

BIOL 101

**Principles and Methods of Biology**

3 Credit Hours

This course is an introduction to cell biology, genetics, development, ecology and evolution.

BIOL 110

**Fundamentals of Biology**

3 Credit Hours

This course is designed to strengthen declared Biology majors who enter with a science ACT score of less than 21 and demonstrate a weakness in math. Content includes study techniques, nature of science, scientific method, the metric system, biochemistry, the cell, and basic laboratory techniques. This course is not open to the general student body. Students will be placed into this course by advising and must earn a grade of C or better in this course before beginning the General Biology sequence (BIOL 111/112).

BIOL 111

**General Biology I**

4 Credit Hours

*Pre/Corequisite:* C (RQ) BIOLB-111

This course is an introduction to the principles of biological systems. Structural organization and functional interactions are studied at cellular, organismal and population levels. General Biology is a two-semester course designed for students majoring in biological sciences. Biology majors must pass both BIOL 111 and 112 with a C or better to enroll in courses for which 111 and 112 are prerequisites. Lecture 3, Discussion and Laboratory 3.

BIOL 112

**General Biology II**

4 Credit Hours

*Pre/Corequisite:* C (RQ) BIOLB-112

Part of a two-semester General Biology Sequence along with BIOL 111, this course focuses on evolution of different forms of life and the ecological interactions that shape biodiversity. Biology majors must pass both courses with a C or better to take courses requiring BIOL 111 and BIOL 112 as prerequisites. Lecture 3, discussion and laboratory 3.

BIOL 117

**Exercise Physiology**

3 Credit Hours

This course is a study of the physiological factors affecting human performance during exercise. Course includes lectures, laboratories and discussions. Offered fall.

BIOL 124

**Physiology of Aging**

3 Credit Hours

In this course the physiological changes that occur in the aging process are addressed with emphasis on learning for the student who is not previously trained in the physiological sciences; includes information on appropriate exercise, nutrition and ways to minimize problems for the elderly.

BIOL 150

**Special Topics in Biology**

1 to 3 Credit Hours

This course includes topics not regularly scheduled and not covered in other courses. Approval of program required.

BIOL 175

**Zombies: Biology of the Undead**

3 Credit Hours

This course is intended for non-science majors. This course will use the model of zombies to introduce students to fundamental biology concepts including atoms and molecules, enzymes, cells, systems, pathogens and disease outbreaks. This course will train you to protect yourself from zombies (and other disease outbreaks)!

BIOL 200

**Human Biology**

3 Credit Hours

*Pre/Corequisite:* E (RM) BIOLB-200

Human anatomy and physiology are studied from a life-cycle perspective. Contemporary topics related to health, disease, nutrition and human ecology are included.

BIOLB 200

**Human Biology Lab**

1 Credit Hour

*Pre/Corequisite:* E (RM) BIOL-200

This is an optional lab that complements the topics covered in BIOL 200. It may be taken concurrent with or after taking BIOL 200. Laboratory 2.

BIOL 201

**Women in Science**

3 Credit Hours

This course meets a number of University General Education Lab/Lecture Requirements. As a Life Science, this course will touch on the life sciences of Chemistry and Biology, exposing you to some the basic concepts of these disciplines. As a Diversity Studies as well as an Interdisciplinary Seminar, this course focuses on the integration of several fields of science, the significance of those fields in contemporary life, and some women scientists who made notable contributions to those fields. Through the study of the experiences of women scientists we will explore science in ways which illuminate science's meaning as both a method of inquiry and as a profession while also expanding our knowledge about women. This course requires active participation in all aspects of the class, from class discussion to self- and peer-evaluation.

BIOL 202

**Human Anatomy**

4 Credit Hours

*Pre/Corequisite:* C (RQ) BIOLB-202

Study of the structures of the human body. Biology majors on the General Biology track may use this course as an elective. Students on the Pre-Health track may substitute this course for BIOL 220. Biology majors must have completed BIOL 111 and 112 with a C or better. Lecture 3, Laboratory 3.

BIOL 203

**Human Physiology**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-202 or BIOL-220 and C (RQ) BIOLB-203

Study of the general principles that underlie the functions of organisms with special reference to humans. Biology majors on the General Biology track may use this course as an elective. Students on the Pre-Health track may substitute this course for BIOL 320. Biology majors must have completed BIOL 111 and 112 with a C or better. Lecture 3, Laboratory 2.

BIOL 205

**Zoo Biology**

3 Credit Hours

Designed to enable students to apply key principles of the biological sciences to the management of animal species. Students will complete analyses of nutrition plans, behavioral data, genetic analyses and other activities that are typical of population management. Students will have access to zoological institutions and meet zoo personnel to observe how this work benefits species conservations and to learn more about careers in the different zoo fields. In addition to on-site class meetings at both university and zoological institutions, content will also be presented via online platform and independent work will be an expectation of the course.

BIOL 206

**Microbiology**

4 Credit Hours

*Pre/Corequisite:* C (RQ) BIOLB-206

This course is a non-major course that deals with the basic structure and functions of bacteria, protozoa, fungi, viruses, and parasitic worms with the emphasis on pathogenic mechanisms. In addition, basic immunology is studied. Biology majors interested in this field should register for BIOL 306. Lecture 3, Laboratory 3.

BIOL 207

**Nutrition**

3 Credit Hours

A study of the application of the science of nutrition to human need. Attention is given to the nutrient content of foods, optimum diets throughout the life cycle, major nutrition problems in our society and the world, efforts to protect the food supply and some common diseases that require special nutritional treatment. Offered spring.

BIOL 208

**Natural History of Great Lakes Region**

3 Credit Hours

*Pre/Corequisite:* E (RM) Biology majors must take BIOLB-208

This course covers the geologic and climatic history of the region, as well as its rich biological heritage. Several field trips and an independent exercise at the Field Museum, Peggy Notebaert Museum or Shedd Aquarium are required. Biology majors taking this course must concurrently take the lab. Saturday field trips. Offered fall.

BIOLB 208

**Natural History of the Great Lakes Laboratory**

1 Credit Hour

*Pre/Corequisite:* E (RQ) BIOL-208

This course covers the geologic and climatic history of the region, as well as its rich biological heritage. Several field trips and an independent exercise at the Field Museum, Peggy Notebaert Museum or Shedd Aquarium are required. Majors taking this course must concurrently take the lecture offered during fall semester.

BIOL 212

**Histotechniques**

3 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 with a C or better BIOL-112 with a C or better or consent of instructor

This is a laboratory course designed to introduce the student to the principles and techniques utilized in preparation of animal tissues for microscopic examination. Laboratory and discussion. Offered spring alternate years.

BIOL 213

**Interactions in Environment**

3 Credit Hours

*Pre/Corequisite:* E (RM) Biology majors must take BIOLB-213

This combined majors/non-majors course explores how organisms interact with each other and their non-living environment. Special emphasis is placed on examining human influences on these systems and the global environment. Biology majors and Environmental and Sustainability Studies minors must take the lab concurrently. Offered during spring semester.

BIOLB 213

**Interactions Environment Lab**

1 Credit Hour

*Pre/Corequisite:* C (RQ) BIOL-213

Required for Biology majors and Environmental and Sustainability Studies minors concurrently taking BIOL 213. Laboratory 3. Offered spring.

BIOL 214

**Natural History of the Vertebrates**

3 Credit Hours

This team-taught lecture course incorporates hands on examination allowing students to learn characteristics of the vertebrate groups and the basic methodology for identifying them. This course has been designed to accommodate both Biology majors and interested non-majors, Education students as well as a perfect Continuing Education course for the veteran teacher. A small fee will be assessed to support the "hands-on" lab component. For students interested in a more complete lab experience, BIOLB 214 Natural History of the Vertebrates Lab - Field Experience, taught during the summer, is recommended. Offered spring semester.

BIOLB 214

**Natural History of the Vertebrates Lab**

0 to 1 Credit Hours

This lab course is a team-taught, total immersion field course where students will be able to take advantage of the wide

variety of habitats at the Reis Biological Station located in the foothills of the Missouri Ozarks that include: prairie, forest, ponds, lakes, waterways and caves. For one week, students will hike, canoe, and bird watch; locate, examine and identify any number of fish, amphibians, reptiles, and small mammals. While this field experience is meant to be a companion to BIOL 214 Natural History of the Vertebrates, it can be taken by itself. There is an associated fee that covers all trip expenses (travel, lodging, food, canoes and scheduled events). Offered summer term.

BIOL 215

### **Wildlife Conservation**

3 Credit Hours

Introduces students to the fundamental concepts of wildlife management and its purposes, covers relevant ecological & biological principles as well as human dimensions of wildlife management.

BIOL 220

### **Human and Comparative Anatomy of the Vertebrates**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 with a C or better BIOL-112 with a C or better and C (RQ) BIOLB-220

This course is an anatomical and evolutionary study of selected vertebrate types, including humans. The laboratory component includes dissection of various vertebrate specimens. The laboratory component includes human cadavers, lampreys and sharks. Offered fall. Lecture 3, Laboratory 3.

BIOL 221

### **Pathogenic Microbiology**

3 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 BIOL-112 with a C or better

This course will focus on a variety of pathogenic microorganisms and will include an introduction to the components and functions of the immune system. Students will study diseases caused by pathogens as well as transmission, symptoms, treatment, prevention, origin and incidence. Offered spring term in alternate years.

BIOL 222

### **Shedd Aquarium and Associated Colleges of the Chicago Area (ACCA) Freshwater Ecology**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 BIOL-112 CHEM-111 with a C or better

In this Freshwater Ecology course, you will gain an appreciation for the freshwater environment, the organisms that call these habitats home, and our relationship with both. In this course, we will cover a wide range of topics with both a local application to the Laurentian Great Lakes and a global perspective. We will make use of resources within Shedd Aquarium's collection and the Chicago area. Complete an external application to the Shedd Aquarium. Program consent required. Typically offered spring.

BIOL 223

### **Contemporary Ethnobotany**

3 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 BIOL-112 CHEM-111 with a C or better

Morton Arboretum and Associated Colleges of the Chicago Area (ACCA) Contemporary Ethnobotany. A study of the influence of plants on our economic, social and political history, and plants humans have chosen to protect and cultivate. Lab includes horticultural and identification work with economically important plants, and trips to plant conservatories. ACCA Cooperative College Botany Program with the Morton Arboretum. Offered periodically. Program consent required.

BIOL 224

### **Woody Plants of the Western Great Lakes**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 BIOL-112 CHEM-111 with a C or better

An introduction to the composition and identification of the woody flora of the western Great Lakes region. The impact of geology, climate and soils on the development of woody flora will also be considered. ACCA cooperative College Botany Program with the Morton Arboretum. Program consent required. Offered periodically.

BIOL 225

### **Biology of Algae**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 BIOL-112 CHEM-111 with a C or better

An introduction to the algae, including the classification, structure and reproduction of major groups. Lab includes field collections and laboratory studies of local freshwater and soil algae. Practical applications in waste management, environmental monitoring and agriculture will be considered. ACCA Cooperative College Botany Program with the Morton Arboretum. Program consent required. Offered periodically.

BIOL 226

### **Plant Ecology**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 BIOL-112 CHEM-111 with a C or better

Examination of the structure/function relationships of plants to environmental factors, interrelationships of plant communities, laboratory and field techniques, and appropriate literature. ACCA Cooperative College Botany Program with the Morton Arboretum. Program consent required. Offered periodically.

BIOL 227

### **Marine and Island Ecology of the Bahamas**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 BIOL-112 CHEM-111 with a C or better

Exploration of habitats and animals found on and around the Bahamian Islands. Includes a nine-day field experience in the Bahamas. Course offered ACCA Cooperative College Program at the Shedd Aquarium. Must complete an external application to Shedd Aquarium. Program consent required. Typically offered spring.

BIOL 228

**Plant-Soil Relationships**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 BIOL-112 CHEM-111 with a C or better

Topics include effects of soil on plant growth and nutrition and how plants affect the soil. ACCA Cooperative College Botany program with the Morton Arboretum. Program consent required. Offered periodically.

BIOL 229

**Plant-Animal Interactions**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 BIOL-112 CHEM-111 with a C or better

The study of the special ecological and evolutionary relationships between plants and animals. The basic interactions between plants and animals (herbivore, pollination, and seed dispersal) will be studied by observing the natural history, conducting experiments, making observations, investigating the theories, and discussing current scientific literature. ACCA Cooperative College Botany Program with the Morton Arboretum. Program consent required. Offered periodically.

BIOL 230

**Invertebrate Biology**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 with a C or better BIOL-112 with a C or better and C (RQ) BIOLB-230

The course takes a functional approach to the phylogeny, ecology and economic importance of invertebrates. The laboratory component will include trips to the Field Museum and Shedd Aquarium, as well as local nature preserves. Lecture 3, Laboratory 3. Offered spring alternate years.

BIOL 231

**Exploring Medicine**

3 Credit Hours

Junior standing and a minimum GPA of 3.2 required. Permission to register is by petition. This hybrid course is for students interested in the health professions, specifically students seeking a career as a medical doctor, doctor of osteopathy, physician assistant, and nurse practitioner. Students will study various systems of the body and learn the pathophysiology and treatment of a variety of human diseases and conditions. The course will help students to see the relevance of basic sciences to the health professions, to be better prepared for the MCAT and medical school, and to be one step ahead in their decision to pursue a career in medicine.

BIOL 240

**Developmental Biology**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 with a C or better BIOL-112 with a C or better and C (RQ) BIOLB-240

This course is designed to chronologically detail the developmental processes of various animal models from conception to birth. Lecture 3, Laboratory 2. Offered fall alternate years.

BIOL 250

**Special Topics**

1 to 4 Credit Hours

This course is a formal study of topics not considered in other listed courses. It is offered by member institutions of ACCA. Approval of the program is required.

BIOL 300

**Genetics**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 with a C or better BIOL-112 with a C or better CHEM-111 CHEM-112 Junior or Senior status and C (RQ) BIOLB-300

This course is a study of inheritance from molecular, cellular, organismal and population perspectives. Lecture 3, Laboratory 2. Offered spring.

BIOL 301

**Genome Biology**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 with a C or better, BIOL-112 with a C or better CHEM-111 CHEM-112 and C (RQ)

BIOLB-301

The study of genomics with an emphasis on hypothesis driven inquiry and the shifting paradigm in genetics facilitated by emerging technologies that allow the gathering and analysis of vast amounts of DNA and other molecular data. Offered fall.

BIOL 302

**Molecular Biology Techniques**

3 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 with a C or better BIOL-112 with a C or better CHEM-111 CHEM-112

Additional support courses CHEM 251 or CHEM 209 are recommended but not required. This course (laboratory and discussion) is designed to introduce students to the principles and laboratory utilized in the molecular analysis of proteins and nucleic acids including: isolation and quantification of DNA, RNA and protein, electrophoretic gel systems and colorimetric detection methods; Polymerase Chain Reaction (PCR) recombinant DNA and restriction enzyme methodology, and bioinformatics analysis. Offered spring term in alternate years.

BIOL 303

**Biostatistics**

3 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 with a C or better BIOL-112 with a C or better PSYCH-101 MATH-112 MATH-113 or MATH-201

This course is an introduction to fundamental concepts and techniques of descriptive and inferential statistics for application to the planning and evaluation of studies in biology and allied fields.

BIOL 304

**Immunology**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 BIOL-112 with a C or better BIOL-306 and E (RQ) BIOLB-304

This course includes a survey of the immune system focusing on immune cells and tissues, antibodies, complement and cytokines. Also included are humoral immune responses, cell mediated responses, hypersensitivity, autoimmunity, cancer, and immunodeficiency. Lecture 3, Laboratory 3. Offered spring term.

BIOL 305

**Cell Biology**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 and BIOL-112 with a C or better, CHEM-111 and CHEM-112 and P (RQ) CHEM-209 or CHEM-251 and C (RQ) BIOLB-305

This course is a study of the structural and functional aspects of the cell with emphasis on membranes and the cell surface, cellular energetics, cell motility, cell synthesis and growth, cell divisions and cell origins. Lecture 3, Laboratory 3. Offered spring.

BIOL 306

**General Microbiology**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 with a C or better BIOL-112 with a C or better and C (RQ) BIOLB-306

This course is for majors dealing with the structure and functions of bacteria, protozoa, fungi and viruses. Immunology, environmental and applied microbiology will be included. Lecture 3, Laboratory 3. Offered fall.

BIOL 308

**Histology**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 with a C or better BIOL-112 with a C or better and E (RQ) BIOL-220 or BIOL-202 and C (RQ) BIOLB-308

This course is designed to enable the student to understand the microscopic anatomy of cells and their products, how cells form tissues and how tissues are then incorporated into larger structures (i.e. organs). Offered fall alternate years.

BIOLB 308

**Histology Lab**

0 Credit Hours

*Pre/Corequisite:* C (RQ) BIOL-308

BIOL 310

**Animal Behavior**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 with a C or better BIOL-112 with a C or better and junior or senior status and C (RQ) BIOLB-310

This course examines the behavior of animals from multiple biological perspectives by integrating genetics, physiology, ecology and evolution. The laboratory complements lecture with exercises and discussions based on these perspectives. Lecture 3, Laboratory 3. Offered fall.

BIOL 312

**Plant Diversity and Adaptation**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 with a C or better BIOL-112 with a C or better Junior or Senior standing and C (RQ) BIOLB-312

This course focuses on the study of plant diversity with an emphasis on how plants have met various environmental challenges through adaptations in their morphology, anatomy, modes of reproduction, and basic physiological and molecular mechanisms. Lecture 3, Laboratory 3. Offered spring alternate years.

BIOL 318

**Ecology**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 with a C or better BIOL-112 with a C or better and C (RQ) BIOLB-318

This course is the scientific study of how organisms interact with their non-living environment and with other organisms. The emphasis is on ecological concepts and methodology. The laboratory component and field trips focus on experimentation and observation, along with data analysis and interpretation. Two required Saturday field trips. Lecture 3, Laboratory 4. Offered fall.

BIOL 320

**Human and Comparative Physiology**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-220 CHEM-111 and C (RQ) BIOLB-320

This course is a comparative study of the physiological functions and adaptations of vertebrates, including humans. Lecture 3, Laboratory 2. Offered spring.

BIOL 329

**Hormones and Behavior**

3 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 with a C or better BIOL-112 with a C or better PSYCH-101

Taught from a comparative perspective, this course includes examples of hormone behavior interactions in a variety of organisms. In this course animal data will be related to human development, physiology and ultimately human behavior. Offered spring.

BIOL 330

**Cadaver Dissection**

1 Credit Hour

*Pre/Corequisite:* P (RQ) BIOL-202 or BIOL-220 with a B or better consent of instructor

This course involves the study of human gross anatomy by dissecting a human cadaver. Offered in the interim between fall and spring terms.

BIOL 333

**Evolution**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 with a C or better BIOL-112 with a C or better and C (RQ) BIOLB-333

Included are the historical developments of evolutionary theory, macroevolution, and the evolutionary history of some representative plant and animal lineages. Course includes field trips and some laboratory exercises that make use of local natural areas and The Field Museum. Lecture 3, Laboratory 3. Offered spring alternate years.

BIOL 341

**Neuroscience**

4 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-111 with a C or better BIOL-112 with a C or better CHEM-111 CHEM-112 and C (RQ)

BIOLB-341

This course investigates the neural processes involved in organisms' perception of themselves and their surroundings, ability to learn, remember and forget and to reason. Basic neuroscience research investigates these mysteries and is the basis of this course. Lecture 3, Laboratory 2. Offered fall.

BIOL 350

**Special Topics**

1 to 3 Credit Hours

Formal study of topics not considered in other listed courses. Courses offered by member institutions of ACCA. Approval of the program is required.

BIOL 351

**Lab and Field Research I**

1 to 2 Credit Hours

This course includes individual laboratory or field research, including literature search on a problem in biology.

Prerequisite: biology major with junior or senior status and consent of the faculty mentor.

BIOL 352

**Lab and Field Research II**

1 to 2 Credit Hours

*Pre/Corequisite:* P (RQ) BIOL-351 consent of mentor

This course includes individual laboratory or field research on a problem in biology.

BIOL 353

**Independent Study**

1 to 3 Credit Hours

This course is an informal study of advanced topics in biology on a tutorial basis. Prerequisite: biology major with junior or senior status and consent of the faculty mentor.

BIOL 355

**Senior Seminar**

1 Credit Hour

*Pre/Corequisite:* P (RQ) Biology major with Senior standing

This course is a review of current literature in biology through discussion and presentations. Prerequisite: biology major with senior status.

BIOL 372

**Methods of Teaching Biology in Middle And Secondary Schools**

3 Credit Hours

This course covers the principles, methods and materials of teaching biology at the middle school and secondary level. Level 2 education course: Requires admission to the Education Program. Classroom and field experiences. 30 clinical hours. Offered fall.

BIOL 401

**Pro Seminar 1: Adjusting to Life as a Science Student**

1 Credit Hour

This course covers topics including adjusting to life as a science student, academic resources, guidance for finding research and clinical opportunities, and preparing for the professional/medical school application process.

BIOL 402

**Pro Seminar 2: The Application Cycle**

1 Credit Hour

This course prepares students for the application cycle. The course will provide opportunities for students to work on significant application components as part of the coursework, including their AMCAS activities listing, preparing a strong personal statement, selecting target medical/professional schools, and navigating the centralized application. The course will also allow students to practice their interviewing skills and plan for their glide year.

BIOL 403

**Pro Seminar 3: Medical Ethics**

1 Credit Hour

This course discusses the principles of medical ethics. In it, students will discover the meaning of the term "ethics", describe the global development of medical ethics by the World Health Organization (WHO), describe the core principles of medical ethics and their implications, recognize ethical issues relevant to the clinical situation and apply the ethical codes as appropriate, discuss the development of indigenous ethical codes in the South East Asian region, and demonstrate sensitivity to cultural diversity in medical care. Students will also read and discuss popular books, and scientific literature.

BIOL 404

**Pro Seminar 4: Health Disparities**

1 Credit Hour

This course discusses the principles of the historical development of systems of racial classification and their use in scientific inquiry and public policy. In it, students will discover the complex relationships between race, socioeconomic status, psychosocial and cultural factors and how these relationships underlie health disparities; assess the impact of healthcare and access and quality on health status and health disparities; and examine potential strategies for better understanding health disparities and working toward health equity. Students will also read and discuss popular books, and scientific literature.