, WCU), North Carolina State NC QUEST – continuation project. 2007-2008, \$125,000*
- 9) LI-COR Purchase. Collaborator with Beverly Collins (Dept. Biology, WCU). LI-COR Environmental Education Fund (LEEF), LI-COR Biosciences, Lincoln NE. 2007 \$25,000
- 10) *Sciences: Seeking clear indicators for effective new changes in educating students. Collaboration with Kim Elliott (Director, Office of Rural Education, College of Education and Allied Professions, WCU). North Carolina State NC QUEST. 2006-2007, \$250,000*
- 11) Production and distribution of native medicinal plants in western North Carolina. Institute for the Economy and Future, Western Carolina University. 2006. \$3000
- 12) Northern red oak genomic investigations. Co-PI with Wesley Bonds (WCU Chemistry), UNC Genomics Training Support Grants. 2005-2008, \$100,000
- 13) Ravenna grass removal and riparian rehabilitation in Llewelyn Gulch, Glen Canyon National Recreational Area. Partners in Parks and National Park Service. NAU 2004-2005, \$16,000
- 14) *Native American Student Recruitment Program. Undergraduate Student Recruitment and Retention Grant. CO-PI K. Leao. NAU, 2004-2005. \$2500*
- 15) Investigating genetic diversity of ponderosa pine. T & E Inc. NAU 2004-2005, \$2408.
- 16) Genetic structure within and among four grasses native to ponderosa pine ecosystems. USDA McIntire-Stennis/AZ Bureau Forestry. NAU 2002-2006, \$76,900

- 17) Genetic structure within and among four grasses native to ponderosa pine ecosystems. Northern Arizona University Intramural Grants Program. NAU 2002-2003, \$11,700
- 18) Evaluating grass seed, seedlings and wildlings for ponderosa pine ecosystem restoration. USDA SW Fire Initiative & NAU Ecological Restoration Institute. 2001-2003, \$86,120
- 19) Managing fragmented Douglas-fir (*Pseudotsuga* spp.) ecosystems in the southwestern US & Mexico. Co-PI J. Bailey (Forestry), SDA/FAS/ICD/RSED/SCP. NAU 1999-2002, \$27,094.
- 20) Evaluation of *Carex* species for use in riparian restoration. AZ Dept. Water Resources Water Protection Fund. NAU 1999-2002, \$47,907.
- 21) Watershed restoration of a high-elevation riparian community. Co-PI A. Springer (NAU Geology), AZ Dept. Water Resources Water Protection Fund. NAU 1999-2002, \$286,275
- 22) Verde River headwaters riparian restoration demonstration project. Co-PI D. Anderson (Environmental Science), A. Springer (Geology), W. Odem (Civil Engineering), AZ Dept. Water Resources Water Protection Fund. NAU 1999-2002, \$148,429.
- 23) Trees from the world's continents at Northern Arizona University. AZ Urban and Community Forestry, Community Challenge Grant. AZ State Land Dept., Forestry Division. NAU 1999-2000, \$10,000.
- 24) Genetic Variation in Douglas-fir Resistance Mechanisms to Western Spruce Budworm Herbivory. Co-PI T. Kolb (Forestry), USDA Forest Service. NAU 1998-2001, \$78,000.
- 25) Evaluating Genetic Diversity of Two Grass Species in a Ponderosa Pine Restoration Project. Northern Arizona University. Intramural Grants Program. NAU 1998-1999, \$12,075.
- 26) Is Douglas-fir Seedling Vigor an Inherited Mechanism for Spruce Budworm Resistance? Northern Arizona University. Intramural Grants Program. NAU 1997-1998, \$7925.
- 27) Evaluation of a Cougar-Based Reserve Design for Conserving Biodiversity on the Colorado Plateau. Co-PI with P. Beier (Forestry) USDA McIntire-Stennis/AZ Bureau of Forestry. NAU 1997-2001, \$62,000.
- 28) Response of a Bebb willow-mixed graminoid community to riparian habitat restoration. USDA McIntire-Stennis/AZ Bureau Forestry. NAU 1996-1998, \$28,000
- 29) Response of Bebb willow to riparian restoration. Co-PI A. Springer (Geology). AZ Dept. Water Resources Water Protection Fund. NAU 1996-1998, \$33,752
- 30) Hoxworth Springs riparian Restoration. Co-PI A. Springer (Geology), AZ Dept. Water Resources Water Protection Fund. NAU 1996-1999, \$31,545
- 31) Influence of light regime on grass species composition in southwestern ponderosa pine forests. USDA McIntire-Stennis/AZ Bureau Forestry. NAU 1995-1997, \$27,000
- 32) Incorporating gene resource conservation into ponderosa pine ecosystem restoration efforts. Northern Arizona University, Intramural Grants Program. NAU 1995-1996. \$13,233
- 33) Genetic variation among populations of Douglas-fir on the Navajo Reservation and implications for regeneration management. USDA McIntire-Stennis/AZ Bureau Forestry. NAU 1995-1999, \$56,000
- 34) Critical riparian habitat restoration along a perennial reach of a Verde River tributary. Co-PI A. Springer (Geology). AZ Dept. Water Resources Water Protection Fund. NAU 1995-1999, \$102,535.
- 35) Morphological and genetic variation among and within Arizona bugbane populations. Northern Arizona University, Intramural Grants Program. NAU 1994-1995, \$83,000

RESEARCH EXPERIENCE - Professional Presentations – Past 10 years only

(presentations in italic are related to education and/or teaching) * = student

Franklin*, J, LE DeWald, J Yarkovich. 2015. (Poster) Monitoring elk grazing in Great Smoky Mountains National Park. Society of American Foresters National Convention, Baton Rouge, LA

Loeb, S, B Collins, J Hyman, L DeWald, ED Baldwin, TJ Straka. 2015. Landscape-scale thresholds of early successional habitat. NIFA Project Leaders Meeting, Greensboro, NC July 28-29

- DeWald, LE.** 2015. (Poster) Evidence of rapid evolution in *Pinus ponderosa* populations in the American southwest. Darwin Day, WCU, Feb. 12.
- Montgomery*, A. and LE **DeWald.** 2014. (**Invited**) Predicting suitable habitat for *Isotria medeoloides* (Pursh) in the southern Appalachian region. US Forest Service, Seminar Series, Southeastern Regional Office, Atlanta, GA November 13
- DeWald, LE.** 2014. (**Invited**) Environmental threats to biodiversity: Why they matter and how to solve them. Western Piedmont Community College Fall Speakers Forum: The Living Earth: Our Inheritance and Our Legacy. Morganton, NC, November 6.
- Abla*, S and LE **DeWald.** 2014. Multi-severity fire effects in xeric oak-pine communities following small fires in the Great Smoky Mountains National Park. Association for Fire Ecology and International Association of Wildland Fire Conference: Large Wildland Fires: Social, Political and Ecological Effects, Missoula, Montana May 19-23, 2014
- Abla*, S and LE **DeWald.** 2014. Multi-severity fire effects and predicting burn severity in xeric oak-pine communities in the Great Smoky Mountains National Park. Great Smoky Mountains National Park Science Colloquium, Gatlinburg, TN March 20, 2014
- Montgomery*, A and LE **DeWald.** 2014. Predicting suitable habitat of the Federally threatened species *Isotria medeoloides* (Pursh) in the southern Appalachian region using the Maxent Model approach. 75th Annual Meeting Assoc. Southeastern Biologists, Spartanburg, SC April 2-5
- Abla*, S and LE **DeWald.** 2014. Multi-severity fire effects in xeric oak-pine communities following small fires in the Great Smoky Mountains National Park. 75th Annual Meeting of the Association of Southeastern Biologists, Spartanburg, SC April 2-5
- Abla*, S and LE **DeWald.** 2013. Comparing fire severity maps to plant community responses in Great Smoky Mountains National Park. Society of American Foresters National Convention, Charleston, SC, Oct. 23-27
- Hillard*, EM and LE **DeWald.** 2013. (Poster) Habitat use by elk (*Cervus elaphus*) in Great Smoky Mountains National Park. College of Agricultural Sciences Fall Festival, Southern Illinois University, Carbondale, IL Oct. 18
- DeWald, LE** and G Dixon*. 2013. (**Invited**) Relationships between genetic diversity, clonal structure and sudden aspen decline in Kaibab National Forest, Arizona. 12th Biennial Conference of Science and Management on the Colorado Plateau. Special Session: Current state of knowledge: Sudden aspen decline on the Colorado Plateau. Northern Arizona University, Flagstaff, AZ Sept. 16-19.
- Collins, B, LE **DeWald,** J Hyman and S. Loeb. 2013. (Poster) Landscape-scale thresholds of early successional habitat: Reconciling biodiversity, public perception, and timber yield in the Nantahala National Forest. Biennial North American Forest Ecology Workshop: Sustaining Forest Ecosystem in the 21st Century. Bloomington, IN. July 17-20.
- Punsalan*, AP, B Collins, and LE **DeWald.** 2013. Germination ecology of *Helonias bullata* (Swamp pink). 74th Annual meeting, Association of Southeastern Biologists, Charleston, WV, April 10-13.
- Hillard*, EM and LE **DeWald.** 2013. Elk (*Cervus elaphus*) habitat use in Great Smoky Mountain National Park. 74th Annual meeting, Assoc. Southeastern Biologists, Charleston, WV, April 10-13.
- Hillard*, EM and LE **DeWald.** 2013. Elk (*Cervus elaphus*) habitat use in Great Smoky Mountain National Park. Great Smoky Mountain National Park Science Colloquium, Gatlinburg, TN March 21
- Collins, B and LE **DeWald.** 2012. Investigating near-ground climate in contrasting sites. Poster Presentation. 4th Annual Faculty Scholarship Celebration, Western Carolina University. Feb. 16
- Torgerson*, J and LE **DeWald.** 2012. Genetic variation in *Hydrastis canadensis* populations in western North Carolina. 73rd Annual meeting of the Association of Southeastern Biologists Univ. Georgia, Athens GA April 4-7
- Dixon*, G and LE **DeWald.** 2012. Clonal dynamics and decline of trembling aspen (*Populus tremuloides* Michx.) in the Kaibab National Forest, Arizona. 73rd Annual meeting Assoc. SE Biologists Univ. Georgia, Athens GA April 4-7

- DeWald, LE.** 2012. *Getting students to read and think: Using popular literature in an introductory Natural Resources course.* 9th Biennial Conference on University Education in Natural Resources. March 22-24, Colorado State Univ. Fort Collins, CO
- DeWald, LE (Invited)** 2011. *Existing SAF accreditation standards and proposed standards in Terrestrial Ecosystem Management. Workshop on the Future of Forestry Education.* Society of American Foresters National Convention, Nov. 2-6, Honolulu, HI.
- DeWald, LE and KM Hoffman***. 2011. Patterns of recruitment and young culm morphology in *Arundinaria gigantea* canebreaks in western North Carolina. Southern Appalachian Man & the Biosphere Conference, Nov. 15-17, Asheville, NC
- Torgerson*, J and LE **DeWald**. 2011. Genetic variation in *Hydrastis canadensis* populations in western North Carolina. Southern Appalachian Man & the Biosphere Conference, Nov. 15-17, Asheville, NC
- DeWald, LE.** 2011. **(Invited)** Augmenting natural medicinal plant populations with local or non-local plants: The good, bad and ugly. Southern Appalachian Man and the Biosphere Conference, Nov. 15-17, Asheville, NC
- Hoffman*, Keith and LE **DeWald**. 2010. Patterns of recruitment and clum morphology in *Arundinaria gigantea*. Assoc. SE Biologists Annual Meeting, April 7-10, Asheville, NC
- DeWald, LE, T Clark and Keith Blatner.** 2010. *Standing our ground: The meaning of SAF accreditation.* 8th Biennial Conf. on University Education in Natural Resources. March 25-27, Blacksburg, VA
- Falcone*, JF and LE **DeWald**. 2009 **(invited)**. Comparisons of arthropod and avian communities in insecticide-treated and untreated hemlock stands in GSM National Park. Invited Seminar, Southern Rocky Mountain Research Station, US Forest Service, Asheville, NC April 23, 2009
- DeWald, LE and SQ Grant***. 2009. Response of southern Appalachian tree species to climate change. Should we intervene? Southern Appalachian Man & Biosphere Annual Conference, Asheville, NC, Nov. 17-19, 2009
- Falcone*, J, and LE **DeWald**. 2009. Comparisons of arthropod and avian communities in insecticide treated and untreated hemlock stands. GSM National Park Science Colloquium, Gatlinburg, TN March 20, 2009
- Extine*, J, LE **DeWald** and R Davis. 2008. Ability of golf courses to provide landscape connectivity in Western North Carolina. 6th Southern Forestry and Natural Resources GIS Conference, Orlando FL March 24-26
- Falcone*, JF and LE **DeWald**. 2008. Effects of a hemlock woolly adelgid (*Adelges tsugae*) insecticide treatment on arthropod community diversity and food availability for insectivorous birds in GSM National Park. Assoc. SE Biologists Annual Meeting, Spartanburg, SC April 6-19
- Lett*, C and LE **DeWald**. 2008. Effects of mycorrhizae fungi on the growth of *Celastrus orbiculatus*. Assoc. SE Biologists Annual Meeting, Spartanburg, SC, April 16-19
- Extine*, JL and LE **DeWald**. 2008. Analysis of quality of habitat patches in western North Carolina golf courses using interior forest birds and landscape indices. Assoc. SE Biologists Annual Meeting, Spartanburg, SC, April 16-19
- Grant*, S and LE **DeWald**. 2008. Changes in genetic diversity of *Quercus rubra* following different harvesting regimes and the decline of *Castanea dentata* in Western North Carolina. Assoc. SE Biologists Annual Meeting, Spartanburg, SC, April 16-19
- DeWald, LE and MF Mahalovich.** 2008. Historical and contemporary lesson from ponderosa pine studies at the Fort Valley Experimental Forest. Fort Valley Experimental Forest – A century of Research 1908-2008. Flagstaff, AZ, August 7-9
- DeWald, LE and P Bates.** 2008. *Field experience for students also provides critical assistance for family landowners in the southern Appalachians.* Presentation at the 7th Biennial Conference, University Education in Natural Resources, March 13-15, Corvallis, OR

- DeWald, LE** and S Grant*. 2007. Changes in northern red oak genetic population structure following decline of the American chestnut and harvesting on genetic diversity of northern red oak in western NC. WFGA/SFTIC Joint meeting. Galveston Island, TX. June 19-22
- Lett*, C and LE **DeWald**. 2007. Influence of mycorrhizae fungi on *Celastrus orbiculatus*. Assoc. SE Biologists Annual Meeting. Columbia, SC, April 18-21
- Extine*, J and LE **DeWald**. 2007. Golf courses and their ability to provide landscape connectivity in Western North Carolina. Assoc. SE Biologists Annual Meeting, Columbia, SC, April 18-21
- Grant*, S and LE **DeWald**. 2007. Effects of the decline of the American chestnut and harvesting on genetic diversity of northern red oak in Western North Carolina. North American Forest Biology Workshop. May 20-23, Bloomington IN
- DeWald, LE** 2007. (**Invited**). Ponderosa pine ecosystem restoration. Pisgah Chapter Meeting, Society of American Foresters, Asheville, NC 3/12/07
- DeWald, LE**. 2006 (**Invited**). Using genetics to compare population structure and movement of puma. Natural Science Seminar Series, Warren Wilson College, Asheville, NC 11/27/06
- DeWald, LE**. 2006 (**Invited**). Using genetics to compare population structure and movement of puma. Paul Burton Seminar Series, Western Carolina University, Cullowhee, NC 11/10/06
- Zhang*, H, LE **DeWald**, and SE. Smith. 2006. Genetic variation in two native grasses in the ponderosa pine forests of northern Arizona: Implications for restoration. Annual Meeting American Bryological/Lichenological Society, American Fern Society, American Society Plant Taxonomists, Botanical Society of America. Cal. State, Univ., Chico. July 28-Aug. 2
- Bell*, S, K Mathews, and LE. **DeWald**. 2006. (Poster) Restoring culture through biology: A look at environmental and genetic factors of *Arundinaria gigantea*. NCUR/Lancy Undergraduate Research Presentations. Western Carolina University, Cullowhee, NC. August 2006.
- DeWald, LE**. 2006. (**Invited**). Using biotechnology to improve productivity of northern red oak: converting ideas into action. The Millennial Initiative: i⁷ Futures Forum: Molecular Biotechnology Symposium. Western Carolina University, April 5, 2006
- DeWald, LE, D McGinty, C Carter and A Dewanti**. 2006. *Rubrics: are they worth the time it takes to develop them?* 2nd Annual Scholarship of Teaching and Learning Faire. Western Carolina University, Cullowhee, NC, February 23, 2006
- Zhang*, H, LE **DeWald**, and SE. Smith. 2005. From trees to grasses: Understanding community genetics with geography and climate. 8th Biennial Conference of Research on the Colorado Plateau: Integrating Science and Management. Nov. 7-10, 2005, Flagstaff, AZ
- DeWald, LE, JJ Jacobs, D McGinty, and P Sanger**. 2005. (**Invited**). *Assessing Student Learning. Seminar for New Faculty, Coulter Faculty Commons for Excellence in Teaching and Learning. Western Carolina University, Cullowhee, NC, August 12, 2005*
- Zhang*, H and LE **DeWald**. 2005. Genetic differentiation of ponderosa pine and a dominant grass in northern Arizona: Implications for restoration. Western Forest Genetics Association Annual Meeting, Oregon State University, Corvallis, OR July 19-21, 2005
- McRae*, BH, P Beier, LE **DeWald** and P Keim. 2005. Gene flow among mountain lion populations in the American southwest. 8th Mountain Lion Workshop – Cougars: The controversy of politics, conflict and conservation. Leavenworth, WA, May 16-20, 2005
- DeWald, LE**. 2005. (**Invited**). Use of biotechnological tools in natural resource management decision-making. The Millennial Initiative: i⁷ Futures Forum. Western Carolina University, April 13, 2005.
- DeWald, LE, JJ Jacobs, D McGinty, and P Sanger**. 2005. *Our favorite ideas for assessing student learning. Scholarship of Teaching and Learning Faire. WCU, Cullowhee, NC Feb. 23, 2005*
- DeWald, LE**. 2005. (**Invited**) Science and policy issues associated with using native seed for revegetation. Biology Department Seminar Series, Western Carolina University, Cullowhee, NC, Jan. 28, 2005

- Zhang*, H and LE DeWald. 2004. (Poster) Genetic diversity among native grass species in Arizona. North American Forest Biology Workshop. Houghton, MI, July12-15, 2004
- DeWald, LE. 2004. (Poster) Conservation of genetic variation in Sky-island populations of Douglas-fir. Madrean Archipelago Conference: Connecting Mountain Islands and Desert Seas, May 11-15, 2004, Tucson, Arizona
- DeWald, LE and E Soller*. 2004. (**Invited**) Using native seed for re-vegetation. Western Carolina University, Cullowhee, NC April 22, 2004
- Leao, K and LE DeWald. 2004. (**Invited**) *The role of student services in recruitment and retention in the NAU School of Forestry. 5th Biennial Conference on University Education in Natural Resources. Flagstaff, AZ, March 14-17, 2004*
- DeWald, LE. 2004. (**Invited**) *Active learning in a web-based introductory course. 5th Biennial Conference on University Education in Natural Resources. Flagstaff, AZ, March 14-17, 2004*
- DeWald, LE. 2004. (**Invited**) *Old versus new standards/guidelines for Society of American Foresters professional program accreditation. 5th Biennial Conference on University Education in Natural Resources. Flagstaff, AZ, March 14-17, 2004*

****40 professional presentations from 1999-2003 (8 = invited, 1 = teaching related), titles and presentation details available on request**

TEACHING EXPERIENCE

a) Employment

August 2004 – Present:	Western Carolina University, Cullowhee, NC
August 1994 – July 2004:	School of Forestry, Northern Arizona University, Flagstaff, AZ
September 1992 - July 1994:	Green River Community College, Auburn, WA
July 1989 - August 1992:	Warren Wilson College, Asheville, NC
September 1982 - June 1986:	Dept. Forestry, Virginia Tech, Blacksburg, VA. (part time)
September 1980-June 1982:	Dept. Forest Resources, Penn State Univ. (part time)

b) Courses Taught: (* = developed the course)

Western Carolina University (2004 - Present)

Undergraduate: Genetics and Evolution, *Issues in Environmental Science, *Ecological Restoration, Introduction to Natural Resource Conservation, *Introduction and Approaches to Environmental Science, Environmental Biology, Forest Ecology, Dendrology, Forest Measurements Laboratory
Graduate: *Ecological Restoration, *Conservation Biology, *Ecological Genetics

See teaching load for last 5 years on next pages

Summary of WCU Teaching 2011 - 2015**3-credit hour release per semester for serving as Director of the Environmental Science Program**

Year	Semester	Course	Type	Credit Hours	Contact Hours	Enrollment	New Prep
2011	Spring	BIOL438 & 538: Ecological Restoration	Lec	3	3	19 & 3	No
		NRM351: Forest Ecology	Lec/Lab	3	5	24	No
		ES150: Intro and Approaches to Env. Sci.	Lec/Lab	4	6	18	No
	Fall	ES495: Senior Seminar	Capstone	3	3	10	Project Dev.
		ES101: Careers & Issues in Env. Sci.	Lec	1	1	26	No
		NRM140: Nat Res Conservation & Mgt	Lec	3	3	32	No
		Total		17	21	132	
2012	Spring	NRM 351: Forest Ecology	Lec/Lab	3	5	24	No
		ES150: Intro & Approaches to Env. Sci.	Lec/Lab	4	6	22	No
	Fall	ES495: Senior Seminar	Capstone	3	3	4	Project Dev.
		BIOL254: Dendrology	Lec/Lab	4	10	28	No
		ES150: Intro & Approaches to Env. Sci.	Lec/Lab	4	6	27	No
			Total		18	30	105
2013	Spring*	NRM351: Forest Ecology (labs revised)	Lec/Lab	3	5	25	Yes (lab)
	Fall	ES495: Senior Seminar	Capstone	3	3	19	Project Dev.
		ES150: Intro & Approaches to Env. Sci.	Lec/Lab	4	6	41	No
		Total		10	14	85	
2014	Spring	NRM 351: Forest Ecology (labs revised)	Lec/Lab	3	5	27	Yes (lab)
		BIOL441 & 541: Conservation Biology	Lec	3	3	19 & 4	Updated
	Fall	ES 495: Senior Seminar	Capstone	3	3	18	Project Dev.
		ES 150: Intro & Approaches to Env. Sci.	Lec/Lab	4	7	21	No
		BIOL254: Dendrology	Lec/Lab	4	10	26	No
			NRM330: Wildlife Mgt. Nov/Dec Only	Lec/Lab	3	5	31
		Total		20	33	146	
2015	Spring	NRM 351: Forest Ecology	Lec/Lab	3	5	23	No
		BIOL438 & 538: Restoration Ecology	Lec	3	3	22 & 3	No
	Fall	ES495: Senior Seminar	Capstone	3	3	16	Project Dev.
		ES150: Intro & Approaches to Env. Sci.	Lec/Lab	4	7	25	No
		NRM352: Forest Measurements Lab	Lab	1	4	29	Yes
		Total		14	22	118	

*Reduced load to compensate for heavy load previous semesters

Other WCU Teaching (Honors, Independent Study, Summer) 2011-2015

Year	Course	Credit Hr	Students	Project Title or Description
2011	NRM480 (Fall)	3	2	ES Internship
	NRM 480 (Fall)	2	1	Energy Management Planning
	NRM480 (Spring)	1	5	Student Recycling at WCU: Poster at Undergraduate Expo (WCU Mar 21-22), Oral presentation NCUR, Ithaca, NY (Mar 31-Apr 2)
	Honors (fall)	3	2	NRCM in Barbara Kingsolver's Prodigal Summer (for NRM140)
	Honors (fall)	1	1	Opportunities sustainability work at WCU (for ES101)
2012	NRM480 (Spring)	2	2	Energy Management Planning
	NRM480 (Fall)	1	1	Energy Management Planning
	Honors (Spring)	4	1	Carbon Stored in Storm Water vs Natural Wetlands (ES150)
	Honors (Fall)	4	1	Land Trusts Role in Environmental Sustainability (ES150)
2013	CHEM380 (Spring)	1	1	Energy Management Planning
	ES480 (Fall)	1	1	WCU Rooftop Solar Energy Assessment
	NRM140 (Summer)	3	49	Two Online Sections: Residential and Distance
2014	ES480 (Spring)	2	3	Sustainability of Commuter transportation at WCU: Posters at WCU undergrad expo and UNC Energy Summit, oral presentation NCUR
	ES480 (Fall)	3	1	ConEdison Solutions audit for WCU (with WCU Sustainability Office)
	NRM140 (Summer)	3	50	Two Online Sections: Residential and Distance
2015	ES480 (Spring)	1	3	Sustainability of Purchasing at WCU: posters at WCU undergrad expo and UNC Energy Summit, oral presentation at NCUR
	ES480 (Spring)	3	1	Comparison of development policies among coastal states (with WCU Center for Developed Shorelines)
	NRM480 (Spring)	1	1	Analysis of meadow forage use by Elk in GSMNP
	NRM480 (Fall)	1	1	Utilization of grass by Elk in GSMNP: Poster presentation at SAF
	NRM480 (Fall)	2	1	Invasive Plant Species Mgt Plan for the WCU Helen Patton House
	BIOL480 (Fall)	1	1	Habitat Comparison at the Balsam Mountain Preserve Golf Course
	NRM140 (Summer)	3	46	Two Online Sections: Residential and Distance

Course taught prior to WCU:

Northern Arizona University (1994 - 2004)

Graduate: *Forest Ecological Genetics, *Forest Conservation Biology, Multi-resource Forest Mgt Principles, *Teaching Practicum, *Professional Seminar, *Ecosystem Restoration and Conservation

Undergraduate: Introduction to Forestry, *Web-based Introduction to Forestry, Arizona Forests and Wildlife, *Introduction to Conservation Biology, Forest and Range Plant Taxonomy, Forest Ecology, Dendrology, *Stream Eco-hydrology, Undergraduate Research. Coordinator of the Junior-level professional forestry fall semester (16 credits) for 4 years.

Green River Community College (1992-1994)

Undergraduate: *Wildlife Habitat Management, *Stream and Wetland Ecology, *Wildland Recreation, Introduction to Forestry, Silvicultural Analysis, Tree and Shrub Identification, Forest Measurements II: Navigation & Mapping, Forestry Coop Education, General Biology, Plant Biology

Warren Wilson College (1989 – 1992)

Undergraduate: *Forest Biology, Genetics, Biochemistry, General Biology (Botany), General Biology (Ecology), Natural Resource Conservation, Environmental Policy, Soil Science, Geology, *Summer Forestry: Silviculture, Measurement and Surveying, Forest Management

Virginia Polytechnic Institute and State University (1982 – 1986)

Undergraduate: Dendrology laboratory, Silviculture laboratory, Forest Ecology laboratory

Graduate Students Mentored

Western Carolina University – Biology Department			Graduation
A. Hawk	MS	Comparing Maxent and DOMAIN habitat modeling of the rare <i>Trillium simile</i>	Ongoing
T. Green	MS	Early succession habitat and canopy opening size in the Nantahala NF	Ongoing
S. Binninger	MS	Fire Severity and herbaceous plant Community Responses GSMNP	May 2016
K. Bennett	MS	Phenotypic and genetic variation in eastern NC fox squirrel populations	Aug. 2016
A. Montgomery	MS	Using Maxent to predict <i>Isotria medeoloides</i> habitat in the S. Apps.	Dec. 2014
S. Abila	MS	Fire Severity and Woody Plant Community Responses GSMNP	Dec. 2014
L. Hillard	MS	Elk habitat use in Great Smoky Mountains National Park	Aug. 2013
A. Pallette	MS	Germination ecology of <i>Helonias bullata</i> (co-advised with B. Collins)	May 2013
G. Dixon	MS	Genetic diversity and decline in <i>Populus tremuloides</i> stands in Arizona	Aug. 2012
J. Togerson	MS	Alkaloid and genetic variation among goldenseal populations	Aug. 2012
N. Shipman	MS	Sensory cues for pollination visitors of <i>Trillium cuneatum</i>	Aug. 2011
K. Hoffman	MS	Patterns of recruitment and culm morphology in river cane canebrakes	Dec. 2010
S. Grant	MS	Genetic diversity of northern red oak in western NC	Dec. 2010
J. Falcone	MS	Arthropod-avian assemblages in insecticide-treated and untreated eastern hemlock stands in GSMNP	May 2009
J. Extine	MS	Evaluation of potential habitat in golf courses in western NC	Dec. 2008
C. Lett	MS	Phosphorus and mycorrhizae effects on growth of <i>Celastrus orbiculatus</i>	May 2008
Northern Arizona University – School of Forestry			
H. Zhang	PhD	Genetic variation in native ponderosa pine understory grass species	Dec. 2009
J. Busco	MS	Establishing Junegrass and muttongrass in SW ponderosa pine forests	Dec. 2005
D. Crisp	MS	Survival and recruitment of bull thistle after pile burning and litter removal	May 2004
B. McRae	PhD	Integrating landscape ecology and population genetics	May 2004
B. Nowicki	MS	Genetic diversity and dwarf mistletoe resistance in SW Douglas-fir	Dec. 2003
E. Bressler	MS	Genetic variation of isolated Douglas-fir in SW N. America and N. Mexico	May 2003
S. Swope	MS	Exotic plant invasions in relation to diversity, limiting resources and livestock grazing in Arizona grasslands	May 2003
K. Kolanoski	MS	Genetic variation of ponderosa pine in N. AZ: Implications for restoration	May 2002
M. White	PhD	Changes in subalpine and montane grasslands, Apache-Sitgreaves NF, AZ	Dec. 2002
D. Fischer	MS	Transpiration and canopy conductance of ponderosa pine and limber pine in a high-elevation prairie	May 2001
J. Steed	MS	Evaluation of sedge species for use in restoration of SW riparian meadows	Aug. 2001
S. Church	MS	Response of Bebb willow to riparian restoration, Hart Prairie, Arizona	Aug. 2000
L. Moser	MS	Genetic structure and variation in a southwestern Douglas-fir population	May 1999
J. Zimmerman	MS	Plant diversity in the Pumphouse Wash canyon system, Coconino Co., AZ	May 1997
E. Naumburg	MS	Shade response of five grass species of southwestern ponderosa pine forests	Aug. 1996
Northern Arizona University – Environmental Science and Policy			
E. Soller	MS	Using native seed for re-vegetation: science and policy	Dec. 2003
A. Richey	MS	Development of a rapid riparian assessment tool	Dec. 2005

HONORS AND AWARDS 2011 - 2015)

2011: Josephine Falcone (MS, Biology) received Karen Nicholson Best Thesis Award

2014: Poster based on ES Capstone won first place project category at UNC System Energy Summit; Ashley Montgomery's MS Thesis project won Catherine H. Beattie Fellowship from Garden Club of America, Finalist for WCU's "Exemplary Advocate for First Year Students", Semi-finalist for College of Arts and Sciences Teaching Award (2013-2014)

2015: Poster based on ES Capstone won first place research category at UNC System Energy Summit; Finalist for WCU's "Exemplary Advocate First Year Students", identified as faculty who most supported academic success of two ES Students on Chancellor's List for high GPA

SERVICE TO PROFESSION AND UNIVERSITY**Service Summary Table 2011 – 2012**

Year	Level	Activity, Committee, Organization	Role
2011	GNR Dept.	TPR/AFE Committee	Member (Chair AFE)
	Biol. Dept.	TPR/AFE Committee	Member
		QEP Co-Coordinator (with Sabine Rundle)	Helped develop QEP
		Ad Hoc Greenhouse Development	Committee Member
	Program	Env. Science Executive Committee	Director & Member
	CHPH Dept.	Administrative Assistant Search	Committee Member
	College	A&S Dean's Advisory Board	Board Member
		Ad Hoc: Helen Patton Center	Committee Member
	University	Scholarly Development Assignment	Committee Member (proposal evaluation)
		Graduate Council	Chair, Curriculum Subcommittee
		Coulter Faculty Commons – SITL	Focus group facilitator
	Professional	Univ. WI Stevens Point Forestry Program	External Reviewer, Accreditation Site Visit
		Society of American Foresters - National	Chair: National Committee on Accreditation
		Society of American Foresters – NC	Chair, Nantahala Chapter; member, NC Executive Committee
		Society of American Foresters – National	National Task Force: Study conducted for new natural resources accreditation
		Presidential Council of Alumnae	Advisor to the President of MTU
		Georgia Southern Univ., Biology Dept.	External Review, Promotion & Tenure File
		Castanea Journal, SE Naturalist Journal	Peer Reviewer for Manuscripts
		John Wiley & Sons, Inc.	Environmental Science Textbook Reviewer
	Cullowhee Native Plant Conference	Taught campus tree identification	
2012	Program	Env. Science Executive Committee	Program Director
	Biol. Dept.	Ad Hoc: Greenhouse Development	Committee Member
	GNR Dept.	DCRD	Committee Member
	College	Engagement Strategy Committee	Member, summarizing College engagement
	University	Graduate Council	Chair, Curriculum Subcommittee
		Master Planning: Sustainable Campus	Task Force Member
		Scholarly Development Assignment	Committee Member
		WCU Writing Center Program Review	Internal member of review team
	Professional	Iowa State University Forestry Program	External Reviewer, Accreditation Site Visit
		Society of American Foresters - Regional	Appalachian Region Fellows Award Committee
		Society of American Foresters - National	Chair: National Committee on Accreditation
		Society of American Foresters – National	National Task Force: New natural resources accreditation developed and report complete
		International Journal Plant Sciences, Western North Amer. Naturalist Journal	Peer Reviewer for Manuscripts
Cullowhee Native Plant Conference		Taught campus tree identification	
Presidential Council of Alumnae		Advisor to the President of MTU	

Service Summary Table 2013 – 2015

Year	Level	Activity, Committee, Organization	Role
2013	Program	Env. Science Executive Committee	Program Director
	Biol. Dept.	Ad Hoc: Greenhouse Development	Committee Member
		Ad Hoc: Biology Report Format	Committee Member
	University	Master Planning: Sustainable Campus	Task Force Member
		Scholarly Development Assignment	Committee Member
	Professional	Society of American Foresters - Regional	Appalachian Region Fellows Award Committee
		Society of American Foresters - National	Education Policy and Review Committee
		USDA MacIntire-Stennis	Grant Proposal Reviewer
		American Journal Experimental Agriculture, Journal of Insect Science	Peer Reviewer for Manuscripts
		Cullowhee Native Plant Conference	Taught campus tree identification
Presidential Council of Alumnae		Advisor to the President of MTU	
2014	Program	Env. Science Executive Committee	Program Director
	Biol. Dept.	Ad Hoc: Greenhouse Development	Committee Member
	GNR	Collegial Review	Committee Member
	University	Scholarly Development Assignment	Committee Member
		Provost Office – Research Grant Program	Proposal Reviewer
		Sustainability Office	Liaison for UNC sustainability efforts
		Coulter Faculty Commons	Facilitator, Interdisciplinary Scholarship Retreat
		Society of American Foresters - Regional	Chair, App. Region Fellows Award Committee
		Society of American Foresters - National	Education Policy and Review Committee
		Ecohydrology J., Western North Amer. Naturalist J., Forest Science	Peer Reviewer for Manuscripts
		Cullowhee Native Plant Conference	Taught campus tree identification
		Presidential Council of Alumnae	Advisor to the President of MTU
2015	Program	Env. Science Executive Committee	Program Director
GNR Dept.	GNR Faculty Affairs	FAD coordinator for GNR, DH term policy development, DCRD revision	
	GNR Collegial Review Committee	Review retention, promotion, tenure dossiers	
College	Collegial Review Committee	Review retention, promotion, tenure, dossiers	
University	Coulter Faculty Commons	Facilitator, Summer Institute Teaching & Learning	
	Sustainability Office	Liaison for UNC sustainability efforts	
	Office Institutional Planning and Effectiveness & Coulter Faculty Commons	Faculty Associate for Assessment; work on efforts to improve assessment knowledge on campus	
Professional	Society of American Foresters - National	Moderator, two sessions at the National Convention in Baton Rouge, Louisiana	
	Society of American Foresters - National	Education Policy and Review Committee	
	Restoration Ecology, Forest Science, Biological Conservation, Ecology and Society Journal	Peer Reviewer for Manuscripts	
	Cullowhee Native Plant Conference	Taught campus tree identification	
	Presidential Council of Alumnae	Advisor to the President of MTU	

Service to Western Carolina University: Departmental Service

Geoscience and Natural Resources Department: Tenure/promotion/retention Committee: 2008 – 2012, 2014-2015, assisted tenure/promotion review document revision (2007-2009), Annual faculty evaluation Committee: 2009 – 2012, Faculty Affairs Committee: 2006 – 2012, 2015-2016, Faculty Mentoring Committee: 2006-2007

Natural Resources Conservation and Management Program (within the Department): Landscape Ecologist /GIS Faculty Search Committee – 2006, assisted program review documents and site visit 2007-2008

Environmental Science Program (Interdisciplinary Program): Director and member, Executive Committee (2004 – present), revised DCRD (2007-2010), wrote self study for program review, Quality Enhancement Plan, and program prioritization document.

Biology Department: Tenure/promotion/retention Committee: 2007 – 2011, assisted with DCRD revision (2007-2009), Ad Hoc Ecology Curriculum Committee: 2008 – 2011, Quality Enhancement Plan (SACS Mandate) Co-Coordinator with Sabine Rundle: 2008 – 2011, Dept. Head Advisory Committee 2007, worked on proposal development for Southern Appalachian Biodiversity and Ecology Center with Beverly Collins – 2007, Community Ecologist Faculty Search Committee – 2005, Terrestrial Zoologist Faculty Search Committee – 2005, Ad Hoc Greenhouse Committee 2009 - present

Service to Western Carolina University: College of Arts and Science

Dean's Advisory Committee: 2011 – 2012, Ad Hoc Helen Patton Center Committee: 2008 - present
Master's Degree Planning in Environmental Sciences Committee: 2009 – 2011, Science Education Faculty Search Committee, Engagement Strategy Committee 2012

Service to Western Carolina University: Institution Service

Campus Master Planning Task Force on Creating a Sustainable Campus 2011-2012, Western Carolina University Writing Center Program Review Team 2012, Scholarly Development Assignment Program Committee 2011- 2013, Quality Enhancement Plan Assessment Team Summer 2010, Graduate Council 2009 - 2012 (Curriculum Committee, 2009 – 2012, Chair 2010 - 2012), C5 Liberal Studies Assessment Team 2008, Micro-grants Committee (2005-2008, Chair beginning Fall 2006), Participated in Region 8 Western Regional Science Fair 2007-2012, Represented WCU at the Regional Science Fair Meeting, NCSU, Raleigh, 7/17/07, Organized interactive Booth for the "Focus the Nation" Event at WCU 2008, 2009 (national teach-in on global climate change solutions for America)

Previous Service to Northern Arizona University: School of Forestry

Writing Across the Curriculum Committee (1 year), Dept. Chair Advisory Committee (1 year), Academic coordinator, Environmental Mgt Emphasis for Env. Sci. Department (5 years), Curriculum Review Committee (3 years), Scholarship Committee (2 years, **Chair**), Manager, School of Forestry's Arboretum (2 years), Professional Forestry Program/Curriculum Review Committee (2 years), Silviculture Faculty Search Committee (1 year), Research Specialist Search Committee (1 year), Recruitment, Retention and Placement Specialist Search Committee (1 year), Forest Measurements Curriculum Revision Committee (1 year), Organized Forestry Seminar Series in 1995-1997, MacIntire-Stennis/AZ Bureau of Forestry Grant Proposal Evaluation Committee (3 years, **Chair**), Faculty Status (promotion/tenure) Committee (2 years, **Chair**), Representative to Long-Distance Education Consortium (Virginia Tech., NAU, Univ. Montana, Univ. Idaho, US Forest Service, Bureau Land Management, National Park Service) (2003-2004), Dean Search Committee (2003), Strategic Planning Committee (1 year, **Chair**), Forest Management Faculty Search Committee (1 year, **Chair**), Assisted School of Forestry's Graduate Program Review by USDA/CSREES April 4-8, 2004, Adjunct Faculty Review Committee (3 years)

Previous Service to Northern Arizona University College of Ecosystem Science and Management

Environmental Management Curriculum Development committee (2 years), Promotion and Tenure Committee (1 year, **Chair**)

Previous Service to Northern Arizona University: Institution Service

NASA Steering Committee (3 years, **Chair** in 2003-2004), University Curriculum Committee (1 year) Commission on the Status of Women (4 years, [Presidential appointments], **Faculty co-chair**), Intramural Grant Program Review Committee (4 years), University Program Review Committee (3 years, **Chair**, Geology Review, Geography Review), Steering Committee for the Graduate Certificate in Conservation Ecology (3 years), Women in Science, Engineering, and Technology Committee (1 year), Research Greenhouse Coordinating Committee (3 years), “UPTEAM” Mentor for Multicultural Student Center (2 years), Incoming Freshman/Transfer Student “Previews” Advisor (3 years), Summer Sessions Advisory Committee (1 year), Distance Education Assessment Specialist Search Committee (1 year), Committee on Faculty Effort and Expectations (1 year), Centennial Campus Arboretum Committee (3 years)

Service to External Constituencies**Michigan Technological University**

Member of the Presidential Council of Alumnae – advisor to the President, 2005 - present

Professional Organizations: Committees and Leadership**Society of American Foresters (SAF)**

- Education Policy and Review National Committee (2013 – 2015)
- Fellows Nomination Selection Committee, Appalachian Society SAF (2009-2014, Chair in 2014)
- Task Force on Special Accreditation for Terrestrial Ecosystem Curriculum (2009-2012)
- Awarded **Fellow in the Society of American Foresters 2007** outstanding scholarship, teaching, and service to the profession of forestry (award recognizes only 5% of SAF Members)
- **Chair**, Nantahala Chapter, North Carolina Division (2007-2011)
- North Carolina SAF Executive Committee (2007- 2011)
- **Chair**, Science and Technology Committee, NC Division, SAF (2007)
- **Co-Chair & Co-Host**: Annual NC Division Meeting, Waynesville, NC June 6-8, 2007
- National Committee on Accreditation 2003-2006 and 2008-2013 (**Chair** 2009 – 2012)
- Southwest Section: **Chair** (2002), **Chair-Elect** (2001) and **Past-Chair** (2003)
- D1 working group: (Tree Improvement/Forest Genetics): **Secretary** (2001 & 2002), **Chair-elect** (2003), **Chair** (2004 and 2005), **Past-Chair** (2006)
- Northern Arizona University’s representative to National Office (1996-2004)
- Organized several technical sessions for the National Conventions (see below)

Western Forest Genetics Association

- Treasurer (2004-2005)

Association of Southeastern Biologists

- 71st Annual Meeting Planning Committee and **Program Co-Chair** (2008-2010)

Peer-Reviewer**Book Reviews:**

- WH Freeman Publishers: Genetics: A conceptual approach. 4th Edition. B. Pierce. 2009
- Scitable.com website review for WH Freeman Publishers 2009
- John Wiley & Sons: 7th Edition of Environment by Raven, Berg, and Hassenzahl 2008
- “Forest Ecology”, J.P. Kimmins, Prentice Hall Biology Inc.,
- “Schoolyard Habitat Handbook”, AZ Game and Fish Heritage Fund
- “Beyond Ponderosa”, Flagstaff Community Tree Board

Program Reviews: Society of American Foresters Accreditation Site Visits

Iowa State Univ. (2012), Univ. Wisconsin-Stephens Point (2011), Utah State Univ. (2010), Univ. Massachusetts – Amherst (2009), Univ. Michigan (2008), Auburn Univ. (2006), Ohio State Univ. (2004)

Research Proposals and Programs:

- Proposal review, National Graduate Women in Science Organization Fellowships, 2009
- US Civilian Research and Development Foundation (CRDF)
- National Science Foundation (4 proposals)
- Research Programs: USFS Rocky Mountain Research Station (2 programs)

Journal Articles:

On average I review 2 or more manuscripts/ year. I have reviewed manuscripts for the following Journals: American Journal of Botany, Western North American Naturalist, Annals of Botany, Theoretical and Applied Genetics, Canadian Journal of Botany, Canadian Journal of Forest Research, Forest Science, Ecohydrology, Phytopathology, Applied Vegetation Science, Wetlands Journal, Restoration Ecology, Southeastern Naturalist (also served as guest editor), Castanea, Forest Ecology and Management

Technical Reports: US Forest Service General Technical Reports (2 reports)

Moderator or Facilitator for Teaching or Research Workshops and Conferences

- **Moderator** for 15th, 16th, and 18th Annual Graduate Research Symposium. March 22, 2007, March 27, 2008, March 11, 2010, Western Carolina University, Cullowhee, NC
- **Presider/Moderator**, Animal Ecology II Session, 69th Annual Meeting, Association of Southeastern Biologists, April 16-19, 2008, Spartanburg, SC
- **Invited Facilitator:** Assessing Student Learning Focus Group. Annual Summer Institute on Teaching and Learning. May 2007, May 2011, May 2015: Coulter Faculty Commons for Excellence in Teaching and Learning. WCU
- **Instructor and Workshop Developer** (with Dr. Patricia Bricker, WCU BK Elem & Middle Grades Ed): Inquiry-based science instruction: A professional development workshop for Alleghany County elementary and middle-school teachers. July 10-14, Sept. 1 2006 and March 4-6 and June 3-5, 2007 Sparta, NC
- Inaugural (Feb. 23, 2005) and Second Annual (Feb. 23, 2006) Scholarship of Teaching and Learning Faires. **Invited Moderator** ‘Assessing Student Learning Session’. Coulter Faculty Commons for Excellence in Teaching and Learning. Western Carolina University.
- **Facilitator**, Assessing Student Learning Focus Group, 3rd and 4th Annual Summer Institutes on Teaching and Learning. Coulter Faculty Commons for Excellence in Teaching and Learning. Western Carolina University. May 2005 and 2006

- **Member** of the Faculty Learning Community on Assessment. Coulter Faculty Commons for Excellence in Teaching and Learning, Western Carolina University, 2004-2006.
- Learner-Centered Education – Arizona Tri-University Project on Learner Centered Education Techniques and course development. **Facilitator**, June and August 2003.
- **Moderator**, Steps toward stewardship: ponderosa pine ecosystems restoration and conservation conference. April 25-27, 2000.
- Slice of Life Project Forum II. **Facilitator**. National Science Foundation Forum, Northern Arizona University, Dec.1997
- The Art and Craft of Teaching. **Facilitator**, Northern Arizona University, July 1-Aug. 7, 1996. Roundtable discussion on role of research in undergraduate education (published in 1996 NAU “Horizons” magazine: “Beyond books: where research fits in”).
- Re-examining University Science Teaching. **Facilitator**. National Science Foundation Forum, Northern Arizona University, Dec.1995

Conference Planning and Organization:

- Program Chair and Planning Committee, Association of Southeastern Biologists Annual Meeting, Asheville, NC April 7-10, 2010
- **Co-Chair**: Natural Resource Education for a Culturally Diverse Audience. 5th Biennial Conference on University Education in Natural Resources, Flagstaff, AZ, March 14-17, 2004.
- Organized and conducted D1 working group technical sessions for the 1996, 2001, 2002 and 2003 Society of American Foresters National Conventions
- Organized July 1999 Western Forest Genetics Association Annual Meeting in Flagstaff, AZ
- Conducted fieldtrip for Arizona Riparian Council Annual meeting: April 30-May 1, 1999.
- Planning and technical assistance for the 2nd Southwestern Rare and Endangered Plant Conference, Flagstaff, AZ February 1996.

Other Professional Service to External Constituencies

- Participant in the Western Carolina University “Public School Projects for Math and Science” Collaborative work with a public school teacher to enhance science education (2006-2007)
- NC Quest Middle School Science Teachers – **Inquiry Resources CD development** with Dr. Patricia Bricker (WCU, BK Elem & Middle Grades Ed) 2008
- Served as Advisor for High School AP Biology Class through the Mathematics and Sciences Grants for School Involvement 2006 and 2007
- “Magnolia Detectives Project” advisor for Jennifer Allsbrook, , Polk County High School (DNA biotechnology project) 2009-2010
- Watershed prioritization development team, USDA Forest Service and Society of Ecological Restoration in collaboration with the Sonoran Institute and USGS Biological Resources Division, University of Arizona, 1997
- Experts Conservation Panel for The Nature Conservancy’s Bioregional planning for the Arizona – New Mexico Mountains ecoregion, 1997 and 1999
- Technical advisor/editor for National Geographic article (190[3]:80-97) 1996
- Member of the USDA Forest Service East Clear Creek Ecosystem Collaborative Assessment and Planning Team, Coconino National Forest, 1995-1999
- Forest regeneration/restoration advisor for the Hopi Tribe, Arizona, 1995-2004
- Advisor, Navajo Forestry – Reforestation Department Seed Orchard Project, 1995-2004
- Member of the USDA Forest Service East Clear Creek Ecosystem Collaborative Assessment and Planning Team, Coconino National Forest 1995-1999
- Forest regeneration/restoration advisor for the Hopi Tribe, Arizona

- Instructor for NSF-funded Summer Science Program for youth at NAU 1996 and 1997
- Watershed prioritization development team, USDA Forest Service and Society of Ecological Restoration, Sonoran Institute and USGS Biological Resources Division, AZ, 1997
- Experts Conservation Panel for The Nature Conservancy's Bioregional planning for the Arizona – New Mexico Mountains ecoregion 1997 and 1999

PROFESSIONAL ACTIVITIES, SPECIAL HONORS, RECOGNITION:

Elected Society of American Foresters Fellow (2008), Certificate of Appreciation Appalachian SAF (2008), Appointed to Michigan Technological University's Presidential Council of Alumnae (2005) (outstanding female alumni who advise the President of the University), Invited facilitator and participant, Wakonse Arizona: workshop providing inspiration and support for college teaching (May, 20-23, 2004), Outstanding Professor of the Year College of Ecosystem Science and Management (2003-2004), Nominated for Teaching Scholar Award, Northern Arizona University (1998), Nominated for American Association of State Colleges of Agriculture and Renewable Resources Outstanding Teacher Award (1998)

MAJOR PROFESSIONAL/SELF-IMPROVEMENT ACTIVITIES:

Basics of Forestry Finance. 1992. Forest Resources Continuing Education Program, College of Forest and Recreation Resources, Clemson University. Columbia, SC March 12, 1992
 Leadership and Supervisory Skills for Women. 1992. National Businesswomen's Leadership Association, and National Seminars, Inc. Asheville, NC May 1992
 Community and Technical College Education. 1992. Western Washington University, Woodring College of Education and the State Board for Community and Technical Colleges. Carson Conference Center, Ellensburg, WA Sept. 8-11, 1992
 Green River Community College 1993. Five-year vocational certificate in Forestry Technology. Auburn, WA. Feb. 9, 1993
 Society of American Foresters Leadership Academy, Nebraska City, NE, May 19-23, 2001

Instructional Improvement Training - Invited Participant/Facilitator:

Techniques in the Multi-Cultural Classroom. Participant. NAU, February 1995
 The Art and Craft of Teaching. **Facilitator**, NAU, July 1-Aug. 7, 1996
 1996 Roundtable discussion regarding the role of research in undergraduate education (published in 1996 NAU "Horizons" magazine: "Beyond books: where research fits in").
 Toward a sustainable future: Re-envisioning the curriculum at NAU. May 17-18, Aug. 18, 1998
 Re-examining University Science Teaching. NAU/National Science Foundation Forum, **Facilitator**, Dec. 1995
 Slice of Life Project Forum II. NAU/National Science Foundation Forum, **Facilitator**. Dec. 1997
 Bodega Field Conference on Teaching Ecological Genetics Techniques, Participant, March 13-16, 1996, Bodega Marine Laboratory Field Station. University of California, Davis.
 Southern Utah Great Teachers Summit, Kanab UT, Participant, Feb. 24-26, 2000
 Learner-Centered Education – Arizona Tri-University Project on LCE Techniques and course development. Participant. May and August 2002 and January 2003.
 Learner-Centered Education – Arizona Tri-University Project on LCE Techniques and course development. **Facilitator**, June and August 2003.
 55 Strategies for Teaching: Promoting active learning in the classroom. NAU Faculty Development program. Participant, Sept. 9, 2003.
 Member of the Faculty Learning Community on Assessment. Coulter Faculty Commons for Excellence in Teaching and Learning, Western Carolina University, 2004-2006.
 Assessment of Student Learning Focus Group at the Scholarship of Teaching and Learning, **Facilitator**, May 2005 Summer Institute, Western Carolina University, May 2005

Teaching and Learning Workshop, participant. Coulter Faculty Commons for Excellence in Teaching and Learning, Western Carolina University Sept. 13, 2005.

Summer Institute for Teaching and Learning, Coulter Faculty Commons, Western Carolina University, May 2011

Leadership Retreat: Coulter Faculty Commons, May 31, 2011

Leadership Academy: Coulter Faculty Commons, 2013-2014

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Education

Ph.D. Forestry (minor Soil Science), 1990. University of Minnesota

Dissertation Title: *Quaking aspen regeneration in northern Minnesota: Effects of harvest season and site conditions.*

M.S. Soil Science, 1981. Montana State University

Thesis Title: *Compaction by logging equipment of six soils in northwestern Montana as affected by soil water content, equipment type and number of passes.*

B.S. (with honors) Forestry, 1977. University of Montana

Professional Experience

July 2013 to present: Associate Professor of Natural Resource Conservation & Management and Natural Resources Program Director, Department of Geosciences and Natural Resources, Western Carolina University

July 2011 to June 2013: Interim Department Head and Associate Professor of Natural Resource Conservation & Management, Department of Geosciences and Natural Resources, Western Carolina University

1993 to 2011. Assistant (1993-2000) and Associate Professor (2000-2011) of Natural Resource Conservation and Management, Department of Geosciences and Natural Resources, Western Carolina University, Cullowhee, North Carolina. (Program Director beginning Fall 2006),

2006 to present. Adjunct Associate Professor, Department of Forestry and Natural Resources, Clemson University, Clemson, South Carolina.

1994 (summer). Visiting Professor, Department of Soil Science, University of Minnesota, St. Paul.

September 1990 to August 1993. Post-doctoral Associate, Department of Soil Science, University of Minnesota.

1987 to 1990. Graduate Research Assistant, Department of Forest Resources, University of Minnesota.

1981 to 1987. Soil Scientist, Minnesota Agricultural Experiment Station, Beltrami County Soil Survey, Bemidji.

1978 to 1981. Graduate Research Assistant, Plant and Soil Science Department, Montana State University, Bozeman.

1977 to 1978. Range Technician, USDI Bureau of Land Management, Dillon, MT.

Teaching Philosophy

Natural resource management is an interdisciplinary and highly applied field. Managing natural resources is often challenging due to the complexity of natural systems coupled with the reality that science behind most management decisions is both imperfect and incomplete. I try to provide students with a variety of learning experiences that will enable them to be successful – both as resource managers and in life. This requires students to gain practice and become proficient in a number of areas, including understanding and applying core principles, developing good problem solving skills, thinking critically, effectively working as part of a team, and communicating well.

Courses taught (Courses in bold taught in the past 5 years)

NRM-210 Methods in Natural Resources Management (every fall)

NRM-420 Soil Genesis and Classification (spring 2010, 2012)

- NRM-440 Integrated Resource Management (every spring)
- NRM-451 Foundations of Silviculture (fall 2011, 2013, 2015)
- NRM-452 Forest Management (spring 2012, 2014)
- NRM-483 Applications in Forest Management (spring 2012, 2015)

Peer-reviewed Publications

- Bucher, Margit, Beth Buchanan, Wendy Fulks, Josh Kelly, Peter Bates, Gary Kauffman, Steve Simon, and Helen Mohr. 2014. The Southern Blue Ridge Fire Learning Network: A collaborative partnership to Restore Fire-adapted Ecosystems and Build Resilient Forests and Communities in the Southern Blue Ridge. Pp. 193-200 in: Waldrop, Thomas A. ed. Proceedings, Wildfire in the Appalachians: discussions among fire managers and scientists. Gen. Tech. Rep. SRS-199, Asheville, NC: USDA Forest Service, Southern Research Station. 208 p.
- Furgurson, Jill, Fred Cabbage, Erin Sills, and Peter Bates. 2012. Bloodroot (*Sanguinaria canadensis* L.) extent and sustainability in western North Carolina. Open Journal of Forestry (<http://SciRP.org/journal/ojf>) 2(4):213-218.
- Grigal, D.F., Bates, P.C, and R.K. Kolka. 2011. Ecosystem C storage and flux in upland/peatland watersheds in northern Minnesota. Ch. 9 (pp 243 – 296) in: Peatland Biogeochemistry and Watershed Hydrology at the Marcell Experimental Forest. CRC Press, Inc. 518 pp.
- Bates, P.C. and Rob Lamb. 2008. Forest stewardship plan for the Waynesville watershed. Available online at <http://www.townofwaynesville.org/content/view/374/347/>
- Bates, P.C, and P. Carlson. 2004. The application of sustainable forest management in a western North Carolina watershed. In: Moore, Susan and Robert Bardon, eds. Enhancing the Southern Appalachian Forest Resource Symposium Proceedings, [CD-ROM] (2004). Available at: http://www.ncsu.edu/feop/symposium/proceedings_2003
- The Land Trust for the Little Tennessee. 2003. The upper Little Tennessee River basin: a conservation assessment and strategy. 166 p. (contributing author).
- Bell, J.C., D.F. Grigal, and P.C. Bates. 2000. A soil-terrain model for estimating spatial patterns of soil organic carbon. Chapter 12 in: *Terrain Analysis: Principles and Applications*. John P. Wilson and John C. Gallant, Editors. John Wiley and Sons, New York. 512 p.
- Bates, P.C., E.I. Sucoff, and C.R. Blinn. 1998. Short-term flooding effects on root suckering of quaking aspen. Northern Journal of Applied Forestry. 15(4):169-173.
- Grigal, D.F. and P.C. Bates. 1997. Assessing the impacts of forest harvesting: The Minnesota experience. Biomass and Bioenergy 13:213-222.
- Bell, J.C., D.F. Grigal, P.C. Bates, and C.A. Butler. 1996. Spatial patterns in carbon storage in a Lake States' landscape. pp. 198-202 In J. Hom, R. Birdsey, and K. O'Brian (eds.) Proceedings, 1995 meeting of the northern global change program; 1995 March 14-16; Pittsburgh, PA. USDA Forest Service General Technical Report NE-214, Northeastern Forest Experiment Station. 238 p.
- Berguson, W.E., D.F. Grigal, and P.C. Bates. 1994. Relative stocking index: a proposed index of site quality. Canadian Journal of Forest Research. 24:1330-1336.
- Bates, P. C., C. R. Blinn, and A. A. Alm. 1993. Harvesting impacts on quaking aspen regeneration in northern Minnesota. Canadian Journal of Forest Research 23:2403-2412.
- Bates, P. C., P. C. Robert, and C. R. Blinn. 1992. Overlaying soil and timber inventories to assess aspen productivity in northern Minnesota. Soil Science Society of America Journal 56:295-301.

- Grigal, D. F., and P. C. Bates. 1992. Forest soils: A technical paper for a generic environmental impact statement on timber harvesting and forest management in Minnesota. Prepared for the Minnesota Environmental Quality Board. Jaakko Poyry Consulting, Inc., Tarrytown, NY. 155 p.
- Bates, P. C., C. R. Blinn, and A. A. Alm. 1990. A survey of the harvesting histories of some poorly regenerated aspen stands in northern Minnesota. pp. 221-230 In R. D. Adams (ed.) Aspen symposium '89, proceedings. USDA Forest Service General Technical Report NC-140, 348 p.
- Bates, P. C., C. R. Blinn, A. A. Alm, and D. A. Perala. 1989. Aspen stand development following harvest in the Lake States region. Northern Journal of Applied Forestry 6:178-183.

Professional Papers (not peer reviewed)

- Childers, C., P.C. Bates, and T Straka. 2003. Southern Appalachian hardwoods: Sustainable and profitable. Forest Landowner 62(6):16-20.
- Bates, P. C., C. R. Blinn, A. A. Alm, and T. E. Engel. 1992. Successfully regenerating quaking aspen improves deer habitat. Whitetails (winter 1992) pg 43-46.
- Bates, P. C., C. R. Blinn, and A. A. Alm. 1991. Regenerating quaking aspen: Management recommendations. Minnesota Extension Service, University of Minnesota NR-FO-5637-S. 8 p.
- Blinn, C. R., and P. C. Bates. 1991. An evaluation of multipoint telecommunication instruction for microcomputers. Compiler 9:28-36.
- Blinn, C. R., and P. C. Bates. 1990. Integration of harvesting and silvicultural practices: An eastern perspective. p. 203-207 In Forestry on the Frontier. Proceedings 1989 Annual Conference. SAF Publication 82-02.
- Blinn, C. R., J. A. Flack, and P. C. Bates. 1989. Developing telecommunication linkages for microcomputer-aided instruction. Compiler 7:30-44.
- Bates, P. C., C. R. Blinn, and A. A. Alm. 1988. Factors affecting the regeneration of quaking aspen: A literature review. Minnesota Agricultural Experiment Station Bulletin 587-1988. University of Minnesota. 13 p.
- Blinn, C. R., and P. C. Bates. 1988. How to market timber effectively. pp. 3-13 In Proceedings: Woodland owners and users conference. Extension Forest Resources, Department of Forest Resources, University of Minnesota, St. Paul. 71 p.

Professional Presentations and Abstracts

- Bates, P.C. *Prescribed fire effects: Early trends from SBR FLN demonstration units*. Webinar. <https://nethope.webex.com/nethope/lsr.php?RCID=3fbe7caae3814248b2201c541f1b509f> June 23, 2014.
- Bates, P.C. *Prescribed fire effects: What can managers learn from SBR FLN demonstration units*. Invited presentation. Southern Blue Ridge Fire Learning Network Annual Meeting. Cashiers, North Carolina. May 20-22, 2014.
- Bucher, Margit, Beth Buchanan, Wendy Fulks, Josh Kelly, Peter Bates, Gary Kauffman, Steve Simon, and Helen Mohr. *The Southern Blue Ridge Fire Learning Network: A Collaborative Partnership to Restore Fire Adapted Ecosystems and Build Resilient Forests and Communities in the Southern Blue Ridge*. Paper presented at the Association for Fire Ecology Regional Meeting. Oct. 8-10, 2013. Roanoke, VA.
- Bates, Peter. *Assessing landscape scale fire effects by ecozone*. Webinar. (<https://nethope.webex.com/nethope/lsr.php?AT=pb&SP=MC&rID=65947072&rKey=eb987cca82cd380d>) November 29, 2012.
- Bates, P.C., Jon Shaffer, Wade Johnston, Dean Simon, Margit Bucher, and Beth Buchanan. *The influence of pre-burn stand variability on prescribed fire success*. Poster presentation. 2012 Annual Convention of the Society of American Foresters. Spokane, Washington. October 24-28, 2012.
- Bates, Peter, Dean Simon, Gary Kauffman, Margit Bucher, Jon Shaffer, and Rob Lamb. *Restoration of high elevation red oak with fire in the southern Blue Ridge*. Poster presentation. 4th Annual Fire in Eastern Oaks Conference. Springfield, MO. May 17-19, 2011.
- Smith, Marek, Sam Lindblom, Steve Croy, Margit Bucher, Beth Buchanan, Helen Mohr, Josh Kelly, Peter Bates, Steve Simon, Gary Kauffman. *Restoration of Fire-adapted Ecosystems in the Central and Southern Appalachians*. Poster presentation. North American Forest Ecology Workshop. Roanoke, VA. June 11-15, 2011.
- Bates, Peter. *Southern Blue Ridge Fire Learning Network prescribed burn monitoring*. Invited presentation. Annual meeting of the North Carolina Prescribed Fire Council. August 16-17, 2011. Wilkesboro, NC.
- Bates, P.C. and Dean Simon. First year results of a prescribed fire in a high elevation red oak stand. *Poster presentation* at the 3rd Fire in Eastern Oak Forests Conference. Carbondale, Illinois. May 20-22, 2008.
- DeWald, Laura E and P.C. Bates. Field experiences for students also provides critical assistance for family landowners in the southern Appalachians. *Paper* at the 7th Biennial Conference of University Teaching in Natural Resources. Corvallis, Oregon. March 13-15, 2008.
- Bates, P.C., Dean Simon, and Rob Lamb. Interim results for a prescribed fire in a high-elevation red oak stand. *Invited presentation*. Fire Learning Network Meeting, June 17, 2008, Asheville, NC.
- Bates, P.C., John Hagan, Jerry Miller, and Tom Martin. Developing forest sustainability indicators for a southern Appalachian watershed. *Poster presentation* at the National Convention of the Society of American Foresters. Portland, Oregon. October 23-27, 2007.
- Bates, P.C. and R. I. Lamb. The Western Carolina Forest Sustainability Initiative (and field tour). *Invited presentation* to the NC Division of the Society of American Foresters Annual Meeting. Balsam, North Carolina. June 7, 2007.
- Bates, P.C., S. Rabby, J. Slagle, and D. Evans. Vegetative competition effects on planted black cherry seedlings in southern Appalachian clearcuts. *Poster presentation* Society of American Foresters

- National Convention. Fort Worth, Texas. October 19-23, 2005.
- Yonce, M., D. Tinker, P. Bates, and W. Allen. The Little Tennessee land protection prioritization model. *Paper presented*. Little Tennessee Sustainable Forestry Project First Annual Research Symposium, Cullowhee, North Carolina. February 7, 2003.
- Childers, C., P.C. Bates, and T. Straka. Financial analysis of the Little Ellijay forest. *Paper presented*. Little Tennessee Sustainable Forestry Project First Annual Research Symposium, Cullowhee, North Carolina. February 7, 2003.
- Bates, P.C., S. Pearson, L. Mazzarelli, and D. Tinker. Forest use history impacts on breeding bird populations in the Little Tennessee River watershed. *Paper presented*. Little Tennessee Sustainable Forestry Project First Annual Research Symposium, Cullowhee, North Carolina. February 7, 2003.
- Bates, P.C, M. Forbis, and J. Abrams. Prescribed fire effects on oak regeneration in the southern Appalachians: First year results. *Poster presentation* Society of American Foresters National Convention. September 13-17, 2001. Denver, Colorado. (Note: poster was accepted but the convention was canceled due to the events of September 11)
- Bates, P.C., D. A. Fulmer, and D. K. Wise. First-year survival of planted black cherry in southern Appalachian clearcuts. *Poster presentation* Society of American Foresters National Convention. September 10-15, 1999. Portland, Oregon.
- Bates, P.C. Forest productivity assessment using topographic parameters in the southern Appalachians. *Poster presentation* American Society of Agronomy Annual Meetings. October 29 - November 3, 1995. St. Louis, Missouri.
- Bates, P.C., D.F. Grigal, and P.C. Robert. Forest productivity assessment of soil map units using the relative stocking index. *Poster presentation* American Society of Agronomy Annual Meetings. November 13-18, 1994. Seattle, Washington.
- Bates, P.C., J.C. Bell, and D.F. Grigal. Spatial distribution of carbon storage in the Cedar Creek Natural History Area, Minnesota. *Paper presented*. American Society of Agronomy Annual Meetings. November 7-12, 1993. Cincinnati, Ohio.
- Bates, P. C., and P. C. Robert. Soil-landscape units for forest management. *Poster presentation* American Society of Agronomy Annual Meetings. November 1-6, 1992. Minneapolis, Minnesota.
- Bell, J. C., P. C. Bates, and D. F. Grigal. Spatial patterns of carbon storage in Lake States' forests. *Poster presentation* American Society of Agronomy Annual Meetings. November 1-6, 1992. Minneapolis, Minnesota.
- Bates, P. C., E. I. Sucoff, and C. R. Blinn. Low oxygen effects on quaking aspen root suckering. *Poster presentation* North American Forest Biology Workshop. August 17-20, 1992. Sault Ste. Marie, Ontario.
- Blinn, C. R., and P. C. Bates. Microcomputer teletraining for natural resource professionals. *Poster presentation* Society of American Foresters National Convention. October 16-19, 1988. Rochester, New York.

Student-mentored presentations, papers, and abstracts (student names in bold)

Holland, Amber L., Michael W. McCloy, Brent C. Mills, Ben A. Melton, and Paul E. Pittman.

Fire effects on acorn and hickory nut production in western North Carolina. 27th National Conference on Undergraduate Research (NCUR). April 11-13, 2013. University of Wisconsin – La Crosse.

- McCloy, Michael, George Hahn, Gabriella Hovis, Ashley Mendenhall, and Michael Mustin.** Challenges to oak regeneration in Western North Carolina: Investigating the role of deer. 27th National Conference on Undergraduate Research (NCUR). April 11-13, 2013. University of Wisconsin – La Crosse.
- Holland, A.L, W.W.D. McCloy, B.A. Melton, B.C. Mills, P.E. Pittman, and P.C. Bates.** Fire effects on mast production in western North Carolina. Poster presentation. 2012 Annual Convention of the Society of American Foresters. Spokane, Washington. October 24-28, 2012.
- Hahn, G.E., G.M. Hovis, A.A Mendenhall, M.G. Mustin, and P.C. Bates.** Effects of white-tailed deer on regeneration following a shelterwood harvest in western North Carolina. Poster presentation. 2012 Annual Convention of the Society of American Foresters. Spokane, Washington. October 24-28, 2012.
- Monar, Kelder.** An assessment of woody and invasive plant cover at restored sites in the Little Tennessee watershed. pages 71 – 78 in 2011 Internship Research Report. Institute for the Environment Highlands Field Site, Highlands Biological Station, Highlands, NC.
- Roloff, Mark.** An examination of oak advanced regeneration one growing season after a prescribed understory burn. Poster presentation. National Conference on Undergraduate Research. April 16-18, 2009. University of Wisconsin – LaCrosse.
- Mozeley, Jennifer, Kevin Griffin, Mason Phillippi, John Austin, and P.C. Bates.** Evaluating crop tree release treatments in southern Appalachian coppice stands. Poster presentation at the National Convention of the Society of American Foresters. Portland, Oregon. October 23-27, 2007.
- VanDenabeele, Weston, Erin Beck, Brad Elliott, and P.C. Bates.** Deer effects on forest regeneration in western North Carolina. Poster presentation at the National Convention of the Society of American Foresters. Portland, Oregon. October 23-27, 2007.
- Yonce, M., D. Fulmer, E. Piela, B. Killian, and A. Cornelison.** Rough-grouse population levels in a maturing mixed hardwood forest in the southern Appalachians. Poster presentation Society of American Foresters National Convention, Portland, Oregon. September 11-15, 1999.
- Abrams, Jamie, Jonathan Creason, and Matt Cave.** Response of planted black cherry to natural competition in a western North Carolina clearcut. Poster presentation Society of American Foresters National Convention, Denver, Colorado. September 13-17, 2001. (Note: the convention was canceled due to the events of September 11)
- Cave, Matt, Michael Forbis, and Jonathan Creason.** Growth and grade response to thinning in a mixed oak stand in western North Carolina. Poster presentation Society of American Foresters National Convention, Denver, Colorado. September 13-17, 2001. (Note: the convention was canceled due to the events of September 11)
- Rabby, S., W. Linker, and P. Bates.** Prescribed fire to promote oak regeneration. Paper presented at the Little Tennessee Sustainable Forestry Project First Annual Research Symposium, Cullowhee, North Carolina. February 7, 2003.
- Arcano, R. and P. Bates.** Hardwood regeneration following patch clearcutting. Paper presented at the Little Tennessee Sustainable Forestry Project First Annual Research Symposium, Cullowhee, North Carolina. February 7, 2003.
- Ramsey, P., H. Kunzig, and J. Stokes.** Residual stand response to hardwood thinning: Results after 2 growing seasons. Paper presented at the Little Tennessee Sustainable Forestry Project Second Annual Research Symposium, Cullowhee, North Carolina. April 23, 2004.

- Price, R. and M. Owens.** Regeneration response to prescribed fire in a mixed hardwood stand. Paper presented at the Little Tennessee Sustainable Forestry Project Second Annual Research Symposium, Cullowhee, North Carolina. April 23, 2004.
- Farmer, S., J. Peeler, and K. Walker.** Regeneration and competition dynamics following patch clearcutting in a northern hardwood stand. Paper presented at the Little Tennessee Sustainable Forestry Project Second Annual Research Symposium, Cullowhee, North Carolina. April 23, 2004.
- Woodby, J., H. Kunzig, R. Davis, S. Rabby, J. Stewart,** and P. Bates Oak regeneration response to prescribed fire in the southern Appalachians. Poster presentation Society of American Foresters National Convention. Fort Worth, Texas. October 19-23, 2005.
- Rabby, D.S.** Small mammal assemblages across a chronosequence of southern Appalachian rich cove stands. Poster presentation Society of American Foresters National Convention. Fort Worth, Texas. October 19-23, 2005.

Funded Proposals

2015. Bates, P.C. Grandfather CFLR Vegetation Restoration Monitoring. *Source:* USDA Forest Service National Forests of North Carolina. **Amount funded: \$35,000.**
2014. Bates, P.C. Prescribed Fire Effects in Oak-Hickory, Yellow Pine, and High Elevation Red Oak Communities in the Southeastern United States. *Source:* USDA Forest Service Southern Research Station. **Amount funded: \$22,000.**
2014. Bates, P.C. Prescribed Fire Effects Monitoring in the Southern Blue Ridge. *Source:* The Nature Conservancy. **Amount funded: \$15,000.** *Funding awarded to Forest Stewards, Inc.*
2013. Bates, P.C. Prescribed Fire Effects on Forest Stand Condition in the Southern Blue Ridge. *Source:* USDA Forest Service Southern Research Station. **Amount funded: \$57,321.**
2012. Bates, P.C. Continued prescribed fire effects monitoring in the Southern Blue Ridge. *Sources:* The Nature Conservancy (\$10,000) US Forest Service Southern Research Station (\$5000). **Amount funded: \$15,000.** *Funding awarded to Forest Stewards, Inc.*
2011. Bates, P.C. Proposal to monitor prescribed fire effects in the Southern Blue Ridge. *Source:* The Nature Conservancy. **Amount funded: \$15,000.** *Funding awarded to Forest Stewards, Inc.*
2011. Davis, Ron; Peter Bates, Brian Kloeppe, Jerry Miller, Mark Lord, Sean O'Connell, and Tom Martin. A Proposal to Conduct Natural Resource Condition Assessments for the Great Smoky Mountains National Park and Carl Sandburg Home National Historic Site. *Source:* National Park Service. **Amount funded: \$140,000**
2010. Bates, P.C. Characterization of preburn stand conditions in the Southern Blue Ridge. *Source:* The Nature Conservancy. **Amount funded: \$24,000.** *Funding awarded to Forest Stewards, Inc.*
2010. The Land Trust for the Little Tennessee and Forest Stewards, Inc. Restoring Open Woodland Habitats Through Implementation of Prescribed Fire and Invasive Exotic Plant Control Surrounding the Nantahala National Forest. *Source:* The National Forest Foundation. **Amount funded: \$40,000.**
2009. Bates, P.C. Characterization of preburn stand conditions at Cold Mountain (Haywood County, NC), Bluff Mountain (Ashe County, NC), and Yellow Creek (Graham County, NC). *Source:* The Nature Conservancy. **Amount funded: \$6000.** *Funding awarded to Forest Stewards, Inc.*

2008. Bates, P.C. and Rob Lamb. Continuation of the design and implementation of sustainable forest management practices at the Balsam Mountain Preserve. *Source:* Balsam Mountain Trust **Amount Funded \$10,087.**
2008. Bates, P.C. Assessment of the impacts of a prescribed burn on forest regeneration and the herbaceous plant community on the Cold Mountain Gamelands. *Source:* The Nature Conservancy. **Amount funded: \$2500.**
2008. Bates, P.C. and Rob Lamb. Implementation and promotion of prescribed fire as a habitat restoration tool in Macon and Graham Counties, NC. *Source:* The Land Trust for the Little Tennessee **Amount funded \$5324.** .
2008. Bates, P.C. and Rob Lamb. Continuation of the design and implementation of forest stewardship activities in the Waynesville watershed. *Source:* Town of Waynesville, NC. **Amount funded \$24,000.** *Funding awarded to Forest Stewards, Inc.*
2006. The western Carolina community forestry project. A collaborative proposal submitted by the Land Trust for the Little Tennessee in partnership with Western Carolina University. *Source:* National Forest Foundation and Home Depot Foundation. Amount requested: \$35,000 **Amount funded: \$35,000.**
2006. Bates, P.C. Development of a detailed forest management plan for the Waynesville watershed. *Source:* Town of Waynesville. Amount requested: \$50,000. **Amount Funded: \$50,000.**
2005. Bates, P.C. Continued development of sustainable forest management opportunities in the Balsam Mountain Preserve. *Source:* Balsam Mountain Trust. Amount requested \$12,700. **Amount Funded \$12,700.**
2005. Bates, P.C. Development of a timber inventory and preliminary forest management plan for the Fisher Creek watershed. *Source:* Town of Sylva. Amount requested: \$3000. **Amount funded: \$3000.**
2005. Bates, P.C. Forest stewardship support for western North Carolina Landowners. Source: Duke University Nicholas School of the Environment and Earth Sciences. Amount Requested: \$14,500. **Amount Funded: \$14,500.**
2005. Bates, P.C. Timber stand assessment in the proposed Balsam Gap Property Conservation Easement along the Blue Ridge Parkway. *Source:* The Conservation Fund. Amount requested: \$5000. **Amount funded: \$5000.**
2004. Boner, R.R. Southern Appalachian Wildlife Conservation Initiative. A collaborative proposal submitted by The Conservation Fund in partnership with Western Carolina University and the Land Trust of the Little Tennessee. *Source:* Doris Duke Charitable Foundation. **Amount funded: \$1.5 million.**
2004. Bates, P.C. Establishment of a sustainable forest management demonstration area within the Balsam Mountain Preserve. *Source:* Balsam Mountain Trust. **Amount Funded: \$3600.**
2004. Bates, P.C. Development of a strategic forest management plan for the Waynesville watershed. *Source:* Town of Waynesville. **Amount funded: \$7000.**
2003. Bates, P.C. River cane mapping in the Little Tennessee River basin. *Source:* Eastern Band of the Cherokee Indians. **Amount funded: \$3000.**
2003. Bates, P.C. Enhancement of sustainable forest management on private lands in western North Carolina. *Source:* Land Trust for the Little Tennessee. **Amount funded: \$10,000.**
2001. Boner, R.R. and D. Ludington. Southern Appalachian Forest Conservation Initiative. A collaborative proposal submitted by The Conservation Fund in partnership with Western

Carolina University, Duke University, and the Land Trust of the Little Tennessee. *Source:* Doris Duke Charitable Foundation. **Amount funded: \$3.5 million.**

1995. Bates, P.C. Forest productivity assessment using digital elevation data in the southern Appalachians. *Source:* Western Carolina University Faculty Research Grant. **Amount funded: \$2450.**
1991. Bell, J. C., E. S. Verry, D. F. Grigal, and P. C. Bates. Spatial patterns and temporal trends in carbon storage in Lake States' forests. *Source:* USDA Forest Service Global Change Research Program. **Amount funded: \$140,000.**
1990. Bates, P. C., and P. C. Robert. Aspen productivity on different soil types in Beltrami County, Minnesota. *Source:* Beltrami County Land Department. **Amount funded: \$5200.**
1987. Robert, P. C., P. C. Bates and C. R. Blinn. The relationship between soil map units and timber inventory data in Beltrami County, Minnesota. *Source:* Beltrami County Land Department. **Amount funded: \$5000.**

1991-1992 University of Minnesota
FR 5140 Silviculture in North American Forest Types
FR 5126 Silviculture: Soil-Site Relationships.

1997 (summer) NC Teaching Fellows Summer Enrichment Program: Man and the Environment

2000 and 2001 (summer) Summer Ventures in Science and Math: Forest Ecology

Graduate Committee Membership (¹Director)

- Scott Abl**, MS Biology, 2014. Western Carolina University
dNbr Imagery and xeric pine-oak forest stand characteristics for fires of different severity in Great Smoky Mountains National Park.
- Adam Becker**, MS Candidate, Department of Forestry and Natural Resources, Clemson University.
(Adam passed away in 2009)
- ¹**D. Shannon Rabby**, MS Biology, 2005. Western Carolina University
Small mammal community dynamics across a chronosequence of southern Appalachian mesic hardwood forests
- Lisa Mazzarelli**, MS Biology. 2002. Western Carolina University
Ground-nesting bird response to land use history in mesic forests of the southern Blue Ridge Mountains
- Grace E.W. Bockoven**, MS Biology. 1999. Western Carolina University
Peregrine falcon (*Falco peregrinus*) restoration in the southern Appalachians
- Diana Ohongo**, MS Chemistry. 1997. Western Carolina University
Highly oriented pyrolytic graphite as a platform for atomic absorption spectrometry for the determination of lead, copper, and aluminum

Offices Held

President, Board of Directors, Forest Stewards, Inc. 2008-present
Board of Trustees, Balsam Mountain Trust. 2009-present
Board of Directors, Southern Forests and Communities. 2011-2013
Board of Directors, Southern Forestry Foundation. 2002-2009
Chair, Nantahala Chapter of the Society of American Foresters. Fall 1996 - Fall 1998.
President, Xi Sigma Pi, University of Minnesota, 1988-1990.
Land management committee, Balsam Mountain Trust. 2005 – present
Natural Resources Program Advisory Committee member. Haywood Community College. 2002 - present.

Professional and honorary societies

Xi Sigma Pi
Phi Kappa Phi
Society of American Foresters
North Carolina Registered Forester #1292
Fire Learning Network
North Carolina Prescribed Fire Council

Honors and awards

WCU Chancellor's Meritorious Award for Engaged Teaching for 2008-2009
Special recognition for service to the region by the Governing Board of the Southwestern Commission and the Executive Committee of the Land Trust for the Little Tennessee 2007
Boise Cascade Corporation Graduate Fellowship, 1989-1990.
USDA Soil Conservation Service Letter of Commendation, 1987.
USDA Soil Conservation Service Certificate of Appreciation, 1987.
USDA Forest Service Certificate of Merit (plus cash award), 1978.

Professional Consulting

1998 - present. NC Registered Forester providing consulting services to private landowners in western North Carolina.
1995 and 1996 (summer). Forest land classification using digital elevation models in the central Appalachians. Co-investigator: Dr. JC Bell, Department of Soil, Water and Climate, University of Minnesota. Client: WestVaco Corporation
1993. Guidelines for the application of wood and bark ash on forest soils in northern Minnesota. Client: Potlatch Corporation.
1992-1993. Preparation of a technical paper evaluating the effects of timber harvesting and management on forest soils in Minnesota. Client: Jaakko Poyry Consulting, Inc., Tarrytown, New York.
1986-1987. Wetlands classification and delineation in northwestern Minnesota. Clients: Various landowners working with the Minnesota Department of Natural Resources Waterbank Program.

Professional Service Activities***Papers and presentations***

2014. Southern Blue Ridge Fire Learning Network Monitoring Program. Field Tour. North Carolina Prescribed Fire Council Annual Meeting. Black Mountain, North Carolina. August 13.
2011. Monitoring update. Southern Blue Ridge Fire Learning Network Winter Meeting. Dec. 6. Asheville, NC.
2010. Review of 'ad hoc' SBR FLN monitoring. Presentation to the SBR Fire Learning Network Meeting, Crossnore, NC. May 20.
2010. Evaluating prescribed fire as a restoration tool in the southern Appalachians. Presentation to the WCU Biology Department Seminar Series. December 3.
2009. Review of monitoring protocols in a high elevation red oak stand. Invited presentation to the Fire Learning Network Meeting, Dillard, GA. May 21..
2009. Prescribed fire research in high-elevation red oak stands. *Field tour* for the Southeastern Hardwood Silviculture Group of the Society of American Foresters. April, 30.
2008. Interim results for a prescribed fire in a high-elevation red oak stand. *Invited presentation* to the Fire Learning Network Meeting. Asheville, NC. June 17.
2008. Focus the nation: A case for practicing sustainable forest management in western North Carolina. *Invited presentation*: WCU Focus the Nation Event. Jan. 21. Cullowhee, NC.
2008. Sustainable forest management: The case for looking forward, not back. *Invited presentation*. WCU Mountain Heritage Center Folklife Series. Jan. 15. Cullowhee, NC.
2004. Development of a strategic forest management plan for the Waynesville watershed. Recorded as Attachment C to the Conservation Easement to the Waynesville Watershed, Haywood County, North Carolina.
2004. GIS for the sciences: The Little Tennessee sustainable forestry project, Presentation to the WCU community, Western Carolina University. February 26.
2003. Forest management: what is it and how do we do it? *Presentation* to the Landtrust Alliance, Franklin, North Carolina. April 11.
2003. Forestry interns learn valuable lessons during Game of Logging training in the southern Appalachians. Game of Logging Newsletter Summer.
2002. The Little Tennessee sustainable forestry project. *Presentation* to the Town and College Club, Sylva, North Carolina. August 26.
2002. Conservation forestry in the Little Tennessee basin. *Presentation* to the southern Appalachian forest conservation project group, Rugby, Tennessee. October 1.

Brian David Byrd, PhD, MSPH**Current Address:**

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Cullowhee, NC 28723

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P.O. Box 445
Canton, NC 28716

Work: (828) 227-2607
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EDUCATION

University of North Carolina at Chapel Hill School of Public Health, Chapel Hill, NC
Graduate Certificate in Field Epidemiology
In progress (2015-2016)

Tulane University School of Public Health, New Orleans, LA
Ph.D, Public Health Parasitology/Vector Biology
Tulane/CDC Vector-Borne Infectious Disease Fellowship
Degree awarded: 2009

Tulane University School of Public Health, New Orleans, LA
Master of Science in Public Health, Tropical Medicine/Public Health Parasitology
Degree awarded: 2002

Tulane University School of Public Health, New Orleans, LA
Clinical Diploma in Tropical Medicine and Traveler's Health
Diploma awarded: 2001

University of North Carolina at Asheville
Bachelors of Arts, Biology
Degree awarded: 2000

ACADEMIC POSITIONS AND EMPLOYMENT

2014-Present	Associate Professor with Tenure, Western Carolina University, Cullowhee, NC
2008-2014	Assistant Professor, Western Carolina University, Cullowhee, NC
2014-Present	Adjunct Assistant Professor, Biology Department, UNC-G, Greensboro, NC
2013-Present	Instructor, Highlands Biological Station
2012-2013	Visiting Fellow, Centers for Disease Control & Prevention (PMI/CGH/DPDM)
2003-2008	Graduate Research Assistant, Tulane University, New Orleans, LA
2001-2002	MSPH Student, Tulane University, New Orleans, LA

HONORS

2013, 2014 Finalist, WCU Chancellor's Distinguished Teaching Award
2013-2014 WCU College of Health and Human Sciences Faculty Scholarship Award
2011-2012 WCU Board of Governors Innovation in Teaching Award (CHHS)
2010-2011 WCU College of Health and Humans Sciences Faculty Student Engagement Award
Phi Beta Delta Honor Society for International Scholars (Δ Z Chapter)
Tulane University/Centers for Disease Control Graduate Research Training Fellowship
Louisiana Board of Reagents Doctoral Incentive Award
UNC-Asheville "Order of Pisgah" Alumni Award
Louisiana Mosquito Control Association Student Research Grant Award
Ernest Carroll Faust Award for Outstanding MSPH Student (Tropical Medicine), Tulane University
UNC-Asheville Undergraduate Research Scholar
Tri-Beta Biological Honor Society, Σ II Chapter

PROFESSIONAL MEMBERSHIPS

American Mosquito Control Association
Society for Vector Ecology
Mid-Atlantic Mosquito Control Association
North Carolina Mosquito and Vector Control Association
John Snow Society

PEER-REVIEWED PUBLICATIONS

*WCU Undergraduate Co-Author

Shroyer, D.A., Harrison, B. A., Bintz, B. J., Wilson, M. R., Sither, C. B.*, & **Byrd, B.D.** (2015) *Aedes pertinax*, a newly recognized mosquito species in the United States *Journal of the American Mosquito Control Association*. 31(1):97-100.

Sither, C. B.*, Harrison, B. A., Bintz, B. J., Wilson, M. R., Kim, J., Graham, M., Hutchinson, M. & **Byrd, B. D.** (2014) First record of *Aedes (Ochlerotatus) stimulans* from Louisiana. *Journal of the American Mosquito Control Association*. 30(4):305-308.

Wilson, R.*, Harrison, R.*, Riles, M.*, Wasserberg, G., & **Byrd, B. D.** (2014) Molecular identification of *Aedes triseriatus* (Say) and *Aedes hendersoni* Cockerell (Diptera: Culicidae) by a novel duplex polymerase chain reaction assay. *Journal of the American Mosquito Control Association*. 30(2): 79-82.

Sither, C. B.*, Hopkins, V. E.*, Harrison, B. A., Bintz, B. J., Hickman, E. Y., Brown, J. S., Wilson, M. R., & **Byrd, B. D.** (2013) Differentiation of *Aedes atlanticus* and *Aedes tormentor* (Diptera: Culicidae) by ITS2 restriction fragment length polymorphisms. *Journal of the American Mosquito Control Association*, 29(4), 376-379.

Turell M. J., **Byrd, B. D.**, & Harrison, B. A. (2013). Potential for US populations of *Aedes japonicus* (Diptera: Culicidae) to transmit Rift Valley fever virus. *Journal of the American Mosquito Control Association*, 29(2):133-137.

Byrd, B. D., Harrison, B. A., Zavortink, T. J., & Wesson, D. M. (2012). Sequence, Secondary Structure, and Phylogenetic Analyses of the Ribosomal Internal Transcribed Spacer 2 (ITS2) in Members of the North American Signifera Group of *Orthopodomyia* (Diptera: Culicidae). *Journal of Medical Entomology*, 49(6), 1189-1197.

Rider, M. A., **Byrd, B. D.**, Keating, J., Wesson, D. M., & Caillouet, K. A. (2012). PCR detection of malaria parasites in desiccated *Anopheles* mosquitoes is uninhibited by storage time and temperature. *Malaria Journal*, 11(1), 193.

Byrd, B. D., Gymburch, E. E.*, O'Meara, G. F., & Wesson, D. M. (2011). Molecular Identification of *Aedes bahamensis* (Diptera: Culicidae). *Florida Entomologist*, 94(4), 1057-1059.

Byrd, B. D., Wesson, D. M., & Harrison, B. A. (2009). Regional Problems Identifying the Fourth Instar Larvae of *Orthopodomyia signifera* (Coquillett) and *Orthopodomyia kummi* Edwards (Diptera: Culicidae). *Proceedings of the Entomological Society of Washington*, 111(3), 752-754.

Colborn, J. M., **Byrd, B. D.**, Koita, O. A., & Krogstad, D. J. (2008). Estimation of copy number using SYBR Green: confounding by AT-rich DNA and by variation in amplicon length. *The American Journal of Tropical Medicine and Hygiene*, 79(6), 887-892.

Kang, S., Sim, C., **Byrd, B. D.**, Collins, F. H., & Hong, Y. S. (2008). *Ex vivo* promoter analysis of antiviral heat shock cognate 70B gene in *Anopheles gambiae*. *Viol. J*, 5, 136.

Palmisano, C. T., Taylor, V., Caillouet, K., **Byrd, B.D.**, & Wesson, D. M. (2005). Impact of West Nile virus outbreak upon St. Tammany Parish mosquito abatement district. *Journal of the American Mosquito Control Association*, 21(1), 33-38.

Carlson J.C., **Byrd B. D.**, & Omlin, F. X. (2004) Field assessments in western Kenya link malaria vectors to environmentally disturbed habitats during dry season. *BMC Public Health*, 4 (1):33.

Gupton, J. T., Burnham, B. S., **Byrd, B. D.**, Krumpe, K. E., Stokes, C., Shuford, J., Winkle, S., Web, T., Warren, A. E., Barnes, C. R., & Hall, I. H. (1999) The cytotoxicity and mode of action of 2,3,4-trisubstituted pyrroles and related derivatives in human Tmolt4 leukemia cells. *Pharmazie*, 54(9): p. 691-7.

Manuscripts in Preparation (Selected)

Harrison BA, **Byrd BD**, Sither CB, and Whitt PB. *Mosquitoes of the Mid-Atlantic Region: An Identification Guide*. Western Carolina University, Cullowhee, NC. Mosquito and Vector-Borne Infectious Diseases Laboratory Publication 2015-01. 207 pp.

Byrd BD, McKinnish TR*, Dunlap CE*, Sither CB*, Hutchinson ML, Harrison RL, Caillouet KA, Li Y, and Harrison BA. Validity of a novel morphological character to distinguish female *Culex*

restuans and *Culex pipiens* collected from gravid traps. Manuscript in preparation for the *Journal of the American Mosquito Control Association*. (Draft Manuscript Prepared, in Co-Author Review)

Harrison BA, Sither CB*, Kim JW, Bintz B, Wilson MR, and **Byrd BD**. A new morphological character that separates females of *Aedes atlanticus* and *Aedes tormentor*. Manuscript in preparation for the *Journal of the American Mosquito Control Association*. (Draft Manuscript Prepared, in Co-Author Review)

Henry M, Li Y, O'Connell S, Sither CB*, Barrera R, Amador M, and **Byrd BD**. Evaluation of the CDC autocidal gravid ovitrap for the surveillance of La Crosse virus Vectors. Manuscript in preparation for the *Journal of the American Mosquito Control Association*. (Submit Fall 2015)

Byrd BD, White L*, Sither CB*, Goggins A*, Sither J*, Harrison BA, and Wasserberg G. Surveillance in a La Crosse Virus endemic area: An evaluation of four mosquito traps and their gonotrophic biases. Manuscript in preparation for the *Journal of the American Mosquito Control Association*.

Tamini T, White L*, Goggins A*, Sither CB*, Byrd BD, and Wasserberg G. Landscape ecology of La Crosse Encephalitis in Western North Carolina I: Does Anthropogenic Disturbance Affect Ecological Transmission Drivers? Manuscript in preparation for the *Journal of Vector Ecology*. (In Preparation by Co-Author)

TECHNICAL DOCUMENTS

Yates M, **Byrd BD**, and Mannix F. Louisiana Mosquito Control Association Survey: Red River Parish, Louisiana. A Technical Report to the Louisiana Department of Health and Hospitals (LDHH) and the Centers for Disease Control and Prevention. Louisiana Mosquito Control Association. 2003.

Yates M, **Byrd BD**, and Mannix F. Louisiana Mosquito Control Association Survey: Natchitoches Parish, Louisiana. A Technical Report to the Louisiana Department of Health and Hospitals (LDHH) and the Centers for Disease Control and Prevention. Louisiana Mosquito Control Association. 2003.

Yates M, **Byrd BD**, and Mannix F. Louisiana Mosquito Control Association Survey: Winn Parish, Louisiana. A Technical Report to the Louisiana Department of Health and Hospitals (LDHH) and the Centers for Disease Control and Prevention. Louisiana Mosquito Control Association. 2003.

GRANT/CONTRACT SUPPORT (Awarded Grants and Contracts-Research)

NC Department of Agriculture & Consumer Services Pesticide Environmental Trust Fund (2016)
Role: Co-Investigator
Amount: \$21,067

Western Carolina University Provost Incentive Grant (2014)
Role: Author and Principal Investigator
Amount: \$6,700

Western Carolina University Graduate School and Research, Faculty Research and Creative Activities Award (2013)

Role: Author and Principal Investigator

Amount: \$5,000

North Carolina Biotech Center Institutional Development Grant to acquire a new ABI 3500 DNA sequencer. (2012)

Role: Co-Author and Investigator

(PI: Mark Wilson)

Amount: \$174,572

Association of Environmental Health Academic Programs (2009)

Recruitment Grant

Role: Principal Investigator

Amount: \$4,000

Western Carolina University Graduate School and Research, Faculty Research and Creative Activities Award (2009)

Role: Author and Principal Investigator

Amount: \$5,000

Tulane University Research Enhancement Fund II (2008)

Toward Resolving *Aedine* Mosquito Phylogeny: A Molecular Study of North American *Aedes* Mosquitoes and their Phylogenetic and Evolutionary Relationships

Role: Grant Co-Author; Co-Investigator

Amount: \$45,000

Louisiana Mosquito Control Research Fund (2007)

Targeted Bionomic Studies of Four *Culex* species and Molecular Analysis of their WNV isolates in Southern Louisiana: 2005

Role: Grant Co-Author; Co-Investigator

Amount: \$3,800

J. Bennett Johnston Science Foundation (2004)

Spatial Analysis of Sentinel Data Reported to the Louisiana ArboNET 2000-2003

Role: Grant Author; Co-Investigator

Amount: \$5,000

Louisiana Mosquito Control Research Fund (2004)

Optimization and Field Evaluation of a PCR Assay for Container-Breeding Mosquitoes

Role: Grant Author; Principal Investigator

Amount: \$5,000

J. Bennett Johnston Science Foundation (2003)

Habitat Characterization of the La Crosse Virus Vector (*Ochlerotatus triseriatus*) in the Kisatchie National Forest

Role: Grant Author; Co-Investigator

Amount: \$5,000

CDC/LA Department of Health and Human Services/ LA Mosquito Control Association (2003)
Mosquito Survey of Rural Louisiana Parishes (Winn, Natchitoches and Red River Parishes)

Role: Subcontractor

Amount: \$18,000

TEACHING EXPERIENCE

Instructor, Undergraduate Principles of Epidemiology, WCU (ENVH 470)

Instructor, Medical Entomology and Laboratory, WCU (ENVH 430/431)

Instructor, Environmental Health Senior Seminar, WCU (ENVH 460)

Instructor, Etiology of Infectious Diseases and Laboratory, WCU (ENVH 260/261)

Instructor, Freshman Seminar: From Black Death to Bioterrorism, WCU (ENVH 190)

Instructor, Environmental Health Science: Systems and Solutions, WCU (ENVH 130)

Instructor, Biological Basis of Disease, WCU (ENVH 270)

Instructor, Field Methods in Medical Entomology, Highlands Biological Station

Co-Instructor, Global Disparities in Public Health, WCU (ENVH-210)

Co-Instructor, Undergraduate Parasitology, UNC-Asheville

Graduate Teaching Assistant, Advanced Medical Entomology, Tulane University

Guest Lecturer, Undergraduate Parasitology, UNC-Asheville

Graduate Teaching Assistant, Tropical Virology, Tulane University

Graduate Teaching Assistant, Diagnostic Laboratory Methods in Microbiology, Tulane University

MANUSCRIPT REVIEWER

Caryologia

EcoHealth Journal

Gene

Journal of Vector Ecology

Journal of the American Mosquito Control Association

Journal of Medical Entomology

Medical and Veterinary Entomology

PLOS Neglected Tropical Diseases

SPECIALIZED TRAINING

Florida Medical Entomology Laboratory Advanced Mosquito Identification Course

Marine Biological Laboratory (Woods Hole) Workshop on Molecular Evolution

Intrathoracic Inoculation of Mosquitoes with Viral Pathogens, CDC-DVID

Age-Grading of Adult Female Mosquitoes, Dodd Short Course, FMCA

SPECIALIZED TRAINING (Continued)

Proteomics Workshop, American Society of Tropical Medicine and Hygiene
Virology & Virus Based Gene Vectors, ABSA
GIS and Remote Sensing, University of New Orleans
Introduction to Spatial Analysis in a GIS Environment, UC-Santa Barbara/CSISS
Cold Spring Harbor Laboratory Genome Access Course, Cold Spring Harbor
New England Biolabs Workshop in Molecular Biology and Biotechnology

RELEVANT GRADUATE COURSEWORK

Immunology, Immunoparasitology, Epidemiological Methods, Epidemiology of Infectious Diseases, Survey of Environmental Health, Biostatistics, Health Behavior Risk Reduction, Principles of Health Systems Administration, Medical Entomology, Advanced Medical Entomology, Malaria, Introduction to Population Genetics, Parasitology Seminar, Microbial Diseases of the Tropics, Tropical Virology, Clinical Tropical Medicine, Medical Protozoology, Medical Helminthology, Diagnostic Methods in Microbiology, Disease Control in Developing Countries, Clinical Case Presentations, Tropical Medicine Seminar, Advanced Topics in Emerging Infectious Disease, Introduction to GIS in Public Health, Parasitological Methods, Terrorism: Public Health Perspective, Special Topics in Medical Entomology, Special Topics in Arbovirology, Special Topics in Mosquito-Borne Disease Ecology

INSTITUTIONAL SERVICE

WCU Institutional Review Board Member (2012-2015); Vice-Chair (2015-2016)
WCU Honors College Dean Search Committee (2015)
WCU Sponsored Research Council (2013-Present)
WCU Institutional Biosafety Committee (2012-2014)
WCU 2020 Commission (Subcommittee on Enhancing Student Experiences)
WCU Quality Enhancement Program Steering Committee Member (2011-Present)
WCU Athletic Training Education Program Faculty Search Committee Member (2011)
WCU ENVH Program Liaison for Orientation and Transfer Sessions (Summer 2010 and 2011)
Undergraduate Academic Experience (Summer Orientation: 2009-2011, 2013)
WCU School of Health Sciences Website Revision Committee (2009-2010)
WCU College of Health and Human Sciences Academic Action Committee (2009-Present)
WCU School of Health Sciences Collegial Review Document Revision Committee (2008-2009)
Student Representative, Search Committee, Department of Tropical Medicine Chair (2008)
ACL-3 Design and Development Team, Tulane Centers for Infectious Disease (2003-2004)
Student Representative, Search Committee, Tulane School of Public Health Dean (2002)

DISCIPLINE SERVICE

Grant Proposal Reviewer, Mosquito Research Foundation (2014-Present)

President, *North Carolina Mosquito and Vector Control Association* (2013-2014)

Vice President, *North Carolina Mosquito and Vector Control Association* (2012-2013)

National Student Competition Organizer, *American Mosquito Control Association* (2012-Present)

NC Representative (State Director, Board of Directors), *Mid-Atlantic Mosquito Control Association* (2010-2013)

Newsletter Editor (Board of Directors), *North Carolina Mosquito and Vector Control Association* (2010-2012)

Auditing Chair (Board of Directors), *North Carolina Mosquito and Vector Control Association* (2009-2010)

Member, *North Carolina Vector-Borne Infectious Diseases Working Group* (2009-Present)

Exam Reviewer, *Centers for Disease Control and Prevention (CDC) Environmental Public Health Online Courses (EPHOC)*.

Advisor, *La Crosse Encephalitis Recovery Service*, Eastern Band of Cherokee Indians/Cherokee Indian Hospital

PROFESSIONAL PRESENTATIONS (Selected)

*Mentored Undergraduate or Graduate Student

**Abstract published in proceedings or journal supplement

Shroyer, DA., Harrison BA, Sither CB*, & **Byrd BD**. *Aedes pertinax*, a newly recognized mosquito species in the United States. American Mosquito Control Association Annual Meeting, New Orleans, LA, 2015.

BD Byrd, Harrison, Sither CB*, & Shroyer DA. *Current status of the Aedini subgenus Protoculex in the Continental United States*. Society for Vector Ecology Annual Meeting, San Antonio, TX, 2014.

Sither CB*, Harrison BA, Bintz B, Wilson MR, Kim J, Graham M, Caillouet KA, and **Byrd BD**. *First record of Aedes (Ochlerotatus) stimulans from Louisiana*. American Mosquito Control Association Annual Meeting, Seattle, WA, 2014.

Wilson R*, Harrison R*, Riles M*, Wasserberg G, and Byrd BD. *Differential identification of Aedes triseriatus (Say) and Aedes hendersoni Cockerell (Diptera: Culicidae) by a novel duplex PCR assay*. American Mosquito Control Association Annual Meeting, Seattle, WA, 2014.

Turell MJ, Britch SC, Aldridge RC, **Byrd BD**, Harrison BA, and Linthicum. *An update on the potential for North American mosquitoes to transmit Rift Valley fever virus*. American Society of Tropical Medicine and Hygiene Annual Meeting, Washington, DC, 2013. **

Shockley LA*, Davis R, Foley P, Reinke R, Yelen M, Richmond P, Carringer M, Kripple J, and **Byrd BD**. *Relative Species Abundance of Mosquitoes in Edge vs Interior Forest Sites within a La Crosse Encephalitis Endemic Region*. The Society for Vector Ecology International Congress, La Quinta, CA, 2013.

Sutcliffe J, Benton K, and **Byrd BD**. *Hole passage behavior in Anopheles gambiae: implications for the field assessment of bed net damage*. American Mosquito Control Association Annual Meeting, Atlantic Beach, NJ, 2013.

Harrison BA, Sither CB*, Whitt P, and **Byrd BD**. *Development of Identification Keys to the Mosquitoes of the Eight States included in the Mid-Atlantic Mosquito Control Association (MAMCA)*. American Mosquito Control Association Annual Meeting, Atlantic Beach, NJ, 2013.

Riles MT*, Mason BH*, Harrison BA, and **Byrd BD**. *Vertical Distribution of Container-Inhabiting Aedes Mosquitoes in a La Crosse Virus Endemic Area*. American Mosquito Control Association Annual Meeting, Atlantic Beach, NJ, 2013.

Byrd BD. *La Crosse Encephalitis in Western North Carolina*. 38th Annual Meeting of the Mid-Atlantic Mosquito Control Association, Columbia, SC, 2013.

Riles MT*, Mason BH*, Harrison BA, and **Byrd BD**. *Vertical Distribution of Container-Inhabiting Aedes Mosquitoes in a La Crosse Virus Endemic Area*. 60th Annual Meeting of the Entomological Society of America, Knoxville, TN, 2012.

Byrd BD, Tamini T*, White L*, Goggins JA*, Sither CB*, Wasserberg G. *La Crosse Encephalitis Risk in Western North Carolina. Invited Presentation: Risk Assessment for Vector-borne Diseases Symposium*. American Mosquito Control Association Annual Meeting, Austin, TX, 2012.

Harrison BA, Sither CB*, Bintz B, Hickman E, Brown J, Hopkins V*, Wilson M, Harrison B, and **Byrd BD**. *Molecular and Morphological Identification of Aedes atlanticus and Aedes tormentor*. American Mosquito Control Association Annual Meeting, Austin, TX, 2012.

Byrd BD. *Evolution of West Nile Virus in North America*. North Carolina Mosquito and Vector Control Association Annual Meeting, Greenville NC, 2011.

Byrd BD, Kunze SG*, Sither CB*, Goggins JA*, O'Meara G. *Thermal Conditions Influence the Relative Abundance of Aedes atropalpus and Aedes japonicus in the Southern Appalachians*. Invited

Presentation: Invasion Biology of Aedes japonicus Symposium. Society for Vector Ecology Annual Meeting, Flagstaff AZ, 2011.

Tamini T, **Byrd BD**, White L, Wasserberg G. *Landscape Ecology of La Crosse Encephalitis in Western North Carolina I: Does Anthropogenic Disturbance Affect Ecological Transmission Drivers?* Society for Vector Ecology Annual Meeting, Flagstaff AZ, 2011.

Schwarz M, **Byrd BD**, Wasserberg G. *Landscape Ecology of La Crosse Encephalitis in Western North Carolina II: The effects of a forest to field ecotone on the distribution and abundance of potential LACV Vectors.* Society for Vector Ecology Annual Meeting, Flagstaff AZ, 2011.

Byrd BD, White L*, Sither CB*, Goggins JA*, Harrison BA, Wasserberg G. *Comparison of Four Traps to Sample Ae. triseratus, Ae. albopictus and Ae. j. japonicus in a La Crosse Virus Endemic Area.* American Mosquito Control Annual Meeting, Anaheim, CA, 2011.

Byrd BD. *Abundance and Gonotrophic Status of Ae. triseratus, Ae. albopictus and Ae. j. japonicus in a La Crosse Virus Endemic Area.* The North Carolina Mosquito and Vector Control Association Annual Meeting, Atlantic Beach, NC, 2010.

Kunze SE*, Sither CB*, Goggins JA*, **Byrd BD**, Bustamante D, Pesko K, O'Meara G. *Impact of Thermal Conditions on the Relative Abundance of Aedes atropalpus and Ae. japonicus in the Southern Appalachians.* The Society for Vector Ecology Annual Meeting, Raleigh, NC, 2010.

Byrd BD. *La Crosse Encephalitis in Western North Carolina.* The Mid-Atlantic Mosquito Control Association Annual Meeting, Savannah, GA, 2010.

O'Meara G, **Byrd BD**, Bustamante D, Pesko K. *Relative Abundance of Aedes japonicus and Aedes atropalpus in Riverine Rock Pools in the Southern Appalachians.* Entomologic Society of America Annual Meeting, Indianapolis, IN, 2009.

Byrd BD. *Additional Insights into the North American Orthopodomyia.* The North Carolina Mosquito and Vector Control Association Annual Meeting, Greenville, NC, 2009.

Goggins JA*, Singleton M*, Wyatt J*, Wiseman W*, Foster H*, and **Byrd BD.** *Undergraduate Vector-Borne Disease Education and Research at Western Carolina University: Preparing the Next Generation of Environmental Health Professionals.* The North Carolina Public Health Association Annual Meeting, Asheville, NC, 2009.

Zontek T and **Byrd BD.** *Vector-Borne Disease Education in Undergraduate Environmental Health Science Programs.* National Environmental Health Association Annual Meeting, Atlanta, GA, 2009.

Wesson DM, Apperson C, Shal C, Kirsch P, and Czokajlo D, and **Byrd BD.** *Test of an Attractant Baited Lethal Ovitrap for Areawide Aedes aegypti Control in New Orleans, LA, USA.* American Mosquito Control Annual Meeting, New Orleans, LA, 2009.

Byrd BD and Goggins JA*. *Undergraduate Vector-Borne Disease Education at Western Carolina University (Environmental Health Sciences Program)*. The North Carolina Mosquito and Vector Control Association Annual Meeting, Raleigh, NC, 2008.

Byrd BD and Wesson DM. *Sequence, secondary structure, and phylogenetic analyses of the ribosomal internal transcribed spacer 2 (ITS2) in the Orthopodomyia signifera group (Diptera: Culicidae)*. The Entomological Society of America Annual Meeting, Reno, NV, 2008.

Rider MA, **Byrd BD**, Caillouët KA, and Wesson DM. *Persistence of Plasmodium DNA in desiccated Anopheles mosquitoes as determined by real-time PCR*. The American Society of Tropical Medicine and Hygiene Annual Meeting, New Orleans, LA, 2008. **

Kang S, Sim C, **Byrd BD**, Collins FH, and Hong YS. *Ex vivo Promoter Analysis of Anopheles gambiae Heat Shock Cognate (Hsc70) Gene during Arbovirus Infections*. The American Society of Tropical Medicine and Hygiene Annual Meeting, New Orleans, LA, 2008. **

Hong YS, Kang S and **Byrd BD**. *Selection of a Peptide Inhibitor of West Nile Virus Infectivity from a Phage Display Library*. The American Society of Tropical Medicine and Hygiene Annual Meeting, New Orleans, LA, 2008. **

Michaels SR, Houdek J, **Byrd BD**, Rider MA, Estrada G and Wesson DM. *Host-feeding Patterns of Aedes aegypti and Aedes albopictus in New Orleans, LA, 2006*. The American Society of Tropical Medicine and Hygiene Annual Meeting, New Orleans, LA, 2008. **

O'Meara G F, Bustamante DM, Pesko, KN, Nishimura N, and **Byrd BD**. *Oviposition and Egg Hatching Behavior of the Rock Pool Mosquito, Aedes atropalpus*. The Society for Vector Ecology Annual Meeting, Ft. Collins, CO, 2008.

Byrd BD, Wesson DM. *Evolution of West Nile Virus in Louisiana*. 50th Annual Louisiana Mosquito Control Meeting, New Orleans, LA. 2007.

Wesson DM, Apperson C, Shal C, Kirsch P, **Byrd BD**, and Czokajlo D. *Test of an Attractant Baited Lethal Ovitrap for Areawide Aedes aegypti Control in New Orleans, LA, USA*. Late Breaker, American Society of Tropical Medicine and Hygiene, 56th Annual Meeting, Philadelphia PA. 2007. **

Byrd BD, Fuller MS*, Swan KF, and Wesson DM. *Phylogenetic Analysis of an Avian Isolate of West Nile Virus, Lafayette Parish, Louisiana (2005)*. Abstract 476, American Society of Tropical Medicine and Hygiene, 55th Annual Meeting, Atlanta GA. 2006. **

Byrd BD, Stuart MD, Whitt PB, Powell EE, Wesson DM, and Harrison BA. *Entomologic and Small Mammal Studies following a La Crosse Encephalitis Outbreak in Transylvania County, NC 2005*. Abstract 602, American Society of Tropical Medicine and Hygiene, 55th Annual Meeting, Atlanta GA. 2006. **

Byrd BD, Swan KF, and Wesson DM. *Phylogenetic analyses of Louisiana West Nile Virus isolates: 2005-2006*. The Louisiana Mosquito Control Association Annual Meeting. Hammond, LA. 2006

Byrd BD. *The Ochlerotatus japonicus Invasion: Notes from the field and the potential for spread into Louisiana*. The Louisiana Mosquito Control Association Annual Meeting. Hammond, LA. 2006

Byrd BD, Ellis BE, Colborn JM, Godsey M, King R, Birkhalter K, Palmisano C, and Wesson DM. *Phylogenetic Analysis of West Nile Virus from Southeastern Louisiana*. Louisiana Mosquito Control Association Annual Meeting, Marksville, LA. 2006

Stav G, **Byrd BD**, Swan K, and Wesson DM. *Physiological age-associated differences in oviposition site selection by the Yellow Fever Mosquito: Aedes aegypti (Diptera: Culicidae)*. Entomological Society of America Annual Meeting, Indianapolis, IN. 2006.

Byrd BD, Reif K*, Stuart MD, and Wesson DM. *HotSHOT: A Simple Method for the Preparation of PCR-Quality Mosquito DNA*. (Late Breaker-Poster) American Society of Tropical Medicine and Hygiene, 54th annual meeting, Washington D.C. 2005. **

Colborn JM, **Byrd BD**, Qaddoura F, and Krogstad DJ. *Effect of AT and GC content and template length on estimation of template copy number using real-time PCR*. Abstract 873, American Society of Tropical Medicine and Hygiene, 54th Annual Meeting, Washington D.C. 2005. **

Byrd BD, Wesson DM. *Molecular Identification of Select Container-breeding Aedes/Ochlerotatus Mosquitoes*. American Mosquito Control Association Annual Meeting. Vancouver, BC. 2005.

Byrd BD, Benton KL*, Mather FJ, Wesson DM. *Sentinel Chicken Flocks in Louisiana: Using Prior Data to Develop an Evidence Based Approach for Site Selection*. American Mosquito Control Association Annual Meeting. Vancouver, BC. 2005.

Byrd BD, Stav G, Lyons D, Wesson DM. *Oviposition choice by Aedes albopictus: the utility of a small-scale array and point pattern analysis for determining the influence of multiple variables*. American Mosquito Control Association Annual Meeting. Vancouver, BC. 2005.

Wesson DM, **Byrd BD**, Bausch DG, Hong D, Kreitlein S, Krogstad DJ, and Buekens P. *Design and Development of a BSL-3 Arthropod Containment Laboratory (ACL-3)*. Tulane University Health Science Research Day Symposium. New Orleans, LA. 2005.

Benton KL*, **Byrd BD**, Mather FJ, Wesson DM. *Arbovirus Sentinel Surveillance in Louisiana: Practice and Evidence Based Research*. Tulane University Health Science Research Day Symposium. New Orleans, LA. 2005.

Byrd BD, Quaddoura F, Colborn JM, Krogstad DJ. *AT-STATS: Development of a browser based Java™ applet for the identification of DNA sequence targets with specific AT-content and size*. Tulane University Health Science Research Day Symposium. New Orleans, LA. 2005.

Byrd BD, Wesson DM. *ITS2 Polymorphisms in select container breeding Aedes/Ochlerotatus species (Diptera: Culicidae)*. Entomological Society of America Annual Meeting. Salt Lake City, UT. 2004.

Byrd BD, Wesson DM. *Molecular Identification of Select Container-breeding Aedes/Ochlerotatus Mosquitoes*. American Society of Tropical Medicine and Hygiene 53rd Annual Meeting. Miami, FL. 2004. **

Byrd BD, Deng H, Liu H, Krogstad DJ. *Terminal Amine Alpha-Carbon Proton Availability: A Determinant of 4-Aminoquinoline N-dealkylation by CYP450*. American Society of Tropical Medicine and Hygiene 53rd Annual Meeting. Miami, FL. 2004. **

Jentes E, Palmisano C, Taylor V, **Byrd BD**, Campanella R, Wesson DM. *The Effects of Urbanization on Mosquito Populations*. Louisiana Mosquito Control Association Annual Meeting. Monroe, LA. 2004.

Byrd BD, Maddox JR*, Wesson DM. *PCR Identification of Container Breeding Aedes/Ochlerotatus Mosquitoes*. Louisiana Mosquito Control Association Annual Meeting. Monroe, LA. 2004.

Byrd BD, Benton KL, Mather FJ, Wesson DM. *Spatial Analysis of Sentinel Data Reported to the Louisiana ArboNET 2000-2004: Work In Progress*. Louisiana Mosquito Control Association Annual Meeting. Monroe, LA. 2004.

Shodipo J, **Byrd BD**, Wesson DM. *Ongoing studies of the La Crosse virus vectors (Ochlerotatus triseriatus and Aedes albopictus) in rural communities of the Kisatchie National Forest (Kisatchie District), Louisiana*. Environmental State of the State Conference. New Orleans, LA. 2004.

Byrd BD, Wesson DM. *Late Breaker: Progress in the development of a molecular assay for the identification of container-breeding Aedes/Ochlerotatus species*. American Society of Tropical Medicine and Hygiene 52nd Annual Meeting. Philadelphia, PA. 2003. **

Mannix F, Terracina L, **Byrd BD**, Wesson DM. *West Nile Virus recovered from bird baths and feeders: a progress report*. Louisiana Mosquito Control Association Annual Meeting. Covington, LA. 2003.

Smith S, **Byrd BD**, Wesson DM. *Louisiana ArboNET: The Next Generation*. Louisiana Mosquito Control Association Annual Meeting. Covington, LA. 2003.

Byrd BD, Wesson DM. *Progress in the development of a molecular assay for the identification of container-breeding Aedes/Ochlerotatus species*. Louisiana Mosquito Control Association Annual Meeting. Covington, LA. 2003.

Caillouet KA, **Byrd BD**, Carlson JC, Wesson DM. *Mosquito diversity in the Barataria basin, South Louisiana*. Texas-Louisiana Mosquito Control Associations Joint Meeting. Beaumont, TX. 2002.

Caillouet KA, **Byrd BD**, Carlson JC, Wesson DM. *Mosquito diversity in the Barataria basin, South Louisiana*. Society of Vector Ecology Annual Meeting, Albuquerque, NM. 2002.

Byrd BD. *Synthesis, cytotoxicity and mode of action of 2-(4-Methoxybenzoyl)-3,4-di-(4-methoxyphenyl)pyrrole in human Tmolt4 leukemia cells*. National Conference of Undergraduate Research. Missoula, MT. 2000. **

Byrd BD. *Synthesis, cytotoxicity and mode of action of 2-(4-Methoxybenzoyl)-3,4-di-(4-methoxyphenyl)pyrrole in human Tmolt4 leukemia cells*. Undergraduate Research Conference, University of North Carolina at Asheville. Asheville, NC. 1999.

Krumpe K, Gupton J., Burnham B, Holt H, **Byrd B**, Winkel S, Shuford J, Webb T, Harrison A, Boucher M, Hines I, Waters P, Wright E, Peaty N, Sikorski J. "*Progress on the Use of Vinylogous Iminium Salt Based Approached as Applied to the Synthesis of Pyrroles Containing Marine Natural Products*." SERMACS'98. Research Triangle Park, NC. 1998. **

Burnham B, Krumpe K, Gupton J, **Byrd B**, Peaty N, Winkel S, Shuford J, Warren A, Barnes C, Henry J, Hall I. "*Recent Developments Concerning The Antineoplastic Activity and Mode of Action of Pyrrole Derivatives Related to Marine Natural Products*." SERMACS'98. Research Triangle Park, NC. 1998. **

Note: More than 25 additional talks at local, state, and national levels have been conducted by mentored undergraduate/graduate students presenting the results of our collaborative research.

INVITED PRESENTATIONS (PROFESSIONAL: NON-CONFERENCE)

La Crosse Encephalitis: An Emerging Mosquito-borne Disease in western NC?
Biology Seminar, Western Carolina University, Cullowhee, NC, Nov. 2012

Vector Biology and Undergraduate Engagement at WCU
Entomology Branch Meeting, Centers for Disease Control, Atlanta, GA, June 2012

Riverine Rock Pool Mosquitoes in the Southern Appalachians: Some Like it Hot?
Biology/Environmental Health Seminar Series, UNC-Greensboro, Greensboro NC, Dec. 2010

Mosquitoes and the Mountains: From a Historical Respite to an Emerging Environmental Health Concern. Rooted in the Mountains (1st Annual Symposium Integrating Indigenous Science, Health and Environment), Western Carolina University, Oct. 2010

Sequence, secondary structure, and phylogenetic analyses of the ribosomal internal transcribed spacer 2 (ITS2) in the Orthopodomyia signifera group (Diptera: Culicidae)
North Carolina State University, Entomological Department Seminar Series, Sept. 2009

West Nile and La Crosse: a tale of two arboviruses,
Biology Department Seminar, University of North Carolina at Asheville, Asheville, NC, May 2006

Vector-Borne Surveillance at the Tulane Primate Center, Tulane University National Primate Research Center, Covington, LA, 2002

Application of GIS Technology in Vector-Borne Infectious Disease Research, Bioinformatics for Entomologists Workshop, Tulane University. Funded by the Fogarty International Center, NIH, 2002

INVITED PRESENTATIONS (COMMUNITY OUTREACH)

La Crosse Encephalitis in Western NC, Haywood County Health and Human Services Department, Waynesville, NC, July 2014

La Crosse Encephalitis: An Emerging Mosquito-borne Disease in WNC. Sylva Rotary Club, Highlands NC, May 2013

Mosquito and Tick-borne Disease in NC. Western North Carolina Public Health Association, Environmental Health Section, Fontana Village Resort, NC, May 2013.

La Crosse Encephalitis: An Emerging Mosquito-borne Disease in WNC. Waynesville Rotary Club, Waynesville NC, November 2009.

La Crosse Virus: An Emerging Environmental Disease in WNC, Mountain District Environmental Health Association Educational Meeting, June 2009

Mosquitoes! Asheville Jewish Community Center Shalom Children's Center, Multiple Presentations 2007-2008

Mosquitoes and You, Tuscola High School, Haywood County, NC, Sept. 2007

Career Day: Public Health Biologist, Asheville High School/Junior Achievement, April 2007

La Crosse Virus in Western North Carolina, Presentation and Discussion Session for Parents of Children with La Crosse Encephalitis, Kanuga Retreat Weekend sponsored by Deliver the Dream, Inc., Hendersonville, NC, March 2006

The Biology of La Crosse Virus, Transylvania County Health Department, Brevard, NC, Oct. 2005

NON-PEER REVIEWED PUBLICATIONS (NON-TECHNICAL)

Byrd BD. Vector-borne Diseases: From Global to Local. *WCU Research Magazine*. Fall 2009. 29-30.

Beverly S. Collins

Education: B.S. in Botany, University of Kentucky, 1977
M.S. in Botany, Rutgers University, 1979
Ph.D. in Botany, Rutgers University, 1985

Professional History:

2006-present: Associate Professor, Western Carolina University
2004-2009: Adjunct Professor, University of Memphis
1993-2006: Associate Research Ecologist, Savannah River Ecology Lab, U. Georgia
1993-1994: Visiting Assistant Professor, U. Georgia, Winter term
1988-1993: Assistant Professor, Biology, Memphis State University
1985-1988: Labwide Postdoctoral Fellowship, Savannah River Ecology Lab
1984-1985: Louis Bevier Fellowship, Rutgers University

Special Appointments:

2015 – Interim Environmental Science Program Director
2009-present: Environmental Science Committee
2009-present: Director, WCU Helen Patton Environmental Center
2007-present: Director, WCU Southern Appalachian Biodiversity and Ecology Center
2006-2007: Graduate Faculty Affiliate Member, Appalachian State University

Research Interests and Experience

My research seeks to understand mechanisms of plant community dynamics within a pattern/process framework, and to apply that understanding to ecosystem management, restoration, and creation. Previous research has taken a field-based experimental approach to understand how disturbance alters the environment and influences plant species coexistence and community composition, pattern, and dynamics. I have studied old field succession in New Jersey and Tennessee, canopy gap dynamics in northern hardwoods of Pennsylvania and bottomland forests of South Carolina, the role of seedbanks and hydrologic fluctuations in regulating the distribution of wetland plants in Carolina bays and reservoirs, and the effects of military and forestry activities on vegetation and nitrogen dynamics of mixed pine hardwood forests at Fort Benning. At WCU, I am studying plant communities and plant-pollinator interactions in high elevation rock outcrop ecosystems and responses of understory plant communities to the size and aggregation of forest harvests. One goal of community ecology is to unravel the causes of community structure and dynamics (e.g., to answer the questions "How are communities put together?" and "What causes communities to change over time?"). My current and future research seeks to address these questions in a variety of ecosystems.

Peer reviewed publications (since 2000, 18 prior): (* = student or postdoc)

Greenberg, C. H. and B. Collins. 2015. *Natural Disturbances and Historic Range of Variation – Type, Frequency, Severity, and Post-disturbance Structure in Central Hardwood Forests USA*. Managing Forest Ecosystems Series. Springer.

Mathews, K. and B. Collins. 2014. Plant and pollinator communities of high elevation rock outcrop communities. *Natural Areas Journal* 34:500-509.

- Wilfahrt, P.A*., B. Collins, and P.S. White. 2014. Shifts in functional traits among tree communities across succession in eastern deciduous forests. *Forest Ecology and Management* 324:179-185.
- Griep, M. T. and B. Collins. 2013. Chapter 14, Wildlife and forest communities, pp. 341-396. In: Wear, David N.; Greis, John G., eds. *The Southern Forest Futures Project: technical report*. Gen. Tech. Rep. SRS-GTR-178. Asheville, NC: USDA-Forest Service, Southern Research Station. 542 p.
- Greenberg, C., B. Collins, and F. R. Thompson. 2011. *Sustaining young forest communities – Ecology and management of early successional habitat in the US central hardwood region*. Editor and Contributor (3 chapters), Springer.
- Pittillo, J. Dan and Beverly Collins. 2010. Flowering phenology: trends over 32 years in a common garden. *Southeastern Naturalist* 9(4):837-846.
- Collins, B., T. M. Schuler, W.M. Ford, and D.Hawkins*. 2010. Stand dynamics of relict red spruce in the Alarka creek headwaters. In: Rentch, James S.; Schuler, Thomas M. *Proceedings from the conference on the ecology and management of high-elevation forests in the central and southern Appalachian Mountains*. 2009 May 14-15; Slatyfork, WV. Gen. Tech. Rep. NRS-P-64. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 242 p.
- Collins, B. and S. Foré*. 2009. Genetic and demographic structure within a large population of *Echinacea laevigata* (Asteraceae). *Journal of Torrey Botanical Society* 136:445-456.
- Walker, A. N.*, S. A. Foré*, and B. Collins. 2009. Spatial and Temporal Structure of *Trillium maculatum* Raf. (Lilliaceae): inferences about seed dispersal. *Botany*: 87(3): 223–230.
- Kwit, C.* and B. Collins. 2008. Native Grasses as a Management Alternative on Vegetated Closure Caps. *Environmental Management* 41:929-936.
- Collins, B. and L. Battaglia*. 2008. Oak regeneration in southeastern bottomland hardwood forest. *Forest Ecology and Management* 255:3036-3054.
- Schnurr, J.* and B. Collins. 2007. Influences on oak and pine establishment with time-since-fire in sandhills longleaf pine forests. *Southeastern Naturalist* 6:523-534.
- Dilustro, J.*, B. Collins and L. Duncan. 2006. Land use history effects in mixed pine hardwood forests at Fort Benning. *Journal of Torrey Botanical Society* 133:460-467.
- Battaglia, L*. and B. Collins. 2006. Linking hydroperiod and vegetation response in Carolina Bay wetlands. *Plant Ecology* 184: 173-185.
- Collins, B., P. Minchin, J. Dilustro*, and L. Duncan. 2006. Land use effects on groundlayer composition and regeneration of mixed pine hardwood forests in the Fall Line Sandhills, S.E. USA. *Forest Ecology and Management* 226:181-188.
- Collins, B., R. Sharitz, K. Madden, and J. Dilustro*. 2006. Comparison of sandhills and mixed pine hardwood communities at Fort Benning, Georgia. *Southeastern Naturalist* 5(1):92-102.
- Holladay, C.-A*., C. Kwit*, and B. Collins. 2006. Woody regeneration in and around aging southern bottomland hardwood forest gaps: effects of herbivory and gap size. *Forest Ecology and Management* 223:218-225.
- Lejeunesse, S*. J. J. Dilustro*, R. R. Sharitz, and B. S. Collins. 2006. Ground layer carbon and nitrogen cycling and legume nitrogen inputs in a frequently burned mixed pine forest. *American Journal of Botany* 93: 84-93.

- Collins, B. S., R. R. Sharitz, and D. P. Coughlin. 2005. Elemental composition of native wetland plants in constructed mesocosm treatment wetlands. *Bioresource Technology* 96:937-948.
- Dilustro, J.J*., B. Collins, L. Duncan, and C. Crawford. 2005. Moisture and soil texture effects on soil CO₂ efflux components in southeastern mixed pine forests. *Forest Ecology and Management*. 204:85-95.
- Collins, B., J. V. McArthur, and R. Sharitz. 2004. Plant and microbial effects on remediation of acidic coal pile runoff in mesocosm treatment wetlands. *Ecological Engineering* 23:107-115.
- Duncan, L.K., J.J. Dilustro* and B.S. Collins. 2004. Avian response to forest management and military training activities at Ft. Benning, GA. *Georgia Journal of Science* 62(2): 95-103.
- Battaglia, L*. B. Collins, and R. Sharitz. 2004. Do regeneration strategies of bottomland hardwoods predict field distributions? *Forest Ecology and Management* 198:15-30.
- Battaglia, L*., B. Collins, and P. Weisenhorn*. 2004. Regeneration in bottomland forests: recruitment and persistence of *Quercus michauxii* in and around aging canopy gaps. *Can. J. For. Res.* 34: 1359-1364.
- Collins, B. 2003. Ground layer competition and herbivory effects on cherrybark oak (*Quercus pagoda* Raf.) regeneration in experimental canopy gaps. *J. Torrey Bot. Soc.* 130:147-157.
- Collins, B. and L. L. Battaglia*. 2002. Microenvironmental heterogeneity and *Quercus michauxii* regeneration in experimental gaps. *Forest Ecology and Management* 155/1-3: 279-290.
- Dilustro J.J*., B. Collins, L. Duncan and R. Sharitz. 2002. Soil Texture, land use intensity, and vegetation of Ft Benning upland forest sites. *Journal of the Torrey Botanical Society* 129(4):280-297.
- Collins, B., G. Wein, and T. Philippi. 2001. Disturbance intensity and frequency effects on early oldfield succession. *Journal of Vegetation Science* 12:721-728.
- Collins, B. and L. L. Battaglia*. 2001. Hydrology effects on propagule bank expression and vegetation in six Carolina bays. *Community Ecology* 2:21-33.
- Collins, B., P. S. White, and D. W. Imm. 2001. Introduction to Ecology and Management of Rare Plants of the Southeast. *Natural Areas Journal* 21:4-11.
- Philippi, T., B. Collins, S. Guisti, and P. M. Dixon. 2001. A multistage approach to population monitoring for rare plant populations. *Natural Areas Journal* 21:111-116.
- Imm, D. W., H. E. Shealy, Jr., K. W. McLeod, and B. Collins. 2001. Rare Plants of Southeastern Hardwood Forests and the Role of Predictive Modeling. *Natural Areas Journal* 21:36-49.
- Collins, B. and G. Wein. 2000. Stem elongation response to neighbor shade in sprawling and upright *Polygonum* species. *Annals of Botany* 86:739-744.
- Kreher, S. A., S. A. Foré*, and B. Collins. 2000. Genetic variation within and among patches of the clonal species, *Vaccinium stamineum* L. *Molecular Ecology* 9:1247-1252.

Selected other publications and works:

- Greenberg, C. and B. Collins. 2013. Book Proposal: *Natural Disturbances and Range of Variation – Type, Frequency, Severity, and Post-disturbance Structure in Central Hardwood Forests*. Proposal accepted by Springer and contract signed December 2013.

- Collins, B. and K. Mathews. 2011. Book review: Spira, Timothy P. 2011. Wildflowers and Plant Communities of the Southern Appalachian Mountains and Piedmont. *Castanea* 76(4): 348–349.
- Imm, D. W., H. Westbury, L. Mulkey, R. R. Sharitz, H. Balbach, V. Dale, B. Collins, A. Kryszik, R. Reddy, C. Garten, D. Price, G. Lockaby, J. DiLustro, and W. Goran. 2009. Ecosystem Management Synthesis and Findings. ERDC-SR-09-2.
- Collins, B., P. Hyatt, and M. Trani. 2007. Relationships of mammals to vegetative communities. Chapter 3, *The Land Manager's Guide to Mammals of the Southeastern United States*. M. K. Trani, W. M. Ford, and B. R. Chapman, eds. The Nature Conservancy, Southeastern Region, Durham, NC. 546pp.
- White, P. S., A. Chiarucci, B. Collins, and S. Diaz. 2006. Disturbance, seeds, restoration, and the importance of experiments and long term observations: the Editor's awards for 2005. *J. Veg. Sci.* 9:1-2.
- Collins, B. 2002. Symposium Synopsis: Regional Partnerships for Ecosystem Research and Management. *Southeastern Biologist* 49(4):372-37.
- Collins, B. and L. Battaglia. 2002. Book review: Hutchings, M. J., John, E. A., and Stewart, A. J. A. (eds.). *The Ecological Consequences of Environmental Heterogeneity*. *J. Veg. Sci.* 13:893-894 (published in 2003).
- Goran, W. D., T. Aden, H. E. Balbach, B. Collins, V. Dale, T. Davo, P. J. Guertin, J. Hall, R. Kress, D. Price, and P. Swiderek. 2002. *The SEMP Approach*. Construction Engineering Research Laboratory ERDC SR-02-1.
- Lozar, R. C., H. E. Balbach, W. D. Goran, and B. Collins. 2002. Proceedings of the "Partners Along the Fall Line: Sandhills Ecology and Ecosystem Management Workshop." Construction Engineering Research Laboratory ERDC/CERL SR-02-2.
- Balbach, H. E., W. D. Goran, T. Aden, D. L. Price, M. R. Kress, W. F. DeBusk, A. J. Krzysik, V. H. Dale, C. Garten, and B. Collins. 2001. Strategic Environmental Research and Development Program (SERDP) Ecosystem Management Project (SEMP) FY00 Annual Report. Engineer Research and Development Center ERDC SR-01-3.

Grants and Cooperative Agreements Funded (since 2000):

- 2013-2015: Collins, B. Revitalizing the WCU Cherokee Garden. RTCAR, 2013. \$5,000.
- 2012-2017: Loeb, S., B. Collins, L. DeWald, J. Hyman, and others. Landscape-Scale Thresholds Of Early Successional Habitat: Reconciling Biodiversity, Public Perception, And Timber Yield In Managed Forests. Agriculture and Food Research Initiative Competitive Grants Program. \$499,145 (WCU portion \$248,600).
- 2011: Collins, B. and L. DeWald. Investigating Near-ground Climate in Contrasting Sites. WCU NOAA grant. \$11,000.
- 2010: Mathews, K. and B. Collins. Susceptibility of High Elevation Rock Outcrop Ecosystems to Climate Change and Trampling. WCU Public Policy Affiliated Faculty.
- 2009: Collins, B. Analysis of Forest Vegetation and Wildlife Habitat in the South: An Analysis for the Southern Forest Futures Project. USDA-FS-SRS \$11,878.
- 2008: Collins, B. Travel to LiCor Li-6400 training. WCU Microgrants \$534.
- 2007: Collins, B. and J. Bourdon. Location and Simulated Harvesting Effects on the Medicinal Herb *Chamaelirium luteum*. USDA-FS-SRS Minigrants 2007-2008. \$3,349.

- 2007: Collins, B. Carolina Northern Flying Squirrel Movements and Den Site Selection along the Cherohala Skyway. Cooperative Agreement with NC Wildlife Resources Commission, 2007-2008, \$10,000.
- 2007: Collins, B. Proposal to: LEEF Program for Undergraduate Teaching and Research. LiCor (\$25,000).
- 2003-2004: Alternative Vegetation on Closure Caps. B. Collins and K. McLeod. DOE-ER Funded 2003, \$29,600.
- 2002-2003: Trace Element Distribution and Impact on Plant and Animal Communities in the D-Area Swamp Ash Plume. McLeod, K. B. Collins, B. Taylor, W. Hopkins, R. Sharitz, and B. Jackson. DOE-ER \$536,277.
- 2002-2005: Impacts of Military Training and Land Management on Threatened and Endangered Species in the Southeastern Fall Line/Sandhills Community. Rebecca Sharitz, lead PI, (research team includes S. J. Harper, B. Collins, J. W. Gibbons, T. D. Tuberville, John Dilustro, D. W. Imm, and N. Burns). SERDP \$940,000.
- 2000-2004: Thresholds of Disturbance: Land Management Effects on Vegetation and Nitrogen Dynamics. B. Collins, lead PI (research team includes R. Sharitz, J V. McArthur, C. Romanek, and J. Seaman from SREL; M. Cadenasso from IES, and P. White from UNC). SERDP/SEMP \$1,331,765.

Symposia and Workshops Organized (since 2000):

- Natural Disturbances and Range of Variation: Type, Frequency, Severity, and Post-disturbance Structure in Southeastern Upland Hardwood Forest. C. Greenberg and B. Collins. Organized for Association of Southeastern Biologists annual meeting, 2014.
- Conservation Values and Dynamics of Early Post-Disturbance Temperate Forests In North America. C. Kwit, B. Collins, and M. Swanson. Organized oral session for Ecological Society of America annual meeting, 2012. [proceedings accepted as special section in Forest Ecology and Management].
- Early Successional Habitats and the Sustainability of Age Class Diversity of Eastern Upland Hardwood Forest: What, Why, Where, and How? C. H. Greenberg and B. Collins. Symposium organized for Association of Southeastern Biologists annual meeting, 2010
- Southern Highlands Ecology and Biodiversity Initiative Center Workshop. WCU, 2006.
- Partners along the fall-line II. Organized for SERDP/SEMP, 2005.
- Ecological forces and land management challenges for the Southeastern landscape. D. DeSteven and B. Collins. Symposium organized for Ecological Society of America, August, 2003.
- Regional partnerships for ecosystem research and management. Organized for Association of Southeastern Biologists annual meeting, 2002.
- Partners along the fall-line. Organized for SERDP/SEMP, 2001.

Selected presentations (since 2006):

- Martin*, E. and B. Collins. 2014. Paleoeological History of a High Elevation Valley in the Blue Ridge Mountains of North Carolina. Association of Southeastern Biologists Annual Meeting, Spartanburg, South Carolina.
- Martin*, E. and B. Collins. 2014. Paleoeological History of a High Elevation Valley in the Blue Ridge Mountains of North Carolina. Southeastern Ecology and Evolution Conference, Georgia Southern University, Statesboro, Georgia.

- Martin*, E. and B. Collins. 2014. Paleoeological History of a High Elevation Valley in the Blue Ridge Mountains of North Carolina. Graduate Student Symposium, Western Carolina University, Cullowhee, North Carolina.
- Martin*, E. and B. Collins. 2014. "Holocene Environmental History of Panthertown Valley in the Blue Ridge Mountains of North Carolina," Paul Burton Seminar Series, Department of Biology, Western Carolina University, Cullowhee, North Carolina.
- Petricovic*, C. 2014. Differences among Populations of an Invasive Plant, *Alliaria petiolata*, In Germination and Growth in a Common Garden. ASB Annual Meeting, April, 2014.
- McCoyle*, McK. and B. Collins. 2014. Canopy openness effects on vegetation richness. NCUR 2014 (U. Ky).
- Tanner, B. R., L. Martin*, C. Lane, R. Young, B. Collins. A southern Appalachian, organic-rich wetland deposit provides evidence for mid-holocene gypsithermal in location of current warming hose, North Carolina. 2014. Geological Society of America Annual Meeting, 2014.
- Punsalan, A. P*., B. Collins, and L. DeWald. 2013. The germination ecology of *Helonias bullata* (swamp pink). Association of Southeastern Biologists annual meeting, Charleston, WV. April 11, 2013.
- Petricovic, C.*. 2013. Common Gardens, Chilly Rooms: Differences Between Populations in an Invasive Plant. WCU Graduate Research Symposium, March 21, 2013.
- Collins, B. 2012. Ecological Concepts in Conservation: Toward more diverse jargon or refined ideas? Seminar broadcast for USFS Southern Region, November, 2012.
- Collins, B. and P.S. White. 2012. Disturbance and early succession in the southern Appalachians and eastern US. Organized oral session presentation, ESA annual meeting, Portland, OR.
- Collins, B. and L. DeWald. Investigating near-ground climate in contrasting sites. Poster presentation for WCU faculty celebration, 2012.
- Parrish, NDA* and B. Collins. 2012. Habitat analysis of a disjunct population of the Carolina northern flying squirrel (*Glaucomys sabrinus coloratus*). Poster: Southeastern Ecology & Evolution Conference at Clemson University, SC - March 2-4.
- Collins, B. 2011. Disturbance history of the Southern Appalachians. USFS Southern Research Station Upland Hardwood Silviculture workshop July 25-29, Bent Creek.
- Petricovic, C* and B. Collins. 2011. Differing stratification requirements between garlic mustard populations along the invasion route. SAMAB, November 15-17, Asheville.
- Collins, B. 2010. Natural disturbance and forest structure. Invited panelist: Ecological Restoration. 20th Annual Southern Appalachian Man and Biosphere Conference: Climate Change: Science to Action, Gatlinburg, TN, Nov. 16-18.
- White, P. and B. Collins. 2010. Natural disturbances and the sustainability of early successional habitat and age class diversity in the eastern upland hardwood forest region. Association of Southeastern Biologists meeting, Asheville, NC.
- Elliot, K., C. Harper, and B. Collins. 2010. Herbaceous layer response to type and severity of disturbance over time. Association of Southeastern Biologists meeting, Asheville, NC.
- Bourdon, J. E*. 2010. Location and simulated harvest/disturbance effects on the medicinal herb *Chamaelirium luteum* L. ASB annual meeting, Asheville.
- Parrish, N* and B. Collins. 2010. Habitat connectivity analysis of a disjunct population of the Carolina northern flying squirrel (*Glaucomys sabrinus coloratus*) utilizing vegetation surveys, GIS-based landscape analysis, and denaturing gradient gel electrophoresis techniques. ASB annual meeting, Asheville.

- Allman, N.D.* and B. Collins. 2009. Connectivity of Carolina northern flying squirrel (*Glaucomys sabrinus coloratus*) foraging habitat. WCU Graduate Research Symposium.
- Collins, B., and D. Pittillo. 2009. Does flowering phenology of native plants indicate climate warming? ASB annual meeting, Birmingham, AL, April.
- Collins, B., T. Schuler, W. M. Ford, D. Hawkins*.2009. Stand Dynamics of Relict Red Spruce in the Alarka Creek Headwaters. Conference on Ecology and Management of High-Elevation Forests of the Central and Southern Appalachian Mountains. May 14-15, 2009 Snowshoe Mountain Resort Slatyfork, West Virginia.
- Collins, B. 2008. Land use and forest understory dynamics. Coweeta Hydrological Lab, February 2008.
- Allman, N.D*. and B. Collins. 2008. Lichen and vegetation surveys of a disjunct population of the Carolina northern flying squirrel (*Glaucomys sabrinus coloratus*). Poster presentation, WCU Faculty Research Awards Reception, April, 2008.
- Allman, N.D*. and B. Collins. 2008. Lichen and vegetation surveys of a disjunct population of the Carolina northern flying squirrel (*Glaucomys sabrinus coloratus*). Poster presentation, 18th Colloquium on the conservation of mammals in the southeastern United States. Blacksburg, VA, February, 2008.
- Holladay, C.-A.*, H. Neufeld, and B. Collins. 2007. Phytoremediation potential of loblolly pine (*Pinus taeda* L.) in wetland soils with heavy metal contamination. Poster presentation, ASB meeting, Columbia, SC, April, 2007.
- Collins, B. 2007. Heterogeneity, regeneration, and diversity in bottomlands and bays. University of Memphis, April 2007.
- Collins, B. 2006. Making it big in bottomlands: regeneration in bottomland hardwood forest. WCU. Paul Burton seminar series, 2006.
- Collins, B. and L. Battaglia. 2006. Canopy openness and oak regeneration in southeastern bottomland hardwood forest. Symposium presentation: Society of American Foresters annual meeting.
- Collins, B. 2006. Multiple land use effects on upland forest vegetation of a heterogeneous military site. Ecological Society of America annual meeting, August.
- Collins, B. 2006. Multiple land use effects on upland forest vegetation of a heterogeneous military site. EPA Ecotoxicology Conference, Cincinnati, April, 2006.

Teaching Experience

Before my appointment at SREL, which is primarily a research laboratory, I taught graduate and undergraduate courses in ecology, botany, and general biology at the University of Memphis (then Memphis State) and Rutgers University (as an instructor and graduate student). Since coming to WCU, I have developed and taught courses in general ecology, field techniques in ecology, physiological and population ecology, community and landscape ecology, conservation biology, and coadaptation ecology across levels from freshmen to graduate students. I have also taught collaborative courses with faculty in English and Environmental Science. In general, my classes emphasize the processes that shape vegetation and ecological patterns, pattern-processes linkages, and the implications of these processes and linkages for ecosystem management, restoration, and creation.

Classes Taught at WCU

Biology 141: General Biology (plant section)
 Biology 241: Introduction to Ecology and Evolution (lecture and lab)
 Biology 304: General Ecology (sole instructor 2006; with Joe Pechmann 2010-11)
 Biology 493/375: Methods in Ecology and Evolution (with Joe Pechmann)
 Biology 434:/534: Terrestrial Ecology
 Biology 437/537: Community and Landscape Ecology
 Biology 433/533: Coadaptation Ecology
 Biology 493/593: Flora and Ecology of the Southern Appalachians (with Kathy Mathews)
 Biology 636: Physiological and Ecosystem Ecology
 Biology 675: Advanced Methods in Ecology and Evolution (with Joe Pechmann)
 Biology 693: Conservation of Changing Landscapes
 Biology/English 493: Ecology in Fiction and Film (with Deidre Elliot)
 Chemistry 493/ Environmental Science 250: Topics in Environmental Science (with Cindy Atterholt, David Henderson, Jim Veteto, and Vicki Szabo)
 Environmental Science 150: Introduction to Environmental Science (with other ES instructors)
 Coordinator for Biology 480 (senior research) fall, 2009 – 2014

Guest Lectures and other Classes

UNC-CH IE; Highlands Biological Station; Forest Ecology, 2013, 2014, 2015
 ENG FYS; (E. Heffelfinger); Ecological Diversity in Appalachia, Nov 2012
 ENG 367; Appalachian Literature (M. Claxton); Appalachian Plants, 2011
 PAR FYS; (D Henderson); You are Here – Southern Appalachian Ecology
 NRM 351; (L. DeWald) Forest Ecology, Jan 19, 21 2010
 Summer Ventures: Mathematical Ecology (with Erin McNelis), 2008

Advising

Postdocs and graduate students supervised (major advisor)

Michael Hooker, 2014-present; M.S.; WCU; Seed dispersal following forest harvests.
 Usha Upreti, 2013-2014; M.S.; WCU; Impacts of an invasive grass, *Microstegium vimineum* (Trin.) A. Camus, on growth and survival of the native herb *Impatiens capensis* Meerb.
 Jessica Duke, 2012-2014; M.S.; WCU; (co-advised with J. Pechmann); Efficacy of created wetland habitat for amphibians.
 Liz Martin, 2011-2014, M.S.; WCU; Holocene environmental history of Panthertown Valley in the Blue Ridge Mountains of North Carolina.
 Carol Petricevic, 2007-2014, M.S.; WCU; Variation in germination and growth among populations of an invasive plant, *Alliaria petiolata* (M. Bieb) Cavara and Grande.
 April Punsalan, 2010-2013. M.S.; WCU; (co-advised with L. DeWald); The germination of *Helonias bullata* L. (swamp pink) in response to flooded, saturated, and dry conditions.
 Nicole Parrish, 2006-2012. M.S.; WCU; Foraging habitat of the Carolina northern flying squirrel.
 Jessica Jaynes, 2006-2012. M.S.; WCU.; Arsenic remediation potential of native ferns.
 Cori Holladay, 2004-2007. M.S.; Appalachian State University. (co-advised with H. Neufeld); Phytoremediation of nickel.

- Charles Kwit. 2003-2006. Postdoc; SREL. Land use effects on vegetation dynamics. Current address: University of Tennessee, Knoxville.
- John Dilustro. 2000-2005. Postdoc; SREL. Land use effects on vegetation and soil N dynamics at Fort Benning. Current address: Chowan University.
- Jaclyn Schnurr. 2002-2003. Postdoc; SREL. Land use effects on vegetation structure and seed predation. Current address: Wells College.
- Stephanie Foré 1995-1999. Postdoc; SREL. Ecological genetics of *Vaccinium stamineum* in fire-adapted vegetation. Current address: Truman State University.
- Eric Pauley 1995-1998. Postdoc; SREL. Oak regeneration in created canopy gaps in a bottomland forest. Currently address: North Carolina State University.
- Tracey Hickox, 1990-1993. M.S. Memphis State University. Understory response to canopy gaps in an old growth bottomland forest.

Graduate student committees

Travis Seaborn, M.S. WCU; Ashley Montgomery, M.S., WCU; Liz Hillard, M.S., WCU; Mary Schultz, M.S., WCU; Sarah Corkern, M.S., WCU; Robert Leisure, M.S., WCU; Michael Lomuscio (Math, M.S., WCU 2010); Christine Stoerhel, M.S., WCU; Kyle Pursel, M.S., WCU; Natasha Shipman, M.S., WCU; Keith Hoffman, M.S., WCU; Bridget Nelson, M.S., WCU; Jeremy Craft, M.S., WCU; Stephanie Grant, M. S., WCU; Carly Lett, M. S., WCU; Josephine Falcone, M. S., WCU; Christin Manee, M.S., WCU; Andrea Lowrance, M.S., UGA; Laura Ulrich, M.S., UGA; John Mulhouse, M.S., UGA; Sara Drake Lejeunesse, M.S., UGA; Amy Squire, M. S., UGA; William Duvall, Ph.D., UGA; Margaret Cirtain, Ph.D.; U. Memphis; Anika McKessey, Ph.D., Drexel University; Chester Figiel, M.S., MSU; Carol Britson, M.S., Ph.D, MSU; Cristine Britton, M.S., MSU; Douglas Elrod, M.S., MSU; Tom Killars, Ph.D., MSU; Rob Kissell, M.S., Ph.D., MSU; Andy Williams, M.S. (Geography), MSU

Undergraduate students supervised

WCU: Danielle Hawkins, Courtney Corbin, Fiona McNaughton, Jesse Fortner, Kayla Damons, Amanda Flagg. Dave Roberson, David Ford, McKenzye McCoyle, Kaitlyne Clampett
 SREL: Rebecca Hubbard, Christine Werner, Pamela Wisenhorn, Anna Proctor, Yaniv Brandvain, Cori Holiday, Keith Beckman

Undergraduate presentations and publications

- McCoyle, McKenzye. 2014. Canopy openness effects on vegetation richness. NCUR (U. Ky).
- Ford, W. D., 2010-11, The effect of germination time on acorn predation (B. Collins and K Mathews, faculty advisors). NCUR.
- Ford, W.D.. The effect of germination time on acorn predation. WCU Undergraduate Expo, March 2011 (B. Collins, K. Mathews, faculty sponsors).
- Sosby, T. 2011. Diversity of Bee species (superfamily Apoidea) on rock outcrop environments. Chinquapin 18:15.
- Collins, B., T. Schuler, W. M. Ford, D. Hawkins*.2009. Stand Dynamics of Relict Red Spruce in the Alarka Creek Headwaters. Conference on Ecology and Management of High-Elevation Forests of the Central and Southern Appalachian Mountains. May 14-15, 2009 Snowshoe Mountain Resort Slatyfork, West Virginia.

High school students supervised

SREL: Beth LaBone

Service

WCU Departmental committees and service

Search committees: Animal Biologist (2012-13)

QEP group, 2008

TPR/CRC Committee, 2008-present

Purchasing/Ordering committee, 2007

Faculty coordinator for Biology Club

Coordinator for Cherokee Garden revitalization initiative

Environmental Science Committee (Biology representative) 2009-present

WCU College and University committees:

2013-present: History Subcommittee, WCU Anniversary Committee

2009- 2012, UNC Faculty Assembly

2009-2011, UNC Faculty Assembly Research Subcommittee

2009-2012, Faculty Senate, Faculty Affairs Council

2009-2012, Post Tenure Appeals Committee

2009-2012, A&S TPR

2010, Search committee, Vice Chancellor for Finance

Scientific community (since 2000):

2004-present: Associate Editor, Environmental Management

2002-present: Associate Editor, Journal of Vegetation Science

2013: Guest Co-Editor for Forest Ecology and Management special section

2011: Participated in USFS Southern Research Station Upland Hardwood Silviculture workshop
July 25-29, Bent Creek

2011: NSF MRI grant panel

2008-2009: Local Arrangements Committee chair, Association of Southeastern Biologists, 2010
meeting

2009: Guest Editor, Southeastern Naturalist

2008: USDA invasive species grant panel

2006, 2009 (1 mo): Acting Chief Editor, Applied Vegetation Science, Journal of Vegetation
Science

2006: USDA invasive species grant panel

2005: Peer reviewer, promotion package for Winston Smith (USDA-FS)

2004: NSF Ecology and Ecosystems grant panel

2004: Tenure and promotion reviewer for Dave Roberts (Head, Dept. of Ecology, Montana State
University)

2003-2006: Chair, ESA Vegetation Section

2003: Workshop participant: Assessing forest biodiversity and sustainable management on
forest lands in the southeastern region. Athens, GA, November, 2003

2003: Workshop participant: Ecosystem management challenges for defense installations. ESA Meeting, Savannah, GA, August, 2003

2000: Guest Editor, Natural Areas Journal theme issue: Rare Plants of the Southeast

1999-2002: Editorial Board, Journal of Vegetation Science

1997-2002: Editor-in-Chief, Journal of Torrey Botanical Society

Selected Outreach Activities

Contact for Cherokee Garden revitalization effort, 2012-present

Board of Directors, NC Bartram Trail, 2007-2012

WCU Mathematics and Science Teacher Project, 2006

Fox Creek High School Curriculum Committee, 2005

ACOLT, Carolina bay restoration project.

Fox Creek High School. As an initial board member, helped prepare the charter and develop this new (2004) charter school. Helped provide computer network support.

WCU, CSRA and local school science fair judge.

Memphis State U herbarium activities (1990-1992): established computer database of all monocots and some dicots.

John David Gerlach, II

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Political Science & Public Affairs
Department
343 Stillwell Building
Cullowhee, NC 28723
(828) 227-3855
jdgerlach@email.wcu.edu

Home:

14 Maybury Court
Arden, NC 28704
(828) 772-9484

EDUCATION

North Carolina State University

Ph.D., Public Administration, 2009

Southern Illinois University Edwardsville

MPA, 2003

West Virginia University

B.S., Wildlife and Fisheries Resources, 2001

ACADEMIC APPOINTMENTS

Western Carolina University

Assistant Professor, 2013-present
Graduate Faculty, MPA program

Texas Tech University

Assistant Professor, 2009-2012
Graduate Faculty, MPA program

North Carolina State University

Adjunct Instructor, 2008-2009
Graduate Instructor, 2004-2008

Durham Technical Community College

Adjunct Instructor, 2007-2009

PEER-REVIEWED PUBLICATIONS

- Gerlach, J.D. & Reinagel, T.P. (*forthcoming*). Experiential Learning in MPA Programs: A Case for Complementarity among Internship and Service Learning Requirements. *PS: Political Science & Politics*.
- Reinagel, T.P. & Gerlach, J.D. (2015). Internships as Academic Exercise: An Assessment of MPA Curriculum Models. *Journal of Public Affairs Education* 21(1): 71-82.
- Gerlach, J.D., Williams, L., & Forcina, C.E. (2013). The Science-Natural Resource Policy Relationship: How Aspects of Diffusion Theory Explain the Identification of Best Available Science. *Politics and Policy*, 41(3). 326-354.
- Wang, J., Gerlach, J.D., Savage, N., & Cobb, G.P. (2013). Necessity and Approach to Integrated Nanomaterial Legislation and Governance. *Science of the Total Environment*, 442. 56-62.
- Gerlach, J.D., Williams, L., & Forcina, C.E. (2013). Data Selection for Making Biodiversity Management Decisions: Best Available Science and Institutionalized Agency Norms. *Administration and Society*, 45(2). 213-241.
- Rugeley, C.R. & Gerlach, J.D. (2012). Understanding Environmental Public Opinion by Dimension: How Heuristic Processing Mitigates High Information Costs on Complex Issues. *Politics and Policy*, 40(3). 444-470.
- Gerlach, J.D. (2009). The Conservation Reserve Program: A Tool for Public Participation in Biodiversity Management and Conservation. *Journal of Extension* 47(5). [Online]. Available URL: <http://www.joe.org/joe/2009october/tt3.php>.
- Gerlach, J.D. & Jolley, G.J. (2008). The Gap Analysis Program: A Proactive Approach to Biodiversity Conservation. *Journal of Extension*, 46(4). [Online]. Available URL: <http://www.joe.org/joe/2008august/tt4.shtml>.

OTHER PUBLICATIONS

- Gerlach, J.D. (2015, July 27). The Tenuous Place of Environmental Policy in National Politics. *Asheville Citizen-Times*, p. 7A.
- Gerlach, J.D. (2014, September 2). Russell Wilson's Former Professor: What the Seahawks Can Teach Us All. *The Seattle Times*. Available URL: <http://blogs.seattletimes.com/take2/2014/09/02/russell-wilsons-former-professor-what-the-seahawks-can-teach-us-all/>.

Gerlach, J.D. (2014, February 9). Seattle, There is a King in Your City. *The Seattle Times*, p. C10.

MANUSCRIPTS IN ADVANCED PREPARATION

Gerlach, J.D. (*under review*). Nonprofit Management Education in MPA Programs: Lessons for Successful Track Building. *Journal of Political Science Education*.

Gerlach, J.D. & O'Halloran, A. (*in preparation*). Moving Beyond Sustainability: The Higher Calling of Nonprofit Organizations. For submission to the *Journal of Public and Nonprofit Affairs*.

Kwon, S., Gerlach, J.D., & Elders, K. (*in preparation*). The Influence of Religious Affiliation on Nonprofit Health Care: An Examination of Florida Nursing Homes. For submission to *Public Performance and Management Review*.

MEDIA APPEARANCE

Gerlach, J.D. (2014, May 3). *Citizens Making a Difference*. 96.7 FM WNCC and 1050 AM WFSC. Franklin, NC.

SELECTED CONFERENCE PRESENTATIONS

Gerlach, J.D. (2015, April). *Moving Beyond Sustainability: The Higher Calling of Nonprofit Organizations*. Presented at the Midwest Political Science Association Annual Conference. Chicago, IL.

Gerlach, J.D. (2014, August). *Science: The Most Powerful Weapon in the New Coal Wars?* Presented at Presented at the 248th Meeting of the American Chemical Society. San Francisco, CA.

Gerlach, J.D. (2014, March). *The New Coal Wars: The Jobs-Environment Balance in the Appalachian Coalfields*. Presented at the American Society for Public Administration Annual Conference. Washington, D.C.

Kwon, S., Gerlach, J.D., & Elders, K. (2013, September). *The Influence of Religious Affiliation on Nonprofit Health Care: An Examination of Florida Nursing Homes*. Presented at the Southeast Conference on Public Administration. Charlotte, NC.

- Wolford, S., Rider, T., & Gerlach, J.D. (2013, April). *Scarcity, Credible Commitments, and War: How Geography and Institutions Lead to Conflict and Cooperation over Water*. Presented at the Midwest Political Science Association Annual Conference. Chicago, IL.
- Gerlach, J.D. (2012, October). *Understanding Environmental Public Opinion by Dimension: How Heuristic Processing Mitigates High Information Costs on Complex Issues*. Presented at the 22nd Annual Conference of the Society of Environmental Journalists. Lubbock, TX.
- Gerlach, J.D. (2012, March). *Politics and Environmental Policy: A Public Administrator's Guide*. Presented at the American Society for Public Administration Annual Conference. Las Vegas, NV.
- Gerlach, J.D. (2011, September). *The USGS Gap Analysis Program: Turning Science into Policy*. Presented at the 242nd Meeting of the American Chemical Society. Denver, CO.
- Gerlach, J.D. (2011, March). *Citizen Attitudes Toward the Environment and the Role of Environmental Nonprofit Organizations in the Public Policy Process*. Presented at the American Society for Public Administration Annual Conference. Baltimore, MD.
- Gerlach, J.D. (2010, October). *An Examination of the Diffusion of Data Selection Practices for Use in Making Ground-Level Natural Resource Policy Decisions*. Presented at the Southeast Conference on Public Administration. Wilmington, NC.
- Gerlach, J.D. (2010, April). *The Role of Institutionalized Norms in Selecting Data for Use in Making Ground-Level Natural Resource Policy Decisions*. Presented at the Midwest Political Science Association Annual Conference. Chicago, IL.
- Gerlach, J.D. (2006, June). *An Examination of Factors Driving Data Selection for Use in Natural Resource Policy Making*. Presented at the Policy Sciences Summer Institute. University of Colorado. Boulder, CO.
- Gerlach, J.D. (2005, December). *A Process Evaluation of NC-GAP: Examining the Use of GAP Data in the Biodiversity Conservation Policy Process*. Presented at the Gap Analysis Program Conference and Research Symposium. Reno, NV.

INVITED PRESENTATIONS

- Gerlach, J.D. (2014, April). *Modern Environmentalism: From the 1960s to Today*. Presented to the Western Carolina University community. A.K. Hinds University Theater. Western Carolina University. Cullowhee, NC.
- Gerlach, J.D. (2012, November). *Identifying, Pursuing, and Securing Grant Funds*. Presented to the Texas Tech University Museum Science Graduate Association. Texas Tech University. Lubbock, TX.
- Gerlach, J.D. (2011, March). *Bridging the Gap between Science and Environmental Policy*. Presented at the Texas Institute of Environmental and Human Health March, 2011 symposium. Texas Tech University. Lubbock, TX.
- Gerlach, J.D. (2009, April). *The Role of Nonprofits in Natural Resource Policy*. Presented at Texas Tech University. Lubbock, TX.
- Gerlach, J.D. (2009, March). *An Examination of Factors that Explain the Use of Data in the Natural Resource Policy Process*. Poster presentation at the 4th Annual North Carolina State University Graduate Research Symposium. Raleigh, NC.
- Gerlach, J.D. (2006, October). *The USGS Gap Analysis Program: Bridging the Gap between Field Data and Real Life Natural Resource Policy*. Presented at Lynchburg College. Lynchburg, VA.

EXTERNAL RESEARCH GRANTS

United States Geological Survey. \$22,000.

Co-PI

November 1, 2006 – August 31, 2007

Awarded research funding to develop a literature review examining the natural resource policy process and how government agencies use science to make or support conservation and land use decisions. (with Elizabethann O'Sullivan)

United States Geological Survey. \$40,000.

Co-PI

August 1, 2004 – October 31, 2006

Awarded research funding to study the effects of Gap Analysis Program data on the natural resource policy process in the state of North Carolina. (with Elizabethann O'Sullivan)

INTERNAL RESEARCH GRANTS**Texas Tech University. \$19,560.**

PI

May 15, 2012 – August 31, 2012

Awarded funding to launch a project entitled *Scarcity, Credible Commitments, and War: How Geography and Institutions Lead to Conflict and Cooperation over Water*. Project applies a complex bargaining model to negotiations over shared water resources among nation-states. (with Toby Rider)

TRAVEL GRANTS**United States Geological Survey. \$1,000.**

September, 2007

USGS Gap Analysis Program travel grant to attend and assist with the National Gap Analysis Program Conference in Asheville, NC.

North Carolina State University School of Public and International Affairs. \$500.

August, 2006

Ph.D. program travel grant to attend Academy of Management (AOM) annual meeting in Atlanta, GA.

TEACHING EXPERIENCE**Western Carolina University**

Courses Taught:

- PA 650. *The Nonprofit Sector*. 2013-2015
- PA 672. *Public Organization Theory*. 2013-2015
- PA 677. *Public Personnel Management*. 2013-2014
- PA 693. *Nonprofit Fundraising and Development* – online. 2015.
- PA 699. *Public Affairs Capstone Experience*. 2014
- PSC 150. *American Government and Politics*. 2013-2015
- PSC 300. *The Nonprofit Sector*. 2014.
- PSC 304. *Public Administration* – online. 2013-2015
- PSC 442. *Natural Resource Management and Policy*. 2013-2015
- ES 350. *Seminar in Energy, Economics, and the Environment*. 2014-2015

Texas Tech University

Courses Taught:

- PUAD 5319. *Research Methods in Public Administration*. 2009-2011
- PUAD 5333. *Environmental Policy and Administration*. 2009-2012

- PUAD 5335.** *Management of Nonprofit Organizations.* 2010-2011
- PUAD 5348.** *Nonprofit Grantwriting and Fundraising.* 2012
- PUAD 5348.** *Water Policy and Administration.* 2011
- POLS 1301.** *American Government, Organization.* 2010–2011
- POLS 7000.** *Water Policy and Administration – independent study.* 2012
- POLS 7000.** *Public Policy Theory / Process – independent study.* 2011

North Carolina State University

Courses Taught:

- PS 203.** *Introduction to Nonprofit Organizations.* 2008
- PS 201.** *Introduction to American Government.* 2006-2009
- PS 201L.** *Introduction to American Government Discussion.* 2004-2006

Teaching Assistant:

- PA 515.** *Research Methods and Analysis.* 2008
- PS 201.** *Introduction to American Government.* 2004-2006

Guest Lecturer:

- PS 202.** *State and Local Government.* 2005-2006

Durham Technical Community College

Courses Taught:

- POL 220.** *International Relations.* 2008
- POL 120.** *American Government.* 2007–2009

TEACHING AWARDS

University FYE Advocate

Western Carolina University
2014-15

University Outstanding Teaching Assistant Award

North Carolina State University Graduate Student Association
Awarded: April 18, 2008

University Outstanding Teaching Assistant Award Nominee

Department of Political Science, North Carolina State University
2006–07

PROFESSIONAL SERVICE**Symposium Co-Organizer**

Science in the Realm of Environmental Policy: Opportunities and Challenges.
248th American Chemical Society National Meeting & Exposition. San Francisco, CA. August 10-14, 2014

Bridging the Gap Between Science and Environmental Policy.
242nd American Chemical Society National Meeting & Exposition. Denver, CO. August 28 – September 1, 2011

Panel Chair/Discussant

MPSA – 2013, 2015
SECoPA - 2013

Vice President

American Society for Public Administration (ASPA), High Plains Chapter
2010–2012

Peer Reviewer

Administration & Society
Journal of Public and Nonprofit Affairs
Politics and Policy
PS: Political Science & Politics

UNIVERSITY SERVICE**Chair**

Graduate Council Curriculum Committee
Western Carolina University
2015-present

Member

Graduate Council
Western Carolina University
2015-present

Member

Faculty Advisory Committee
Acting Associate Dean of the Graduate School Search
Western Carolina University
Summer 2015

Faculty Representative

Sustainable Energy Initiative
Western Carolina University
2015-present

Faculty Advisor

College Republicans
Western Carolina University Chapter
2013-2015

Member

Summer Session Task Force
Western Carolina University
2013

Faculty Advisor

Association of Fundraising Professionals
Texas Tech University Student Chapter
2010-11

Faculty Community Outreach Advisor

Texas Tech University
Public Administration Graduate Association
2010–2012

Delegate, Texas Tech University

Installation of Chancellor W. Randolph Woodson
North Carolina State University, October 26, 2010

COLLEGE OF ARTS AND SCIENCES SERVICE

Member

Environmental Science Executive Committee
Western Carolina University
2013-present

DEPARTMENTAL SERVICE**Director**

MPA Program
Western Carolina University
2015-present

Member

MPA Committee
Western Carolina University
2013-present

Member

Department Internships Committee
Western Carolina University
2015-present

Member

MPA Admissions Committee
Western Carolina University
2014-2015

Member

Department Teaching Committee
Western Carolina University
2013-2014

Member

Faculty Search Committee
Western Carolina University
Spring 2015
Fall 2014 (chair)

Texas Tech University
Fall 2012 (x2)
Fall 2010
Fall 2009

COMMUNITY SERVICE AND OUTREACH**Member**

Executive Board of Directors
Industries for the Blind - Asheville, NC chapter
2015-present

Member

Advisory Board
WNC Nonprofit Pathways
2015-present

Fundraising Consultant

Cherokee Children's Home – capital campaign, 2015

Grant Writing Consultant

Asheville Downtown Association, 2015
Huntington City Mission – Project Angel, 2013-2014

Founding Member

Executive Board of Directors
Flatlands Dance Theatre
2010–2011

PROFESSIONAL DEVELOPMENT ACTIVITIES

Attendee

Network of Schools of Public Policy, Affairs, and Administration Conference
2015 (*scheduled*)

NC Center for Nonprofits Conference
2013, 2014, 2015

NC City and County Managers Association Annual Meeting
2013, 2015

WNC City and County Managers Association Quarterly Meeting
April 30, 2015

PROFESSIONAL AFFILIATIONS

American Society for Public Administration (ASPA)

2007–present

Association of Fundraising Professionals (AFP)

2015-present
2010–2012

American Political Science Association (APSA)
2008–2013

OTHER EXPERIENCE

Summer Research Associate

North Carolina Cooperative Fish & Wildlife Research Unit

July 1, 2009 – August 12, 2009

May 15, 2008 – August 15, 2008

Helped develop a graduate-level course on climate change (ZO 624 – Climate Change and Conservation). Contributed to the development of change scenario models for the South Atlantic Migratory Bird Initiative.

Holmes, Radford & Avalon, Inc.

January 20 – May 10, 2003

Worked as a research aid and grant writer for the nonprofit fundraising consulting firm in St. Louis, MO.

REFERENCES

George P. Cobb, Ph.D., Chair of the Environmental Science Department
Baylor University
BSB B407.1
One Bear Place #97266
Waco, TX 76798
(254) 710-3409
george_cobb@baylor.edu

Dennis Daley, Ph.D., Professor of Political Science and Public Administration
Dissertation Committee Chair
North Carolina State University
CB 8102
Raleigh, NC 27695-8102
(919) 515-3740
Dennis_Daley@ncsu.edu

Dennis Patterson, Ph.D., Chair of the Department of Political Science
Texas Tech University
Holden Hall 113
Lubbock, TX 79409
(806) 742-4050
dennis.patterson@ttu.edu

David G. Henderson
Curriculum Vitae
 Associate Professor
 Philosophy and Religion
 Western Carolina University

Mail: 232 Stillwell Building
 Cullowhee, NC 28723
Phone: 828-227-2939
Email: dghenderson@wcu.edu
Web: <http://paws.wcu.edu/dghenderson>

Education

Ph.D. Texas A&M University, 2008, Philosophy

Ph.D. Advisor: John J. McDermott

Dissertation Title: "Wilderness: The History, Significance and Promise of an American Value"

M.S. Texas A&M University, 2006, Wildlife and Fisheries Sciences

B.A. (*Summa Cum Laude* and Honors) Bryan College, 2002, Liberal Arts, minors in Mathematics and Greek

Areas of Specialization in Philosophy:

Environmental Philosophy, Ethical Theory

Areas of Competence in Philosophy:

American Philosophy, Philosophy of Science, Logic

Areas of Competence in Biology:

Ecology, Herpetology, Conservation Biology

Publications in Peer-Reviewed Journals and Edited Volumes

In press "Hunting Ethics: Reflections from a (Mostly) Vegetarian Hunter" in *Hunting and Academic Identity*, eds. David Bruzina and Douglas Higbee, under review by the University of South Carolina Press.

"Philosophy of American Wilderness," *The Internet Encyclopedia of Philosophy*, ISSN 2161-0002, (September 2014): <http://www.iep.utm.edu/am-wild>.

"Bugbee's Wilderness: Metaphysical and Montanan," *The Pluralist* 8.3 (Fall 2013): 46-54

"Creation Care," *Taking Christian Moral Thought Seriously*, eds. Jeremy A. Evans and Daniel Heimbach (Nashville: B&H Publishing Group, 2011): 177-197..

"Valuing the Stars: On the Economics of Light Pollution," *Environmental Philosophy* 7:1 (Spring 2010): 17-26.

"The Possibility of Managing for Wilderness," *Environmental Ethics* 31 (Winter 2009): 413-429.

Other Publications

Review of *The Future of Ethics: Sustainability, Social Justice, and Religious Creativity*, Willis Jenkins (Washington, D.C.: Georgetown University Press, 2013) in *The Journal of the American Academy of Religion* (2015): 267-269.

Review of *Mountains of Injustice: Social and Environmental Justice in Appalachia*, eds. Michele Morrone and Geoffrey L. Buckley (Athens, OH: Ohio University Press, 2011) in *Environmental Values* 21:4 (November 2012): 539-541.

Review of *Beyond Naturalness: Rethinking Park and Wilderness Stewardship in an Era of Rapid Change*, eds. David N Cole and Laurie Yung (Washington, D.C.: Island Press, 2010) in *Environmental Ethics* 33:3 (Fall 2011): 335-336.

“Earth Day Reflections at Western,” *Faculty Forum* 23:8 (April 2011): 1-2.

“Let There Be (Incandescent) Light,” *Washington Post*, October 2, 2009: A21.

“Geographic distribution. *Lampropeltis calligaster*,” *Herpetological Review* 38:3 (September 2007): 355.

“Evangelicals are Conservationists,” *Conservation Biology* 19:6 (December 2005): 1687-1688.

Academic Presentations and Panels

“Tapping the Legacy of Chico Mendes,” *The TransAmerican Experience Conference*, November 7, 2015, University of Oregon.

“Teaching Environmental Values through Nature Journaling,” presented as part of a panel: “Toward a Philosophy of Sustainability: Engaging Eco-Pragmatism in the Classroom,” *2015 Annual Meeting of the Society for the Advancement of American Philosophy*, March 7, 2015, Grand Valley State University.

“Wilderness: The History and Significance of an American Idea,” *Center for Life Enrichment*, July 22, 2014, Highlands, NC.

“Bugbee’s Wilderness, Metaphysical and Montanan,” *40th Annual Meeting of the Society for the Advancement of American Philosophy*, March 9, 2013, Richard Stockton College of New Jersey.

“Bugbee’s Wilderness, Metaphysical and Montanan,” *Annual Meeting of the North Carolina Religious Studies Association*, November 2011, University of North Carolina – Chapel Hill.

“Creation Care: the Moral and Religious Significance of Nature in Christian Scripture and Tradition,” *Annual Meeting of the North Carolina Religious Studies Association*, November 3, 2012, University of North Carolina – Wilmington.

Invited Panelist, “Too Much (Or Not Enough) Free Speech? Constitutional Protections under the First Amendment and U.S. Elections,” Hosted by the Public Policy Institute for Constitution Day, September 17, 2012, Western Carolina University.

“On the Possibility of Managing for Wilderness,” *Biology/Environmental Studies Departmental Seminar Series*, January 19, 2012, University of North Carolina – Asheville.

“Is it Possible to Manage Wilderness?” *Biology Department Paul Burton Seminar Series*, January 23, 2009, Western Carolina University, Cullowhee, North Carolina. (Earlier presentation of the same paper.)

“On the Possibility of Managing for Wilderness,” *Philosophy Department Colloquium Series*, December 4, 2007, Texas A&M University, College Station, Texas. (Earlier presentation of the same paper.)

Invited Panelist, “Reflections by Former Students,” *The Nectar is in the Journey: A Celebration of the Life and Work of John J. McDermott*, March 15, 2009, Texas A&M University, College Station, Texas.

“Alexander von Humboldt and Henry David Thoreau: The Romantic Influence on the American View of Nature,” *Annual Meeting of the Society for the Advancement of American Philosophy*, March 14, 2009, Texas A&M University, College Station, Texas. This is a national conference.

Invited Panelist, “Perspectives on the Future of Environmental Ethics: A Graduate Student Panel,” *Future Trends in Environmental Philosophy*, A joint meeting of the International Association for Environmental Philosophy and the International Society for Environmental Ethics, June 4, 2004, Allenspark, Colorado.

“Moral Pluralism: The Greening of Kantian Ethics,” *2004 WFSC Student Symposium*, February 21, 2004, College Station, Texas.

“Approximate Truth,” *Realia—43rd Annual Summer Conference: Contemporary Issues in Philosophy of Science*, August 19, 2003, Digby, Nova Scotia.

Professional Positions

Western Carolina University

- Assistant Professor, Department of Philosophy and Religion, 2008-2015
- Associate Professor, Department of Philosophy and Religion, 2015-present

Texas A&M University – Research Assistant to Distinguished Professor John J. McDermott, 2003-2008
Involved extensive editorial work, especially on *The Drama of Possibility* cited below.

Curatorial Internship – Texas Cooperative Wildlife Collection, Summer 2005

Teaching Experience

Western Carolina University

- PAR 102 Western Moral Traditions
- PAR 230 Legal, Scientific and Critical Reasoning
- PAR 311 Philosophy of Science
- PAR 313 Philosophy of Law
- PAR 330 American Wilderness Ethics and Aesthetics
- PAR 333 Environmental Ethics
- PAR 393 Seminar in Pragmatism
- PAR 495 Senior Seminar/Capstone
- ES 250 Environmental Science Sophomore Seminar
- USI 130 University Experience

Texas A&M University

- PHIL 111 Contemporary Moral Issues
- PHIL 314 Environmental Ethics

- PHIL 240 Introduction to Logic
- Graduate Teaching Assistant, PHIL 482 Engineering Ethics

St. Michael's Academy

- Philosophy and Logic Instructor (high school students), 2003-2008

Professional Development

Awarded Scholarly Development Assignment for Spring 2017 to work on a manuscript: *Tending the Wilderness: Natural Science and the Love of Nature..*

Awarded a Professional Development Grant of \$1200 to attend “The Stewardship of Public Lands: Politics and the Yellowstone Ecosystem,” an AASCU faculty seminar to be held in Yellowstone National Park, July 29 – August 3, 2013.

Participated in two-day training in the Blackboard LMS provided by the Coulter Faculty Center of Western Carolina University, July 13-14, 2010.

Participated in “Online Course Development Day,” a workshop provided by the Coulter Faculty Center of Western Carolina University on the pedagogy of online instructional technology, August 11, 2009.

Received \$200 micro-grant for instructional enhancement to attend a summer workshop in “Scientific Illustration” with Nancy Lowe at the Highlands Biological Station in Highlands, NC, May 11-16.

Had “Small Group Assessments” conducted in two classes (Fall 2008) by the Coulter Faculty Center of Western Carolina University in order to better understand and improve my effectiveness as a teacher.

Field Experience

Fitzgerald Herpetology Lab at Texas A&M: As a graduate student of Lee Fitzgerald's, I did extensive biological fieldwork. I often spent a week or more at a time in the field working on the Mescalero Sands Ecosystem and *Sceloporus arenicolus*. I also assisted with many undergraduate herpetology class field trips.

Herpetological Independent Study Group: From December 29, 2007 to January 11, 2008, I travelled with HISG to Talamanca, Costa Rica. There we did herpetological species inventory work for the Science Center of the Kéköldi Indigenous Reserve.

Awards and Honors

Douglas Greenlee Prize, Society for the Advancement of American Philosophy, 2013

Highest Academic Achievement Award, Bryan College 2002

Professional Memberships and Offices

President (2011-2012): North Carolina Religious Studies Association

American Association of University Professors

Association for Environmental Studies and Sciences

International Society for Environmental Ethics

Society for the Advancement of American Philosophy

Acknowledgments (I'm listed in the acknowledgements of the following books)

Herzog, Hal. *Some We Love, Some We Hate, Some We Eat: Why it's so Hard to Think Straight about Animals*. New York: HarperCollins, 2010.

The Basic Writings of Josiah Royce. vols. 1 & 2. ed. John J. McDermott. New York: Fordham University Press, 2005.

McDermott, John J. *The Drama of Possibility: Experience as Philosophy of Culture*. ed. Douglas Anderson. New York: Fordham University Press, 2007.

DR. BENJAMIN R. TANNER
 Dept. of Geosciences & Natural Resources
 Western Carolina University
 331 Stillwell Bldg.
 Cullowhee, NC 28723
 828-227-3915 (work)
 207-412-8401 (cell)
 btanner@wcu.edu

EDUCATION

Ph.D., Earth and Planetary Sciences, University of Tennessee Dissertation Title: "C3/C4 Variations in Higher Salt Marsh Sediments: An Application of Compound Specific Isotopic Analysis of Lipid Biomarkers to Late Holocene Paleoclimatic Research" Committee Chair: Maria E. Uhle, Ph.D.	2005
M.S., Quaternary and Climate Studies, University of Maine Thesis Title: "Lithic Analysis of Chipped Stone Artifacts Recovered from Quebrada Jaguay, Peru" Committee Chair: Daniel H. Sandweiss, Ph.D.	2001
B.S., Anthropology, Minor in Geology, Florida State University Cum Laude	1999

PROFESSIONAL EXPERIENCE

Associate Professor of Geology, Western Carolina University	2011-Current
Assistant Professor of Geology, Western Carolina University	2005-2011
Adjunct Professor of Natural Sciences, Maryville College	2005
Teaching Associate, University of Tennessee	2003-2005
Teaching Assistant, University of Tennessee	2001-2003
Research Assistant, University of Maine	1999-2001
Laboratory Technician, Museum of Florida History	1998-1999

COURSES TAUGHT

GEOL 140, Investigations in Environmental Geology, WCU
 GEOL 150, Methods in Geology, WCU
 ES 150, Introduction and Approaches to Environmental Science, WCU (2 week geology section of course)
 GEOL 191, Geology, Landscapes and the Human Psyche, WCU
 GEOL 310 Lab, Soils and Hydrology, WCU
 GEOL 455/555, Wetlands, WCU
 GEOL 465/565, Environmental Geochemistry, WCU
 GEOL 494/591, Topics in Geology: Wetland Identification and Delineation, WCU
 GEOL 495, Senior Research Seminar (Capstone Course), WCU
 GEOL 491, Topics in Geology: Coastal Fieldtrip, WCU
 GEOL 491, Topics in Geology: Global Climate Change, WCU
 GEOL 494, Topics in Geology: Great Smoky Mountains National Park Fieldtrip, WCU
 Natural Science: Earth Science and the Environment, Maryville College
 Environmental Geology, University of Tennessee
 Physical Geology, University of Tennessee

PEER REVIEWED ARTICLES (Bold indicates student author)

- Perry, L., Farmer, B., Onder, D., Tanner, B., and Burton, C., In Press, A Community-Based Activities Survey: Systematically Determining the Impact on and of Faculty, *Metropolitan Universities Journal*.
- Tanner, B.R., Lane, C.S., **Martin, E.M.**, Young, R., and Collins, B., 2015, Sedimentary Proxy Evidence of a mid-Holocene Hypsithermal Event in the Location of a Current Warming Hole, North Carolina, USA, *Quaternary Research*, v. 83, p. 315-323.
- Bostic, J.**, Tanner, B., and McDowell-Peek, K., 2015, Apparent Drowned Impacts of T-Head Groin Construction on a Salt Marsh, Hunting Island State Park, SC, *Southeastern Geology*, v. 51, p. 51-64.
- Tanner, B.R., Kinner, D.A., Griffith, A.D., Young, R.S., and **Sorrell, L.M.**, 2011, Presence of *Arundinaria gigantea* (rivercane) on Numerous Non-wetland Sites Suggests Improper Ecological Classification of the Species, *Wetlands Ecology and Management* v. 19, p. 521-532.
- Wilson, K.R., Kelley, J.T., Tanner, B.R. and Belknap, D.F., 2010, Examining North-Temperate Salt-Marsh Geologic Records: Determining Origin of and Defining a Unique Stratigraphic Signature for Salt Pools of Six Maine Salt Marshes, U.S.A., *Journal of Coastal Research* v. 26, p. 1007-1026.
- Song, X., Tanner, B.R., and **Neff, K.E.**, 2010, Exploring Possibilities for Using UV/Vis and Fourier – Transform Infrared Spectroscopy to Directly Differentiate Soil Organic Matter in a Soil Profile, *Spectroscopy Letters* v. 43, p. 561-566.
- Tanner, B.R., Kelley, J.T., Uhle, M.E., Mora, C.I., Lane, C., Schuneman, P.J., and **Allen, E.S.**, 2010, Comparison of Bulk and Compound-Specific $\delta^{13}\text{C}$ Analyses and Determination of Carbon Sources to Salt Marsh Sediments Using *n*-Alkane Distributions (Maine, USA), *Estuarine, Coastal and Shelf Science* v. 86, p. 283-291.
- Griffith, A.D.**, Kinner, D.A., Tanner, B.R., **Moore, A.**, Mathews, K.G., and Young, R.S., 2009, Nutrient and Physical Soil Characteristics of River Cane Stands, Western North Carolina, *Castanea*, v. 74, p. 224-235.
- Tanner, B.R., Uhle, M.E., Kelley, J.T., and Mora, C.I., 2007, C3/C4 Variations in Salt Marsh Sediments: An Application of Compound Specific Isotopic Analysis of Lipid Biomarkers to Late Holocene Paleoenvironmental Research, *Organic Geochemistry* v. 38, p. 474-484.
- Tanner, B.R., Perfect, E., and Kelley, J.T., 2006, Fractal Analysis of Maine's Glaciated Shoreline Tests Four Compartment Coastal Classification Scheme, *Journal of Coastal Research* v. 22, p. 1300-1304.

PRESENTATIONS AND CONFERENCE ABSTRACTS (Bold indicates student author)

- Dunlap, C.**, Tanner, B., 2016, Organic rich deposits from a Southern Appalachian wetland indicate carbon sequestration potential and site stability over the last millennium, Geological Society of America Abstracts with Programs, Accepted and to be presented in March, 2016.
- Perry, L., Farmer, B., Burton, C., Onder, D., Tanner, B., 2016, A community-based activities survey: determining impact of and on faculty, Pathways to Achieving Civic Engagement Conference, High Point University, Accepted and to be presented Feb., 2016.
- Tanner, B., 2016, Understanding the past to better manage today: Paleoenvironments of Southern Appalachian bogs, Bog Learning Network Annual Meeting, Asheville NC. (Invited)
- Tanner, B., **Keever, M.**, 2015, Organic-rich sediments from a Southern Appalachian wetland provide a record of late Pleistocene through Holocene environmental conditions, Geological Society of America Abstracts with Programs, Vol. 47, No.7.
- Tanner, B., 2015, Long term carbon sequestration rates of southern Appalachian wetlands, Geological Society of America Abstracts with Programs, Vol. 47, No.2.
- Corcoran, K., Dunlap, C.**, Tanner, B., 2015, Soil cores of four organic-rich wetland deposits from Western North Carolina provide a record of Holocene environmental change for the Southern Appalachians, Geological Society of America Abstracts with Programs, Vol. 47, No.2.
- Tanner, B., 2014, Western NC Wetland Peat Core Records and Environmental Change. WCU Biology Paul Burton Seminar Series. (Invited)
- Tanner, B., **Martin, L.**, Lane, C., Young, R., Collins, B., 2014, A Southern Appalachian, organic-rich wetland deposit provides evidence for mid-Holocene hypsithermal in location of current warming hole, North Carolina, Geological Society of America Abstracts with Programs, Vol. 46, No. 3.

- Bostic, J.**, Tanner, B., Young, R., 2014, Downdrift impacts of T-head groin construction on a Back-barrier Salt Marsh, Hunting Island State Park, SC, Geological Society of America Abstracts with Programs, Vol. 46, No. 3.
- Williams, M., Cogburn, C., Coker, M., Brittain, A.**, Tanner, B., 2014, Paleoenvironmental Study of Late Holocene, Organic-Rich Deposits Recovered From Pink Beds, a Southern Appalachian Wetland in Western NC, Geological Society of America Abstracts with Programs, Vol. 46, No. 3.
- Merrill, S., Beall, D., Chopp, A., Doll, B., Farris, A., Jensen, A., Johnson, D., Scholtz, E.**, Tanner, B., 2014, Paleoenvironmental Study of Late Pleistocene-Holocene Southern Appalachian Wetlands, N.C. Geological Society of America Abstracts with Programs, Vol. 46, No. 3.
- Coker, M., Brittain, A., Cogburn, C., Williams, M.**, Tanner, B., 2014, Paleoenvironmental Study of Late Holocene, Organic-Rich Deposits Recovered from Pink Beds, A Southern Appalachian Wetland in Western NC, National Conference for Undergraduate Research, University of Kentucky.
- Wilson, K.R., Kelley, J.T., Tanner, B.R., Belknap, D.F., 2013, Finger-printing Salt Pools in the Stratigraphic Record: Implications for Understanding Morphological Change in North-Temperate Salt Marsh Systems, Geological Society of America Abstracts with Programs, Vol. 45, No. 2
- Wilson, K.R., Kelley, J.T., Tanner, B.R., Belknap, D.F., 2013, Maine's Dynamic Salt Marshes: Are Re-Interpretations of North-Temperate Salt Marsh Stratigraphic Records Warranted?, Penrose Conference, Geological Society of America, Galveston, TX.
- Tanner, B.R., 2012, Organic Biomarker Compounds Record Holocene Environmental Change at Panthertown Bog, N.C., Molecules in the Mountains Conference, Western Carolina University and North Carolina Biotechnology Center. (Invited)
- Tanner, B., **Zimmerman, T., Tahquette, D.**, 2012. Monitoring of Coastal Wetland Sedimentation and Plant Community Change Under a Regime of Sea Level Rise at ACE Basin NERR, S.C. Geological Society of America Abstracts with Programs, Vol. 44, No. 4, p. 77
- Tanner, B., **Parris, J., Reinke, R., and Moser, E.**, 2011, Paleoenvironmental Record at Panthertown Bog (NC), An Early Holocene Peat-Accumulating Wetland in the Southern Appalachians. Geological Society of America Abstracts with Programs Vol. 43, No. 5, p. 618.
- Hiatt, C.**, Kinner, D., Lord, M., Tanner, B., Campbell, T. and **Padgett, M.**, 2011, Hydrogeologic Properties of Different Geomorphic Settings in a Small Disturbed Watershed, Western North Carolina. Geological Society of America Abstracts with Programs Vol. 43, No. 5, p. 116
- Griffith, A., Kinner, D., Tanner, B., and Young, 2010, Restoration of *Arundinaria Gigantea* (Rivercane) to the Oconaluftee River Floodplain, Cherokee, NC. Geological Society of America Abstracts with Programs Vol. 42, No. 5.
- Tanner, B.R., Kinner, D.A., Barbour, S., and Young, R., 2010, Radiocarbon Dates Reveal a High Elevation, Early Holocene Wetland Deposit in the Southern Appalachian Mountains, Geological Society of America Abstracts with Programs, Vol. 42, No. 1, p. 188
- Sorrell, L.M.** and Tanner, B.R., 2010, Carbon Sequestration Rates of Different Marsh Zones in the Schoodic Marsh of Acadia National Park, Maine, Geological Society of America Abstracts with Programs, Vol. 42, No.1, p. 141
- Wilson, K.R., Kelley, J.T., Belknap, D.F., and Tanner, B.R., 2009, Maine Salt Pools: Dynamic Agents of Coastal Change, Coastal and Estuarine Research Federation 20th Biennial Conference.
- Wilson, K.R., Kelley, J.T., Belknap, D.F. Tanner, B.R., 2009, Salt Pools in the Stratigraphic Record and Their Role in Governing Surficial Change in Five Maine Salt Marshes: Geological Society of America Abstracts with Programs v. 41, no. 3, p. 18.
- Allen, E.S.**, Tanner, B.R., Wilson, K.R., and Kelley, J.T., 2008, Finding a Fingerprint for Salt Pool Deposits in Maine Salt Marshes, Geological Society of America Abstracts with Programs v. 40, no. 4, p. 57.
- Tanner, B.R., Griffith, A.D., Kinner, D.A., and Young, R.S., 2008, Presence of *Arundinaria gigantea* on Non-hydric Soils Suggests Improper Classification of the Species, Eos Transactions, Fall Meeting Supplement v. 89, no. 53, abstract B43A-0428.
- Tanner, B.R., Sanger, D., Yates, M., and Sandweiss, D., 2008, Lithic Analysis of Chipped Stone Artifacts Recovered from Quebrada Jaguay, Peru, Society for American Archaeology Annual Meeting (Invited).
- Wilson, K.R., Kelley, J.T., Belknap, D.F., **Allen E.S.**, and Tanner, B.R., 2008, Identifying a Unique, Stratigraphic Signature for Maine's Salt Pool Environments, New England Estuarine Research Society Fall Meeting.

- Tanner, B.R., 2007, Determination of Carbon Sources to Salt Marsh Sediments Using n-Alkane Distributions and $\delta^{13}\text{C}$ Analysis, Baruch Marine Field Laboratory, University of South Carolina. (Invited)
- Griffith, A.**, Kinner, D., **McDowell, K.**, Tanner, B., and Young, R., 2007, Soil characterization for rivercane (*Arundinaria Gigantea* (Walter Muhl.)) restoration in Western North Carolina [abs]: GSA Abstracts with Programs, v. 39, no. 6, p. 243.
- Tanner, B.R., Perfect, E., and Kelley, J.T., 2007, Fractal Analysis of Maine's Formerly Glaciated Shoreline Tests Established Coastal Classification Scheme, Geological Society of America Abstracts with Programs v. 39, no. 1, p. 103.
- McDowell, K.L.**, **Griffith, A.D.**, Kinner, D.A., Tanner, B.R., and Young, R.S., 2007, Restoration of Rivercane (*Arundinaria Gigantea*) in Western NC: A Step Towards the Identification of Ideal Environmental Conditions, Geological Society of America Abstracts with Programs v. 39, no. 2, p. 29.
- Tanner, B.R., Uhle, M.E., and Mora, C.I., 2006, Compound Specific Isotopic Analysis of n-Alkanes and Distributions of Foraminifera from Four Maine, USA Salt Marsh Sites Record Marsh Responses to Frequent Late Holocene Disturbance, GSA Abstracts with Programs v. 38, no. 3, p. 26.
- Tanner, B.R., Uhle, M.E., Kelley, J.T., and Mora, C.I., 2005, Comparison of Bulk and Compound-Specific $\delta^{13}\text{C}$ Analyses and Determination of Carbon Sources to Salt Marsh Sediments Using n-Alkane Distributions (Maine, USA), Eos Transactions, Fall Meeting Supplement v. 86, no. 52, abstract B11A-1021.
- Tanner, B.R., and Uhle, M.E., 2004, Compound Specific Isotopic Analysis Provides Paleoenvironmental Information about a Machiasport, Maine Salt Marsh, Gordon Research Conference on Organic Geochemistry, Plymouth, NH.
- Tanner, B.R. and Uhle, M.E., 2003, C3/C4 Variations in Higher Salt Marsh Sediments: An Application of Compound Specific Isotopic Analysis of Lipid Biomarkers to Late Holocene Paleoclimatic Research, GSA Abstracts with Programs v. 35, no. 6, p. 437.
- Sandweiss, D.H., Richardson, J. III, Andrus, F., Houk, S., Piperno, D., Reitz, E., and Tanner, B., 2003, Update on Siches, and Early to Middle Holocene Fishing Site in Far Northern Peru, 22nd Northeast Conference on Andean Archaeology and Ethnohistory, Harvard University.
- Tanner, B.R., 2001, Lithic Analysis and Sourcing Survey at Quebrada Jaguay, Peru, 9th Annual J. Louis Agassiz Symposium, University of Maine.
- Tanner, B., Sanger, D., Yates, M., and Sandweiss, D., 2001, Preliminary Results from a Lithic Analysis at Quebrada Jaguay, a Maritime-Based Paleoindian Site, 19th Northeast Conference on Andean Archaeology and Ethnohistory, Dartmouth College.
- Sandweiss, D.H., Tanner, B., Sanger, D., and Piperno, D., 2000, Paleoindian-age Domestic Structure at a Peruvian Fishing Site, Society of American Archaeology Conference, Philadelphia, PA.
- Tanner, B.R., Sandweiss, D.H., 2000, Lithic Analysis at Quebrada Jaguay: Research Scope and Preliminary Analysis, 8th Annual J. Louis Agassiz Symposium, University of Maine.

RESEARCH GRANTS and CONTRACTS – Principle Investigator, CO-PI, or Collaborator

NSF Major Research Instrumentation, pending

“Acquisition of a Cavity Ring Down Carbon Isotope Analyzer at Western Carolina University”, \$183,317

-Gannon, J.P. (PI), Tanner, B. (Co-PI), Collins, B. (Co-PI)

NSF Paleo Perspectives on Climate Change, pending

“Collaborative Research and RUI: Reassessment of Late-Quaternary Paleoclimatology in the Southeastern U.S. with the Application of Novel Proxies at New and Established Sites”, \$127,342 (Tanner portion of request)

-Lane, C. (UNCW), Tanner, B., Porinchu, D. (UGA), principle investigators

WCU Provost Internal Funding Support Grant, 2015-2016, funded

“Isolated Wetlands - a WCU, USFS Collaboration”, \$10,000

-Styers, D., Tanner, B., principal investigators

NSF MRI, 2014, funded

“Acquisition of a gas chromatograph and isotope ratio mass spectrometer interface at UNCW”, \$171,151

-Lane, C. (UNCW), principal investigator

-B. Tanner was an official collaborator on this proposal and makes frequent use of the analytical equipment at UNCW

WCU Faculty Research and Creative Activities Award, WCU, 2013-2014, funded

“Paleoenvironmental Analysis of Local Wetlands”, \$5000

-B. Tanner was the principle investigator on this grant

NOAA Grant, WCU, 2011-2012, funded

“Monitoring of coastal wetland plant community change under a regime of sea level rise: Implications for marsh migration and carbon sequestration”, \$29,500

-B. Tanner was the principle investigator on this grant

NOAA Grant, WCU, 2011-2012, funded

“Groundwater recharge in different landscape elements, western North Carolina”, \$43,800

-B. Tanner was an official collaborator on this grant

Cherokee Preservation Foundation, 2010-2011, funded

“Rivercane Restoration Project”, \$12,000

-B. Tanner was a collaborator and partner on this grant and was in charge (w/Dave Kinner) of money allocated to WCU through a contract from this grant.

Schoodic Research Fellowship, Acadia National Park, 2009, funded

“Determination of Carbon Sequestration Rates in Salt and Freshwater Marshes in the Schoodic Section of Acadia National Park”, \$5,000

-B. Tanner was the principle investigator on this grant

Cherokee Preservation Foundation, 2007-2008, funded

“Western Carolina University Rivercane Project”, \$50,000

-B. Tanner was a co-PI on this grant

Maine Sea Grant, 2007-2008, funded

“Use of Biomarkers to Determine Life Cycles of Maine Salt Marsh Pannes”, \$3,000

-B. Tanner was the principle investigator on this grant

Baruch Marine Field Laboratory, 2007, funded

Visiting Scientist Award (Salt Marsh Carbon Sequestration Study), \$3,000

-B. Tanner was the principle investigator on this grant

WCU Faculty Research Grant, 2006-2007, funded

“Oxygen Isotope Record of Hurricane Activity Recorded in Tree Rings of Longleaf Pine”, \$12,500 (graduate student support)

-B. Tanner was the principle investigator on this grant

Cherokee Preservation Foundation, 2006-2007, funded

“Western Carolina University Rivercane Project”, \$101,000

-B. Tanner was a co-PI on this grant

Sigma Xi Grants-in-Aid of Research, 2004, funded

“Maine Salt Marsh Project”, \$752

UT Department of Earth and Planetary Sciences, 2004, funded

Discretionary Funds Award Supporting Maine Salt Marsh Research, \$650

Geological Society of America, 2004, funded
"Maine Salt Marsh Project", \$2,000

Geological Society of America, 2003, funded
"Maine Salt Marsh Project", \$1,800

University of Tennessee, 2002, funded
Scholarly Activity and Research Incentive Fund (SARIF), \$3,000

HONORS, AWARDS, SPECIAL APPOINTMENTS

Scholarly Development Assignment Program, WCU	Fall, 2015
Faculty Associate, University of Maine	Fall, 2015
Provost Fellow for Academic Community Engagement, WCU	2014-2015
Research Fellow, Program for the Study of Developed Shorelines, WCU	2007-Current
Chancellor's Meritorious Award for Engaged Teaching, WCU	2007
Outstanding Achievement in Interdisciplinary Research, University of Tennessee	2005
Gene Tipton Graduate Mineralogy Award, Knoxville Gem & Mineral Society	2004
Highest Graduate Student GPA, departmental award, University of Tennessee	2003

PROFESSIONAL ORGANIZATIONS

American Quaternary Association	Current
Geological Society of America	Current

INTERNAL SERVICE

WCU Representative on UNC Engagement Council (UNC System)	2014-2015
Marine Science Undergraduate Program Committee (UNC System)	2013-2014
Provost Advisory Board for Academic Community Engagement (Univ. Level)	2014-2015
Service Learning Course Designation Sub-committee (Univ. Level)	2015
WCU Community Scholarship Incubator Retreat Planning Committee (Univ. Level)	2014-2015
WCU Community Scholarship Incubator Retreat Session Leader	2015
Faculty Scholarship Task Force (Univ. Level)	2010-2011
Faculty Scholarship Advisory Council (Univ. Level)	2010-2011
Chair of Committee	2010-2011
University Research Council	2009-2010
University Scholar Award Sub-Committee	2010, 2011
Environmental Sciences Executive Committee (A&S)	2011-Current
College of Arts & Sciences Collegial Review Committee	2014-2015
College of Arts & Sciences Strategic Planning Committee	2013
College of Arts & Sciences Research Tech. Search Committee	2011
College of Arts & Sciences Safety Committee	2007-2014
College of Arts & Sciences Technology Committee	2007-2009
Geosciences & NRCM AFE Committee	2007-2008, 2012-2015
Chair of Committee	2012, 2015
Geosciences & NRCM CRD Committee	2011-2015
Geosciences & NRCM Student Recruitment and Retention Committee	2011-2012
Geosciences & NRCM Faculty Affairs Committee	2007-2013, 2016
Chair of Committee	2009, 2010, 2013
Geosciences & NRCM Resources Committee	2011-2012, 2013-2014
Geosciences & NRCM Business and Space Affairs Committee	2006/2007
Departmental Liaison for Career Services	2006-2010
Departmental Liaison for State Employees Combined Campaign	2006-2007
Geosciences QEP Point Person	2009-Current

Geosciences Search Committee for full time faculty hire	2005, 2006, 2010, 2013, 2014
Chair of Committee	2013
Chair of Geoscience Search Committee for adjunct hire	2015

EXTERNAL SERVICE

Dept. of Earth and Planetary Sciences Alumni Advisory Board, Univ. of TN	2015-Current
Geological Society of America, SE Section theme session convener	2006, 2015
Geological Society of America, SE section student poster contest judge	2015
Regional Science Fair Judge	2008, 2012, 2015
Pathways to Achieving Civic Engagement Conference Proposal Selection Committee	2014
Student Volunteer Coordinator for SE Geological Society of America Meeting, Asheville	2011-2012
Presentations to local elementary and middle school classes	2006, 2007, 2009, 2010, 2013
Science Fair Judge, Cullowhee Valley School	2009, 2010
Geology presentation to Boy Scout regional meeting	2006

REVIEWER

American Chemical Society, PRF Grant Program	2016
Quaternary Research	2015
Geomorphology	2015
Book Chapter Review (Natural Disturbances and Range of Variation: Type, Frequency, Severity, and Post-disturbance Structure in Central Hardwood Forests)	2014
Organic Geochemistry	2013
Wetlands	2011
Southeastern Geology	2009
Environmental Pollution	2008
Latin American Journal of Sedimentology and Basin Analysis	2008
National Science Foundation CAREER Program	2006, 2007
Antarctic Science	2007
Journal of Coastal Research	2006

UNDERGRADUATE STUDENT THESES SUPERVISED (WCU Geology does not require a senior thesis for students to complete their capstone requirement and our research seminar class is by far the most popular capstone option)

Chris Dunlap – Environmental change at a Southern Appalachian wetland	2015
Joel Bostic – Effects of hard stabilization on coastal salt marsh	2014
Blake Roberts – South Carolina salt marsh carbon sequestration	2013
Erin Parris – Biomarker analysis and environmental change at Panthertown Bog	2012
Lee Sorrels – Maine salt marsh carbon sequestration	2010
Harrison Carter – Carbon sequestration at Jackson Cty. Park wetland	2010
Evan Allen – Stratigraphic signature of Maine salt pools	2008
Katie McDowell – Rivercane soil characteristics	2007

Lauren R. Bishop

lbishop@wcu.edu

60 Love Lane

Waynesville, NC 28786

828.335.3135

OBJECTIVE:

Director of sustainability in higher education.

EDUCATION:

Master of Arts in Industrial Technology, Building Science

Appalachian State University, Boone, NC

May 2005

B.S.B.A. in Real Estate and Urban Analysis

Appalachian State University, Boone, NC

May 2001

CURRENT POSITION:

Chief Sustainability Officer/Director of Sustainability & Energy Management,

Facilities Management, Western Carolina University

Cullowhee, NC

September 2013 – Present

Owner, Love Lane Flower Farm

Waynesville, NC

March 2016 - Present

- ***Sustainable Energy Management & Waste Reduction*** – Support management of energy usage and building automation systems for campus. Identify and implement energy conservation measures. Assist in management of campus recycling program and sustainable transportation opportunities.
- ***Project Management*** – Develop and manage energy related capital projects including: energy performance contracting, campus metering, building automation systems, & building commissioning. Assist Planning, Design, & Construction with sustainable energy aspects of capital projects.
- ***Programing & Engagement*** – Plan and manage Sustainable Energy Initiative. Plan and organize annual sustainability events with key stakeholders on campus and community partners including: Campus Sustainability Day, Campus Conservation Nationals: Battle of the Plug, RecycleMania, Earth & Wellness Celebration, Wild & Scenic Film Festival.
- ***Education & Outreach*** – Instructed LEAD 152, a Go Green Living Learning Community (LLC) since 2007. Instructed ES 350 spring 2014. Founder and advisor of Eco CATS student organization. Founder and chair of campus Sustainability Council. Work with various departments on campus to facilitate faculty and student research and projects. Present sustainability education to campus community. Work with several community partners to strengthen university relationship and identify opportunities.
- ***Planning & Policies*** – Develop several institutional and UNC system plans and policies including: WCU Sustainability Master Plan, UNC Sustainability Policy, Appalachian Energy Summit, WCU Recycling Plan, WCU Strategic Energy Plan, & WCU Petroleum Displacement Plan.
- ***Grant Awards*** - 2008 DENR Mobile Source Emission Reduction Grant \$6K, 2009, State Energy Office Energy Reserve Fund Grant \$15K, 2009 State Energy Office ARRA Grant \$717K, 2010 DENR DEAO State Agency Recycling Grant \$5K, 2012 Keep America Beautiful Alcoa Bin Grant \$5K.

RELATED EXPERIENCE***Energy Manager, Facilities Management, Western Carolina University***

Cullowhee, NC May 2007 – September 2013

- Manage all aspects of energy usage and building automation systems for campus. Identify and implement energy conservation measures.

Assistant Director Facilities, Department of Residential Living, Western Carolina University

Cullowhee, NC September 2005 – April 2007

- Managed and processed all maintenance work order requests for residential living. Assisted with managing capital improvement projects. Supervised 4 full time maintenance mechanics, paint shop, and 15-30 student workers. Implemented first residence hall energy competition and campus Earth Day celebration.

Graduate Research Assistant, Appalachian State University Energy Center

Boone, NC September 2003 – June 2005

- Assisted in the research, development, and implementation of high performance, affordable housing. Assisted in facilitating construction technology curriculum. Member of design team for Affordable Passive Solar Plan Book.

AFFILIATIONS & CERTIFICATIONS:College and University Recycling Coalition, *2016-present*President of Board of Directors, Haywood Waterways Association, *2014-2016*Southeastern Campus Sustainability Coordinators Network, *2014-present*UNC Sustainability Alliance, *2013-present*Land of Sky Clean Vehicles Coalition, *2012-present*Haywood Community College Regional Center for the Advancement of Children PTO, *2012-2015*Professional Energy Manager, Institute of Energy Professionals, *2011-present*Energy Management Diploma, NC State University, *2011-present*Member U.S. Green Building Council (USGBC), *2010-present*Member Association for Advancement of Sustainability in Higher Education (AASHE), *2009-present*WCU Staff Senate, *2007-2009***PRESENTATIONS & EXHIBITS:**2016 Appalachian Energy Summit: Academic Integration Case Study-A Road Map (*presenter*)2015 WCU QEP Finalist: Sustain! Campus as a Living Learning Lab (*presenter & white paper*)2014 Region 8 Western Regional Science & Engineering Fair (*exhibit & judge*)2014 Region 8 NC Teacher's Association Professional Development Drive-in (*exhibit & presenter*)2011-2012 NC Sustainable Energy Conference: *LEED Case Study: Health & Human Science Building*2009 Annual AASHE Conference: *STARS Pilot Phase, Petroleum Displacement Plan Lessons Learned***AWARDS:**

2016 WCU Recognized Student Organization Advisor of the Year

2016 WCU First Year Experience Advocate Finalist

2014 Campus Conservation Nationals Top 10 in U.S. (*Battle of the Plug*)2012-2016 Princeton Review Guide to Green Colleges (*WCU*)2014 WCU Recognized Student Organization of the Year (*Eco CATS*)2012 State Energy Office UNC Utility Saving Initiative Leadership Award (*WCU*)2010 WCU Most Innovative Program (*Eco CATS*)

2009 WCU Bright Idea Award

2006 WCU Student Affairs Bright Idea Award

Cynthia Atterholt
Associate Professor of Chemistry
Western Carolina University

Education:

Kent State University, Kent, OH	B.S. Ed.	1977	Chemistry and Mathematics
Winthrop University, Rock Hill, SC	M.B.A.	1987	Business Administration
University of California, Davis, CA	Ph.D.	1996	Agricultural & Environmental Chemistry

Research and Professional Experience

2002-Present	Associate Professor of Chemistry, Department of Chemistry and Physics, Western Carolina University, Cullowhee, NC.
2004-2015	Department Head, Department of Chemistry and Physics, Western Carolina University, Cullowhee, NC.
1996-2002	Assistant Professor of Chemistry, Department of Chemistry and Physics, Western Carolina University, Cullowhee, NC.
1991-1996	Research Assistant, University of California, Davis, Departments of Biological & Agricultural Engineering and Food Science & Technology.
1984-1991	Chemistry Teacher, Clover High School, Clover, SC.
1981-1984	Development Chemist, Sandoz Chemical Corporation, Charlotte, NC.
1977-1981	Chemical Lab Technician, Union Carbide, Linde Division, North Royalton, OH.

Publications and Patents:

- Frederique M. De Lame, James R. Miller, Cynthia A. Atterholt, and Larry J. Gut, "Development and Evaluation of an Emulsified Paraffin Wax Dispenser for Season-Long Mating Disruption of *Grapholita molesta* in Commercial Peach Orchards," *Journal of Economic Entomology*, 2007, 100 (4); 1316-1327.
- Invited article on the agricultural use of pesticides published by McGraw-Hill Publishers. The article was published in a set of Chemistry books entitled "Chemistry: Foundations and Applications," 2004.
- A.L. Salido, C.A. Atterholt, J.R. Bacon, and D.J. Butcher, "An Environmental Focus using Inductively Coupled Plasma Optical Emission Spectrometry and Ion Chromatography," *J. Chem. Ed.*, 2003, 80, 22-23.
- D.J. Butcher, P.F. Brandt, N.J. Norgaard, C.A. Atterholt, A.L. Salido, "Sparky IntroChem: A Student Oriented Introductory Chemistry Course," *J. Chem. Ed.*, 2003, 80, 137-139.
- Atterholt, C., D. Butcher, J. R. Bacon, W.R. Kwochka, and R. Woosley. 2000. Implementation of an environmental focus in an undergraduate chemistry curriculum by the addition of gas chromatography-mass spectrometry. *Journal of Chemical Education* 77 (12): 1549-1550.
- Meissner, H.E., C.A. Atterholt, J.F. Walgenbach and G.G. Kennedy. 2000. Comparison of pheromone application rates, point source densities and dispensing methods for mating disruption of tufted apple bud moth (Lepidoptera: Tortricidae). *J. Econ. Entomol.* 93:3.
- Delwiche, M., J. Krochta, R. Rice, and C. Atterholt. Aqueous emulsion comprising biodegradable carrier for insect pheromones and methods for controlled release thereof. United States Patent, Patent number 6,001,346, December 14, 1999.

- Atterholt, C. 1999. Book review of *Chemistry and Mode of Action of Crop Protection Agents*, by L. Copping and H. Hewitt, published by The Royal Society of Chemistry, in *J. Am. Chem. Soc.* **121** (40), p. 9486.
- Atterholt, C., M. Delwiche, R. Rice, and J. Krochta. 1999. Controlled Release of Insect Sex Pheromones from Paraffin Wax and Emulsions. *J. Controlled Release*, **57** (3): 233-247.
- Atterholt, C., M. Delwiche, R. Rice, and J. Krochta. 1998. Study of biopolymers and paraffin as potential controlled-release carriers for insect pheromones. *J. of Ag. & Food Chem.*, **46** (10), pp. 4429-4434.
- Delwiche, M., C. Atterholt, R. Rice. 1998. Spray Application of Paraffin Emulsions Containing Insect Pheromones for Mating Disruption, *Transactions of the ASAE* **41**(2):475-480.
- Rice, R., C. Atterholt, M. Delwiche, and R. Jones. 1997. Efficacy of mating disruption pheromones in paraffin emulsion dispensers. *Technology Transfer in Mating Disruption IOBC wprs Bulletin*, **20** (1), pp. 151-161.

Abstracts and Presentations:

- Kristen Jordan and Cynthia Atterholt, "Characterizing the Rheological Properties of Wax Emulsions used as Carriers for Biopesticides in Agricultural Management," poster presentation, March 9, 2016, The Pittsburg Conference on Analytical Chemistry, Atlanta, GA.
- Brooke Bien and Cynthia Atterholt, "Pesticide Residue Analysis of Cereal Grains Treated with Traditional Fungicides or a Tannic Acid Biopesticide," poster presentation (1750-2 P), March 11, 2016, The Pittsburg Conference on Analytical Chemistry, Atlanta, GA.
- Crystal Noelle, Shea Connelly, and Cynthia Atterholt, "The Development of Tannic Acid Wax Emulsions as a Biopesticide for Agricultural Applications," Undergraduate Expo poster presentation, March 23, 2015.
- Crystal Noelle and Cynthia Atterholt, "A Study of Wax Emulsions used for the Controlled Release of Natural Products used as a Feeding Deterrent for Deer," poster presentation, October 19, 2014, SERMACS, Nashville, TN.
- Crystal Noelle and Cynthia Atterholt, "Emulsions as a Deer Repellent," Undergraduate Expo poster presentation, March 24, 2014.
- Cynthia Atterholt, Sam Burrus, and Afton Harris, "A comparison of soy, paraffin, and microcrystalline wax emulsions used for the controlled release of insect pheromones," poster presentation at the National ESA Conference, Knoxville, TN, November 14, 2012.
- Samuel Burrus, Julie Combs, and Cynthia Atterholt, "Rheological properties of aqueous wax emulsions," Undergraduate EXPO, WCU, March 26, 2012.
- Cynthia Atterholt, "Controlled Release Pheromones: an alternative to pesticide use in agriculture" at Brevard College in Brevard, NC, April 5, 2011.
- Stephen Ballew and Cynthia Atterholt, "Rheological Characteristics of Aqueous Wax Emulsions Used for the Controlled Release of Pheromones as an Alternative to the Use of Pesticides for Insect Pest Management," presented at SERMACS, New Orleans, LA, December 1, 2010; the Graduate Research Symposium, WCU, March 24, 2011; and Science in the Mountains, April 19, 2011.
- Afton Harris and Cynthia Atterholt, "A Laboratory Evaluation and Comparison of the Release Rates of Oriental Fruit Moth Pheromone from Soy, Paraffin, and Microcrystalline Wax," presented at the Undergraduate Expo, March 21, 2011, and Science in the Mountains, April 19, 2011.

- Lisa McCracken and Cynthia Atterholt, "Evaluation of wax carriers for the controlled release of pheromones for mating disruption in an integrated pest management program." Poster presentation (AGFD-192) at the 239 National ACS meeting in San Francisco, CA, March 23, 2010. The poster was also chosen for the Sci-Mixer event on March 22, 2010.
- Vonny M. Barlow, James F. Walgenbach, Paul H. Davis, Cynthia A. Atterholt, "Performance of selected pheromone reservoir systems for mating disruption of codling moth in the Eastern commercial apple production system." Presented at the National Entomological Society of America meeting in Indianapolis, IN, December 15, 2009.
- R. Borges, L. E. J. Mafra, F. M. De Lame, James R. Miller, Larry J. Gut, T. P. Reed, Cynthia A. Atterholt, Reginald R. Coler and Agenor Mafra-Neto, "SPLAT-OFM A & K: a new sex pheromone tool to manage oriental fruit moth populations." Paper presentation at the National Meeting of the Entomological Society of America, Fort Lauderdale, FL, December 2005. Agenor Mafra-Neto was the presenting author.
- Rafal Krugly, Cynthia Atterholt, and James Walgenbach, "Factors Affecting the Release of Oriental Fruit Moth Pheromone from 3M™ Sprayable Pheromone." Poster presentation at the National Meeting of the Entomological Society of America, Cincinnati, OH, October 2003.
- F.M. de Lame, C.A. Atterholt, J.R. Miller, and L.J. Gut. The potential of paraffin-based pheromone dispensing systems for the mating disruption of Oriental fruit moths, *Grapholita molesta* (Busck). Presented at the Cumberland-Shenandoah Fruit Workers Conference, Nov. 2002. F. M. de Lame was the presenting author.
- F.M. de Lame, J.R. Miller, C.A. Atterholt, and L.J. Gut. Successful development of a paraffin wax-based pheromone dispenser for season-long mating disruption of the Oriental fruit moth, *Grapholita molesta* (Busck) in commercial peach orchards in Michigan, USA. IOBC Working Group Meeting: Pheromones and Other Semiochemicals in Integrated Production, Erice, Sicily, September 2002. (poster) F. M. de Lame was the presenting author.
- Atterholt, C. Paraffin Pheromone Formulations and their Potential in Mating Disruption, Michigan State University, October, 2001.
- Atterholt, C., T. Gore, E. Lincoln, J. Walgenbach. Determining Laboratory Release Rates of Synthetic Insect Pheromones Used as Pesticide Alternatives for Insect Pest Management. Federation of Analytical Chemistry and Spectroscopy Societies, Detroit, MI, October, 2001.
- Atterholt, C. Controlled Release of Pheromones from Paraffin and Paraffin Emulsions, Research meeting, Gowan Chemical Co., Yuma, AZ, January 2001.
- Gore, T., C. Atterholt, J. Walgenbach. Comparison of Paraffin Emulsion and Isomate® Dispensers for Mating Disruption of Oriental Fruit Moth and Codling Moth. Entomological Society of America National Meeting, Atlanta, GA, December, 1999.
- Gore, T., C. Atterholt, J. Walgenbach. Laboratory and Field Studies of Codling and Oriental Fruit Moth Pheromones. Southeastern Regional Meeting of the American Chemical Society, Knoxville, TN, October, 1999.
- Sanders, E., C. Atterholt, J. Walgenbach. Evaluation of the Release Rates of Codling Moth Pheromone from Various Dispensers and a Comparison of Laboratory and Field Data. The Annual National Black Graduate Student Conference, Baton Rouge, LA, May 1999.
- Woosley, R., C. Atterholt, J. R. Bacon, and D. Butcher. Impact of gas chromatography-mass spectrometry (GC-MS) on the chemistry curriculum at Western Carolina University. National Meeting of the Am. Chem. Society, New Orleans, LA, August 1999.

Atterholt, C. Controlled Release of Insect Pheromones from Paraffin for Mating Disruption of Orchard Pests, Federation of Analytical Chemistry and Spectroscopic Societies, Austin, TX, October 12, 1998.

Roles, D.C., C. Atterholt, H. Meissner, and J. Walgenbach. 1997. Release Rates of Tufted Apple Bud Moth Sex Pheromone at Various Concentrations and Temperatures. Annual Meeting of the Entomological Society of America, Nashville, TN, Paper #214.

Grants and Awards

Chancellor's Travel Fund Award in the amount of \$1000 to attend the National ESA meeting in Knoxville, TN, November, 2012.

Chancellor's Travel Fund Award in the amount of \$1000 to attend the National ACS meeting in San Francisco, CA, March 21-25, 2010.

Research gift in the amount of \$10,000 funded by ISCA Technologies Inc., 2010.

Research gift in the amount of \$1500 funded by ISCA Technologies Inc., 2006.

PI on an internal grant from the Institute for the Economy and the Future, 2005, in the amount of \$2000 to study the controlled release of Gypsy Moth pheromones.

Collaborator on an EPA grant for an air quality study, 2003. WCU received \$164,203 for our part of a \$750,000 collaborative research project to study the effects of air quality on the lung function of hikers in the Great Smoky Mountain National Park.

Research gifts in the amounts of \$5000 and \$1000 funded by Gowan, Inc., 2000 and 2001.

Co-PI on a \$2500 faculty research grant funded by the Office of Research and Graduate Studies at WCU for the period 7/99 to 6/2000, entitled "Solid Phase Microextraction for the Determination of Volatile chemicals in Fraser Fir Tissue."

Research gifts in the amounts of \$2000 and \$1000 funded by Agrium Inc., 1998 and 1999.

Co-PI on a \$76,000 grant funded by NSF CCLI-A&I, July 1999, entitled Implementation of an Environmental Focus in an Undergraduate Chemistry Curriculum using Inductively Coupled Plasma Optical Emission and Ion Chromatography."

Co-PI on a \$43,744 grant was funded by NSF-ILI, July 1997, entitled, "Implementation of an Environmental Focus in an Undergraduate Chemistry Curriculum by the Addition of Gas Chromatography-Mass Spectrometry."

Professional Affiliations:

Member, American Chemical Society

2nd Review
7125

Approved MLL BR
7/30/12

**Department /Division: Environmental Science Program
Department Collegial Review Document
Effective Fall Semester 2012**

**Policies, Procedures, and Criteria for Faculty Evaluation:
Annual Faculty Evaluation, Reappointment, Tenure, Promotion, and Post-Tenure Review**

I. Overview

The purpose of this document is to describe the policies, procedures, and criteria for faculty performance evaluation in the Environmental Science Program. The document is guided by *The Code* of the UNC system and by the Faculty Handbook of Western Carolina University.

The environmental science (ES) program is interdisciplinary; the degree program represents a deliberate blending of courses and faculty expertise across several science disciplines within the College of Arts and Sciences (Biology, Chemistry, Geology, Natural Resource Conservation and Management, Philosophy and Religion), and one program in the College of Health and Human Sciences (Environmental Health). The ES program is governed by a Program Director and an Executive Committee consisting of faculty from the disciplines listed above. We recognize that faculty vary in their teaching, scholarly and service activities, and that there is not a single model that defines success. This AFE/TPR document for faculty with an ES appointment reflects the interdisciplinary nature of the appointments of ES faculty.

For purposes of AFE and TPR for ES faculty:

- The Department Head (DH) for ES faculty is the DH of the administrative home of the ES Program, currently Chemistry and Physics.
- The AFE and TPR committees for ES faculty will consist of the same individuals.
- Evaluation of ES faculty will reflect the teaching, scholarship and service contributions to Departments in which the ES faculty being evaluated hold teaching appointments.
- Where ES faculty hold interdisciplinary appointments, separate AFE/TPR evaluations by Departments outside of ES will not be done, because the interests of these Departments will be represented by their DHs and by individuals from these Departments on the ES AFE/TPR committee.
- The AFE/TPR committee for ES faculty will consist of tenured individuals as follows: 1 faculty from each Department in which the ES faculty has a teaching appointment but who are not on the ES Executive Committee, 3 people from the ES Executive Committee excluding the DH for ES, and the DH of ES as the nonvoting committee chair.
- Individuals on the AFE/TPR committee from outside the ES Executive Committee will be appointed by their respective Department Heads. Individuals on the AFE/TPR committee from within the ES Executive Committee will be selected by election within the ES Executive Committee.

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- The DH statements for AFE and TPR will be prepared by the DH for the ES program. Heads of Departments in which the ES faculty being evaluated has a teaching appointment will sign the statement prepared by the DH for ES, with an option to include an addendum to the ES DH statement that reflects additional information regarding the ES faculty members' contribution to their Department.

Summary of Responsibilities of the Director of the Environmental Science Program

In addition to teaching and scholarship, primary responsibilities of the ES Program Director are to provide leadership and coordination for the ES program including (1) recruiting, retention and job placement, (2) curriculum, (3) advising, (4) ES Executive Committee, and (5) equipment and budget.

Recruitment/retention/job placement leadership includes overseeing the development and updating of open house and other promotional materials such as FAQ sheets, brochures, etc.; coordinating participation in open house and majors fairs, coordinating participation in summer orientation programs, coordinating oversight of the ES website, coordinating development and maintenance of career opportunity resources and career advising; assisting WCU with relations with alumni who have a BS degree in ES from WCU.

Curriculum leadership includes coordination with participating disciplines; coordinating ongoing evaluation of courses for inclusion in the program; coordinating degree audit revisions.

Leadership in advising includes working with the ES Executive Committee on advising procedures and assignment of advisees; providing oversight for ES student graduation paperwork; coordinating junior/senior course plans and presenting these plans to the ES Executive Committee for approval; coordinating advising for the Environmental Stewardship club; coordinating development of advising materials such as progress check sheets, etc.

Leadership with the ES Executive Committee includes organizing and chairing committee meetings and providing leadership for ES-related issues and administrative activities.

Leadership with the equipment and budget includes making sure ES supplies and equipment needed to run the program are ordered and maintained within the budget.

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II. Domains of Evaluation

A. Teaching (Faculty Handbook Section 4.04 & 4.05)

1. Teaching effectiveness is evaluated according to the following 3 dimensions:

a) Pedagogical Content Knowledge--Effective teachers remain current in their fields, know how students learn, and recognize what prior information, including misconceptions, students bring to their courses. Most important, they know how to combine these three kinds of knowledge to create teaching acts that lead to student learning. Using their pedagogical content knowledge, scholars restructure their expertise in forms that are understandable and useable by their students. An instructor's pedagogical content knowledge is reflected in the teaching acts that represent a discipline's central concepts, skills and recent advances through a variety of means, including classroom explanations, assignments, and other course requirements. Teachers become more effective as they repeatedly engage in these teaching acts and find out what is easiest and most difficult for their students and modify their teaching accordingly.

b) Professional Aspects of Teaching-- Effective teaching relies upon the ability to perform well the required administrative and professional functions associated with instruction. While good teaching relies upon disciplinary expertise – and different disciplines often approach teaching differently – teaching is also a profession that requires common duties regardless of area. Such functions include, for example, providing appropriate and timely feedback to students, providing clear instructions, providing regular information regarding progress, responding appropriately and in a timely manner to students, making materials available, holding classes and making suitable use of class time. Highly effective teaching is more than class management; it is class management that relies upon an instructor's ability to perform the duties associated with the job.

c) Student Response to Instruction--Students have a unique and important perspective on certain components of teaching effectiveness. They value intellectual engagement, enthusiasm, and passion for course content. Course organization and clarity, two aspects that relate to student success, are validly rated by students. Effective teachers are available to the students. The extent to which the student feels respected and shares a sense of rapport with the instructor correlates with teaching effectiveness.

2. Methods of evaluation and sources of evidence

- a) Self-evaluation of teaching, addressing the 3 dimensions of effective teaching. (4.05A)
- b) Peer review of teaching materials --including syllabi, examinations, study guides, handouts, assignments, etc. ~~will be conducted by the AFE/TPR committee.~~ (4.05B2b)
- c) ~~Direct observation of instruction using the departmental protocol. (4.3.1.1) Direct observation of non-tenured faculty will occur once per year. The observation will be performed by a tenured member (other than the DH) of Department in which~~

Deleted: The ES AFE committee will elect a three faculty member committee (exclusive of the department heads) to conduct the peer review of teaching materials.

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the ES faculty is teaching. The results of the observation will be presented in the form of a letter to the ES AFE/TPR committee.

- d) Student assessment of instruction, using a form of the university-wide SAI instrument--required of all sections of all courses taught by untenured faculty. (4.05A)

3. General comments

Faculty should have the ability to create an atmosphere for learning, and stimulate learning by students. This ability can best be assessed through the University criteria outlined above. In addition to satisfactorily meeting these University expectations, the cumulative record of ES faculty should reflect their contributions to meeting the teaching loads within the Departments in which they have teaching appointments. Depending on the Department, these contributions can include teaching service and core courses: 100-300 level; teaching 300-600 elective level courses; teaching courses involving individual instruction at the undergraduate and/or graduate level.

Evaluation of Pedagogical Content Knowledge

Faculty members should be able to evaluate the current state of their pedagogical content knowledge for a particular course by responding to the questions: "What am I doing to help my students understand the most important material in my field?" and "How have I changed my teaching practices to help students understand the central concepts, skills and advancements for the courses I teach?"

Peer evaluators should be able to see evidence of pedagogical content knowledge in the portfolios of materials faculty members submit, including their syllabi, assignments, exams, classroom exercises, and self evaluations. Peer observation reports may include categories that reflect how instructors have used pedagogical content knowledge in the design of their instruction.

- Statement (by faculty member) discussing how instruction has changed or developed in relation to his/her discipline.
- Peer evaluation of the extent to which a faculty member's pedagogy is appropriate to the discipline.

Evaluation of professional Aspects of Teaching

These workday aspects of teaching are separate from, but related to, both academic expertise and student perception of learning, and they may be assessed by peers and students. Direct observation by peers of instruction, as well as peer review and evaluation of materials, can provide evaluation of a faculty member's organizational and administrative performance in their classes. Student feedback (on SAIs for example) may reflect performance in this area.

- Feedback from direct observation of teaching
- Peer review of teaching materials
- SAI responses on relevant items, such as:
 - My instructor is well prepared for class meetings, or
 - Feedback from the instructor clearly indicates my standing in this course.

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Evaluation of Student Response to Instruction

- Feedback from direct observation of teaching. kEvaluation by peers of teaching materials.
- SAI responses.

a) Professional Development

Documentation of professional development to enhance teaching includes activities such as participation in pedagogy-related conferences and workshops, and observing other faculty teaching (especially in courses within Departments in which ES faculty hold teaching appointments).

B. Scholarship and Creative Works (4.05C)

1. WCU recognizes as legitimate forms of scholarly activity the four types described by Boyer. Specific departmental perspectives on these categories, relative valuations of various forms of scholarly activity, and department-specific examples of each, are described in #2 below.

- a) **Scholarship of discovery** – Original research that advances knowledge. Also includes creative activities such as artistic products, performances, musical, or literary works.
- b) **Scholarship of integration** – Synthesis of information across disciplines, across topics, or across time.
- c) **Scholarship of application** – Application of disciplinary expertise with results that can be shared with and/or evaluated by peers.
- d) **Scholarship of teaching and learning** – Systematic study of teaching and learning processes.

2. Methods of evaluation and sources of evidence—including acceptable processes for peer review

Scholarship productivity of untenured tenure-track faculty must be dominated by discovery. Scholarship productivity of tenured faculty may reflect any mixture of the four types described above. Evidence of productivity is indicated by the following:

- * participation in research;
- * number, and quality of publications;
- * recognition by professional organizations such as invitations to speak or participation in panel discussions, election to office, requests for critical reviews of research proposals, requests to referee articles by other scientists;
- * evidence of participation in student research such as the production of reports, student oral or poster presentations, theses, or published articles;
- * evaluation of work by peers outside the ES Program and the University. All scholarship must be peer reviewed defined as evaluation of scholarly work by people with knowledge and expertise in the discipline in order to determine the quality of the work; and where the results of that assessment are made known to the faculty member and others, as appropriate for the work being evaluated. Scholarly work must be disseminated to a broad audience so that knowledge is advanced. In cases where scholarly work does not fit the traditional academic peer

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review model it is the responsibility of the faculty member to document in writing how their scholarship fits into the model;

- * presentation of papers or posters at professional meetings;
- * evidence of keeping abreast of the developments in the discipline;

To meet expectations in the area of scholarship, the faculty member must show productivity in the scholarship of discovery prior to obtaining tenure. Scholarship of application, integration, and of teaching and learning are also recognized and valued by the ES program. However, productivity in these other areas must not be the sole source of scholarship for the granting of tenure.

3. **General comments** – Scholarship is expected of all tenure-track and tenured faculty in the ES Program though the type, amount, and role of scholarship may vary between faculty members due to stage of career, expertise, interests, and/or needs of the University; Department; or Program. Because appointments in ES are interdisciplinary, scholarship may reflect a broad range of topics across the disciplines within which ES faculty have appointments.

- a) **Grant proposals and awards** – The cumulative record of faculty should show evidence of active attempts to obtain funding if required to maintain their research/teaching programs.
- b) **Professional development** in scholarship is enhanced by a faculty member's participation in activities such as grant writing workshops, short courses that demonstrate use of new technology within their discipline, working with and/or using equipment (that WCU does not have) of colleagues at other institutions or agencies. Participation in a mentoring program as the person being mentored is also considered professional development.

C. Service (4.04C3 & 4.05D)

1. Types of service

- a) **Institutional service** is general expertise service done as an act of good citizenship such as serving on committees, recruiting students, mentoring new faculty members and advising administrators.
This type of service might include participation in committee work at the program, departmental, college and university level; participation in open house activities for ES, orientation and other forms of student recruitment for ES; helping new faculty members succeed in their new positions by providing advice regarding teaching, research and service; advising administrators regarding the needs of the program; department; college; university (this can include advice regarding changes in curriculum, programs, student enrollments, grant requests, challenges associated with resources for advising, teaching and research, personnel issues etc.); helping each other by presenting guest lectures in other faculty's classes, if a faculty is unable to hold class.
- b) **Community engagement** might include professional activities such as participation in local primary or secondary school activities, presentations to local community groups, aid to local organizations that require disciplinary expertise, mentoring elementary, middle and high school students, participation in

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science fair judging, professional volunteer work and interactions with media.

c) Special expertise, unusual time commitments, or exceptional leadership can include:

- * Service related to: ES program director duties; seminar series coordination; hosting special speakers; operation and management of core facilities; library liaison; invited presentations at the local, state, national or international level; grant proposal review, manuscript reviews; editor positions for books, chapters and journals; professional societies as an officer, committee member or program organizer.
- * Service on committees that require an extraordinary amount of time, such as faculty senate, over-sight or advisory committees.
- * Service related to exceptional leadership that provides an improved instructional quality, administration, or research capabilities.

d) Advising students includes being informed about curriculum and related processes, being available to advisees, and assisting academic and career planning. ES faculty should have familiarity of the different disciplines in which they hold teaching appointments. Familiarity may include:

- * specific degree requirements and options for each program in which the faculty member has advisees;
- * where to direct students to find research options for students in programs requiring a senior research project;
- * how science and math courses fit into the liberal studies requirements;
- * requirements for liberal studies, junior/senior courses and total hours toward graduation;
- * requirement of availability to meet with advisees during advising time and during the drop/add period of the semester;
- * responsibility for timely responsiveness to email and telephone inquiries regarding advising;
- * where to direct students to find out about career opportunities.

2. Methods of evaluation and sources of evidence –Administrative professional judgment can appropriately be applied in this area of evaluation. The workload of Committee Chairpersons will be taken into account. Other evidence such as letters of appreciation can be taken into account.

3. General comments – ES faculty should have the ability to serve the University and the public in ways appropriate to their discipline and an educational institution of our type. The service load of ES faculty should reflect their interdisciplinary appointments and thus be distributed across the Departments in which ES faculty hold teaching appointments.

a) Professional development for service may be enhanced by participation in activities that improve leadership, advising, or engagement skills (e.g.,

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workshops, conferences, training sessions, formal courses)

III. Specific Procedures for Review Events

A. Annual Faculty Evaluation (4.05)

1. Overview

The statements in Section I of this document apply to the AFE review process. The Domains of Evaluation for teaching, scholarship and service expectations described in Section II of this document serve as the basis for evaluation of the 1-calendar-year reflected in each AFE portfolio. In addition:

- * It is expected that all tenured ES faculty will serve on AFE committees of Departments in which they have teaching appointments on a rotating basis, with a length of service consistent with the policies of the respective Departments.
- * The AFE Committee for ES faculty will review materials submitted by each ES faculty member and will make written comments regarding teaching, scholarship, and service. A single written statement prepared by the AFE committee and signed by the Chair of the Committee will be forwarded to the Department Head for ES. The Department Head will use information provided in the ES faculty member's AFE document plus the ES AFE Peer Review Committee's statement in preparing his/her letter. Further, input and review of this letter will be solicited by the home Department Head for ES from all other Department Heads where the ES faculty member holds an appointment. This letter will be signed by all contributing Department Heads.
- * The ES faculty member will be given statements from the ES Department Head and the Committee. The faculty member has one week to respond to the Committee and Department Head reports. If requested by the faculty member, or offered by the Department Head, a consultation can occur where the Department Head and faculty meet to review the evaluation and discuss ways to improve performance if necessary. The faculty member must sign the Department Head and Committee reports to indicate receipt, but has the right to add a written statement of acceptance, clarification, or rebuttal to be included with the Department Head's report. The Head shall, following the meeting with the individual and receipt of any additional written statement from the faculty member, reconsider his/her report and either amend, or forward it as previously written.
- * A summary of the year's departmental AFE results from the Department Head, the Review Committee, and any written statements by the faculty member shall be prepared and submitted by the Department Head to the Dean of Arts and Sciences by the deadline established by the Dean.

2. Composition of review committee

The composition of the AFE committee is identical for the TPR committee for the calendar year. The composition of this committee is described in "Section I. Overview" of this document. When the AFE of a member of this committee is being reviewed, that member will excuse him/herself from the process.

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3. Procedures and preparation of documentation

a. All full-time faculty members must prepare an AFE document that includes:

1) Teaching

- a) self-evaluation addressing three teaching dimensions of teaching (as outlined in Section II.A.1), statement of teaching philosophy, description of goals, methods, and strategies used; selected teaching materials for courses taught during the review period.
- b) ~~copies of teaching materials including the syllabi, final exam, and one or two exercises from each class taught~~
- c) direct observation of classroom teaching reports or summaries (if required).
- d) Student Assessment of Instruction.

Deleted: peer evaluations of

Comment [W1]: The manner by which peer review of teaching materials is considered in the AFE process is discussed in section II.2 b

Deleted: (from the three faculty member review committee elected by the ES AFE committee).

2) Scholarship and Creative Activity

- a) one-paragraph self-evaluation summary of scholarship
- b) scholarship activities (as outlined in Section II B above) listed in a template provided by the DH.

3) Service

- a) one-paragraph self-evaluation summary of service
- b) service activities (as outlined in Section II C above) listed in a template provided by the DH.

b. Specific guidelines for preparation of the AFE document

The AFE Portfolio is due to the ES AFE committee by the last Friday in February each year. The portfolio will include information for items III. A.3.a.1-3, along with course syllabi and exams from the previous two semesters assembled in a binder. Faculty may include other instructional-related materials in addition to syllabi and exams if they so choose.

A blank template will be provided each year by the Department Head and will include tables and a standard format to document teaching load and activities, scholarship productivity and activities, and service load and activities with categories reflecting items III. A. 3. a. 1-3 of this document.

c. Evaluation of part-time/non tenure-track instructors (4.05F) whose only responsibility is teaching:

- * Teaching effectiveness will be evaluated based on the 3 dimensions, using data from the following sources:
 - 1. **Direct observation of teaching by tenured peers**
 - 2. **Peer review of teaching materials**, using the Department AFE format for teaching, with review occurring each spring
 - 3. **Student Assessment of Instruction**, using the University approved instrument, for each course taught.
- * The Department Head will write an evaluation summary of teaching effectiveness during AFE preparation in the spring
- * The Department Head shall place in the part-time faculty member's file the evaluation summary, the peer teaching observation report, peer review of

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teaching materials, and a summary of all available SAI reports.

III. B. Reappointment, Tenure and Promotion (4.06 & 4.07)

1. **Overview** – Statements in Section I of this document apply to the reappointment, tenure and promotion review process. The Domains of Evaluation for teaching, scholarship and service described in Section II of this document serve as the basis for evaluation of a faculty member's cumulative record.

Faculty are expected to show improvement or continued excellence in teaching during their five years leading up to tenure application as reflected in peer evaluations and student evaluations.

Faculty are expected to increase their service as they progress through their tenure track period. Faculty initially serve only on departmental committees and have few advisees, by the third and fourth year faculty are expected to also serve on college and/or university wide committees and to carry an increased advising load.

Faculty are expected to begin their scholarship with grant application and submissions and gathering of preliminary data. Subsequently faculty are expected to work with an increasing number of students and have obtained necessary funding to support their work. Lastly, faculty are expected to have their work accepted for publication in externally reviewed journals by the last years leading up to their tenure application.

2. **Composition of review committee (4.07D1)** is described in Section I of this document and is expected to be consistent with provisions in the faculty handbook. It is expected that all tenured ES faculty will serve on TPR committees of the Departments within which they hold teaching appointments on a rotating basis, with a length of service consistent with the policies of the respective Department.
3. **Procedures and preparation of documentation** – The candidate list for each college is prepared by the Office of the Provost and distributed to the deans for review. The list is finalized by the Office of the Provost in conjunction with the Dean's office. Detailed instructions for preparing the dossier are issued annually from the Office of the Provost including the TPR schedule for when documents are due and decisions are made at the various review levels.

C. Post-Tenure Review (4.08)

1. **Overview** - The philosophy statement in Section I of this document applies to post-tenure review. The Domains of Evaluation for teaching, scholarship and service described in Section II of this document serve as the basis for evaluation of a faculty member's cumulative record.
2. **Composition of review committee** – The post-tenure review committee will consist of the same individuals as the TPR committee. The membership of the TPR committee will be consistent with the provisions in the faculty handbook.
3. **Procedures and preparation of documentation** – The post-tenure review documents will consist of a faculty member's CV, copies of all AFE Committee reports during the review period, and copies of the Department Head's AFE reports during the review period.

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**Criteria for Annual Faculty Evaluation, Reappointment,
Tenure, Promotion, and Post Tenure Review**

IV. The criteria for meeting expectations in the Environmental Science Program

A. Annual Faculty Evaluation (4.05)

1. **Teaching** – Faculty must satisfy the criteria outlined in Section II of this document that are consistent with the nature of his or her appointment and rank as described below.
2. **Scholarship** – Faculty must satisfy the criteria outlined in Section II of this document that are consistent with the nature of his or her appointment and rank as described below. Consideration will also be given to multiyear productivity, especially for assessment of the trajectory for tenure and promotion. For example, one year with no significant scholarly product may be okay if the faculty member has an active research program. But multiple years with no scholarly products is problematic.
3. **Service** – Faculty must satisfy the criteria outlined in Section II of this document that are consistent with his or her appointment and rank as described below.
4. **General comments** – ES faculty should be contributing to the Departments in which they hold teaching appointments as described in Section II and III of this document.

B. Reappointment (4.06)

1. **Teaching** - To achieve the teaching mission and aspiration of WCU and the strategic goals of the Departments within which ES faculty hold teaching appointments, we expect that in addition to satisfactorily meeting definitions of load and the three dimensions of teaching, the cumulative record of faculty should reflect that they regularly update their courses, maintain good student course evaluations, and contribute to one or more of the following:
 - * Teaching service and core courses: 100-300 level
 - * Teaching 300-600 elective level courses
 - * Teaching courses involving individual instruction at the undergraduate and/or graduate level
2. **Scholarship** – faculty must show evidence they are developing a research program dominated by the scholarship of discovery. This evidence may include peer-reviewed publications; oral and poster presentations; grants applied for; grants funded; research in progress; research conducted with students; unpublished research and manuscripts; lectures based on discovery research presented at non-professional meetings; other indications of keeping current in the field; workshop or short course attendance; review of grants and manuscripts. The most critical of these components are involvement of students in research, peer reviewed publications, active pursuit of funding necessary to support their work (either internally or externally) and invited presentations.

Although scholarship of untenured faculty must be dominated by discovery, productivity related to the other three types of scholarship described in section II. B. 1. of this document is also valued and will be considered in evaluating of meeting

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scholarship expectations. Evidence of scholarship will be those activities listed in the above paragraph.

3. **Service** - faculty must show meaningful participation in program and departmental activities, especially where the faculty member can make substantive contributions (e.g. program director, curriculum, advising). In addition, faculty are expected to contribute to college and/or university wide service activities (e.g., graduate council, governance, awards, student recruitment, etc.). It is expected that faculty increase their service as they progress through their tenure track period. Initially faculty serve only on departmental committees and have few advisees, by the third and fourth year faculty are expected to also serve on college and/or university wide committees and to carry an increased advising load.
4. **General comments** – Faculty should refer to Section II of this document for criteria describing domains of teaching, scholarship and service evaluation. Determination of whether faculty are meeting expectations for reappointment is not solely gauged by the sum of selected accomplishments. Instead, faculty evaluation is assessed through consideration of the cumulative past record, and evidence for continued growth.

ES – DCRC 2nd and 4th year Expectations

While the overall ES teaching, scholarship, and service expectations remain the same, the point on the trajectory toward tenure will differ for 2nd and 4th year faculty. The following language informs both ES TPR Committee Faculty and college level reviewers of expectations for teaching, scholarship, and service at years 2 and 4.

Year 2 Expectations:

- **Teaching:** Expectations for teaching load consider that when possible and in collaboration with academic units where an ES faculty holds teaching appointment(s), first year ES faculty will have a reduced course load. The 2nd year reappointment file should demonstrate progress towards meeting departmental teaching standards (in the academic units where ES faculty hold teaching positions) and student learning goals. Faculty should reflect upon their first year of teaching considering university goals of promoting critical thinking and student experiential learning. Faculty should articulate plans for continued growth in teaching.
- **Scholarship:** Faculty should formulate a tentative research agenda that includes enrichment opportunities for undergraduate students and that describes a graduate level research program if the interdisciplinary appointment includes an academic unit with a graduate program.
- **Service:** 2nd year faculty have participated only in departmental service with no college or university level service expectations during this time.

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Year 4 Expectations:

- **Teaching:** The cumulative teaching record of individuals should demonstrate evidence of effectiveness and the promise of continued growth in achieving ES teaching expectations for promoting critical thinking in students and providing learning experiences which include opportunities outside of the classroom.
- **Scholarship:** Faculty must show evidence that their cumulative record of scholarly activity is on a trajectory to achieve the level of productivity required for tenure (DCRD section IV-B.2). This should include an active scholarly research agenda that provides enrichment opportunities for students.
- **Service:** By year 4, faculty should demonstrate meaningful participation in service to the department and program, and also show willingness to serve beyond the department level. Such service could include service to the college or university, service to the profession, or service to the region.

C. Tenure (4.07)

1. **Teaching** - In addition to the criteria described for reappointment, a faculty member must have demonstrated a consistent and commendable record of teaching over several years. The faculty member must have demonstrated proficiency in a range of teaching preparations, which might include teaching at different levels (introductory and liberal studies courses to upper level and graduate courses in the major) and class types (traditional lecture courses, independent studies, field investigation courses, etc.). Peer evaluations must be consistently positive for the last three years prior to tenure application and student evaluations for all class sections should indicate a majority of students believe the instructor is an effective teacher.
2. **Scholarship** - in addition to the criteria described for reappointment, a faculty member must demonstrate evidence of 1) an on-going, established research program dominated by scholarship of discovery 2) that has been productive, and 3) shows promise of continued productivity in the future. Such a record is typically evidenced by publications in peer-reviewed journals, production of MS graduates if the faculty member conducts research within a Department that has a graduate program, involvement of undergraduate students in research activities, and the ability to obtain external funds if necessary to carry out scholarly activities. The scholarship of application, integration, and of teaching and learning are also valued but must not represent the sole form of scholarship. All forms of scholarship should be both disseminated and subject to external peer review (see section II.B.2.). Most faculty will use their first few years to establish their research laboratory and/or field sites, gather data, and to obtain the necessary funding for their research. Later years are expected to be more productive in terms of publications.

The ES program expects ES designated faculty to actively engage students in

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learning using a teacher-scholar mode. This requires that faculty are active, productive scholars and that their scholarly activity provides students with opportunities to enrich their educational experiences. It is not feasible to establish a standard publication expectation for tenure because 1) the Departments faculty will affiliate with a wide range of disciplines; 2) the highly variable and sometimes lengthy time it may take from project initiation to publication; some research programs require extensive data for publication; and 3) the expectation of student involvement in research, which requires significant time and may decrease scholarly productivity.

The typical successful case for tenure will include at least two manuscripts accepted for publication in peer-reviewed journals. However, the number of publications is not the sole source of evidence that will be considered in granting tenure. It is the responsibility of the faculty member being considered for tenure to demonstrate that their scholarship is 1) ongoing, 2) productive, and 3) has promise for continued productivity.

3. **Service** – In addition to the criteria described for reappointment, a faculty member will have engaged in service beyond the department prior to promotion to associate professor. This type of service should include serving on college level or university level committees and can also include discipline-based service to the community or society or service to the profession. Faculty must show meaningful participation in the programs and/or departments they are affiliated with. In addition, faculty are expected to contribute to college and/or university wide service activities (e.g., graduate council, governance, awards, student recruitment, etc.)
4. **General comments** – Faculty should refer to Section II of this document for criteria describing domains of teaching, scholarship and service evaluation. Determination of whether faculty are meeting expectations for tenure is not solely gauged by the sum of selected accomplishments. Instead, faculty evaluation is assessed through consideration of the cumulative past record, and evidence for continued growth.

D. Promotion to Associate Professor (4.07)

1. **Teaching** – Criteria for meeting expectations are the same as for tenure
2. **Scholarship** – Criteria for meeting expectations are the same as for tenure
3. **Service** – Criteria for meeting expectations are the same as for tenure
4. **General comments** – see general comments listed under expectations for tenure.

E. Promotion to Full Professor (4.07)

Overall, for promotion to full professor, a faculty member must have a superior record of teaching, scholarship, and service.

1. **Teaching** - Faculty should show continued progress on the trajectory established in earning tenure as described by the expectations in Section IV C of this

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document. They should demonstrate leadership as a teacher. Evidence of this leadership could include publications related to pedagogy, mentoring of young faculty, or participation (as a leader) in teaching workshops or seminars. Evidence of superior classroom performance can be reflected in peer evaluation, student evaluations and students learning assessment data, if available.

2. **Scholarship** - It is expected that a faculty member's research program will continue to include scholarship of discovery, but productivity in scholarship of integration, application and of teaching and learning are also highly valued. Faculty should show continued progress on the trajectory established in earning tenure as described by expectations in Section IV C of this document. However, faculty scholarship should also show evidence that their scholarship is having a broader and long-lasting impact on their discipline, education, and community. Evidence of broader and long-lasting impact includes being recognized by professional organizations such as *invitations* to speak or participate in panel discussions; election to office at the state or national level in professional/scientific organizations; performing critical reviews of research programs and proposals; refereeing articles for peer-reviewed journals.
3. **Service** – In addition to meeting expectations described in Section IV C of this document, faculty should show broadening contributions to service. This service should reflect clear evidence of a superior level of performance, which should include the evolution of the faculty member from a participant to a leader in service activities.
4. **General comments** – Faculty should refer to Section II of this document for criteria describing domains of teaching, scholarship and service evaluation. Determination of whether faculty are meeting expectations for promotion is not solely gauged by the sum of selected accomplishments. Instead, faculty evaluation is assessed through consideration of the cumulative past record, and evidence for continued growth.

F. Post-Tenure Review (4.08)

1. **Teaching**- a faculty member must have demonstrated a consistent and commendable record of teaching over several years. The faculty member must have demonstrated proficiency in the range of teaching preparations he or she has been assigned. This range might include different levels (introductory and liberal studies courses to upper level or graduate courses) and class types (laboratory, field, lecture).
2. **Scholarship** – A faculty member must demonstrate continued productivity in scholarship. Scholarly productivity is defined in Section II.B. It is expected that the faculty member's scholarly activities will have a broader and long-lasting impact on their discipline, education, and community.
3. **Service** – A faculty member must demonstrate service contributions above the program/department level. Faculty should demonstrate service internal and external to the University. This service should reflect clear evidence of a wide

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Standard 5 Appendix

A5.1. Enrolled Student Demographics, Fall term. Data from Office of Institutional Planning

	2011- 2012	2012- 2013	2013- 2014	2014- 2015	2015- 2016
Sex					
Female	21	24	26	22	21
Male	24	36	49	39	51
Citizenship					
US Citizen	45	60	74	59	72
Resident Alien				1	
Non-Resident Alien			1	1	
Race/Ethnicity					
White	39	53	64	52	67
Other	5	5	7	6	5
Class level					
Freshman	8	18	22	13	32
Sophomore	15	12	13	15	12
Junior	8	20	17	10	16
Senior	14	10	23	23	12
Total students	45	60	75	61	72

A5.2. Enrollment in Environmental Science Courses. Data from Office of Institutional Planning

	2011-12	2012-13	2013-14	2014-15	2015-16
<i>ES 101</i>	26	0	0	0	56
<i>ES 150</i>	50	58	82	42	0
<i>ES 250</i>	0	0	29	11	21
<i>ES 350</i>	0	0	24	13	12
<i>ES 480</i>	0	0	4	5	4
<i>ES 495</i>	11	4	19	18	16