BIOLOGICAL SCIENCES MAJOR (BS)

Department website (https://www.uwp.edu/learn/programs/biologicalsciences.cfm)

College: College of Natural & Health Sciences

Since the opening of the university in 1968, UW-Parkside's Biological Sciences Department has developed and maintained an outstanding program with a strong track record of preparing graduates for successful careers in the life sciences. The department attracts many quality students from diverse backgrounds and has a robust research culture covering a wide array of specializations. This makes for an ideal environment for students ready to explore the fascinating world around them while also preparing for one of the many rewarding career options available to graduates our program.

The Biological Sciences faculty is committed to the teacher-scholar model and our pedagogy emphasizes quality teaching, hands-on experience with modern methods and direct involvement of students in research. The department maintains active research facilities with both state-of-the-art instrumentation for indoor benchwork, but also a network of managed natural areas to provide research opportunities in ecology and evolution.

The department offers two majors. The biological sciences major is appropriate for students with a general interest in biology and has concentrations appropriate for most students interested in careers in medicine, field biology or laboratory work. The molecular biology and bioinformatics major is designed for students who wish to specialize in this cutting-edge and rapidly growing field. Both majors are appropriate for students preparing for the health professions or research careers; consult with the pre-health advisors for advice relating to your specific career goals.

The department supports several student organizations: Biology Club, Molecular Biology Club, the Pre-Health Professions Club and the Environmental Club. These clubs promote learning and career preparation outside the formal classroom. Activities include field trips, guest lectures, mentoring, and social activities. See your academic advisor or contact the department office for information about how to become involved.

The biological sciences program greatly values collaboration across departments. In addition to general education courses, we offer core and elective courses for several other majors and programs including applied health sciences, nursing, biochemistry, environmental studies, and several pre-professional programs.

Program Learning Outcomes

1. Biological complexity and evolution: students demonstrate expertise regarding the nature of living organisms and biological processes.
2. Inquiry and research methods: students develop analytical and critical thinking skills, including hypothesis generation and testing, and engage in the practice of biology.
3. Scholarship and communication: students develop the capacity to engage in current thinking, discoveries and methodologies via reading the scientific literature and communicating (discussion, writing, presentation).

Requirements for the Biological Sciences Major

The major in biological sciences consists of a minimum of 42 credits in biological sciences with additional courses in mathematics and chemistry. Within the major, a minimum of 15 credits in courses numbered 300 or above must be completed at UW-Parkside.

Code	Title	Credits
College of Natural and Health Sciences requirement		
New entering students, and transfer students with less than 30 college credits, choosing a major in the College of Natural and Health Sciences are required to take this course.		
UWP 101	First Year Seminar: Natural and Health Sciences	1
Required Core Courses [1]		
BIOS 101	Bioscience	4
BIOS 102	Organismal Biology	4
BIOS 210	Biostatistics	4
BIOS 260	General Genetics	4
Required Core Courses Subtotal		*17*
Mathematics and Chemistry Courses		
Mathematics Courses		
MATH 221	Calculus and Analytic Geometry I	5
Chemistry Courses [2]		
CHEM 101	General Chemistry I	4
CHEM 102	General Chemistry II	4
CHEM 103	General Chemistry Lab I	1
CHEM 104	General Chemistry Lab II	1
Mathematics and Chemistry Courses Subtotal		*15*
Concentration Options		
Select one concentration		34-43
Total Credits		**66-75**

1. Students must complete core courses numbered in the 200s and below before they enroll in 400-level biological sciences courses. Exception from this prerequisite requires approval from the program faculty. Students should consult with their academic advisor before registration if such a situation arises.
2. CHEM 323 Organic Chemistry Lab is strongly recommended, but not required. Most graduate and professional schools require an organic chemistry course with a laboratory component. Students who plan to do graduate work are also advised to take MATH 222 Calculus and Analytic Geometry II.

Concentration Options

Students must complete the requirements of one of the available concentrations. Students who plan to do graduate work are also advised to consider additional courses in Physics and Mathematics.

Students pursuing careers in the health professions are strongly urged to contact the Pre-Health office at 262-595-2327 for advising.

Concentration in General Biology

Code	Title	Credits
Required Concentration Courses		
BIOS 435	Experimental Methods/Biochemistry Laboratory [1]	2

or BIOS 445	Research Methods in Ecology and Evolution	
CHEM 321	Organic Chemistry I	4
CHEM 322	Organic Chemistry II	4
Elective Concentration Courses		24
Total Credits		**34**

[1] If one course is taken to fulfill this requirement, the other may be taken as an upper-level Biology elective.

Elective Concentration Courses

Each student must complete a minimum of 24 elective credits selected from 300-400 level biological sciences courses. Of these 24 credits, at least 3-credit hours must be obtained from each of the four designated areas listed below (Areas: 1 (Cell and Molecular Biology), 2 (Organismal Structure and Function), 3 (Biological Diversity) and 4 (Population Ecology)). To complete the requirement of 24 elective credits, at least one 300-level or higher elective class must include a laboratory. Classes that meet this laboratory requirement are marked with an (L) in the list above as well as BIOS 453 and BIOS 455. BIOS 435 Experimental Methods/ Biochemistry Lab and BIOS 445 Experimental Methods in Ecology and Evolution are core classes and do not satisfy this requirement.

Students can select among any of the remaining 300-400 level biological sciences courses to complete the remaining elective credits, which may include up to three credits each of BIOS 494 (Internship) and BIOS 499 (Independent Study). However, BIOS 494 and BIOS 499, cannot be used to satisfy the Area requirements. Students are required to check with a faculty member concerning any biological sciences special topics courses (BIOS 290, 390, 490) counting toward the topic areas listed below.

Area 1: Cell and Molecular Biology

Code	Title	Credits
BIOS 301	Cell Biology	3
BIOS 307	Biochemical Metabolism	3
BIOS 309	Molecular Biology	3
BIOS 355	Biology of Cancer	3

Area 2: Organismal Structure and Function

Code	Title	Credits
BIOS 300	Human Functional Anatomy (L)	4
BIOS 317	Developmental Biology	3
BIOS 341	Mammalian Physiology	3
BIOS 344	Plant Physiology	3

Area 3: Biological Diversity

Code	Title	Credits
BIOS 303	Microbiology (L)	4
BIOS 311	Parasitology (L)	4
BIOS 313	Invertebrate Zoology (L)	4
BIOS 318	Vertebrate Zoology (L)	4
BIOS 324	Botany (L)	4
BIOS 329	Paleontology (L)	3
BIOS 351	Virology	3

Area 4: Population Biology

Code	Title	Credits
BIOS 305	Principles of Ecology (L)	4
BIOS 314	Evolutionary Biology	3
BIOS 330	Topics in Field Biology: (L)	3
BIOS 333	Restoration Ecology (L)	4
BIOS 336	Conservation Ecology	3
BIOS 340	Animal Behavior (L)	4
BIOS 414	Molecular Evolution	3

Concentration in Ecology and Evolution

Code	Title	Credits
Required Concentration Courses		
BIOS 305	Principles of Ecology [1]	4
or BIOS 310	Freshwater Ecology	
BIOS 314	Evolutionary Biology	3
BIOS 445	Research Methods in Ecology and Evolution	2
GEOS 102	Origin and History of the Earth	3
GEOS 104	Introductory Geology Laboratory	2
Required Concentration Courses Subtotal		*14*
Elective Allied Science Courses		*8*
Select from the following list in accordance with academic and post-graduate goals		
CHEM 321	Organic Chemistry I	
CHEM 322	Organic Chemistry II	
CHEM 323	Organic Chemistry Lab	
GEOS 301	Geomorphology	
GEOS 320	Soils, Weathering and Surficial Processes	
GEOS 420	Glacial Geology	
GEOS 445	Environmental Sampling, Monitoring, and Assessment	
MATH 222	Calculus and Analytic Geometry II	
MATH 223	Calculus and Analytic Geometry III	
MATH 309	Probability and Statistics (Same As CSCI 309)	
MATH 310	Advanced Probability Theory and Statistics	
MATH 368	Mathematical Modeling (Same As CSCI 368)	
PHYS 105	College Physics I	
PHYS 106	College Physics II	
Elective Biology Courses		*16*
Select from the following in consultation with the advisor. Must choose at least two (2) from the following list: BIOS 303, BIOS 311, BIOS 313, BIOS 318, BIOS 324, and BIOS 329		
BIOS 207	Research Process in Biology	
BIOS 303	Microbiology	
BIOS 309	Molecular Biology	
BIOS 311	Parasitology	
BIOS 313	Invertebrate Zoology	
BIOS 318	Vertebrate Zoology	
BIOS 324	Botany	
BIOS 329	Paleontology	
BIOS 330	Topics in Field Biology:	
BIOS 333	Restoration Ecology	
BIOS 336	Conservation Ecology	

BIOS 340	Animal Behavior	
BIOS 341	Mammalian Physiology	
BIOS 344	Plant Physiology	
BIOS 414	Molecular Evolution	
BIOS 436	Conservation Ecology Lab	
BIOS 499	Independent Study	
Total Credits		**38**

[1] If one course is taken to fulfill this requirement, the other may be taken as an elective in the concentration.

Concentration in Pre-Health Professions

Students who are planning to pursue graduate/professional work in health sciences are advised to complete the Biological Sciences major with a concentration in Pre-Health Professions.

Code	Title	Credits
Required Concentration Courses		
BIOS 300	Human Functional Anatomy (L)	4
BIOS 303	Microbiology (L)	4
BIOS 307	Biochemical Metabolism	3
BIOS 341	Mammalian Physiology	3
BIOS 435	Experimental Methods/Biochemistry Laboratory	2
CHEM 321	Organic Chemistry I	4
CHEM 322	Organic Chemistry II	4
Select one of the following:		10
CHEM 323	Organic Chemistry Lab	2
PHYS 105 & PHYS 106	College Physics I and College Physics II	
OR		
PHYS 201 & PHYS 202	General Physics I and General Physics II	
Required Concentration Courses Subtotal		*36*
Elective Concentration Courses		**6**
Select from the following:		
BIOS 301	Cell Biology	
BIOS 309	Molecular Biology	
BIOS 311	Parasitology (L)	
BIOS 314	Evolutionary Biology	
BIOS 317	Developmental Biology	
BIOS 342	Mammalian Physiology Laboratory	
BIOS 351	Virology	
BIOS 355	Biology of Cancer	
Total Credits		**42**

General University Degree Requirements (Bachelor's Degree)

In addition to individual program requirements, students must also fulfill the following requirements:

Requirement	Credits
Skills	7-8
General Education	36
Foreign Language**	6-8
Ethnic Diversity	3
Total	52-55

** Transfer students in sustainable management, and health information management and technology collaborative, online degree-completion programs, the business management online degree-completion program, and the flexible option degree-completion program will be exempt from the university's foreign language requirement. See appropriate academic section for further information.

Skills Requirement (https://catalog.uwp.edu/policies/#skills)

Code	Title	Credits
Reading and Writing		
ENGL 101	Composition and Reading	3
Computational Skills		
Select one of the following:		4-5
MATH 102	Quantitative Reasoning	
MATH 103	Elementary Statistics	
MATH 104	College Mathematics with Applications	
MATH 111	College Algebra I	
Total Credits		**7-8**

General Education (https://catalog.uwp.edu/policies/#general)

- General Education Course List (https://catalog.uwp.edu/programs/general-education-program/#coursestext)

Foreign Language (https://catalog.uwp.edu/policies/#language)

Ethnic Diversity (https://catalog.uwp.edu/policies/#ethnic)

Degree Requirements

Requirement	Credits
Minimum Total Credits	120
Upper Level Credits (300 level or above)	36
Residency	30

Cumulative Degree GPA: 2.0 minimum

Course	Title	Credits
Year 1		
Fall Semester		
MATH 102	Quantitative Reasoning	4
ENGL 100	Fundamentals of English	3
Introductory Language		4
COMM 107	Communication and the Human Condition	3
	Credits	**14**
Spring Semester		
ENGL 101	Composition and Reading	3
COMM 105 or COMM 205	Public Speaking for the 21st Century or Oral Interpretation	3
COMM 108	Media and Society	3
Introductory Language		4
	Credits	**13**
	Total Credits	**27**