



School of Mathematics & Sciences
LINCOLN MEMORIAL UNIVERSITY

**Bachelor of Science in Conservation Biology, Research
Four Year Curriculum Plan**

The following is a suggested four year plan of study for freshmen entering LMU during the 2017 academic year. Transfer students should contact the department chair to determine how their credits will apply. This plan is to be used in conjunction with the university catalog and advice of the faculty advisor. Courses on the plan may be taken in semesters other than those listed based upon availability and course placement. This plan meets LMU's Liberal Art Common Core requirements, major requirements and 300 / 400 level course requirements.

First Year

Fall

BIOL 111+L - General Biology I + Lab	4
CHEM 111+L - General Chemistry	4
MATH 115 - College Algebra	3
ENGL 101 - Composition 1	3
UACT 100 - Strategies for College Success	2

TOTAL 16

Spring

BIOL 112+L - General Biology II + Lab	4
CHEM 112+L - General Chemistry	4
MATH 270 - Statistics	3
ENGL 102 - Composition 2	3
ISYS 100 - Computer Literacy	2
LNCN 100- Lincoln's Life & Legacy	1

TOTAL 17

Second Year

Fall

BIOL 370+L - Ecology + Lab	4
MATH 120 - Trigonometry	3
SOCI 100 - Sociology	3
ECON 212 - Principles of Microeconomics	3
History Sequence 1	3
BIOL 290 - Scientific Writing	1

TOTAL 17

Spring

CBIO 200 - Conservation Biology	3
Elective	3
Biodiversity: Vertebrate Option	4
MATH 150 - Calculus I	4
History Sequence 2	3

TOTAL 17

Third Year

Fall

Conservation Biology Elective	3
BIOL 315+L - Molecular Genetics + Lab	4
Conservation Biology Elective	4
ENGL 240, 250, or 260	3
COMM 200 - Speech Communication	3

TOTAL 17

Spring

Biodiversity: Plant Option	4
CBIO 483 - Undergraduate Research in Con Bio	1
Biodiversity: Invertebrate Option	4
BIOL 410 - Evolution	3
CBIO 397 - Junior Research Seminar	1
BIOL 380 - Research Design & Analysis	3

TOTAL 16

Fourth Year

Fall

Conservation Biology Elective	4
Biodiversity: Vertebrate Option	4
CBIO 421 - Geographic Information Systems I	3
PHIL 420 - Ethics	3
Fine Arts Elective	3

TOTAL 17

Spring

Conservation Biology Elective	4
CBIO 400 - Conservation Biology App. & Analy.	3
CBIO 422 - Geographic Information Systems II	3
CBIO 483 - Undergraduate Research in Con Bio	1
CBIO 497 - Senior Research Seminar	1
LNCN 300 - American Citizenship & Civic Life	1

TOTAL 13

Note: In order to graduate in four years (eight regular semesters) the student must average passing 16/17 hours per semester.

Total Hours 130

CBIO 200 - Conservation Biology

The course examines the meaning and significance of biodiversity from local to global scales. Current and emerging threats to biodiversity, including extinction, habitat fragmentation, land use change, over exploitation, invasive species, and global climate change are explored. Efforts to manage and maintain biodiversity, including how human activity impacts conservation efforts, natural resource policy and management, as well as the social, political and ethical decisions for conservation management are discussed. Prerequisites: BIOL 111 and 112 with labs. Spring.

CBIO 400 – Conservation Biology Application & Analysis

The seminar course explores advanced topics in the conservation of biological diversity via two major emphases. Emphasis 1: Foundational and current papers in the primary literature are critiqued and discussed. A wide range of conservation topics, including but not limited to, captive breeding, species reintroductions, reserve design, management of ecosystems and endangered species as well as conservation tools are explored. Each meeting consists of a brief summary lecture (initially by the instructor, but later by the student) followed by required discussions. The student will, in consultation with the instructor, select discussion papers, develop a brief lecture, and facilitate the discussion. Emphasis 2: Hands-on experience will be gained via exercises in solving the types of problems typically encountered by conservation biologists. Pre-requisites: BIOL 200, BIOL 370 and lab, two biodiversity courses and senior standing, or permission of instructor. Spring odd years.

CBIO 420 – Wetland Ecosystems

This course provides an overview of wetland ecology, management, and policy. We will explore how wetlands are defined, the history of wetland attitudes and values, and wetland ecosystem services. Wetland ecosystems addressed will include tidal marshes, mangroves, and peatlands, but will focus mostly on freshwater marshes, swamps, and riparian wetlands. We will also examine U.S. wetland policy, the practice of wetland delineation, wetland restoration, as well as wetland management to promote valuable ecosystem services, including the maintenance of biodiversity. Prerequisites: BIOL 370 and lab. Fall odd years.

CBIO 430 – Terrestrial Ecosystems

This course investigates the structure and function of terrestrial ecosystems and explores the benefits of utilizing an ecosystem approach in the development of management and conservation plans. A global survey of terrestrial ecosystems is conducted and the impact of abiotic and biotic interactions in structuring these systems is evaluated. The flow of energy, nutrients, and water are traced through both aboveground and belowground linkages extending through trophic levels considering microorganisms, plants, and animals. Temporal and spatial scales are considered through the examination of both natural and anthropogenic disturbance events, succession, global climate change, and remote sensing data. The course will examine selected papers from the primary literature and the student will develop a written management plan for an ecosystem located in the Eastern United States. Prerequisite: BIOL 370 and lab. Spring even years.

CBIO440 – Freshwater Aquatic Ecosystems

CBIO 440 will explore the basic ecological processes that occur in freshwater aquatic systems from creeks and ponds to rivers and lakes. Although these systems are diverse, there are many processes that are common to all and we will examine these processes in closer detail in CBIO 440. Specifically, students will address the concepts of specialized adaptations that allow organisms to live in water including respiration, feeding and reproductive systems. We will look at aquatic food webs and energy flow through aquatic systems. Students will examine the interactions of aquatic organisms, both plant and animal, with and within the water column. In addition, CBIO 440 will include an overview of the ecology of shallow littoral habitats, deep water zones in both lakes and oceans, and special characteristics of flowing water systems. Finally, we will explore community organization in freshwater habitats. Pre-requisites: BIOL 370 and lab. Spring odd years.

Biodiversity Plant Options:

BIOL 320 +L - Principles of Botany, 4hrs

BIOL 330 +L - Field Botany, 4hrs

Biodiversity Invertebrate Options:

BIOL 340 +L - Invertebrate Zoology, 4hrs

BIOL 350 +L - Entomology, 4hrs

Biodiversity Vertebrate Options:

CBIO 330 +L - Ichthyology, 4hrs

CBIO 340 +L - Herpetology, 4hrs

CBIO 350 +L - Ornithology, 4hrs

CBIO 360 +L - Mammology, 4hrs

Conservation Biology Electives:

CBIO 210 - Wildlife Management, 3hrs

CBIO 220 +L - Freshwater Fisheries Management, 4hrs

CBIO 250 +L - Soils, 4hrs

CBIO 370 - Land Use & Environmental Policy, 3hrs

CBIO 410 - Environmental Issues in Appalachia, 3hrs

CBIO 420 - Wetland Ecosystems, 3hrs

CBIO 430 - Terrestrial Ecosystems, 3hrs

CBIO 440 - Freshwater Ecosystems, 3hrs

CBIO 410 - Environmental Issues in Appalachia, 3hrs

BIOL 311 +L - Integrated vertebrate A&P I, 4hrs

BIOL 336 +L - General Microbiology, 4hrs

BIOL 441 - Biochemistry I, 4hrs

BIOL 450 +L - Molecular Cell Biology

CHEM 221 +L - Organic Chemistry I, 4hrs

CHEM 230 +L - Environmental Chemistry, 4hrs

GEOG 300 - Environmental Geography, 4hrs