

ECOLOGY AND CONSERVATION BIOLOGY - BS, ECOLOGY AND CONSERVATION BIOLOGY TRACK

The Department of Ecology and Conservation Biology provides one of the most advanced educational opportunities available to prepare undergraduate students for leadership in the science and stewardship of terrestrial and aquatic ecological systems. The BS in ECCB degree will emphasize acquisition of fundamental ecological knowledge and its application to biodiversity conservation, environmental health, and the management of complex systems, such as interactions involving aspects of ecology from genes to ecosystems, landscape, hydrology, and climate. Four tracks (Ecology and Conservation Biology, Ecoinformatics, Forest Resources, and Vertebrate Zoology) are offered to provide flexibility in one's chosen career path.

Ecology and Conservation Biology Track

The Ecology and Conservation Biology track is designed to meet the needs of students interested in pursuing a graduate degree in natural sciences as well as careers with natural resource agencies, conservation and environmental organizations, environmental consulting firms, and education and research institutions with the tools for understanding issues related to conserving, managing, and restoring species, habitats, and ecosystems. Students enrolled in this track gain an understanding of the core body of knowledge ecologists and conservation biologists require, including ecological concepts, ecological practices, human-environmental interactions, and biodiversity exploration and conservation. This track accomplishes this by offering a diversity of courses, including higher-level electives, that allow students to tailor their education to fit their interests. For example, students can take courses that position them for external certification through organizations such as the Ecological Society of America and the Society for Ecological Restoration. Students completing this track will have a strong background in ecosystem functioning, field experience, human and ethical dimensions, organism biology, and quantitative applications.

Program Requirements

First Year

Fall		Semester Credit Hours
BIOL 111	Introductory Biology I	
ESSM 201	Exploring Ecosystem Science and Management	1
MATH 140	Mathematics for Business and Social Sciences	3
RENr 205	Fundamentals of Ecology	3
General elective ¹		2
Semester Credit Hours		13
Spring		
BIOL 112	Introductory Biology II	4

MATH 142	Business Calculus	3
American history (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history) ²		3
Language, philosophy and culture (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#language-philosophy-culture) ²		3
Social and behavioral sciences (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#social-behavioral-sciences) ²		3
Semester Credit Hours		16

Second Year

Fall

CHEM 119	Fundamentals of Chemistry I	4
WFSC 302	Natural History of the Vertebrates	3
American history (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history) ²		3
Communication (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#communication) ²		3
Creative arts (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts) ²		3
Semester Credit Hours		16

Spring

CHEM 222	Elements of Organic and Biological Chemistry	3
RENr 215	Fundamentals of Ecology–Laboratory	1
STAT 302	Statistical Methods	3
WFSC 304	Wildlife and Fisheries Conservation	3
Communication (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#communication) ²		3
Government/Political science (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#government-political-science) ²		3
Semester Credit Hours		16

Third Year

Fall

Select one of the following:		4
CHEM 120	Fundamentals of Chemistry II	
GEOL 101 & GEOL 102	Principles of Geology and Principles of Geology Laboratory	
PHYS 201	College Physics	
SCSC 301	Soil Science	
Ecosystem		3
Select one of the following:		
ESSM 309	Forest Ecology	
ESSM 320	Ecosystem Restoration and Management	
WFSC 404	Aquatic Ecosystems	
ESSM 416	Fire Ecology and Natural Resource Management	

Government/Political science (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#government-political-science) ²	3	⁴ Select from ESSM 305, ESSM 324, ESSM 351/RENR 405, ESSM 417, ESSM 444, ESSM 446, ESSM 459, ESSM 462/GEOG 462, ESSM 484, ESSM 485, ESSM 491, PHYS 201, PHYS 202, RENR 400, STAT 307, WFSC 300/ENTO 300, WFSC 314, WFSC 316, WFSC 408, WFSC 410, WFSC 415/MARB 415, WFSC 450/ENTO 450, WFSC 451/ENTO 451, WFSC 462/BIOL 462, WFSC 485.
Ecology practice ³	3	
General elective ¹	3	
Semester Credit Hours		16
Spring		
ESSM 304 Rangeland Plant Taxonomy	3	⁵ Select from BESC 204, ENTO 201, ESSM 203, ESSM 302, ESSM 303; WFSC 311, WFSC 315, WFSC 335, WFSC 401, WFSC 402.
ESSM 311 Biogeochemistry and Global Change	3	⁶ Select from ESSM 351/RENR 405, ESSM 444, ESSM 459, ESSM 462/GEOG 462, PHYS 201, PHYS 202, STAT 307.
WFSC 403 Animal Ecology	3	⁷ Select from ESSM 301, ESSM 314, ESSM 319, ESSM 420, ESSM 430, RENR 470, WFSC 444, WFSC 447, WFSC 457.
WFSC 433 Molecular Ecology in Wildlife and Fisheries	3	⁸ Select from AGECE 350, ESSM 301, ESSM 308, ESSM 314, ESSM 318, ESSM 319, ESSM 404, ESSM 405, ESSM 406, ESSM 420, ESSM 430, RENR 460/RPTS 460, RENR 470, WFSC 303, WFSC 444, WFSC 447, WFSC 457.
Ecology practice ⁴	3	⁹ Select from AGECE 350, ESSM 308, ESSM 318, ESSM 404, ESSM 405, ESSM 406, RENR 460/RPTS 460, WFSC 303.
Semester Credit Hours		15
Fourth Year		
Fall		
Biodiversity ⁵	3	
Ecology practice ⁴	3	
Ecology practice ⁶	3-4	
Human-environment interaction ⁷	3	
Human-environment interaction ⁸	3	
Semester Credit Hours		16
Spring		
ESSM 485 Directed Studies	1	
Individual function	3-4	
Select one of the following:		
BESC 401 Bioenvironmental Microbiology		
BIOL 318 Chordate Anatomy		
ENTO 306 Insect Physiology		
ESSM 307 Forest Protection		
ESSM 310 Forest Tree Improvement and Regeneration		
MEPS 313 Introduction to Plant Physiology		
WFSC 422 Ethology		
WFSC 448 Fish Ecophysiology		
Biodiversity ⁵	3	
Human-environment interaction ⁹	3	
General elective ¹	1-3	
Semester Credit Hours		12
Total Semester Credit Hours		120

Must make a grade of C or better in BIOL 111, BIOL 112, and all ECCB major core coursework (ESSM 201, ESSM 304, ESSM 311, ESSM 485, RENR 205, WFSC 302, WFSC 304, WFSC 403, and WFSC 433.)

¹ Select from any 100-499 course not used elsewhere.

² Graduation requirements include a requirement for 3 hours of International and Cultural Diversity (<http://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements/>) courses and 3 hours of Cultural Discourse (<http://catalog.tamu.edu/undergraduate/general-information/degree-information/cultural-discourse-requirements/>) courses. A course satisfying a Core category, a college/department requirement, or a general elective can be used to satisfy this requirement.

³ Select from ESSM 305, ESSM 324, ESSM 417, ESSM 446, ESSM 484, ESSM 485, ESSM 491, RENR 400, WFSC 300/ENTO 300, WFSC 314, WFSC 316, WFSC 408, WFSC 410, WFSC 415/MARB 415, WFSC 450/ENTO 450, WFSC 451/ENTO 451, WFSC 462/BIOL 462, WFSC 485.