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 areas of interest.

The Bachelor of Science in Biology degree prepares students for future careers in life sciences research, teaching, and biotechnology. Many graduates pursue advanced degrees in specialized areas such as cellular and molecular biology, bioinformatics, physiology, immunology, entomology, microbiology, ecology, and environmental engineering.

The biology 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. The department also has appropriate field equipment for collecting biological data from the terrestrial, aquatic, and estuarine habitats surrounding campus.

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. Internship credits do not count towards the biology major, but many biology majors have taken advantage of this program to gain experience and to confirm their career objectives.

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
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 340 Cellular Biology**,** BIOL 341 General Genetics**) to graduate with a degree in Biology. See also the Chemistry Program's minimum grade requirements for** CHEM 111 General Chemistry I**,** CHEM 112 General Chemistry II.

Code	Title	Credits
BIOL 132	Organism Function and Diversity	4
or BIOL 126	Phage Hunters II	
BIOL 210	Introduction to Ecology and Evolution [1]	3
BIOL 260	Biostatistics and Research Design [1]	4
BIOL 340	Cellular Biology [1]	4
BIOL 341	General Genetics [1]	4
BIOL 451	Seminar	2
Select one Research Intensive class from the classes listed below:		4
BIOL 419	Neuroethology	
BIOL 427	Ornithology	
BIOL 430	Molecular Biology of the Gene	
BIOL 432	Virology	
BIOL 439	Developmental Biology	
BIOL 462	Research Practices in Plant Ecology	
BIOL 466	Research in Endocrinology	
BIOL 472	Research-Intensive Topics in Biology	
BIOL 481 & BIOL 491	Research Design & Proposal Development in Biology and Special Problems in Biology	
Select 16 additional hours of BIOL electives, including 1 lab class [2,3]		16
Total Credits		**41**

1 These are prerequisites for various upper-level courses. and should be completed during the second year.
2 CHEM 317 Biochemistry I counts as an elective in the BIOL major.
3 A maximum of 2 credit hours of BIOL 499 Internship counts as an elective in the BIOL major

Note: BIOL 132 Organism Function and Diversity, or BIOL 126 Phage Hunters II, and CHEM 111 General Chemistry I, CHEM 112 General

Chemistry II are prerequisites for the biology major's core curriculum and should be taken in the student's first year.

All graduating students must participate in the assessment of the major.

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
Bradley A. Lamphere
Abbie M. Tomba
R. Parrish Waters
April N. Wynn

Assistant Professors

Swati Agrawal
Josephine Antwi
Ginny R. Morriss
Laura M. Sipe

Senior Lecturer

Michael C. Stebar