

Department of Biology

College of Arts and Sciences

Faculty

(1987). University Professor of Biology and Department Chair. B.S.A. and M.S., Arkansas State University; Ph.D., University of Memphis; Additional study, University of Tennessee at Memphis, Mid-America Baptist Theological Seminary, and University of Memphis.

(1992). Assistant Professor of Biology Laboratories. B.S., Union University; M.A., Western Kentucky University; Additional study, Boston University, Portland State University and University of Memphis.

(2002). Assistant Professor of Biology. B.S., University of Tennessee; M.S., University of Kentucky; Ph.D., Kansas State University.

(1980). University Professor of Biology. B.S. and M.S., University of Mississippi; Ph.D., Louisiana State University.

(1962). Associate Professor of Biology. B.S., Union University; M.S., University of Illinois; Additional study in Radiation Biology, University of Tennessee at Memphis.

(1998). Associate Professor of Biology. B.S., Union University; M.S., University of Missouri–St. Louis; Ph.D., St. Louis University.

(1987). Professor of Biology and Director of the Edward P. Hammons Center for Scientific Studies. B.S., Union University; M.S. and Ph.D., Texas A & M University.

The curriculum in biology is designed to acquaint students with living organisms as whole, functioning entities that, in their diversity, share many common features. In addition to providing the scientific background required of all educated citizens, the courses provide a foundation upon which the student may build a graduate program, undertake training in health-related professions, or prepare for secondary-level science teaching. Students may participate in independent research as well as specific courses.

Major in Biology

Because contemporary biology leans heavily on mathematics and physical sciences, students majoring in biology should include introductory mathematics and chemistry in the freshman year. The beginning course will be BIO 112 where the student will build a foundation for future study of biological processes. With this preparation, students can proceed to the first 200-level biology course during the second semester of the freshman year. In the sophomore year, the student will

- A. BIO 112, 211, 213, 214, and 215
 - B. Four 300 level BIO courses including BIO 302 and 315 and excluding 395.
 - C. BIO 425, 426, 427, and 498
 - D. Biology elective 4 hours (221 and 222 apply only together)
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- A. Major requirements as shown above to include BIO 221, 222, and 318.

A study of the basic characteristics of organisms, dealing with structure, function, reproduction, and ecology. Three hours of lecture and 2 hours of laboratory per week.

A survey of the structure and function of the human body with emphasis on the normal operations of each organ system and the role of homeostasis. Attention will be given to selected diseases and disorders of each organ system. Three hours lecture and 2 hours lab per week. Credit cannot be earned after having earned either BIO 221 or 222. No credit toward BIO major/minor.

BIOLOGY Prerequisites: BIO 100 or 112.

The biological concepts involved in fisheries and wildlife biology, their application in practice, and the exploration of contemporary issues facing the organisms, habitats and human consumers. The course will address the needs of the casual student of the environment as well as those preparing for careers in wildlife management, parks and recreation, veterinary science, vertebrate zoology and allied fields.

Prerequisites: 12 hours of biology. Graded on a pass/fail basis.
Students are required to attend all seminar presentations made by students enrolled in BIO 498 during the semester. Must be taken before enrolling in BIO 498.

Prerequisite: BIO 112 and 214, plus four additional hours of BIO, excluding BIO 221-2.
A study of the similarities of anatomy and early development of the vertebrates, complemented by dissection of representative adults. Three hours of lecture and 3 hours of laboratory per week.

Prerequisite: 12 hours of biology, excluding BIO 221 or BIO 222.
A study of the principles of heredity including both classical and molecular genetics. Three hours of lecture and 3 hours of laboratory per week.

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Prerequisite: 12 BIO hours, excluding BIO 221-22, and CHE 106 or 314. Zoology is recommended.

A study of the principles of physiology, emphasizing metabolic processes common to many organisms. Three hours of lecture and 3 hours of laboratory per week.

Prerequisite: 12 BIO hours, excluding BIO 221-22. Zoology is recommended.
A study of development in organisms, including both classical, descriptive embryology and contemporary investigations of processes involved in morphogenesis and differentiation. Three hours of lecture and 3 hours of laboratory per week.

Prerequisite: 12 hours of biology, excluding BIO 221-22.
A study of the interactions between organisms and their biological and physical environments. Three hours of lecture and 3 hours of laboratory per week.

Prerequisite: BIO 211, CHE 314, and 8 additional BIO hours, excluding BIO 221-2.
A fundamental course dealing with principles of immunity and the mechanism of the immune response. Laboratory emphasis is on serology and transplantation immunology. Three hours of lecture and 3 hours of laboratory per week.

Prerequisites: 12 hours of BIO, excluding 221-2, and CHE 111-2.
A comprehensive overview of the ecological consequences of environmental pollution, the effects of toxic substances on the ecosystem as a whole and on individuals with that ecosystem and the methodology of assessing pollutant damage.

Prerequisite: BIO 221 & 222 or 214 or 312.
Cadaver anatomy and dissection for nursing, preprofessional, and physical education students to enhance understanding of anatomy and prepare them for work on living humans.

Prerequisites: 12 BIO hours excluding BIO 221-2.
A study of biological systems at the cellular and subcellular levels emphasizing functional aspects such as protein procession and sorting, membrane systems, energy generation in mitochondria and chloroplasts, and cell signaling.

Prerequisites: BIO 211, 315; CHE 314 and 324.

Basic principles of molecular biology focusing on recombinant DNA methods as applied to a variety of biological questions. Students will learn basic research laboratory skills through a wide range of methods from gel electrophoresis to subcloning.

All courses and their application must be defined and approved prior to travel.

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Lower-level group studies that do not appear in the regular departmental offerings.

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Upper-level group studies that do not appear in the regular departmental offerings.

BIOLOGY

Prerequisites: Junior standing, 20 hours toward BIO major, minimum BIO GPA of 2.0. An introduction to the skills necessary to conduct scientific research, prepare a manuscript and make a presentation at a scientific meeting. Each student will develop and submit a research proposal for approval and attend all presentations in BIO 427.

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Prerequisite: BIO 425, minimum BIO GPA of 2.0. Individual research in accordance with the proposal developed and approved in 425. Students will attend all student presentations in BIO 427.

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Prerequisite: BIO 426, minimum BIO GPA of 2.0. Presentation of results of 426 as a publishable manuscript and oral presentation.

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Individual research under the guidance of a faculty member(s).

Prerequisite: 28 hours toward BIO major, a minimum BIO GPA of 2.0, senior standing. The writing and oral presentation of a library research paper in addition to weekly discussions of current biological research. May be modified at the discretion of the department.