

NATURAL SCIENCES MAJOR (M)

The goal of the Department of Life and Earth Sciences at Concordia University Wisconsin is to develop competent scientists with a Christian worldview. The graduates of its programs will possess the current scientific knowledge and research/data interpretation skills so necessary for entering scientific or medical careers in industry, academia, or government. More importantly, they will be prepared to provide a Christian influence and ethical perspective to the debate on the science-related issues facing the world today.

The Natural Science major is designed to accompany a bachelor's degree in Secondary Education for students preparing to teach high school science. Accordingly, it provides a wide-ranging background combined with an opportunity for an area of specialization. Students pursuing other careers in science, or intending to apply to graduate programs in science, generally should choose a more specialized major.

The Lutheran Church–Missouri Synod affirms that all of Scripture, including the creation account in Genesis, is the word of God, true, and authoritative for faith and life. Current conventional scientific theories that conflict with the account in Genesis might be studied in portions of this course. In no way should this be seen as endorsement of a non-authoritative view of Scripture by the course instructor or by Concordia University.

Program Learning Outcomes

Students will:

- Demonstrate an understanding of and an ability to explain major biological and related scientific concepts (Knowledge Base of Biology and Related Sciences);
- Demonstrate the ability to appropriately collect and analyze data while utilizing laboratory equipment and procedures safely and effectively (Biological Procedures and Data)
- Develop investigative and critical thinking skills to explore complex questions and solve challenging scientific problems (Scientific Inquiry);
- Demonstrate the ability to communicate scientific information effectively to both scientists and non-scientists (Scientific Communication);
- Recognize how vocations in science provide opportunities for service to Christ and others and necessitate ethical behavior in all aspects of science (Vocation and Ethics) demonstrate an understanding of how/why a Christian sees evidence of God's design in nature and how to be good stewards of His creation (God's Design and Stewardship).

Curriculum

Code	Title	Hours
Core Requirements (https://catalog.cuw.edu/undergraduate/university/acad-prog/trad/core/)		45
Major Requirements		51
Electives ¹		24
Minor: Optional		
Total Hours		120

¹ For Secondary Education Students, the credit total is 130

Code	Title	Hours
Required Core Courses		
BIO 141	General Biology I (Science with a Lab)	
MATH 205	Statistics I (MATH 205 for Biology Emphasis; MATH 128 for Chemistry/Physics Emphases) or MATH 128 College Algebra	
COMM 105	Public Speaking (Communication) or COMM 20 Interpersonal Communication	
ENG 104	Introduction to Writing	
Courses Required for Secondary Education Students		
ED 1102	Foundations of Education (Core Human Beings & Being Human requirement)	
ED 1103	Human Relations for Teachers (Core Society and Culture requirement)	
ED 4376	Curriculum and Methods of Teaching Science - Secondary (Required pedagogy class) ²	
Major Requirements		23
BIO 141	General Biology I (taken in core)	
BIO 142	General Biology II	4
CHEM 141	General Chemistry I	4
CHEM 142	General Chemistry II	4
PHYS 151	General Physics I	4
	or PHYS 171 University Physics I	
PHYS 152	General Physics II	4
	or PHYS 172 University Physics II	
SCI 275	Cosmogony	3
Choose one environmentally-focused class		3-4
Choose one of the following emphases:		9-17
Emphasis in Biology		
Emphasis in Chemistry		
Emphasis in Physics		
Major Electives		7-15
Total Hours		51

² Requires Upper Division Status

Environmentally-Related Courses

Code	Title	Hours
BIO 156	Environmental Science	4
	or PHYS 108 Introductory Astronomy	
	or SCI 195 Meteorology	
	or SCI 235 Earth Science	
	or SCI 246 Oceanography	

Emphasis in Biology

Code	Title	Hours
MATH 205	Statistics I (taken in core)	
BIO 146	Essentials of Anatomy and Physiology (If BIO 191 is chosen, BIO 192 must be selected as a major elective)	4

or BIO 191	Human Anatomy and Physiology I	
BIO 244	Botany	4
BIO 260	Biology of Microorganisms	4
BIO 348	Genetics	4
BIO 490	Biology Senior Seminar (fall semester)	1
Total Hours		17

Emphasis in Chemistry

Code	Title	Hours
MATH 128	College Algebra (taken in core)	
CHEM 241	Organic Chemistry I	4
CHEM 242	Organic Chemistry II	4
CHEM 225	Analytical Chemistry	4
CHEM 425	Biochemistry	4
CHEM 491	Chemistry Senior Seminar I	1
Total Hours		17

Emphasis in Physics

Code	Title	Hours
MATH 128	College Algebra (taken in core)	
PHYS 108	Introductory Astronomy (must be selected as environmentally-focused course)	
PHYS 171	University Physics I (must be selected as major requirement)	
PHYS 172	University Physics II (must be selected as major requirement)	
MATH 201	Calculus I (must be taken before PHYS 171)	4
MATH 202	Calculus II	4
CHEM 491	Chemistry Senior Seminar I	1
Total Hours		9

Major Electives

7 elective credits are required for the biology/chemistry emphases, 15 for the physics emphasis. Major electives can be selected from any courses in the other emphases (Biology (p. 1), Chemistry (p. 2), Physics (p. 2)), additional courses from the environmentally-focused (p. 1) category, or selected from the following (prerequisites may apply):

Code	Title	Hours
CHEM 235	Descriptive Inorganic Chemistry	4
BIO 192	Human Anatomy and Physiology II	4
BIO 240	Zoology	4
BIO 321	Cell Biology	4
BIO 367	Ecology of the Tropics	3
BIO 368	Ecology of the Tropics-Lab	1
BIO 410	Ecology	4
Other courses approved by the chair of the Department of Life and Earth Sciences		