

# BIO - BIOLOGY

## **BIO 101** 4 credit hours (lecture: 3 | lab: 3)

### **Introduction to Life Science**

Laboratory course introduces life science. Content includes cell structure and function, cell division, nucleic acids and proteins, biodiversity and evolution, and selected human systems. Intended for non-science majors, and those who desire an understanding of fundamental life processes, or who intends to pursue higher biology courses.

IAI General Education: L1 900L

*Delivery mode:* Face-to-Face | Hybrid | Online Fee: \$40

## **BIO 103** 3 credit hours (lecture: 3 | lab: 0)

### **A Survey of Ecology**

This non-laboratory course provides an introduction into our natural environment and the relationships between humans and the environment. Topics include ecosystem structure and function, population dynamics, renewable and non-renewable resources, alternative energies, waste management, pollution, management of natural areas, overview of ecological balances in nature, and human's relationship to these balances. Intended for the non-science major. Credit cannot be received in both BIO 103 and BIO 106.

*Delivery mode:* Face-to-Face | Online

## **BIO 104** 3 credit hours (lecture: 3 | lab: 0)

### **Human Genetics (non-laboratory course)**

Course introduces basic genetic principles and applications in human populations. Content includes the cell cycle; structure, function, mutation and transmission of the genetic material; role of genetics in health care and biotechnology; and ethical, psychological and social implications of gene-based medicine. Credit cannot be received for both BIO 104 and BIO 105.

**Prerequisite:** None

IAI General Education: L1 906

*Delivery mode:* Face-to-Face | Online

## **BIO 105** 4 credit hours (lecture: 3 | lab: 3)

### **Human Genetics**

Laboratory course introduces basic genetic principles and applications in human populations. Content includes the cell cycle; structure, function, mutation and transmission of the genetic material; role of genetics in health care and biotechnology; and ethical, psychological and social implications of gene-based medicine. Credit cannot be received for both BIO 104 and BIO 105.

**Prerequisite:** None

*Delivery mode:* Face-to-Face Fee: \$40

## **BIO 106** 4 credit hours (lecture: 3 | lab: 3)

### **Introduction to Environmental Science**

Laboratory course introduces study of the environment in which we live and of factors contributing to its alteration. Content includes ecosystem structure and function; population dynamics; resources; pollution; evaluation and management of natural areas; biodiversity and conservation; overview of ecological balances in nature and humans' relationship to these balances. Intended for non-science majors. Credit cannot be received in both BIO 103 and BIO 106.

**Prerequisite:** None

IAI General Education: L1 905L

*Delivery mode:* Face-to-Face | Hybrid | Online Fee: \$35

## **BIO 107** 4 credit hours (lecture: 3 | lab: 3)

### **Ecological Restoration**

Laboratory course provides a broad overview of ecological restoration principles and practices by exploring the plant and animal communities found on Oakton's campus and learning practices for restoring them to ecological health. Activities emphasize identifying and learning about native plant and animal communities and the natural and artificial processes that affect their survival, reproduction, and population dynamics. Students will participate in identifying species and assemblages; monitoring plant and animal populations; collecting and mapping spatial data; managing invasive plants; and revegetating land with seeds and plantings.

**Recommended:** One year of high school biology.

*Delivery mode:* Face-to-Face | Hybrid | Online Fee: \$40

## **BIO 108** 4 credit hours (lecture: 3 | lab: 3)

### **General Botany**

Laboratory course focuses on biological aspects of the plant kingdom, with topics ranging from sub-cellular processes to ecological roles. Content includes structural and physiological adaptations, present and past diversity, reproduction, genetics and evolution, and ecological interactions. Recommended

**Prerequisite:** High school biology.

*Delivery mode:* Face-to-Face | Online Fee: \$40

## **BIO 109** 3 credit hours (lecture: 3 | lab: 0)

### **Plants and Society**

Course focuses on biological aspects of the plant kingdom and connections to human beings, with topics ranging from sub-cellular processes to ecological roles. Content includes structural and physiological adaptations, present and past diversity, reproduction, genetics and evolution, ecological interactions, and importance to human agriculture, medicine, general welfare and society.

**Recommended:** One year of high school biology.

IAI General Education: L1 901

*Delivery mode:* Face-to-Face | Hybrid | Online

## **BIO 110** 3 credit hours (lecture: 3 | lab: 0)

### **Sex and Gender Basis of Life, Wellness and Disease**

This non-laboratory course explores the intersection of sex and gender with health and disease states. Content includes an overview of the factors that influence the development of disease states; the differences between sex and gender and how they influence health and disease; history of gender and sex differences in medicine, and how sex and gender influence the development of selected disease states.

*Delivery mode:* Face-to-Face | Online

## **BIO 112** 3 credit hours (lecture: 3 | lab: 0)

### **Essentials of Nutrition**

Course introduces concepts and principles of the science of nutrition. Content includes identification and definition of the nutritional components of food; elements of digestion, metabolism and energy management; consideration of nutrition requirements for each age group and health problems related to diet. Intended for anyone interested in becoming a more knowledgeable consumer of nutritional information. Credit cannot be earned in both BIO 112 and BIO 113.

**Prerequisite:** One year of high school chemistry or biology.

*Delivery mode:* Face-to-Face | Online

<p><b>BIO 114</b> <b>3 credit hours (lecture: 3   lab: 0)</b>  <b>Basic Human Anatomy and Physiology</b>  Non-laboratory survey course covers the structure and function of each body system. Content includes body planes, directional terms, quadrants, body cavities, the major organs in each body system and example disease states.  <b>Prerequisite:</b> 1 year high school biology within last five years or one semester of college biology or the equivalent, with minimum grade of C.  <b>Recommended:</b> 1 year high school chemistry within last five years or one semester of college chemistry or the equivalent, with minimum grade of C, and completion of HIT 104 with minimum grade of C.  <i>Delivery mode: Face-to-Face</i></p>	<p><b>BIO 231</b> <b>4 credit hours (lecture: 3   lab: 3)</b>  <b>Human Anatomy and Physiology I</b>  The course begins with an introduction to the human body, basic biochemistry, cytology and histology. Following that foundation, the anatomy and physiology of the integumentary, skeletal, muscular, central nervous system and peripheral nervous systems are explored. First of two-part sequence. Intended primarily for student in health fields.  <b>Prerequisite:</b> BIO 101 with a minimum grade of C within the past 5 years, BIO 121 with a minimum grade of C within the past 5 years, or a year of High School Biology with a minimum grade of C within the past 5 years AND entry-level competency for EGL 101 as demonstrated by coursework or placement.  <b>Recommended:</b> CHM 101 or CHM 105.  <i>Delivery mode: Face-to-Face   Hybrid   Online</i> <span style="float: right;">Fee: \$50</span></p>
<p><b>BIO 116</b> <b>3 credit hours (lecture: 3   lab: 0)</b>  <b>Microbe and Society</b>  A non-lab introductory science course in microbiology designed for non-science majors who wish to explore the vast universe of microbes and their roles in life on earth. The course focuses on the impact of microbes on human affairs and society. Content includes microbial diversity, cell structure and function, growth and reproduction, genetics, molecular biology and evolution, and the role of microbes in the environment, agriculture, industry, and in human welfare and disease.  <b>Prerequisite:</b> None  <i>Delivery mode: Face-to-Face   Hybrid   Online</i></p>	<p><b>BIO 232</b> <b>4 credit hours (lecture: 3   lab: 3)</b>  <b>Human Anatomy and Physiology II</b>  Laboratory course continues BIO 231. Content includes structure and function of special senses, circulatory, immune, digestive, respiratory, urinary, endocrine and reproductive systems. Cadavers and other appropriate specimens are used. Second of two-part sequence. Intended primarily for students in allied health fields.  <b>Prerequisite:</b> BIO 231 with a minimum grade of C.  <i>Delivery mode: Face-to-Face   Hybrid   Online</i> <span style="float: right;">Fee: \$50</span></p>
<p><b>BIO 121</b> <b>4 credit hours (lecture: 3   lab: 3)</b>  <b>General College Biology I</b>  Laboratory course examines basic principles of biology. Content includes cellular biochemistry and physiology, photosynthesis, and cellular respiration; details of protein synthesis and functions of DNA and RNA in gene function. First of two-course sequence. Intended for those wanting strong biological focus in curricula.  <b>Prerequisite:</b> BIO 101 with minimum grade of C or one year of high school biology with minimum grade of C, either option completed within the last five years.  <b>Recommended:</b> High school chemistry or its equivalent, such as CHM 101 or CHM 105.  IAI General Education: L1 910L  IAI Major: BIO 910  <i>Delivery mode: Face-to-Face   Hybrid   Online</i> <span style="float: right;">Fee: \$40</span></p>	<p><b>BIO 233</b> <b>4 credit hours (lecture: 3   lab: 3)</b>  <b>Non-Cadaver Human Anatomy and Physiology I</b>  This non-cadaver based lab course begins with an introduction to the human body, basic biochemistry, cytology and histology. Following that foundation, the anatomy and physiology of the integumentary, skeletal, muscular, central nervous system and peripheral nervous systems are explored. First of two-part sequence. This course is intended for students entering the health care profession who do not need exposure to human cadavers in a lab setting. Students cannot receive credit for both BIO 231 and BIO 233.  <b>Prerequisite:</b> BIO 101 with a minimum grade of C within the past 5 years, BIO 121 with a minimum grade of C within the past 5 years, or a year of high School Biology with a minimum grade of C within the past 5 years AND entry-level competency for EGL 101 as demonstrated by coursework or placement.  <b>Recommended:</b> CHM 101 or CHM 105.  <i>Delivery mode: Face-to-Face   Online</i> <span style="float: right;">Fee: \$50</span></p>
<p><b>BIO 122</b> <b>4 credit hours (lecture: 3   lab: 3)</b>  <b>General College Biology II</b>  Laboratory course continues BIO 121. Content includes Mendelian genetics, chromosomes and heredity, evolution, diversity of living organisms (including bacteria, archaea, selected protists, fungi, plants and animals), and ecology. Second of two-course sequence.  <b>Prerequisite:</b> BIO121  IAI General Education: L1 910L  IAI Major: BIO 910  <i>Delivery mode: Face-to-Face   Hybrid   Online</i> <span style="float: right;">Fee: \$40</span></p>	<p><b>BIO 234</b> <b>4 credit hours (lecture: 3   lab: 3)</b>  <b>Non-Cadaver Human Anatomy and Physiology II</b>  Laboratory course continues BIO 233. Content includes structure and function of special senses, circulatory, digestive, respiratory, urinary, endocrine and reproductive systems. Dissection of animal organs included in lab experiences. Second of two-part sequence. This course is intended for students entering the health care profession who do not need exposure to human cadavers in a lab setting. Students cannot receive credit for both BIO 232 and BIO 234.  <b>Prerequisite:</b> BIO 231 or BIO 233 with a minimum grade of C.  <i>Delivery mode: Face-to-Face   Online</i> <span style="float: right;">Fee: \$50</span></p>

**BIO 240** **3 credit hours (lecture: 1 | lab: 4)**

**Interdisciplinary Undergraduate Laboratory Research**

Course provides undergraduate research experience. Interdisciplinary course co-listed with CHM 240. Team-taught by faculty from several disciplines. Content includes active participation in selected research experiences including: developing an independent research project; designing and performing experiments; collecting data; analyzing results; participating in collaborative research with other students and professors; learning how to discriminate among various types of scientific literature; reading, critiquing and presenting research articles in a selected area of research; and presenting research at end of semester in both written and oral form. This course can be repeated once for credit.

**Prerequisite:** Honor student status or consent of instructor.

*Delivery mode:* Face-to-Face | Online Fee: \$50

**BIO 242** **3 credit hours (lecture: 3 | lab: 0)**

**Pathophysiology and Human Disease**

Course analyzes and compares human diseases by studying pathophysiology, histopathology, pathogenesis and diseases as they impact cellular metabolism. Course content integrates pathophysiology with more common clinical aspects of disease. Course is intended primarily for health career students.

**Prerequisite:** BIO 232

*Delivery mode:* Face-to-Face | Online

**BIO 244** **3 credit hours (lecture: 3 | lab: 0)**

**Principles of Pharmacology**

Course introduces pharmacology, primarily for students in allied health fields. Content includes major prescription and over-the-counter drug classes (with representative drugs), their uses, side effects and warnings. Students will use practical pharmacology theory (pharmacokinetics, pharmacodynamics) and physiology to understand and predict drug effects, interactions, and toxicity. The impact of society, media, economic and cultural pressures on patient access and compliance with medication will also be discussed.

**Prerequisite:** BIO 232 with minimum grade of C or concurrent enrollment in BIO 232.

*Delivery mode:* Face-to-Face | Online

**BIO 251** **4 credit hours (lecture: 3 | lab: 3)**

**Microbiology**

Laboratory course introduces biology of microorganisms including bacteria, fungi, protists and viruses. Content includes metabolism, genetics, identification, control, physiology, relationship to health and disease, and host defense. Intended primarily for student in health fields.

**Prerequisite:** BIO 121 (preferred) with a minimum grade of C or BIO 232 with a minimum grade of C or concurrent enrollment in BIO 232 approved by the Department Chair.

*Delivery mode:* Face-to-Face | Hybrid | Online Fee: \$60

**BIO 290** **1-4 credit hours (lecture: 0-4 | lab: 0-4)**

**Topics in Biology**

Course meets the special interest needs of biology students. Topics will be offered for variable credit from one to four semester credit hours. Students may repeat BIO 290 up to three times on different topics for a maximum of nine semester credit hours. Prerequisite may vary by topic.

*Delivery mode:* Face-to-Face