CONSERVATION BIOLOGY

Degree: B.S., Biology
Department of Biological Sciences (https://cas.umw.edu/biology/)

Biology encompasses the study of all living things and their interaction with the environment. The Department faculty is dedicated to providing students with a strong undergraduate education in the fundamental principles of biology, while offering opportunities and encouraging students to pursue specialized interests in ecology and conservation.

The Conservation Biology major is designed for students interested in public or private-sector careers in fields such as endangered species protection and recovery, habitat conservation, conservation biology education, and fisheries and wildlife management. Additionally, it prepares students for graduate study in conservation biology in cases where graduate degrees are required for particular careers. Students who complete all requirements earn the degree of Bachelor of Science (B.S.) in Biology with a major in Conservation Biology.

The core curriculum is designed to ensure thorough command of the scientific method and access to inquiry-based learning experiences, while providing a balanced background in cell and molecular biology, organismal biology, and ecology. Elective courses cover a wide variety of specialized topics to meet students' particular interests in biology. An array of laboratory and field experiences further develop working knowledge of the scientific method, teach specific experimental techniques, and promote ongoing development of quantitative and analytical skills.

All of the equipment and facilities in the department are available for undergraduate student use. Collections of microscope slides, vertebrate and invertebrate specimens and a herbarium are available to enhance learning. Advanced laboratory instrumentation such as spectrophotometers, thermalcyclers, ultracentrifuges, and two electron microscopes allow students to engage in sophisticated research.

Outstanding junior and senior biology majors have the opportunity to participate in the undergraduate research program. Working with a faculty mentor, the student explores the literature, defines an original research problem, and utilizes the appropriate research and analytical techniques to investigate the problem. On many occasions this work results in presentations at state, regional, and national scientific meetings. Research students who meet minimum requirements (3.0 overall GPA and a 3.25 average in biology) may pursue Honors in Biology by writing and defending a thesis on their research project. Students can also gain focused research experience via participation in the UMW Summer Science Institute. Financial support for student research is available. Additionally, biology faculty offer research opportunities through the university's undergraduate research (URES 197 Undergraduate Research) program.

The internship program also offers students an opportunity to gain valuable career related experience. Many biology majors have taken advantage of this program to gain experience and to confirm their career objectives. Qualified internship credits may also be counted toward the capstone requirement in Conservation Biology.

In addition to the "Beyond the Classroom" requirement found on the general education course list (https://catalog.umw.edu/undergraduate/general-education/general-education-course-list/), the department has established another mechanism by which biology majors may satisfy the experiential learning general education requirement. The **Biology service learning option** requires students to apply knowledge and skills acquired in their formal courses and to reflect upon how such application has augmented their education.

Students will complete a service-learning contract in which they will:

1. identify the agencies for which they will conduct their service,
2. indicate the biology faculty members who will evaluate the academic component of their activities, and
3. describe the duties that they will carry out for these agencies.

Students must complete 40 hours of service within 12 months of submitting their contracts. Students completing their community service during their last semester must complete all requirements by March 1 (November 1 for those finishing in December). Contact the biology department chair for additional details.

Major Requirements

Students must earn a C- or better in most BIOL required courses that serve as prerequisites for other BIOL courses. Students must also earn a C- or better in the core courses (BIOL 210 Introduction to Ecology and Evolution**,** BIOL 260 Biostatistics and Research Design**,** BIOL 341 General Genetics**,** BIOL 428 Conservation Biology or equivalent) **to graduate with a degree in Conservation Biology*. See also the Department of Chemistry's minimum grade requirements for*** CHEM 111 General Chemistry I**,**CHEM 112 General Chemistry II. *A maximum of 16 CONS course credits can count to the major.*

A minimum of 41 credits from the following:

Code	Title	Credits
BIOL 132	Organism Function and Diversity	4
or BIOL 126	Phage Hunters II	
BIOL 210	Introduction to Ecology and Evolution	3
BIOL 260	Biostatistics and Research Design	4
BIOL 341	General Genetics	4
Select one of the following:		4
BIOL 428	Conservation Biology	
CONS 402	Applied Conservation	
CONS 404	Biodiversity Monitoring	
CONS 491	Conservation Management Planning	
Select one of the following:		4
GISC 200	Introduction to GIS	
GEOG 250	Introduction to Geographic Information Systems and Cartography	
EESC 205	GIS Applications in Environmental Science and Geology with Lab	
Select two of the following diversity courses:		8
BIOL 231	Plant Biology	
BIOL 321	Invertebrate Zoology	
BIOL 323	Entomology	
BIOL 372	Parasitology	
BIOL 425	Vertebrate Zoology	
BIOL 426	Biology of Fishes	
BIOL 427	Ornithology [2]	
BIOL 471	Topics in Biology [1,3]	
Select one upper-level ecology course:		3-4
BIOL 311	Plant Ecology	

BIOL 322	Animal Ecology	
BIOL 401	Animal Behavior	
BIOL 423	Ecology and Evolution in the Galapagos Islands	
BIOL 424	Tropical Ecology	
CONS 405	Landscape and Macrosystems Ecology	
CONS 406	Small Population Management	
Select one public policy, economic, and cultural perspectives course:		3
ANTH 365	Environment and Development Narratives: The Modern Myths of Nature and Progress	
CONS 410	Human Dimensions of Conservation	
ECON 331A	Environmental and Resource Economics	
EESC 230	Global Environmental Problems	
EESC 330	Environmental Regulations	
GEOG 245	Environment and Society	
HIST 322	US Environmental History	
PHIL 330	Environmental Ethics	
Select one of the following research intensive courses:		4-6
BIOL 445	Research Practices in Aquatic Ecology	
BIOL 462	Research Practices in Plant Ecology	
BIOL 472	Research-Intensive Topics in Biology [1]	
BIOL 481/491	Research Design & Proposal Development in Biology [1]	
CONS 490	Integrated Conservation Strategies	
CONS 496	Research in Conservation	
Total Credits		**41-44**

1 As approved by the department.
2 Course may fulfill the biodiversity or the research intensive requirement.
3 Depending on the topic this course may count for a biodiversity course or an upper-level ecology course

General Education Requirements

The general education requirements for Bachelor of Arts/Bachelor of Science degrees (https://catalog.umw.edu/undergraduate/general-education/requirements-bachelor-arts-bachelor-science-degrees/) apply to all students who are seeking to earn an undergraduate B.A., B.S. or B.S.Ed. degree.

Students seeking a Bachelor of Liberal Studies degree have a separate set of BLS general education requirements (https://catalog.umw.edu/undergraduate/general-education/requirements-bachelor-liberal-studies-degrees/).

Electives

Elective courses are those that are not needed to fulfill a general education requirement or major program requirement but are chosen by the student to complete the 120 credits required for graduation with a B.A./B.S./B.S.Ed. degree or the BLS degree. These courses may be taken graded or pass/fail (or S/U in the case of physical education and 100-level dance). No student in a regular B.A./B.S./B.S.Ed. program may count more than 60 credits in a single discipline toward the 120 credits required for graduation.

Total Credits Required for the Degree: 120 credits

Biological Sciences Department

Dianne M. Baker, Chair

Faculty

Professors

Dianne M. Baker
Andrew S. Dolby
Alan B. Griffith
Lynn O. Lewis
Deborah A. O'Dell

Associate Professors

Theresa M. Grana
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Assistant Professors

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Josephine Antwi
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Michael C. Stebar