

Occupational Therapy

Division of Social Sciences

- **Major: 34-36 credit hours**
- **Minor: 31-32 credit hours**
- **Major/Minor GPA required for graduation: 2.0**

PROGRAM REQUIREMENTS:

- **Capstone: Attending Washington University for the final 32 hours**
- **Research: Attending Washington University for the final 32 hours**
- **Service: Psychology Cornerstone (BIO 201) and Introduction to Occupational Therapy (PSY 255)**

Description of Major: Occupational therapy is an applied social and biological science dedicated to assisting people in developing skills and attitudes to adapt to disabilities so that their lives become more productive and meaningful.

Student Learning Outcomes

Students will:

- Complete at least 30 hours of volunteer time (or shadowing) at an occupational therapy-related setting.
- Be exposed to issues of cultural diversity and abnormal psychology.
- Become more self-aware, reflective, and collaborative individuals as they learn to analyze themselves and the society in which they live.

Preparation: McKendree University is affiliated with the Program in Occupational Therapy, Washington University School of Medicine, and offers students the opportunity to complete a Bachelor of Science (BS) degree with a major in occupational therapy from McKendree University, and a Master of Science in occupational therapy from Washington University. The student completes three years at McKendree University and transfers to Washington University for two years of work in occupational therapy. Admission to the Program in Occupational Therapy is competitive, and students pursuing this degree program should work with their McKendree advisor to plan an alternate major in case they are unsuccessful in obtaining admission to Washington University (*See suggested additional courses that students electing to major in either biology or psychology should complete during their first three years.)

Students applying to the Program in Occupational Therapy, Washington University School of Medicine, must take the Graduate Record Examination (GRE) and must complete at least 30 hours of volunteer time in an occupational therapy-related setting. Proficiency in medical terminology and computers is also required. Applicants must have CPR certification when they apply, which may be obtained by enrolling in First Aid (PED 206) or by enrolling in an American Red Cross Adult CPR class. Transfer students to McKendree University must complete at least 45 credit hours at McKendree before being admitted to the Program in Occupational Therapy.

OCCUPATIONAL THERAPY
MAJOR REQUIREMENTS **34-36 crs.**
BIO 101 BIOLOGY FOR LIFE **4**
or
BIO 110 PRINCIPLES OF CELLULAR AND MOLECULAR BIOLOGY **5**
BIO 308 HUMAN ANATOMY AND PHYSIOLOGY I **5**
BIO 309 HUMAN ANATOMY AND PHYSIOLOGY II **5**
CHE 100 GENERAL CHEMISTRY FUNDAMENTALS **3**
or
CHE 105 GENERAL CHEMISTRY I **4**
MTH 170 STATISTICS **3**
PSY 153 INTRODUCTION TO PSYCHOLOGY **3**
PSY 201 PSYCHOLOGY CORNERSTONE **1**
PSY 210 DEVELOPMENTAL PSYCHOLOGY **3**
PSY 255 INTRODUCTION TO OCCUPATIONAL THERAPY **2**
PSY 315 ABNORMAL PSYCHOLOGY **3**
PSY 498 PROFESSIONAL SEMINAR **2**

Successfully complete (and transfer) 30 credit hours in occupational therapy coursework at Washington University. Students must have completed the McKendree University general education requirements and at least 90 credit hours prior to entering the Washington University Program in Occupational Therapy.

STRONGLY RECOMMENDED ELECTIVES
ATH 200 MEDICAL TERMINOLOGY **3**
HPE 158 HEALTH AND WELLNESS **3**
PED 206 FIRST AID **2**
PED 403 KINESIOLOGY (W) **3**
PHY 211 GENERAL PHYSICS: MECHANICS, HEAT, SOUND **4**
or
PHY 212 GENERAL PHYSICS: ELECTRICITY, MAGNETISM, OPTICS **4**

* Students who wish to complete a four-year degree from McKendree University and then apply to Washington University or other graduate programs in occupational therapy may major in any field (e.g., biopsychology, biology, psychology, health). Students planning to major in biology—if they do not enter the Program in Occupational Therapy, Washington University School of Medicine—should also complete BIO 111, CHE 105, CHE 106, and either BIO 303 or BIO 313 during their first three years. Students planning to major in psychology should complete PSY 301, PSY 396, and PSY 498.

OCCUPATIONAL THERAPY
MINOR REQUIREMENTS **31-32 crs.**
BIO 101 BIOLOGY FOR LIFE **4**
or
BIO 110 PRINCIPLES OF CELLULAR AND MOLECULAR BIOLOGY **5**
BIO 308 HUMAN ANATOMY AND PHYSIOLOGY I **5**
BIO 309 HUMAN ANATOMY AND PHYSIOLOGY II **5**
CHE 100 GENERAL CHEMISTRY FUNDAMENTALS **3**
MTH 170 STATISTICS **3**
PSY 153 INTRODUCTION TO PSYCHOLOGY **3**
PSY 210 DEVELOPMENTAL PSYCHOLOGY **3**
PSY 255 INTRODUCTION TO OCCUPATIONAL THERAPY **2**
PSY 315 ABNORMAL PSYCHOLOGY **3**

Biology (BIO)

BIO 101 **BIOLOGY FOR LIFE** **4**

This course is intended for the non-science major. The principal objectives are to prepare students to be scientifically literate citizens and to connect biological principles to real-world problems. This includes the effect of biotechnology on society as well as environmental issues such as climate change and habitat destruction. This course meets for three hours of lecture per week and one three-hour laboratory per week. A student must pass the laboratory portion of any science course to pass the entire course.

BIO 108 **BIOLOGY CORNERSTONE** **1**

This course serves as an introduction to the biology program and the field of biology. The class will focus on strategies for success both in the program and after graduation, highlighting the various subfields of biology, career opportunities, graduate and professional school preparation, skills for critical reading of the primary literature, and communicating scientifically.

BIO 110 **PRINCIPLES OF CELLULAR AND MOLECULAR BIOLOGY** **5**

This course is an introductory biology course for biology majors that emphasizes basic principles of cellular and molecular biology including the biochemical basis of life, cellular structure and function, metabolism, and genetics. The course meets for three hours of lecture per week and one three-hour laboratory per week. Prerequisite: One year of high school biology or instructor consent. A student must pass the laboratory portion of any science course to pass the entire course.

BIO 111 **PRINCIPLES OF ORGANISMAL AND POPULATION BIOLOGY** **5**

This course is an introductory biology course for biology majors which emphasizes basic principles of organismal and population biology including animal and plant structure and function, evolutionary principles and mechanisms, the diversity of life, and ecology. This course meets for three hours of lecture per week and one three-hour laboratory period per week. Prerequisite: 1 year of high school biology or instructor consent. A student must pass the laboratory portion of any science course to pass the entire course.

BIO 202 **SCIENTIFIC COMMUNICATION (W)** **3**

Scientists are responsible for not only generating data, but for communicating data both to other scientists and the general population. As the communication process within the sciences is in many ways different from that found in other subject areas, this course will provide students with the background needed to master those skills. Major areas of skill development include the composition of formal manuscripts and review articles, the development of figures and tables that summarize and effectively communicate findings, and the spoken presentation of original data sets to an audience. Prerequisite: Biology, biopsychology, or environmental studies major.

BIO 211 **GENETICS** **4**

Genetics is the study of DNA, the information-bearing material of inheritance, as well as related molecules and processes. This course will examine how DNA is organized, how its information is transmitted from one generation to the next, and how the information it bears is utilized. The study of genetics is foundational to many other biological fields, and this course will provide students with the background they need to go on in such diverse topics as development, physiology, and evolution. This course meets for three hours of lecture per week and one three-hour laboratory period per week. Prerequisites: BIO 110 and C- or better in BIO 110, or instructor consent. A student must pass the laboratory portion of any science course to pass the entire course.

BIO 220 **EVOLUTION** **3**

This course introduces the major principles of evolutionary biology. Specific topics include a brief history of evolutionary thought, concepts of evolutionary genetics, adaptation and natural selection, origins of biological diversity, and paleobiology and macroevolution. This course meets for three hours of lecture per week. Prerequisites: BIO 110, 111, 211, or instructor consent.

BIO 250 **INTRODUCTION TO ENVIRONMENTAL SCIENCE** **3**

This course introduces the interrelationships among the natural environment, humans, and the human environment. The focus is on building a scientific framework to understand current environmental challenges while incorporating an understanding of interdisciplinary perspectives when considering potential solutions. Students will examine issues such as air and water pollution, global climate change, energy, agriculture, and biodiversity loss.

BIO 280-289 **SPECIAL TOPICS IN BIOLOGY** **1-3**

BIO 299 **PRACTICUM IN BIOLOGY** **1-3**

For students at the sophomore level or above who wish to arrange a practicum in the laboratory or other appropriate direct-experience learning situation in biology. Prerequisites: 15 hours of related coursework, grade point average consistent with biology program graduation requirements, and instructor consent. No more than eight credit hours combined total for this practicum and an internship may be counted as credit toward the major.

BIO 300 **BIOSTATISTICS** **3**

Students will cover the use of statistical analysis methods to address biological problems. Emphasis is placed on hypothesis development, statistical testing and interpretation of statistical outputs in R, communication of results in proper scientific format, and the production of figures to graphically display data. Prerequisites: BIO 110 or 111, or instructor consent.

Biology (BIO)

BIO 303 4 ECOLOGY

Ecology is a quantitative science that focuses on the diverse interactions between organisms and their biotic and abiotic environment. This course examines factors that control energy and nutrient cycling in ecosystems, population dynamics of organisms, and the structure and function of biological communities, as well as principles that govern ecological responses to anthropogenic changes such as global climate change and habitat fragmentation. The class meets for three hours of lecture per week and one three-hour laboratory period per week. This course satisfies the ecology/evolution elective area for students pursuing a Bachelor of Arts in Biology. Prerequisites: BIO 111, 300, and C- or better in BIO 111, or instructor consent. A student must pass the laboratory portion of any science course to pass the entire course.

BIO 308 5 HUMAN ANATOMY AND PHYSIOLOGY I

This course provides an in-depth study of the muscular, skeletal, nervous, endocrine, and reproductive systems. For each organ system, anatomy, physiology, and role within the whole organism are discussed concurrently. Gross anatomy is explored in lab utilizing dissections and/or models; characteristics of tissues and cells is investigated with microscopy. Function of each organ system is investigated in lab by physiological observation and experimentation. This course satisfies the cellular/molecular elective area. This course meets for three hours of lecture per week and two two-hour laboratory periods per week. Prerequisite: BIO 101 or 110. A student must pass the laboratory portion of any science course to pass the entire course.

BIO 309 5 HUMAN ANATOMY AND PHYSIOLOGY II

This course provides an in-depth study of the cardiovascular, respiratory, immune, digestive, and urinary systems. For each organ system, anatomy, physiology, and role within the whole organism are discussed concurrently. Gross anatomy is explored in lab utilizing dissections and/or models; characteristics of tissues and cells is investigated with microscopy. Function of each organ system is explored in lab by physiological observation and experimentation. This course satisfies the cellular/molecular elective area. This course meets for three hours of lecture per week and two two-hour laboratory periods per week. Prerequisite: BIO 101 or 110. A student must pass the laboratory portion of any science course to pass the entire course.

BIO 311 5 MICROBIOLOGY

This course deals with the morphology, genetics, physiology, and ecology of bacteria and other microbes. In the laboratory, microbiological techniques and applications are stressed. This course meets for three hours of lecture per week and two two-hour laboratory periods per week. This course satisfies the cellular/molecular elective area. Prerequisites: BIO 110, CHE 105, 106, or instructor consent. A student must pass the laboratory portion of any science course to pass the entire course.

BIO 313 4 CELLULAR BIOLOGY

This course is an introduction to the biology of all cells with an emphasis placed on eukaryotic cells. Organelles will be studied with attention to their composition, organization, and function. Additional topics to be covered are protein structure/function, bioenergetics, protein sorting, cell communication,

and regulation of the cell cycle. The laboratory will emphasize various methods used by cell biologists as powerful tools for examining cell function. This course meets for three hours of lecture per week and one three-hour laboratory per week. This course satisfies the cell/molecular elective area for students pursuing a Bachelor of Arts in Biology. Prerequisites: BIO 110, CHE 105, 106, and junior standing, or instructor consent. A student must pass the laboratory portion of any science course to pass the entire course.

BIO 320 3 CONSERVATION BIOLOGY

This course examines issues related to understanding and preventing the decline of populations and extinction of species. Lectures will discuss fundamental principles of biodiversity maintenance at the level of species, population, and ecosystems. Students will develop knowledge of both ecological and evolutionary principles related to the topic. This course satisfies the ecology/evolution elective area. Prerequisite: BIO 111.

BIO 325 4 FIELD BOTANY

This is a field-oriented course that surveys local vascular flora and habitats. Field exploration focuses on identification and techniques, with emphasis given to the taxonomy, ecology, evolution, and systematics of native and naturalized plants. This course meets for two three-hour periods per week that will be divided between lecture and laboratory work. This course satisfies the ecology/evolution elective area. Prerequisite: BIO 111 or instructor consent. A student must pass the laboratory portion of any science course to pass the entire course.

BIO 335 4 FISH BIOLOGY AND CONSERVATION

This course will provide a broad overview of numerous aspects of fish biology, including anatomy, physiology, taxonomy, evolution, and ecology. In addition, the course will also examine management strategies for preserving aquatic ecosystems, with an emphasis on the conservation and management of fish populations targeted by recreational and/or commercial fishing. The laboratory portion of the course will be partially field-based, providing students with the opportunity to sample fishes using techniques employed by natural resources managers. The course will also provide background in the process of identifying local fish species, for the purpose of population assessment and environmental monitoring. This course satisfies the ecology/evolution elective requirement. Prerequisites: BIO 111, 202.

BIO 340 3 DEVELOPMENTAL BIOLOGY

This course focuses on the fundamental events of embryonic development, with an emphasis on genetic and molecular approaches used in modern experimental embryology. As modern developmental biology employs information and techniques from many different fields of biology, this course provides the challenge of learning and integrating diverse topics in biology including cell biology, genetics, molecular biology, biochemistry, and evolution. We explore the common features of development that are shared by different kinds of organisms and emphasize how diverse organisms use the same signaling and regulatory molecules during embryogenesis. This course meets for three hours of lecture per week. This course satisfies either the ecology/evolution or cell/molecular elective area. Prerequisites: BIO 110, 211, CHE 105, 106, or instructor consent.

Biology (BIO)

BIO 342 3

NEUROBIOLOGY

This course focuses on various topics in neurobiology, with an emphasis on genetic and molecular approaches used in modern experimental biology. We explore the organization of neurons and glial cells, as well as their development and change over time. We discuss membrane potential at the cellular level and learn about techniques to record electrical potentials. Finally, we examine topics in sensation and perception, as well as motor responses and the related circuitry. This course focuses on reading and interpreting primary literature, as well as presentation of figures and designing next-step experiments. This course meets for three hours of lecture each week. This course satisfies the cellular/molecular elective area. Prerequisites: BIO 110 or instructor consent.

BIO 350 3

ANIMAL BEHAVIOR

This course will examine the evolutionary (ultimate) and mechanistic (proximate) underpinnings of animal behavior in a number of contexts including foraging, fighting, learning, mating, parental care, and social behavior. Throughout this course, students will also examine principles and methods of scientific investigation and communication. This course meets for three hours of lecture per week. This course satisfies the ecology/evolution elective area. Prerequisite: BIO 111.

BIO 380-389 1-3

SPECIAL TOPICS IN BIOLOGY

BIO 410 4

ANIMAL PHYSIOLOGY

This course provides an introduction to the structure and function of physiological systems in animals. The primary emphasis is on vertebrates, with comparisons drawn from the entire animal kingdom. Topics include a general introduction to principles of physiology, an overview of physiological processes, and the integration of physiological systems. This course meets for three hours of lecture and one three-hour laboratory session per week. This course satisfies the cell/molecular elective area. Prerequisites: BIO 110, CHE 105, 106, or instructor consent. Recommended: CHE 205. A student must pass the laboratory portion of any science course to pass the entire course.

BIO 420 5

COMPARATIVE VERTEBRATE ANATOMY

This course examines the anatomical and physiological adaptations of vertebrates from an evolutionary perspective using lectures and laboratory exercises. Vertebrate diversity is studied by examining all major living clades. An organ systems approach is used to illustrate general structural and functional patterns across different vertebrates. The laboratory portion of the course requires the dissection of several representative vertebrates. This course meets for three hours of lecture and for two two-hour laboratory sessions per week. This course satisfies the ecology/evolution elective area. Prerequisites: BIO 110, 111, 220, or instructor consent. A student must pass the laboratory portion of any science course to pass the entire course.

BIO 430 4

BIOTECHNOLOGY

Modern genetic techniques have revolutionized the biological sciences, and an understanding of genetics is essential to the fields of biotechnology. This course builds upon students' basic understanding of genetics to develop new molecular genetic skills, a better understanding of experimental approaches, and the ability to access and organize genetic information from the burgeoning bioinformatics databases. The class meets in the laboratory for two two-hour periods per week. In addition, students may be required to work in the laboratory outside of scheduled class time, depending on the nature of the experiments conducted. This course satisfies the cell/molecular elective area. Prerequisites: BIO 210, CHE 105, 106. Recommended: CHE 205. A student must pass the laboratory portion of any science course to pass the entire course.

BIO 451 2

SEMINAR IN BIOLOGY

This course allows students to explore a variety of topics and discuss their understanding and interpretation of biological subjects with their peers. The goal of this course is to allow students to pursue specific topics in more detail and to develop the skills necessary to critically evaluate and discuss literature in biology. The course may be taken up to two times for credit towards the major requirements. This course meets for one two hour discussion period per week. Prerequisite: Junior standing and biology major.

BIO 455 2

BIOLOGY RESEARCH METHODS (W)

This is the capstone course in biology. It will provide an overview of topics important to biological research and allow students to apply information they have learned throughout the biology curriculum in a research setting. This course focuses on critical analysis of primary literature and data, as well as scientific communication in the form of both writing and presentations. Prerequisites: Biology major and senior standing, or instructor consent.

BIO 470 3-8

INTERNSHIP IN BIOLOGY

No more than four hours of internship may be counted toward a major in biology.

BIO 480 1-4

INDEPENDENT STUDY

BIO 492 1

BIOPSYCHOLOGY CAPSTONE

This course is the capstone experience for biopsychology majors. The goals are to provide students the opportunity to learn about biopsychology topics and engage with current research in the field. An emphasis will be placed on field trips and guest speakers to allow for greater lifelong learning. Same as PSY 492. Prerequisite: PSY 275.