

Department of Life Sciences

Mission Statement

The Mission of the department of life sciences at Bethel College is to educate and train Christians for positions of leadership within the scientific community.

Vision: In order to fulfill this mission, our vision is to develop “Kingdom Scientists:” students who actively follow Christ in their careers as biologists and medical professionals, who work to bring Jesus’ sovereignty and authority to bear all areas of life sciences. To this end we desire to instill in our students the belief that we are uniquely called by God to be stewards of His creation and to glorify Him through performing with excellence in all aspects of our work.

Goals: Our goals as the department in life sciences are to provide an academically excellent program to recruit, encourage, and promote the entry of young Christians into the scientific research and medicine and to provide diverse learning and research experiences for our students to help them develop a strong base of knowledge in biological principals and research techniques, critical thinking and analysis skills, and verbal and written communication skills.

Objectives: Consistent with the Bethel College mission and vision statement we believe that it is our duty to provide our students with the analytical and professional skills necessary to succeed in their chosen career. In order to balance these needs, we believe that all departmental courses and programs should integrate the following elements:

- **Critical thinking skills**
Biologists should be able to identify and analyze a problem, weigh evidence and generate hypotheses.
- **Research skills**
Biologists should be able to propose and test hypotheses and analyze problems, and they must have the skills and research tools necessary to investigate them.
- **Communication skills**
Biologists should achieve competency in both oral and written communication in order to effectively disseminate the results of research.
- **Technological skills**
Students should acquire and demonstrate competency in the use of, at minimum, spreadsheet, word processing, bioinformatics, presentation and basic statistical analysis programs.
- **Practical experience**
Students should receive real-world experience through undergraduate research programs and internships.

• Ethics

Students should be able to discuss and form opinions about current issues in bioethics from a Christian worldview.

• Global citizenship

Students should be aware of global issues and be actively involved in finding solutions to critical problems in the world, such as global warming, the HIV/AIDS pandemic and poverty.

Biology Major

This major is designed to prepare students for further studies in medicine, cellular and molecular biology, biological laboratory sciences, physical and occupational therapy and medical school. Students interested in these programs typically complete a baccalaureate degree prior to admittance into a professional school or graduate school.

		HOURS	
General Studies			
COMM	171	Speech Communication	3
ENGL	101	Written Communication II	3
ENGL	102	Written Communication III	3
PSYC	182	General Psychology	3
PHED	100	Lifelong Physical Awareness	0.5
SOC	151	Principles of Sociology	3
BIBL	215	Old Testament Literature	3
BIBL	216	New Testament Literature	3
		Foreign Language, Two Semesters	6
		History Elective	3
		Art/Drama/Music	3
		Literature	3
PHIL	150	Logic & Critical Thinking	2
PHIL	250	Introduction to Philosophy	3
THEO	110	Exploring the Christian Faith	3
PHIL	452	Senior Experience	1
PHED	112-136	Physical Education Activities	1.5
			<u>47</u>
Major			
NS	110	Environmental Science	4
BIOL	210	Zoology	4
BIOL	211	Botany	4
BIOL	214	Anatomy & Physiology I	4
BIOL	215	Anatomy & Physiology II	4
BIOL	308	Molecular Cell Biology	4
BIOL	309	Genetics	4
BIOL	312	Microbiology	4
BIOL	460	Biochemistry	4
			<u>36</u>
Required Cognates			
CHEM	163	General Chemistry I	4
CHEM	164	General Chemistry II	4
CHEM	261	Organic Chemistry I	4
CHEM	262	Organic Chemistry II	4
PHYS	121	General Physics I	4
MATH	111	Basic Probability & Statistics	3
MATH	131	Calculus I, or	4
MATH	124	Applied Calculus	(3)
NS	333	Scientific Research Methods	<u>3</u>
			29-30
		Electives needed to complete the degree	11-12

Biology Minor

			HOURS
BIOL	115	Human Biology, or	4
NS	110	Environmental Science	(4)
BIOL	210	Zoology	4
BIOL	211	Botany	4
BIOL	308	Molecular Cell Biology, or	4
BIOL	312	Microbiology	(4)
BIOL	309	Genetics	4
CHEM	163	General Chemistry I	<u>4</u>
			24

Environmental Biology Major

This program is designed to educate biologists in the area of the environmental sciences especially as related to organismal or field biology. This should prepare them for careers in wildlife ecology, veterinary medicine, environmental consulting, land use planning, government agencies, missionary field-work as related to sustainable development and general environmental stewardship. The program emphasizes hands-on fieldwork, biodiversity approaches to environmental concerns and integration of a biblical basis for creation with sound scientific principles. The Environmental Biology major operates in partnership with Au Sable Institute in Michigan. It requires that the student take at least two courses during the summer semester at one of the Au Sable campuses.

General Studies

COMM	171	Speech Communication	3
ENGL	101	Written Communication II	3
ENGL	102	Written Communication III	3
PSYC	182	General Psychology	3
PHED	100	Lifelong Physical Awareness	0.5
SOC	151	Principles of Sociology	3
BIBL	215	Old Testament Literature	3
BIBL	216	New Testament Literature	3
		Foreign Language (two semesters)	6
		History Elective	3
		Art/Drama/Music	3
		Literature	3
PHIL	150	Logic & Critical Thinking	2
PHIL	250	Introduction to Philosophy	3
THEO	110	Exploring the Christian Faith	3
PHIL	452	Senior Experience	1
PHED	112-136	Physical Education Activities	<u>1.5</u>
			47

Major

BIOL	210	Zoology	4
BIOL	211	Botany	4
BIOL	309	Genetics	4
BIOL	313	Ecology	4
BIOL	317	Wildlife Techniques	4
BIOL	330	Biodiversity	3
BIOL	411	Comparative Vertebrate Anatomy	4
BIOL	420	Mammalogy	4
Au Sable		Ornithology	4
Au Sable		Field Botany	<u>4</u>
			39

Required Cognates			HOURS
MATH	111	Basic Probability & Statistics	3
MATH	131	Calculus I, or	4
MATH	124	Applied Calculus	(3)
CHEM	163	General Chemistry I	4
CHEM	164	General Chemistry II	4
CHEM	261	Organic Chemistry I	4
NS	291	Physical World, or	4
PHYS	121	General Physics I	(4)
NS	333	Scientific Research Methods	<u>3</u>
			25-26
Electives needed to complete the degree			19-21

Environmental Biology Minor

BIOL	313	Ecology	4
BIOL	330	Biodiversity	3
NS	110	Environmental Science	4
BIOL	210	Zoology	4
BIOL	211	Botany	<u>4</u>
			19

Pre-Medicine Major

This program is designed to meet the entrance requirements for professional schools such as medical, dental, physical therapy and veterinary schools. The courses in this major are specifically chosen to prepare students for the MCAT (Medical Colleges Admissions Test), to allow flexibility in additional training in the sciences, and to allow students to take helpful courses in non-science disciplines. Students are advised to include anatomy—either Comparative Vertebrate Anatomy or Human Anatomy & Physiology I & II.

It should be noted that only a small percentage of students going to medical schools take a “pre-med” major. With this in mind, students are encouraged to also consider majors such as Biology or Chemistry (or a number of other fields), as there are more common ways to train for entrance into these types of professional programs. [Minimal requirements for most medical schools are one year of Biology, one year of General Chemistry, one year of Organic Chemistry and one year of Physics (some also require a year of calculus)].

General Studies			
COMM	171	Speech Communication	3
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PSYC	182	General Psychology	3
PHED	100	Lifelong Physical Awareness	0.5
SOC	151	Principles of Sociology	3
BIBL	215	Old Testament Literature	3
BIBL	216	New Testament Literature	3
		Foreign Language	6
		History Elective	3
		Art/Drama/Music	3
		Literature	3
PHIL	150	Logic & Critical Thinking	2
PHIL	250	Introduction to Philosophy	3
THEO	110	Exploring the Christian Faith	3
PHIL	452	Senior Experience	1
PHED	112-136	Physical Education Activities	<u>1.5</u>
			47
Major			
BIOL	210	Zoology	4
BIOL	308	Molecular Cell Biology	4

LIFE SCIENCES

			HOURS
CHEM	163	General Chemistry I	4
CHEM	164	General Chemistry II	4
CHEM	261	Organic Chemistry I	4
CHEM	262	Organic Chemistry II	4
MATH	111	Basic Probability & Statistics	3
MATH	131	Calculus I	4
PHYS	121	General Physics I	4
PHYS	122	General Physics II	4
Electives chosen from:			24
BIOL courses – 200 level or above,			
CHEM courses – 200 level or above,			
PHYS courses – 200 level or above,			
NS 333			
MATH 132			
			<hr/>
			63
Electives needed to complete the degree			14

All majors in this division receive the Bachelor of Science (B.S.) degree.

Science Education - see Physical Science Department