Biology: Biomedical B.A.

Biology: Biomedical Major

The B.A. Biology Major: Biomedical requires a minimum of 120 total hours to graduate. This total includes UNIFI/General Education requirements and the following specified major requirements, plus electives to complete the minimum of 120 hours.

This major offers basic preparation to students for allopathic, osteopathic, chiropractic, pharmacy, physical therapy, dental, veterinary, optometric, podiatric and other health-related programs. In addition, it prepares students for graduate study in biomedical sciences, e.g., pharmacology, toxicology, pathology, physiology, cellular biology, and related areas. Students should seek advice and information early in their programs so that individual goals and specific additional requirements of some graduate and professional programs can be considered in curricular planning.

Required: *		
Introductory track:		15
BIOL 2051	General Biology: Organismal Diversity	
BIOL 2052	General Biology: Cell Structure and Function	
BIOL 3100	Evolution, Ecology and the Nature of Science	
BIOL 3140	Genetics	
Anatomy and Physiology group:		8
BIOL 3101	Human Anatomy and Physiology I	
or BIOL 3106	Vertebrate Anatomy	
BIOL 3102	Human Anatomy and Physiology II	
Cognate courses:		
Chemistry and Biochemistry:		13-16
CHEM 1110 & CHEM 1120	General Chemistry I and General Chemistry II	
or CHEM 1130	General Chemistry I-II	
CHEM 2210	Organic Chemistry I	
CHEM 2220	Organic Chemistry II	
CHEM 2230	Organic Chemistry Laboratory	
Mathematics:		3-5
Select one of the following:		
MATH 1120 & MATH 1130	Mathematics for Biological Sciences and Trigonometry	
MATH 1140	Precalculus	
MATH 1420	Calculus I	
STAT 1772	Introduction to Statistical Methods	
Physics:		8
PHYSICS 1511	General Physics I	
PHYSICS 1512	General Physics II	
Electives selected from the following (consult with advisor): ^		10
BIOL 3106	Vertebrate Anatomy §	
BIOL 3108	Medical Histology	
BIOL 3147	Cancer and Emerging Infectious Diseases	
BIOL 3151	General Microbiology	
BIOL 3190	Undergraduate Research in Biology	
BIOL 4114/5114	Comparative Animal Physiology	
BIOL 4116/5116	Neurobiology	
BIOL 4128/5128	Cell Biology	
BIOL 4129/5129	Genomics	
BIOL 4130/5130	Genetic Technologies in Medicine	
BIOL 4137/5137	Advanced Human Physiology	
BIOL 4144/5144	Virology	
BIOL 4146/5146	Developmental Biology of Animals	
BIOL 4150/5150	Immunology	
BIOL 4157/5157	Biostatistics	
BIOL 4164/5164	Mammalogy	
CHEM 4510/5510	Biochemistry I **	
Total hours		57-62

* Students must take at last seven (7) hours of 4000-level biology coursework pertinent to their major, with four (4) of those hours being taken at UNI.

^ No more than 3 credits of BIOL 3190 Undergraduate Research in Biology will be counted toward biology elective requirements for this degree. For students pursuing the Honors Emphasis, the remaining credit of BIOL 3190 Undergraduate Research in Biology and BIOL 3191 Senior Thesis will be applied to university electives.

§ If not used to satisfy the Anatomy and Physiology group requirement.

** For students pursuing graduate programs in Allopathic or Osteopathic Medicine, Physician Assistant, or Veterinary Medicine, Biochemistry I (CHEM 4510) and Biochemistry II (CHEM 4520) are recommended and would satisfy a Chemistry minor in addition to the BA Biology Biomedical degree.

Honors Research

Students invited to do Honors Research will complete 4 credit hours of BIOL 3190 Undergraduate Research in Biology and 1 credit hour of BIOL 3191 Senior Thesis. The following BA degrees are eligible for Honors Research: Biology BA, Biology: Biomedical BA, and Biology: Ecology, Evolution and Organismal Biology BA.

Four-Year Plan

Biology: Biomedical, B.A.

This is a sample plan of study with a suggested sequencing of classes for the major. University electives may be applied to earn additional academic majors, minors, or certificates. Students should regularly meet with their academic advisor to plan their specific semester schedule to include UNIFI/General Education program and/or university elective hours required.

Course	Title	Hour
Freshman		
Fall		
BIOL 2051	General Biology: Organismal Diversity (or BIOL 2052 Gen Bio: Cell Structure and Function)	4
CHEM 1110	General Chemistry I	4
Math course required for major (Based on ALEKS score)		3
UNIFI/General Education or University Electives		3
	Hours	**14**
Spring		
BIOL 2052	General Biology: Cell Structure and Function (or BIOL 2051 Gen Bio: Organismal Diversity)	4
CHEM 1120	General Chemistry II	4
UNIFI/General Education or University Electives		6
	Hours	**14**
Sophomore		
Fall		
BIOL 3140	Genetics (or BIOL 3100 Evolution, Ecology and the Nature of Science)	4
CHEM 2210	Organic Chemistry I	3
UNIFI/General Education or University Electives		9
	Hours	**16**
Spring		
BIOL 3100	Evolution, Ecology and the Nature of Science (or BIOL 3140 Genetics)	3
CHEM 2220	Organic Chemistry II	3
CHEM 2230	Organic Chemistry Laboratory	2
UNIFI/General Education or University Electives		6
	Hours	**14**
Junior		
Fall		
BIOL 3101	Human Anatomy and Physiology I (or BIOL 3106 Vertebrate Anatomy)	4
PHYSICS 1511	General Physics I	4
UNIFI/General Education or University Electives		6
	Hours	**14**
Spring		
BIOL 3102	Human Anatomy and Physiology II	4
PHYSICS 1512	General Physics II	4
UNIFI/General Education or University Electives		9
	Hours	**17**
Senior		
Fall		
Biomedical Emphasis Elective (4000 level) **		3
Biomedical Emphasis Elective (3000 or 4000 level) **		3
UNIFI/General Education or University Electives		9
	Hours	**15**
Spring		
Biomedical Emphasis Elective (4000 level) **		4
UNIFI/General Education or University Electives		12
	Hours	**16**
	Total Hours	**120**

* To graduate from UNI with a biology major, students must have both a cumulative and a major UNI GPA of 2.0 or higher, with a grade of C- (1.67) or higher in all courses that are applied to the major.

**Students must take at last seven (7) hours of 4000-level biology coursework pertinent to their major, with four (4) of those hours being taken at UNI.

Learning Outcomes

Biology: Biomedical Major, B.A.

Goals: Students will gain an understanding of major themes in biology (organization of life, diversity and its causes, genetics, and cellular biology) along with deeper exposure to and advanced competency in topics related to biomedical fields. Students will be able to think critically and communicate effectively on these discipline-specific topics.

Outcomes:

- Students will show proficiency in advanced content from their areas of interest in the fields of anatomy, physiology, development, cellular biology, immunology, and/or genetics.
- Students will communicate effectively using discipline-specific vocabulary and standard scientific communication skills such as graphical representation of data.
- Students will think critically about discipline-specific content as evidenced by an ability to interpret data, to effectively critique arguments, and/or to solve problems relating to living organisms.

Policies

Majors

1. Students should indicate their interest in majoring in biology by filling out a Declaration of Curriculum form any time after their admission to UNI.
2. A student's freshman year shall be devoted primarily to completing the required course work in general biology (BIOL 2051 General Biology: Organismal Diversity and BIOL 2052 General Biology: Cell Structure and Function) and chemistry (CHEM 1110 General Chemistry I and CHEM 1120 General Chemistry II, or CHEM 1130 General Chemistry I-II). UNIFI/General Education and/or math classes should be taken by students to complete their schedules.
3. For the BS Biology, the BS Environmental Science, the BA Biology, the BA Biology Biomedical Emphasis, the BA Biology-Teaching, and the BA Biology Ecology, Evolution and Organismal Biology emphasis, students must receive a grade of C- (1.67) or higher in courses that are applied to their major. Prior to enrollment in a course, all prerequisites must be completed with a C- (1.67) or higher.

4. ALEKS is a mathematics placement exam used at the University of Northern Iowa. Your academic advisor will use your score on the ALEKS assessment to determine your placement in UNI mathematics, chemistry, and physics courses.
5. A student enrolled in a biology class during fall or spring semester, or who drops a biology course after the first seven days of classes, should contact the department if they want to take the class again in an immediately subsequent semester. The student will only be allowed to register if space remains after all advanced registrations are completed.
6. To graduate from UNI with a BS Biology, a BA Biology, a BA Biology Biomedical Emphasis, or a BA Biology Ecology, Evolution and Organismal Biology emphasis, students must have both a cumulative and a major UNI GPA of 2.00 or higher, with a grade of C- (1.67) or higher in all courses that are applied to the major. To graduate from UNI with a BA Biology-Teaching, students must have both a cumulative and a major UNI GPA of 2.50 or higher, with a grade of C- (1.67) or higher in all courses that are applied to the major.
7. With the exception of the Biology 3+1 Joint program, to graduate from UNI with a biology major, students must take at least seven (7) hours of 4000-level biology coursework pertinent to their major, with four (4) of those hours being taken at UNI.
8. Transfer students entering UNI shall be subject to the acceptance requirements listed in #3.

Minors

To graduate from UNI with a biology minor, students must have both a cumulative and a minor UNI GPA of 2.00 or higher, with a grade of C- (1.67) or higher in all courses that are applied to the minor.

Notes:

1. A student can declare only one major within the Department of Biology with the exception of the BA Biology Teaching major, which can be paired with another degree in biology.
2. A student with a major within the Department of Biology cannot declare a Biology minor or a Biology-Teaching minor.
3. A student with a major in the interdisciplinary B.A. Environmental Resource Management: Ecosystems Track may not also declare a major or minor in biology.
4. A student with a major in the interdisciplinary B.S. Environmental Science: Environmental Life Science Track may not also declare a major or minor in biology.

Related Programs

- Biology M.S.
- Chemistry B.A. or B.S.