

WILDLIFE AND FISHERIES CONSERVATION AND ECOLOGY

Administered by the Department of Natural Resource Ecology and Management

The Wildlife and Fisheries Conservation and Ecology curriculum provides its majors with an understanding of ecological principles and processes and their applications to natural resource management. This major is oriented toward students desiring a general and flexible program in environmental biology and for those planning graduate study. Graduates find employment as aquaculturists, aquatic ecologists, wildlife biologists, fisheries biologists, resource managers, and ecologists for industry, environmental consulting firms, natural resource and environmental agencies and organizations, zoos, and as educators. Graduates are able to communicate and work effectively in the multidisciplinary arena of ecology and natural resource management. Additionally, they recognize the importance of ethics in their field of study and are sensitive to cultural diversity and broad environmental concerns.

Students majoring in Wildlife and Fisheries Conservation and Ecology may select from one or more of four options: Fisheries and Aquatic Sciences, Interpretation of Natural Resources, Pre-veterinary and Wildlife Care, or Wildlife. Each option has specific outcomes expectations that include (1) the scope of the specialization and its relationships to broader aspects of animal ecology, biotic resource management, and other allied scientific disciplines and professions, (2) career opportunities and requirements, and (3) knowledge and skills appropriate for employment at technical and practitioner levels in each discipline.

All options require three months (400 hours) of relevant work experience or study at a biological station prior to graduation. The latter may be accomplished at the university's affiliate field stations: Rod and Connie French Conservation Camp in Montana, Iowa Lakeside Laboratory at West Lake Okoboji, and Gulf Coast Research Laboratory at Ocean Springs, Mississippi. Information on these laboratories is available from the Department of Natural Resource Ecology and Management Student Services Center.

Pre-veterinary medicine preparation may be achieved while satisfying degree requirements in animal ecology.

Additional education and training can lead to other opportunities in such areas as research and management, natural resources planning and administration, teaching, and environmental consulting, among others. Graduate training is necessary for many specialized positions within the fields of wildlife and fisheries conservation and ecology. Students

preparing for graduate study should consult with their academic advisor concerning appropriate coursework.

Students wishing to be certified by the American Fisheries Society or The Wildlife Society need to consult with their advisors in selecting required courses in their respective programs. The formal application then needs to be completed and submitted for review by their professional societies. Certification in either society has many professional benefits and may be required or recommended for employment by federal and state agencies and private industry.

Students seeking certification to teach biology in secondary schools must meet requirements of the College of Health and Human Sciences as well as those of the Wildlife and Fisheries Conservation and Ecology curriculum. In addition, they must apply formally for admission to the teacher education program (see Teacher Education Program (<https://catalog.iastate.edu/collegeofhumansciences/schoolofeducation/#teachereducationtext>)). Students with an interest in careers in outdoor writing are encouraged to obtain a minor or a second major in journalism (see Journalism and Communication, Courses and Programs (https://catalog.iastate.edu/collegeofliberalartsandsciences/journalism_and_mass_communication/)). Students who wish to pursue a job as a conservation officer may wish to minor in criminal justice (see Criminal Justice (<https://catalog.iastate.edu/collegeofliberalartsandsciences/criminaljustice/>)).

Student Learning Outcomes

Upon graduation, students should be able to:

1. Identify, explain and critically evaluate their own beliefs, values and actions in relation to professional and societal standards of ethics.

For any given situation, graduates identify, critically evaluate, and state their own beliefs and values as they relate to professional and societal ethical standards, for any given situation. They elaborate on how those values and beliefs impact their actions, and they explain which specific canons or principles of a professional code of ethics are applicable to a particular situation.

2. Anticipate, analyze and evaluate natural resource issues and opportunities, explaining the ecological, economic, and social consequences of natural resource actions at various scales and over time.

In the case of existing natural resource issues, graduates explain the ecological, economic, and social consequences that reasonably could be expected to occur as the result of actions taken to address the issue. The explanation includes considerations of the geographic area influenced by the issue as well as the time frame over which the consequences can be expected to occur. In the case of evolving circumstances, graduates predict natural resource issues that may arise as a result

of the circumstances and explain the ecological, economic and social consequences of those issues.

3. Actively seek the input and perspectives of diverse stakeholders regarding natural resource problems and issues.

Graduates identify the comprehensive list of individuals or groups who may be impacted by particular natural resource problems and issues. They are well versed in techniques for seeking and incorporating input and perspectives from those people, and they incorporate those inputs and perspectives into the decision-making process.

4. Assess, analyze, synthesize, and evaluate information fairly and objectively.

Not all information is equally sound or applicable in a particular situation. Graduates evaluate the validity and importance of information obtained from any source. Once evaluated, they use the information appropriately in the solution of natural resource problems.

5. Work effectively, both individually and with others, on complex, value-laden natural resource problems that require holistic problem-solving approaches.

Effective solution of natural resource problems often involves input from diverse constituencies with diverse value scales. When working individually, graduates incorporate those values into the solution of problems. Graduates work effectively with diverse individuals and groups to reach consensus on problem solutions.

6. Formulate and evaluate alternative solutions to complex problems and recommend and defend best alternatives.

The natural resource base with which we deal is capable of providing numerous goods and services to numerous publics. Graduates formulate multiple alternatives, as well as action plans, to achieve stakeholder objectives. They evaluate each of the feasible alternatives in terms of biological possibility, economic feasibility and social acceptability. They recommend best alternatives based on the stakeholders' objectives, and they justify their recommendations on the basis of sound science.

7. Communicate clearly and effectively with all audiences using appropriate oral, visual, electronic, and written techniques.

Graduates utilize the best form, or forms, of communication for effectively conveying information to, or seeking input from, a particular audience. They are proficient in all forms of communication and adjust their style or technique of communication to suit different audiences.

8. Recognize and interpret resource problems and opportunities across spatial scales from local to global.

Graduates recognize where resource problems and opportunities can or could exist, and they evaluate and interpret these for others. They,

evaluate and interpret for individual landowners at a very local scale as well as for problems that span multiple ownerships, regions and ecosystems.

9. Appreciate cultural diversity and understand the impact of the global distribution of people and wealth on natural resource use and valuation.

Different cultures, population densities, and income classes value and use natural resources in very different ways. Because natural resources often are used simultaneously by different groups, it is important for graduates to be able to account for those differing uses and valuations when making management decisions about natural resources.

10. Exercise leadership skills as professionals and engaged citizens.

Graduates organize, facilitate, and participate effectively in groups, teams, or organizations. They define problems or opportunities, implement action planning processes, work toward goals and justify actions taken.

11. Demonstrate creativity and innovation in identifying and pursuing opportunities that produce environmental, social, or economic value.

Graduates display creativity in a variety of situations and identify opportunities to promote understanding of natural resource issues. They demonstrate persistence when working with individuals who have diverse interests in order to build consensus and facilitate accomplishing stated objectives.

12. Exercise life-long learning skills developed before graduation.

Graduates articulate why life-long learning is important. Graduates find answers to their questions as they arise throughout life. They are capable of determining what they need to know to effectively deal with an issue or situation, and they know how to obtain the necessary knowledge. They have learned how to learn in the absence of teachers.

CURRICULUM IN Wildlife and Fisheries Conservation and Ecology

Total Degree Requirement: 128 cr.

Only 65 cr. from a two-year institution may apply which may include up to 16 technical cr.; 9 P-NP cr. of free electives; 2.00 minimum GPA.

International Perspective: 3 cr.

U.S. Cultures and Communities: 3 cr.

Communications Proficiency (with grade of C or better):

6 cr. of English composition

3 cr. of speech fundamentals

Communication/Library 16 cr.

ENGL 1500	Critical Thinking and Communication	3
ENGL 2500	Written, Oral, Visual, and Electronic Composition	3
SPCM 2120	Fundamentals of Public Speaking	3

LIB 1600	Introduction to College Level Research	1
Plus 6 credits from the following:		6
ENGL 2070	Introduction to Creative Writing	
ENGL 3020	Business Communication	
ENGL 2750	Analysis of Popular Culture Texts	
ENGL 3030	Free-Lance Writing for Popular Magazines	
ENGL 3040	Creative Writing: Fiction	
ENGL 3050	Creative Writing: Nonfiction	
ENGL 3060	Creative Writing: Poetry	
ENGL 3090	Proposal and Report Writing	
ENGL 3100	Rhetorical Analysis	
ENGL 3120	Communicating Science and Public Engagement	
ENGL 3140	Technical Communication	
AGEDS 3110	Presentation and Sales Strategies for Agricultural Audiences	
PR 3050	Publicity Methods	
NREM 3300	Principles of Interpretation	
SPCM 3120	Business and Professional Speaking	
AGEDS 3270	Survey of Agriculture and Life Sciences Communication	
COMST 2100	Communication and U.S. Diversity	
COMST 3300	Communication in a Digital World	
ENGL 2220	Artificial Intelligence and Writing	
ENGL 3550	Literature and the Environment	
LDST 3220	Leadership Practice	
LDST 3330	Women, Gender, and Leadership	
LLS 3120	Problem Solving and Action Planning in Leadership	
POLS 2710	Public Organizations and Leadership	
POLS 4750	Management in the Public Sector	
THRE 3580	Oral Interpretation	

Humanities and Social Sciences: 6 cr.

Humanities course list: <https://www.cals.iastate.edu/student-services/humanities> (<https://www.cals.iastate.edu/student-services/humanities/>)

Social Science course list: <https://www.cals.iastate.edu/student-services/social-sciences> (<https://www.cals.iastate.edu/student-services/social-sciences/>)

Approved humanities course	3
Approved social science course	3
Total Credits	6

Ethics: 3 cr.

3 cr. from approved ethics list: <https://www.cals.iastate.edu/student-services/ethics> (<https://www.cals.iastate.edu/student-services/ethics/>)

Mathematical Sciences: 6 cr.

MATH 1400	College Algebra	3
STAT 1010	Principles of Statistics	3-4
or STAT 1040	Introduction to Statistics	

Total Credits **6-7**

Physical Sciences: 14 cr.

CHEM 1630	College Chemistry	5
& 1630L	and Laboratory in College Chemistry	
or CHEM 1770	General Chemistry I	
& 1770L	and Laboratory in General Chemistry I	
CHEM 2310	Elementary Organic Chemistry	3-4
& 2310L	and Laboratory in Elementary Organic Chemistry	
or CHEM 3310	Organic Chemistry I	
& 3310L	and Laboratory in Organic Chemistry I	
or BBMB 2210	Structure and Reactions in Biochemical Processes	
PHYS 1150	Physics for the Life Sciences	5
& 1150L	and Laboratory in Physics for the Life Sciences	
or PHYS 1310	General Physics I	
& 1310L	and General Physics I Laboratory	

Total Credits **13-14**

Biological Sciences: 24 cr.

NREM 1040	Practical Work Experience	R
NREM 1100	Orientation in Natural Resource Ecology and Management	1
NREM 1200	Introduction to Renewable Resources	3
NREM 2110	Careers in Natural Resources	1
WFCE 3650	Vertebrate Biology	4
BIOL 2110	Principles of Biology I	3
BIOL 2110L	Principles of Biology Laboratory I	1
BIOL 2120	Principles of Biology II	3
BIOL 2120L	Principles of Biology Laboratory II	1
WFCE 2310	Principles of Wildlife & Fisheries Conservation	3
WFCE 3120	Ecology	4
or NREM 3110	Field Ecology in Montana	

Total Credits **24**

Practical Experience:**FISHERIES AND AQUATIC SCIENCES OPTION**

WFCE 3210	Ichthyology	3
WFCE 3330	Fisheries Techniques	2
WFCE 4180	Stream Ecology	3

WFCE 4400	Fishery Management	3
WFCE 4860	Aquatic Ecology	3
WFCE 4860L	Aquatic Ecology Laboratory	1
Choose one of two Mathematics sequences:		7-8
Sequence 1 (Calculus)		
MATH 1430	Preparation for Calculus	
One of the following:		
MATH 1600	Survey of Calculus	
MATH 1650	Calculus I	
Sequence 2 (Statistics)		
NREM 2400	Quantitative Problem Solving in Natural Resources or MATH 1430: Preparation for Calculus	
STAT 3201	Intermediate Statistical Concepts and Methods	
Plus 12 credits from approved list		12
Total Credits		34-35

INTERPRETATION OF NATURAL RESOURCES OPTION

NREM 3300	Principles of Interpretation	3
WFCE 3660	Natural History of Iowa Vertebrates	3
ENT 3700	Insect Biology	3
NREM 3800	Field Ecology Teaching	3
NREM 3030	Internship	1-3
At least three credits from the following:		3
AGRON 2060	Introduction to Weather and Climate	
ASTRO 1200	The Sky and the Solar System	
GEOL 1000	How the Earth Works	
GEOL 1010	Environmental Geology: Earth in Crisis	
GEOL 1080	Introduction to Oceanography	
At least five credits from the following:		5
BIOL 3660	Plant Systematics	
BIOL 4740	Plant Ecology	
FOR 3560	Dendrology	
WFCE 4150	Ecology of Freshwater Invertebrates, Plants, and Algae	
NREM 3570	Midwestern Prairie Plants	
FOR 3580	Forest Herbaceous Layer: Ecology and Identification.	
BIOL 4560	Principles of Mycology	
At least five credits from the following:		5
ENT 4250	Aquatic Insects	
WFCE 3210	Ichthyology	
WFCE 4150	Ecology of Freshwater Invertebrates, Plants, and Algae	

WFCE 4570 & 4570L	Herpetology and Herpetology Laboratory	
WFCE 4580 & 4580L	Ornithology and Ornithology Laboratory	
WFCE 4590 & 4590L	Mammalogy and Mammalogy Laboratory	
Plus additional credits from approved list to total 33 credit hours.		5-7
Total credits		33

PREVETERINARY & WILDLIFE CARE OPTION

ANS 2140	Domestic Animal Physiology or BMS 3290 Anatomy and Physiology of Domestic Animals	
One of the following:		3
ANS 3360	Domestic Animal Behavior and Well-Being	
ANTHR 3170	Primate Behavior, Ecology, and Evolution	
BIOL 3540	Animal Behavior	
Three credits from the following:		3
WFCE 3210	Ichthyology	
WFCE 3660	Natural History of Iowa Vertebrates	
WFCE 4570 & 4570L	Herpetology and Herpetology Laboratory	
WFCE 4580 & 4580L	Ornithology and Ornithology Laboratory	
WFCE 4590 & 4590L	Mammalogy and Mammalogy Laboratory	
One of the following:		3
ANS 2140	Domestic Animal Physiology	
ANS 3130	Exercise Physiology of Animals	
BMS 3290	Anatomy and Physiology of Domestic Animals	
BIOL 3350	Principles of Human and Other Animal Physiology	
BIOL 3510	Comparative Vertebrate Anatomy	
BIOL 3520	Vertebrate Histology	
BIOL 4340	Endocrinology	
BIOL 4360	Neurobiology	
One of the following:		3
ANS 3310	Domestic Animal Reproduction	
BIOL 3130	Principles of Genetics	
BIOL 4230	Developmental Biology	
GEN 3200	Genetics, Agriculture and Biotechnology	
NREM 3150	Genetics for Natural Resource Managers	
At least three credits from the following list:		3-4
BMS 7401	Intro to Aquatic Animal Medicine	
WFCE 4420	Aquaculture	
WFCE 4540	Principles of Wildlife Disease	

ANS 3190	Animal Nutrition	
BIOL 3530	Introductory Parasitology	
BIOL 3580	Bee Biology, Management, and Beekeeping	
BIOL 4020	Introduction to Pathology	
MICRO 2010	Introduction to Microbiology	
MICRO 3020	Biology of Microorganisms	
3 cr from course level 3000-5000 from WFCE or NREM		3
Select additional credits from unused courses listed above or additional 3000-5000 level WFCE or NREM courses to total 33 credit hours.		9-12
Total credits		33

WILDLIFE OPTION

WFCE 3710	Ecological Methods	3
or WFCE 3720	Wildlife Population Methods	
WFCE 4510	Wildlife Ecology and Management	3
BIOL 3130	Principles of Genetics	3
or GEN 3200	Genetics, Agriculture and Biotechnology	
or NREM 3150	Genetics for Natural Resource Managers	
BIOL 3660	Plant Systematics	4
Choose one of two Mathematics sequences		7-8
Sequence 1 (Calculus)		
MATH 1430	Preparation for Calculus	
One of the following:		
MATH 1600	Survey of Calculus	
MATH 1650	Calculus I	
Sequence 2 (Statistics)		
NREM 2400	Quantitative Problem Solving in Natural Resources	
or MATH 1430	Preparation for Calculus	
STAT 3201	Intermediate Statistical Concepts and Methods	
Six credits from the following list:		6
WFCE 4570	Herpetology	
WFCE 4570L	Herpetology Laboratory	
WFCE 4580	Ornithology	
WFCE 4580L	Ornithology Laboratory	
WFCE 4590	Mammalogy	
WFCE 4590L	Mammalogy Laboratory	
Six credits from the following list:		6
WFCE 4550	International Wildlife Issues	
ENVS 2830	Introduction to Environmental Politics and Policies	
ENVS 2930	Environmental Planning	
NREM 2700	Foundations in Natural Resource Policy and History	

NREM 3850	Natural Resource Policy	
NREM 4520	Ecosystem Management: Integrating Ecology, Society, and Policy	
NREM 4600	Controversies in Natural Resource Management	
AMIN 3130	Native Land, Water, and Resources	
At least three credits from the following list:		3-4
WFCE 4150	Ecology of Freshwater Invertebrates, Plants, and Algae	
WFCE 4540	Principles of Wildlife Disease	
WFCE 5160	Avian Ecology	
ANTHR 3170	Primate Behavior, Ecology, and Evolution	
BIOL 3150	Biological Evolution	
BIOL 3540	Animal Behavior	
BIOL 3540L	Laboratory in Animal Behavior	
BIOL 4710	Introductory Conservation Biology	
EEOB 5070	Advanced Animal Behavior	
ENT 3700	Insect Biology	
At least five credits from the following list:		5
WFCE 4150	Ecology of Freshwater Invertebrates, Plants, and Algae	
AGRON 3170	Principles of Weed Science	
BIOL 3550	Plants and People	
BIOL 4540	Plant Anatomy	
BIOL 4560	Principles of Mycology	
BIOL 4740	Plant Ecology	
EEOB 5640	Wetland Ecology	
FOR 3560	Dendrology	
FOR 3580	Forest Herbaceous Layer: Ecology and Identification.	
NREM 3570	Midwestern Prairie Plants	
Plus additional credits from approved list to total 45 credit hours.		0-5
Total credits		45

Animal Ecology, B.S. - Fisheries and Aquatic Sciences

Freshman

Fall	Credits Spring	Credits
BIOL 2110	3 BIOL 2120	3
BIOL 2110L	1 BIOL 2120L	1
NREM 1100	1 NREM 1200	3
MATH 1400	3 ENGL 1500	3
CHEM 1630	4 LIB 1600	1
CHEM 1630L	1 STAT 1010 or 1040	3-4

Required Elective	3	
	16	14-15

Sophomore

Fall	Credits Spring	Credits
WFCE 3650	4 WFCE 2310	3
NREM 2110	1 CHEM 2310	3
WFCE 3120	4 CHEM 2310L	1
MATH Calculus Elective	4 SPCM 2120	3
ENGL 2500	3 Free Elective / Restricted Elective	3
	Required Elective	3
	16	16

Junior

Fall	Credits Spring	Credits
PHYS 1150	4 WFCE 3210	3
PHYS 1150L	1 Communications Elective	3
WFCE 4860	3 Restricted Elective	3
WFCE 4860L	1 Required Elective	3
WFCE 3330	2 Free Elective	3
Required Elective	5	
	16	15

Senior

Fall	Credits Spring	Credits
WFCE 4180	3 Restricted Electives	7
WFCE 4400	3 Communications Elective	3
Required Elective	9 Free Electives	6
Communications Elective	3	
	18	16

* To complete degree program in 4 years students must maintain an average of 16 credits per semester.

** Initial math course is determined on the basis of high school math and placement test scores. A non-credit course (Math 10) may be required at additional costs.

***In scheduling coursework, students should pay particular attention to courses with limited offerings (e.g., offered only on alternate years) and to course sequences (i.e., where a course serves as a prerequisite for another course).

Animal Ecology, B.S. - Interpretation of Natural Resources option

Freshman

Fall	Credits Spring	Credits
BIOL 2110	3 BIOL 2120	3
BIOL 2110L	1 BIOL 2120L	1
NREM 1100	1 NREM 1200	3
Required Elective	3 ENGL 1500	3
MATH 1400**	3 STAT 1010 or 1040	3-4
CHEM 1630	4 LIB 1600	1
CHEM 1630L	1	
	16	14-15

Sophomore

Fall	Credits Spring	Credits
WFCE 3650	4 CHEM 2310	3
NREM 2110	1 CHEM 2310L	1
WFCE 3120	4 SPCM 2120	3
Earth Science Elective	3 WFCE 2310	3
ENGL 2500	3 NREM 3300	3
	Restricted Elective	3
	15	16

Junior

Fall	Credits Spring	Credits
PHYS 1150	4 Communications Elective	3
PHYS 1150L	1 WFCE 3660	3
ENT 3700	3 Required Elective	6
NREM 3800	3 BIOL 3660	4
Botany or Restricted Elective	3-4	
Required Elective	3	
	17-18	16

Senior

Fall	Credits Spring	Credits
Restricted Elective	6-7 Botany or Restricted Elective	3
Required Elective	3 Restricted Elective	3
Free Electives	7 Communications Elective	3
	NREM 3030	1-3
	Elective	3
	16-17	13-15

* To complete degree program in 4 years students must maintain an average of 16 credits per semester.

** Initial math course is determined on the basis of high school math and placement test scores. A non-credit course (Math 10) may be required at additional costs.

***In scheduling coursework, students should pay particular attention to courses with limited offerings (e.g., offered only on alternate years) and to course sequences (i.e., where a course serves as a prerequisite for another course).

Animal Ecology, B.S. - Pre-Vet & Wildlife Care option

Freshman

Fall	Credits Spring	Credits
BIOL 2110	3 BIOL 2120	3
BIOL 2110L	1 BIOL 2120L	1
NREM 1100	1 NREM 1200	3
Required Elective	3 ENGL 1500	3
MATH 1400	3 STAT 1010 or 1040	3-4
CHEM 1630 [#]	4 LIB 1600	1
CHEM 1630L [#]	1	
16		14-15

Sophomore

Fall	Credits Spring	Credits
WFCE 3650	4 CHEM 2310 [#]	3
NREM 2110	1 CHEM 2310L [#]	1
WFCE 3120	4 SPCM 2120	3
Restricted Elective	3 Free Elective/ Restricted Elective	3
ENGL 2500	3 Required Elective	3
	WFCE 2310	3
15		16

Junior

Fall	Credits Spring	Credits
PHYS 1150	4 NREM 3300	3
PHYS 1150L	1 ANS 2140 or BMS 3290	3
Restricted Elective	3 Natural History Elective	3
Required Elective	3 Required Elective	3
Free Elective	6 Free Elective	6
17		18

Senior

Fall	Credits Spring	Credits
Restricted Elective	6 Restricted Elective	3
Genetics/Development Elective	3 Communications Elective	3
Required Elective	3 Free Elective	9

Communications Elective	3
Free Elective	2
17	
15	

* To complete degree program in 4 years students must maintain an average of 16 credits per semester.

** In scheduling coursework, students should pay attention to courses with limited offerings, (e.g., offered only on alternate years) and to course sequences (i.e., where a course serves as a prerequisite for another course).

Admission to the ISU College of Veterinary Medicine requires a different set of Chemistry and Physics courses. Students should plan to enroll in Chemistry 1770, 1770L, 1780, 3310, 3310L and 3320. The Physics requirement is PHYS 1310 and 1310L.

Animal Ecology, B.S. - Wildlife option

Freshman

Fall	Credits Spring	Credits
BIOL 2110	3 BIOL 2120	3
BIOL 2110L	1 BIOL 2120L	1
NREM 1100	1 NREM 1200	3
MATH 1400	3 ENGL 1500	3
CHEM 1630	4 LIB 1600	1
CHEM 1630L	1 STAT 1010 or 1040	3-4
Required Elective	3	
16		14-15

Sophomore

Fall	Credits Spring	Credits
NREM 2110	1 CHEM 2310	3
WFCE 3120	4 CHEM 2310L	1
MATH Calculus Elective	4 SPCM 2120	3
ENGL 2500	3 Free Elective / Restricted Elective	3
WFCE 3650	4 Required Elective	3
	WFCE 2310	3
16		16

Junior

Fall	Credits Spring	Credits
PHYS 1150	4 BIOL 3660	4
PHYS 1150L	1 Communications Elective	3
WFCE 3710	3 Restricted Electives	6
Restricted Electives	6 Required Elective	3
Required Elective	3	
17		16

Senior

Fall	Credits Spring	Credits
WFCE 4510	3 Restricted Electives	9
Restricted Electives	6 Communications Elective	3
Required Elective	3 Free Elective	3
Free Electives	6	
	18	15

* To complete degree program in four years students must maintain an average of 16 credits per semester.

**Initial math course is determined on the basis of high school math and placement test scores. A non-credit course (Math 10) maybe be required at additional costs.

***In scheduling coursework, students should pay attention to courses with limited offerings, (e.g., offered only on alternate years) and to course sequences (i.e., where a course serves as a prerequisite for another course). It is critical that students take AECL 3710 fall semester of the junior year and AECL 4510 fall semester of the senior year.

Minor - Wildlife and Fisheries Conservation and Ecology

The department offers a minor in Wildlife and Fisheries Conservation and Ecology that may be earned by taking 15 credits in the department including:

WFCE 3650	Vertebrate Biology	4
NREM 1200	Introduction to Renewable Resources	3
WFCE 3120	Ecology	4

Plus, four additional credits of WFCE or NREM courses at the 3000 level or above.

The minor must include at least 3 credits that are not used to meet any other department, college, or university requirement.