

2010-2011 Course Catalog

The University Of Montana

College of Forestry and Conservation

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The undergraduate curricular programs at the College of Forestry and Conservation (CFC) provide the knowledge and skills for students to become effective natural resource professionals. They offer a sequence of learning experiences that build the necessary confidence and critical thinking capabilities to help solve some of humanity's most pressing problems in the stewardship of our shared natural heritage.

Undergraduate programs at the College of Forestry and Conservation have evolved into a unique action-oriented, interdisciplinary experience where students integrate real-world issues into their coursework. Students will utilize the latest technologies in the assessment and analysis of natural resource challenges, and they will simultaneously apply this learning in multiple field settings across the unparalleled natural settings of Montana.

The five undergraduate majors in the College are science degrees, leading to a Baccalaureate of Science (B.S.) degree. These majors are Forestry, Recreation Management, Wildlife Biology, Resource Conservation, and Wildland Restoration. These majors all provide a strong foundation in knowledge about natural systems, science, analytical skills, and policy, but each is tailored to the specialized needs of a particular career track or research discipline in the natural resources management professions. Students have an opportunity to emphasize the disciplinary concentration of their choosing, but all students will receive a balance of ecological, physical, and social sciences.

Students uncertain about which specific major best meets their interests and needs will find that the ability to move between majors early in their student career is facilitated by a common foundational core of coursework. Each major's curricular program is designed to fulfill the broad educational goals for all graduates of The University of Montana, as well as the specific disciplinary requirements of civil service and professional accrediting organizations.

Preparation to Enter the College of Forestry and Conservation

Students planning to enter the College of Forestry and Conservation should attain a sound background in English, social studies, mathematics, biology, and other sciences.

Entering freshmen and non-resident transfer students will be admitted in accordance with general university admission requirements listed previously in this catalogue. Resident transfer students or current UM students wanting to change their major to the

College of Forestry and Conservation must have a grade point average of 2.0 or higher to be admitted.

Educational Framework at the College of Forestry and Conservation

Students at the College of Forestry and Conservation are expected to demonstrate a range of capabilities before graduation so they can better address the multiple demands facing modern natural resource managers. The College fosters learning through a combination of innovative teaching and scholarship with a focus on state of the art knowledge in the major fields and emerging natural resource challenges. Each major's curriculum follows a similar seven part structure that encourages the sequenced development of foundational knowledge, applied skills, and creative problem-solving. The following description illustrates how the curricula are organized to present the most efficient and engaging pathway to the full development of student capabilities:

Foundations of Science

Students will be required to have a solid understanding of the primary physical, chemical, and biological drivers of natural systems. Required for all students are an introductory course in inorganic chemistry and a basic biological science course (there are several introductory biology classes that will apply, depending on a student's major). Students in the Wildland Restoration major and the Forest Operations option within the Forest Management major will also take an introductory course in physics.

Recreation Management majors will take introductory coursework in psychology or sociology to understand social drivers in relation to natural systems. Additionally, all students are encouraged to take one of the four introductory courses offered by the College that draw together multiple disciplines to demonstrate the historical and cultural dimensions of conservation: The Nature of Montana (RSCN 121S); Careers in Natural Resources (WBIO/FOR 180); Wildlife and People (WBIO 105N); or International Forestry (RSCN/FOR 170). In the sophomore year most students will take an introductory course in soils to become familiar with the cycling of energy and nutrients in terrestrial ecosystems while students in the Wildlife Biology major will take coursework in molecular biology and genetics. In their junior year all students take an upper division ecology class. The University's general education requirements and specific College majors ensure all students take additional natural and social science classes to provide the foundations necessary to understand and manage the natural and social systems underlying human uses of natural resources.

Quantitative and Analytical Skills

All students at the College will attain the quantitative analytical and measurement foundations needed for their professional or research career path. The freshmen level quantitative requirement rests on a proficiency in mathematics that is obtained through one of two routes depending on major: a college algebra/linear math/probability track or an introductory calculus track. All sophomore students take a statistics class which many fulfill through a special course in the analysis of multiple forms of measurement of natural resource characteristics, called Biometrics. Although not required for all majors, most students decide to take a special course in mapping that combines the common

applications of geographic information systems (GIS) and the basic attributes of spatial analysis.

Applied Field Skills

A tremendous advantage of an education at the College of Forestry and Conservation is the proximity of an unlimited field laboratory in both the managed and untrammelled landscapes of Montana. All undergraduates will have multiple opportunities to learn in field settings as a part of lab sections associated with many of CFC's courses. Some specific academic opportunities, such as the College's Wilderness and Civilization Program, will take students on extended backcountry trips to gain first-hand knowledge of wild settings. Exceptional hands-on learning experiences are provided at the College's Lubrecht Experimental Forest located less than 30 miles from campus on the Blackfoot River. Since students must demonstrate competency and confidence in outdoor field work to be a successful natural resource professional, students are required to select a sophomore-level field measurements course within their major. Although advanced transfer students (>59 transfer credits) to the College or Wildlife Biology students may apply other relevant experiences to their field training requirement, completion of a field measurements course is expected before students may enroll in upper division courses, as the needed skills to succeed in subsequent, more advanced field labs depend on a solid core of field capabilities.

Communication

Effectiveness in addressing our shared problems in natural resource management depends on a person's ability to communicate. College of Forestry and Conservation students will graduate with considerable training in written communication with both lower-division requirements at the 200-level and a series of upper division courses where writing constitutes the major part of course expectations. Each major in the College provides a "distributed writing" menu for students entering into upper-division courses, such that each student will take at least three classes where writing skills are evaluated. Students will also fulfill university-wide writing requirements, including the successful passage of the Writing Proficiency Examination prior to entering into upper division coursework. All students take a public speaking class. Students wishing to gain more experience in public speaking and communication can also take a special class Natural Resources Interpretation.

Professional specialization

Each academic major in the College contains a sequence of courses and learning experiences tailored to the student's specific professional aspirations. Clusters of courses within a major prepare students to obtain the necessary knowledge and professional competencies to perform the tasks of a modern resource manager or research scientist. Course work combines biophysical and social science training to allow students to recognize and navigate the complexities and context of conservation sciences and natural resources management. Thus, each major has courses representing both ecological and policy development processes, as well as a progression of classes covering the knowledge areas and topics of major natural resources disciplines. Students will take a core of required courses (described

in the section below) as well as a balanced selection of "professional electives" to acquire sufficient balance and depth in their chosen field to emerge with an identified professional specialty.

Work Experience and Service Learning

Students at the College of Forestry and Conservation will apply what they have learned in real-world settings prior to graduation. This work experience can be obtained in many ways, via internships, summer employment, study abroad opportunities, or specially designed "service learning" courses. Service experiences will allow students to obtain credit, learn new material, and offer critical work to established organizations to advance conservation goals. In general, requirements for work experience or internships will be counted based on the number of hours worked over the course of a student's entire undergraduate career, with 400 hours or more of work necessary for graduation.

Capstone experience

Each academic major in the College offers an opportunity for students to synthesize previous learning in a real-world project via either an undergraduate research project or the completion of a special, integrative "capstone" course. Undergraduate research projects are designed through close supervision of a student's academic advisor, while the capstone courses bring together a team of faculty who facilitate student oriented problem solving through a focus on an applied management problem or real world case studies that offer vital experience in the preparation of students for their professional careers.

Other University-wide requirements for Academic Achievement

The University of Montana has established standards for graduation of all students that include demonstrated proficiencies in oral and written communication and symbolic systems as well as a selection of diverse learning experiences identified as "general education courses." The College's expectations for writing and quantitative skills more than fulfill university-wide requirements for communication and symbolic systems, and many of the courses offered by CFC also fulfill the categories within general education requirements. All CFC majors also offer sufficient opportunity for students to choose among the full range of UM courses as "free electives," such each person might be able to explore new areas of learning at their own discretion.

Student Advising

All College of Forestry and Conservation students will have a full-time faculty advisor as well as the extensive advising support provided by the College's Office of Student Services. Students are paired with a faculty advisor who matches their academic and professional interest and serves as a mentor and advocate for students as they progress through individual academic achievements. Students may change their advisor at any time as their specific interests develop or change. New students needing an advisor and current students who wish to change advisors should contact the College's Office of Student Services. Students are required to consult with their

advisors before each registration period and remain responsible for fulfilling the published requirements for graduation.

Graduation Auditing

All students will complete a graduation audit in the semester prior to their graduation to make sure that they have a sure pathway for successful completion of their chosen major.

Faculty

Professors

Donald J. Bedunah, Ph.D., Texas Tech University, 1982

Jill M. Belsky, Ph.D., Cornell University, 1991

William T. Borrie, Ph.D., Virginia Polytechnic Institute and State University, 1995

Perry J. Brown, Ph.D., Utah State University, 1971 (Dean)

James A. Burchfield, Ph.D., University of Michigan, 1991 (Associate Dean)

Edwin J. Burke, Ph.D., Colorado State University, 1978

Wayne A. Freimund, Ph.D., University of Minnesota, 1993

Paul Krausman, Ph.D., University of California-Santa Cruz, 1993

L. Scott Mills, Ph.D., University of California, Santa Cruz, 1993

R. Neil Moisey, Ph.D., The University of Montana, 1997

Norma Nickerson, Ph.D., University of Utah, 1989 (Research)

Martin Nie, Ph.D., Northern Arizona, 1998

Mike Patterson, Ph.D., Virginia Polytechnic Institute and State University, 1993 (Chair of Society and Conservation)

Daniel H. Pletscher, Ph.D., Yale University, 1982 (Director, Wildlife Biology Program)

Donald F. Potts, Ph.D., State University of New York, 1979 (Chair of Forest Management)

Lloyd Queen, Ph.D., University of Nebraska, Lincoln, 1988

Steven W. Running, Ph.D., Colorado State University, 1979

Stephen F. Siebert, Ph.D., Cornell University, 1990

Diana Six, Ph.D., University of California, Riverside, 1997

Ronald H. Wakimoto, Ph.D., University of California, 1978

Associate Professors

Woodman Chung, Ph.D., Oregon State University, 2002

Elizabeth Crone, Ph.D., Duke University, 1995

Lisa A. Eby, Ph.D., Duke University, 2001

John M. Goodburn, Ph.D., University of Wisconsin-Madison, 2004

Christopher Keyes, Ph.D., Oregon State University, 2002 (Research)
John Kimble, Ph.D., Oregon State University, 1995 (Research)
David Naugle, Ph.D., South Dakota
Dane Scott, Ph.D., Vanderbilt University, 1999
Carl Seielstad, Ph.D., University of Montana, 2003 (Research)
Scott Woods, Ph.D., Colorado State University, 2001

Assistant Professors

David Affleck, Ph.D., Yale University, 2006
Keith Bosak, Ph.D., University of Georgia (Athens), 2006
Cory Cleveland, Ph.D., University of Colorado-Boulder, 2001
Solomon Dobrowski, Ph.D., University of California (Davis), 2005
Elizabeth D. Dodson, Ph.D., Oregon State University, 2004
Mark Hebblewhite, Ph.D., University of Alberta, 2006
Andrew Larson, Ph.D., University of Washington, 2009
Laurie Marczak, Ph.D., University of British Columbia, 2007
Cara Nelson, Ph.D., University of Washington, 2004
James Riddering, Ph.D., University of Montana, 2004 (Research)
Tyron Venn, Ph.D., University of Queensland, 2004
Laurie Yung, Ph.D., University of Montana, 2003 (Research)

Faculty Associates

Carol Brewer, Ph.D., University of Wyoming, 1993
Robert Crabtree, Ph.D., University of Idaho, 1988
Thomas DeLuca, Ph.D., Iowa State University, 1993
Rich Harris, Ph.D., University of Montana, 1993
Peter Kolb, Ph.D., University of Idaho, 1996
Michael Mitchell, Ph.D., North Carolina State University, 1995
Anna Sala, Ph.D., University of Barcelona, 1992
Christopher Sevheen, Ph.D., University of Montana, 1981
Kathy Tonnessen, Ph.D., University of California-Berkley, 1982

Emeritus Professors

Paul B. Alaback, Ph.D., Oregon State University, 1980
David H. Jackson, Ph.D., University of Washington, 1975
Stephen F. McCool, Ph.D., University of Minnesota, 1970
Alan McQuillan, Ph.D., University of Montana, 1981

Thomas J. Nimlos, Ph.D., University of Wisconsin, 1959

Robert D. Pfister, Ph.D., Washington State University, 1972

Robert R. Ream, Ph.D., University of Wisconsin, 1963

Jack Ward Thomas, Ph.D., University of Massachusetts, 1972

Hans R. Zuuring, Ph.D., Iowa State University, 1975