

## BIOLOGY (BI)

### BI LD1, GENERAL CREDIT, 1-16 Credits

### BI LD2, GENERAL CREDIT, 1-16 Credits

### BI 003, UNDERGRADUATE RESEARCH, 0 Credits

Engage in research activities appropriate to the discipline; and through the research experience, acquire skills, techniques, and knowledge relevant to the field of study. In consultation with a faculty mentor, engage in research activity, and make and execute a plan for a project.

### BI 101, \*ENVIRONMENTAL BIOLOGY: ECOLOGY, CONSERVATION, GLOBAL CHANGE, 4 Credits

Introduction to ecosystems, including biodiversity, species interactions, human impacts, and conservation biology. Lectures introduce biological themes and research in the context of current issues in science and society. Hands-on laboratories focus on using organisms and technologies to explore biology and develop skills for lifelong learning. No previous science courses are required, intended for non-biological science majors. This course can be taken alone or in any combination with BI 102 or 103. Lec/lab/rec. (Bacc Core Course)

**Attributes:** CPBS – Core, Pers, Biological Science

*Available via Ecampus*

### BI 102, \*ANIMAL BIOLOGY: GENES, BEHAVIOR AND EVOLUTION OF LIFE, 4 Credits

Introduction to how genetics shapes life on Earth, including how understandings of DNA and environmental factors are leading to biotechnological advances. Lectures introduce biological themes and research in the context of current issues in science and society. Hands-on laboratories focus on using organisms and technologies to explore biology and develop skills for lifelong learning. No previous science courses are required, intended for non-biological science majors. This course can be taken alone or in any combination with BI 101 and BI 103. Lec/lab/rec. (Bacc Core Course)

**Attributes:** CPBS – Core, Pers, Biological Science

**Equivalent to:** BI 102H

*Available via Ecampus*

### BI 103, \*HUMAN BIOLOGY: ANATOMY, PHYSIOLOGY AND DISEASE, 4 Credits

Introduction to the biology of humans, including aspects of human health and disease. Lectures introduce biological themes and research in the context of current issues in science and society. Hands-on laboratories focus on using organisms and technologies to explore biology and develop skills for lifelong learning. No previous science courses are required, intended for non-biological science majors. This course can be taken alone or in any combination with BI 101 and BI 102. Lec/lab/rec. (Bacc Core Course)

**Attributes:** CPBS – Core, Pers, Biological Science

**Equivalent to:** BI 103H

### BI 109, HEALTH PROFESSIONS: MEDICAL, 1 Credit

Discussion of matters relating to a medical career. Includes application procedures, the importance of various requirements, admissions, professional school curricula, financing education, and related matters. Speakers are included. Graded P/N.

### BI 111, INTRODUCTION TO MARINE LIFE IN THE SEA: MARINE HABITATS, 1 Credit

A field-focused learning experience exploring the varied marine life and habitats on the Oregon coast, including rocky shores, sandy beaches, mud flats, bays and estuaries. Students will also be introduced to the breadth of marine science course offerings and research at Oregon State University's Hatfield Marine Science Center located in Newport, Oregon. Graded P/N.

**Equivalent to:** FW 111

### BI 150, INTRODUCTION TO MARINE BIOLOGY, 3 Credits

Survey of marine organisms, the environments they inhabit, and their evolutionary adaptations for thriving in those environments. The course will also highlight current conservation challenges that threaten marine life, such as climate change, overfishing, and pollution.

### BI 175, \*GENOMES, IDENTITIES AND SOCIETIES, 3 Credits

DNA's roles in shaping our senses of identity, individuality, and societal interconnectivity will be analyzed. New advances in genetic technology will be explored, along with their potential impacts on society. The relationships between genetics and discrimination will be examined with focus on cases from Oregon, America, and the world. (Bacc Core Course)

**Attributes:** CPDP – Core, Perspective, Difference/Power/Discrimination

### BI 197, PROFESSIONAL DEVELOPMENT I: HEALTH PROFESSIONS, 1 Credit

Integrative Biology faculty and other professionals introduce a variety of human health professions including dentistry, medicine, pharmacy and others (veterinary medicine students take BI 198). Emphasizes professional development through exploring relevant social and cognitive concepts, as well as engaging in experiential learning and networking. Departmental and campus student success resources are highlighted. Graded P/N.

### BI 198, PROFESSIONAL DEVELOPMENT I: BIOLOGY AND ZOOLOGY, 1 Credit

Integrative Biology faculty and biology professionals introduce life science careers outside of human health professions (human health profession students take BI 197). Emphasizes professional development through exploring relevant social and cognitive concepts, as well as engaging in experiential learning and networking. Departmental and campus student success resources are highlighted. Graded P/N.

*Available via Ecampus*

### BI 199, SELECTED TOPICS, 1-16 Credits

Field Ecology.

**Equivalent to:** BI 199H

*This course is repeatable for 16 credits.*

## BI 199H, SELECTED TOPICS, 1-16 Credits

**Attributes:** HNRS – Honors Course Designator

**Equivalent to:** BI 199

*This course is repeatable for 16 credits.*

## BI 204, \*INTRODUCTORY BIOLOGY I, 4 Credits

Foundations of biological sciences including scientific inquiry, genetics, evolution, and ecology. Significant emphasis throughout on the application of core concepts to solve human and environmental problems. Laboratory emphasizes skills in critical thinking, scientific writing, and experimental design. Not intended for pre-health profession students. Lec/lab. (Bacc Core Course)

**Attributes:** CPBS – Core, Pers, Biological Science

*Available via Ecampus*

## BI 205, \*INTRODUCTORY BIOLOGY II, 4 Credits

Fundamental concepts in molecular and cellular biology, beginning with biomolecules and the origin of life, and ending with genomics. Significant emphasis throughout on applications of biotechnology to solve human problems. Laboratory emphasizes skills in critical thinking, scientific writing, and experimental design. Not intended for pre-health profession students. Lec/lab. (Bacc Core Course)

**Attributes:** CPBS – Core, Pers, Biological Science

**Prerequisite:** CH 121 (may be taken concurrently) with D- or better or CH 201 (may be taken concurrently) with D- or better or ((CH 231 (may be taken concurrently) with D- or better or CH 231H (may be taken concurrently) with D- or better) and (CH 261 (may be taken concurrently) [D-] or CH 261H (may be taken concurrently) [D-] or CH 271 (may be taken concurrently) [D-] or CH 271H (may be taken concurrently) [D-]))

*Available via Ecampus*

## BI 206, \*INTRODUCTORY BIOLOGY III, 4 Credits

Basic plant and animal physiology from an evolutionary perspective. Significant emphasis on topics of importance to human society, including human and plant disease. Laboratory emphasizes skills in critical thinking, scientific writing, and experimental design. Not intended for pre-health professional students. Lec/lab. (Bacc Core Course)

**Attributes:** CPBS – Core, Pers, Biological Science

**Prerequisite:** CH 121 (may be taken concurrently) with D- or better or CH 201 (may be taken concurrently) with D- or better or ((CH 231 (may be taken concurrently) with D- or better or CH 231H (may be taken concurrently) with D- or better) and (CH 261 (may be taken concurrently) [D-] or CH 261H (may be taken concurrently) [D-] or CH 271 (may be taken concurrently) [D-] or CH 271H (may be taken concurrently) [D-]))

*Available via Ecampus*

## BI 211, \*PRINCIPLES OF BIOLOGY, 4 Credits

Origins of life, energy transformations, plant and animal diversity. Lec/lab. (Bacc Core Course)

**Attributes:** CPBS – Core, Pers, Biological Science

**Equivalent to:** BI 211H

## BI 211H, \*PRINCIPLES OF BIOLOGY, 4 Credits

Origins of life, energy transformations, plant and animal physiology. Lec/lab. (Bacc Core Course)

**Attributes:** CPBS – Core, Pers, Biological Science; HNRS – Honors Course Designator

**Equivalent to:** BI 211

## BI 212, \*PRINCIPLES OF BIOLOGY, 4 Credits

Cell biology, organ systems, plant and animal physiology. Lec/lab. (Bacc Core Course)

**Attributes:** CPBS – Core, Pers, Biological Science

**Prerequisite:** (CH 121 (may be taken concurrently) with D- or better or CH 201 (may be taken concurrently) with D- or better or CH 221 (may be taken concurrently) with D- or better or CH 224H (may be taken concurrently) with D- or better or ((CH 231 (may be taken concurrently) with D- or better or CH 231H (may be taken concurrently) with D- or better) and (CH 261 (may be taken concurrently) [D-] or CH 261H (may be taken concurrently) [D-] or CH 271 (may be taken concurrently) [D-])) )

**Equivalent to:** BI 212H

## BI 212H, \*PRINCIPLES OF BIOLOGY, 4 Credits

Cell biology, organ systems, plant and animal physiology. Lec/lab. (Bacc Core Course)

**Attributes:** CPBS – Core, Pers, Biological Science; HNRS – Honors Course Designator

**Prerequisite:** (CH 121 (may be taken concurrently) with D- or better or CH 201 (may be taken concurrently) with D- or better or CH 221 (may be taken concurrently) with D- or better or CH 224H (may be taken concurrently) with D- or better or ((CH 231 (may be taken concurrently) with D- or better or CH 231H (may be taken concurrently) with D- or better) and (CH 261 (may be taken concurrently) [D-] or CH 261H (may be taken concurrently) [D-] or CH 271 (may be taken concurrently) [D-])) )

**Equivalent to:** BI 212

## BI 213, \*PRINCIPLES OF BIOLOGY, 4 Credits

Genetics, evolution, natural selection, and ecology. Lec/lab. (Bacc Core Course)

**Attributes:** CPBS – Core, Pers, Biological Science

**Prerequisite:** CH 121 with D- or better or CH 201 with D- or better or CH 221 with D- or better or CH 224H with D- or better or ((CH 231 with D- or better or CH 231H with D- or better) and (CH 261 [D-] or CH 261H [D-] or CH 271 [D-]))

**Equivalent to:** BI 213H

## BI 213H, \*PRINCIPLES OF BIOLOGY, 4 Credits

Genetics, evolution, natural selection, and ecology. Lec/lab. (Bacc Core Course)

**Attributes:** CPBS – Core, Pers, Biological Science; HNRS – Honors Course Designator

**Prerequisite:** CH 121 with D- or better or CH 201 with D- or better or CH 221 with D- or better or CH 224H with D- or better or ((CH 231 with D- or better or CH 231H with D- or better) and (CH 261 [D-] or CH 261H [D-] or CH 271 [D-]))

**Equivalent to:** BI 213

## BI 221, \*PRINCIPLES OF BIOLOGY: CELLS, 4 Credits

Introduction to fundamental biological concepts and theories about the chemical and molecular basis of life, structure and function, transformation of energy and matter and information flow at a cellular and molecular level. (Bacc Core Course)

**Attributes:** CPBS – Core, Pers, Biological Science

**Prerequisite:** (CH 121 (may be taken concurrently) with D- or better or CH 201 (may be taken concurrently) with D- or better) or ((CH 231 (may be taken concurrently) with D- or better or CH 231H (may be taken concurrently) with D- or better) and (CH 261 (may be taken concurrently) [D-] or CH 261H (may be taken concurrently) [D-] or CH 271 (may be taken concurrently) [D-]))

**Equivalent to:** BI 221H

## BI 221H, \*PRINCIPLES OF BIOLOGY: CELLS, 4 Credits

Introduction to fundamental biological concepts and theories about the chemical and molecular basis of life, structure and function, transformation of energy and matter and information flow at a cellular and molecular level. (Bacc Core Course)

**Attributes:** CPBS – Core, Pers, Biological Science; HNRS – Honors Course Designator

**Prerequisite:** (CH 121 (may be taken concurrently) with D- or better or CH 201 (may be taken concurrently) with D- or better) or ((CH 231 (may be taken concurrently) with D- or better or CH 231H (may be taken concurrently) with D- or better) and (CH 261 (may be taken concurrently) [D-] or CH 261H (may be taken concurrently) [D-] or CH 271 (may be taken concurrently) [D-]))

**Equivalent to:** BI 221

## BI 222, \*PRINCIPLES OF BIOLOGY: ORGANISMS, 4 Credits

Introduction to fundamental biological concepts and theories about plant, and animal physiology, evolution, structure and function, transformation of energy and matter and systems at an organismal level. (Bacc Core Course)

**Attributes:** CPBS – Core, Pers, Biological Science

**Prerequisite:** (BI 221 with C- or better or BI 221H with C- or better) and ((CH 121 (may be taken concurrently) with D- or better or CH 201 (may be taken concurrently) with D- or better) or ((CH 231 (may be taken concurrently) with D- or better or CH 231H (may be taken concurrently) with D- or better) and (CH 261 (may be taken concurrently) [D-] or CH 261H (may be taken concurrently) [D-] or CH 271 (may be taken concurrently) [D-]))

**Equivalent to:** BI 222H

## BI 222H, \*PRINCIPLES OF BIOLOGY: ORGANISMS, 4 Credits

Introduction to fundamental biological concepts and theories about plant, and animal physiology, evolution, structure and function, transformation of energy and matter and systems at an organismal level. (Bacc Core Course)

**Attributes:** CPBS – Core, Pers, Biological Science; HNRS – Honors Course Designator

**Prerequisite:** (BI 221 with C- or better or BI 221H with C- or better) and ((CH 121 (may be taken concurrently) with D- or better or CH 201 (may be taken concurrently) with D- or better) or ((CH 231 (may be taken concurrently) with D- or better or CH 231H (may be taken concurrently) with D- or better) and (CH 261 (may be taken concurrently) [D-] or CH 261H (may be taken concurrently) [D-] or CH 271 (may be taken concurrently) [D-]))

**Equivalent to:** BI 222

## BI 223, \*PRINCIPLES OF BIOLOGY: POPULATIONS, 4 Credits

Introduction to fundamental biological concepts and theories about diversity, evolution, and ecology; specifically, evolutionary relationship, transformation of energy and matter, information flow and systems at a population level or above. (Bacc Core Course)

**Attributes:** CPBS – Core, Pers, Biological Science

**Prerequisite:** (BI 221 with C- or better or BI 221H with C- or better) and ((CH 121 (may be taken concurrently) with D- or better or CH 201 (may be taken concurrently) with D- or better) or ((CH 231 (may be taken concurrently) with D- or better or CH 231H (may be taken concurrently) with D- or better) and (CH 261 (may be taken concurrently) [D-] or CH 261H (may be taken concurrently) [D-] or CH 271 (may be taken concurrently) [D-]))

**Equivalent to:** BI 223H

## BI 223H, \*PRINCIPLES OF BIOLOGY: POPULATIONS, 4 Credits

Introduction to fundamental biological concepts and theories about diversity, evolution, and ecology; specifically, evolutionary relationship, transformation of energy and matter, information flow and systems at a population level or above. (Bacc Core Course)

**Attributes:** CPBS – Core, Pers, Biological Science; HNRS – Honors Course Designator

**Prerequisite:** (BI 221 with C- or better or BI 221H with C- or better) and ((CH 121 (may be taken concurrently) with D- or better or CH 201 (may be taken concurrently) with D- or better) or ((CH 231 (may be taken concurrently) with D- or better or CH 231H (may be taken concurrently) with D- or better) and (CH 261 (may be taken concurrently) [D-] or CH 261H (may be taken concurrently) [D-] or CH 271 (may be taken concurrently) [D-]))

**Equivalent to:** BI 223

## **BI 231, INTRODUCTION TO HUMAN ANATOMY AND PHYSIOLOGY, 3 Credits**

The first of a three-term introductory series. Using a strong gross anatomy focus, course topics address fundamental concepts of biology as they apply to human anatomy and physiology and then focus on understanding the structures, functions, and regulatory mechanisms involved in the human skeleton, muscular and integumentary systems. BI 231 is a required prerequisite to BI 232 and BI 233. The BI 241 Lab is optional but prerequisite for either of the subsequent BI 242 or BI 243 lab courses in the series. Lec.

## **BI 232, INTRODUCTION TO HUMAN ANATOMY AND PHYSIOLOGY, 3 Credits**

The second of a three-term introductory series. Using a strong gross anatomy focus, course topics address the structures, functions and regulatory mechanisms involved in the human nervous, endocrine and reproductive systems. Lec.

**Prerequisite:** BI 231 (may be taken concurrently) with C- or better

## **BI 233, INTRODUCTION TO HUMAN ANATOMY AND PHYSIOLOGY, 3 Credits**

The third of a three-term introductory series. Using a strong gross anatomy focus, course topics address the structures, functions, and regulatory mechanisms involved in the human cardiovascular, respiratory, urinary and digestive systems. Lec.

**Prerequisite:** BI 231 (may be taken concurrently) with C- or better

## **BI 241, INTRODUCTION TO HUMAN ANATOMY AND PHYSIOLOGY LABORATORY, 2 Credits**

The first of a three-term introductory series. Using the human cadaver (prosection), course topics address fundamental concepts of biology as they apply to human anatomy and physiology and then focus on understanding the structures, functions, and regulatory mechanisms involved in the human skeletal, muscular and integumentary systems. Physiology demonstrations illustrate functions of organ systems. Lab/rec.

**Prerequisite:** BI 231 (may be taken concurrently) with C- or better

## **BI 242, INTRODUCTION TO HUMAN ANATOMY AND PHYSIOLOGY LABORATORY, 2 Credits**

The second of a three-term introductory series. Using the human cadaver (prosection) and dissection of preserved specimens with a strong gross anatomy focus, course topics address the structures, functions and regulatory mechanisms involved in the nervous, endocrine and reproductive systems. Physiology demonstrations illustrate functions of organ systems. Lab/rec.

**Prerequisite:** BI 231 (may be taken concurrently) with C- or better and BI 232 (may be taken concurrently) [C-] and BI 241 (may be taken concurrently) [C-]

## **BI 243, INTRODUCTION TO HUMAN ANATOMY AND PHYSIOLOGY LABORATORY, 2 Credits**

The third of a three-term introductory series. Using the human cadaver (prosection) and dissection of preserved specimens with a strong gross anatomy focus, course topics address the structures, functions, and regulatory mechanisms involved in the human cardiovascular, respiratory, urinary and digestive systems. Physiology demonstrations illustrate functions of organ systems. Lab/rec.

**Prerequisite:** BI 231 (may be taken concurrently) with C- or better and BI 233 (may be taken concurrently) [C-] and BI 241 (may be taken concurrently) [C-]

## **BI 298, PROFESSIONAL DEVELOPMENT FOR BIOLOGISTS II, 1 Credit**

Students will develop awareness of the elements of professional development, identify strategic areas for growth, and design an exploration plan. Emphasis is placed on being able to analyze career opportunities to determine the best mix of technical and professional skills needed for success as a biological science professional. Graded P/N.

**Equivalent to:** BI 298H

*Available via Ecampus*

## **BI 299, SPECIAL TOPICS, 1-16 Credits**

*This course is repeatable for 16 credits.*

## **BI 301, \*HUMAN IMPACTS ON ECOSYSTEMS, 3 Credits**

Selected human impacts on ecosystems are examined in depth, including air quality, global climate change, management of agricultural and forest resources, and threats to biological diversity. The causes, approaches to investigating, and potential solutions for each issue are discussed from a scientific and social perspective. Adverse effects on ecosystems that result from each environmental problem are examined. (Bacc Core Course)

**Attributes:** CSGI – Core, Synth, Global Issues

**Recommended:** One year of college biology or chemistry

## **BI 306, \*ENVIRONMENTAL ECOLOGY, 3 Credits**

Biological, physical, and chemical nature of both natural and human-disturbed ecosystems. Topics include population and conservation ecology, toxins in the food chain and in the environment, forest decline and acid rain, eutrophication of terrestrial and aquatic ecosystems, and ecosystem restoration. Offered alternate years. (Bacc Core Course)

**Attributes:** CSGI – Core, Synth, Global Issues

**Equivalent to:** BI 306H

**Recommended:** One year of college biology and chemistry

## BI 306H, \*ENVIRONMENTAL ECOLOGY, 3 Credits

Biological, physical, and chemical nature of both natural and human-disturbed ecosystems. Topics include population and conservation ecology, toxins in the food chain and in the environment, forest decline and acid rain, eutrophication of terrestrial and aquatic ecosystems, and ecosystem restoration. Offered alternate years. (Bacc Core Course)

**Attributes:** CSGI – Core, Synth, Global Issues; HNRS – Honors Course Designator

**Equivalent to:** BI 306

**Recommended:** One year of college biology and chemistry

## BI 309, TEACHING PRACTICUM, 1-6 Credits

Introductory experience for students assisting with instruction in Biology or Zoology courses. Admission is by application. See Cordley 3029 for details.

*This course is repeatable for 6 credits.*

## BI 311, GENETICS, 4 Credits

Fundamentals of Mendelian, quantitative, population, molecular, and developmental genetics. Lec/rec.

**Prerequisite:** ((BI 211 with C- or better or BI 211H with C- or better) and (BI 212 [C-] or BI 212H [C-]) and (BI 213 [C-] or BI 213H [C-])) or ((BI 221 [C-] or BI 221H [C-]) and (BI 222 [C-] or BI 222H [C-]) and (BI 223 [C-] or BI 223H [C-])) or (BI 204 [C-] and BI 205 [C-] and BI 206 [C-])

**Equivalent to:** BI 311H

*Available via Ecampus*

## BI 311H, GENETICS, 4 Credits

Fundamentals of Mendelian, quantitative, population, molecular, and developmental genetics. Lec/rec.

**Attributes:** HNRS – Honors Course Designator

**Prerequisite:** ((BI 211 with C- or better or BI 211H with C- or better) and (BI 212 [C-] or BI 212H [C-]) and (BI 213 [C-] or BI 213H [C-])) or ((BI 221 [C-] or BI 221H [C-]) and (BI 222 [C-] or BI 222H [C-]) and (BI 223 [C-] or BI 223H [C-])) or (BI 204 [C-] and BI 205 [C-] and BI 206 [C-])

**Equivalent to:** BI 311

## BI 315, MOLECULAR BIOLOGY LABORATORY, 3 Credits

Laboratory projects exploring the transmission of genetic information from storage to function will introduce students to fundamental molecular biology concepts and techniques, including isolation of DNA, construction of recombinant plasmids, quantification of gene expression in model organisms, polymerase chain reaction, and analysis of protein expression and subcellular localization. Lec/lab.

**Prerequisite:** BB 314 with C- or better or BB 314H with C- or better

**Equivalent to:** BB 315

## BI 319, ^THEORY, PRACTICE AND DISCOURSE IN THE LIFE SCIENCES, 3 Credits

The practice of science and the critical evaluation of scientific claims are explored through writings, discussions and presentations. Topics including the scientific method, ethics and the role of science in society are examined along with implications for professionals ranging from health care to environmental biology. Strategies for effectively communicating science with diverse audiences are emphasized. (Writing Intensive Course).

**Attributes:** CWIC – Core, Skills, WIC

**Prerequisite:** (( (BI 211 with C- or better or BI 211H with C- or better) and (BI 212 [C-] or BI 212H [C-]) and (BI 213 [C-] or BI 213H [C-])) or ((BI 221 [C-] or BI 221H [C-]) and (BI 222 [C-] or BI 222H [C-]) and (BI 223 [C-] or BI 223H [C-])) ) and (ST 351 [D-] or ST 351H [D-])

*Available via Ecampus*

## BI 331, ADVANCED HUMAN ANATOMY AND PHYSIOLOGY, 3 Credits

The first of a three-term advanced series. With a strong focus on the physiological underpinnings of disease, course topics address the fundamental concepts of human anatomy and physiology and then focus on understanding the structures, functions, regulatory mechanisms and common pathologies involved in the skeletal, muscular and integumentary systems. Lec.

**Prerequisite:** (( (BI 211 with C- or better or BI 211H with C- or better) and (BI 212 [C-] or BI 212H [C-]) and (BI 213 [C-] or BI 213H [C-])) or ((BI 221 [C-] or BI 221H [C-]) and (BI 222 [C-] or BI 222H [C-]) and (BI 223 [C-] or BI 223H [C-])) ) and (CH 123 [C-] or ((CH 233 [C-] or CH 233H [C-]) and (CH 263 [C-] or CH 263H [C-])) ) and BI 341 (may be taken concurrently) [C-]

## BI 332, ADVANCED HUMAN ANATOMY AND PHYSIOLOGY, 3 Credits

The second of a three-term advanced series. With a strong focus on the physiological underpinnings of disease, course topics address the structures, functions, and regulatory mechanisms involved in the nervous, endocrine and reproductive systems. Lec.

**Prerequisite:** BI 331 with C- or better and BI 342 (may be taken concurrently) [C-]

## BI 333, ADVANCED HUMAN ANATOMY AND PHYSIOLOGY, 3 Credits

The third part of a three-term advanced series. With a strong focus on the physiological underpinnings of disease, course topics address the structures, functions, and regulatory mechanisms involved in the cardiovascular, respiratory, urinary and digestive systems. Lec.

**Prerequisite:** BI 332 with C- or better and BI 343 (may be taken concurrently) [C-]

## BI 341, ADVANCED HUMAN ANATOMY AND PHYSIOLOGY LABORATORY, 2 Credits

The first of a three-term advanced series. Using the human cadaver (prosection) and physiological data acquisition equipment, course topics address the fundamental concepts of human anatomy and physiology and then focus on understanding the structures, functions, regulatory mechanisms and common pathologies involved in the human skeletal, muscular and integumentary systems. Lab.

**Corequisites:** BI 331

## BI 342, ADVANCED HUMAN ANATOMY AND PHYSIOLOGY LABORATORY, 2 Credits

The second of a three-term advanced series. Using the human cadaver (prosection), dissection of preserved specimens, and physiological data acquisition equipment, course topics address the structures, functions, regulatory mechanisms and common pathologies involved in the human nervous, endocrine and reproductive systems. Lab.

**Corequisites:** BI 332

## BI 343, ADVANCED HUMAN ANATOMY AND PHYSIOLOGY LABORATORY, 2 Credits

The third of a three-term advanced series. Using the human cadaver (prosection), dissection of preserved specimens, and physiological data acquisition equipment, course topics address the structures, functions, regulatory mechanisms and common pathologies involved in the human cardiovascular, respiratory, urinary and digestive systems. Lab.

**Corequisites:** BI 333

## BI 345, \*INTRODUCTION TO EVOLUTION, 3 Credits

Elements of evolutionary theory; origin and history of life; evolutionary controversy; origins of species, sex, and humans. (Bacc Core Course)

**Attributes:** CSST – Core, Synthesis, Science/Technology/Society

**Equivalent to:** Z 345

*Available via Ecampus*

## BI 347, \*OCEANS IN PERIL, 3 Credits

The interactions of society and the marine environment, emphasizing the ecological, biogeochemical, economic, sociological, and political significance of the oceans. Topics of current critical importance will include marine pollution, protecting marine habitats, conserving marine biodiversity, fisheries and aquaculture, ocean energy, biogeochemical change, global warming, ocean acidification, and sea level rise. (Bacc Core Course)

**Attributes:** CSST – Core, Synthesis, Science/Technology/Society

**Prerequisite:** BI 101 with C- or better or BI 102 with C- or better or BI 211 with C- or better or BI 211H with C- or better or BI 213 with C- or better or BI 213H with C- or better or BI 204 with C- or better or BI 150 with C- or better or BI 221 with C- or better or BI 221H with C- or better

*Available via Ecampus*

## BI 348, \*HUMAN ECOLOGY, 3 Credits

The impact of humans on the environment, emphasizing the political, sociological, and ecological consequences of human population growth. Topics of current critical importance will include global warming trends, destruction of the ozone layer, consequences of pollution, habitat destruction, the loss of biodiversity, and conservation biology. (Bacc Core Course)

**Attributes:** CSST – Core, Synthesis, Science/Technology/Society

**Equivalent to:** Z 348

*Available via Ecampus*

## BI 351, MARINE ECOLOGY, 3 Credits

Ecological interactions and principles in different marine habitats. Topics include the organisms (plants, invertebrates, vertebrates) found in major habitats and interactions between organisms. Habitats discussed include coral reefs, rocky shores, kelp forests, near-shore waters, open-ocean waters, and the deep sea. Emphasis is placed on how organism-organism interactions produce varying patterns of distribution, abundance, body size, diversity, stability, and succession.

**Prerequisite:** ((BI 211 with C- or better or BI 211H with C- or better) and (BI 212 [C-] or BI 212H [C-]) and (BI 213 [C-] or BI 213H [C-])) or ((BI 221 [C-] or BI 221H [C-]) and (BI 222 [C-] or BI 222H [C-]) and (BI 223 [C-] or BI 223H [C-])) or (BI 204 [C-] and BI 205 [C-] and BI 206 [C-])

**Equivalent to:** Z 351

*Available via Ecampus*

## BI 353, PACIFIC NORTHWEST COASTAL ECOSYSTEMS, 4 Credits

A field-based introduction to the diversity of ecosystems of the Pacific Northwest coast. Biological and physical processes affecting the distribution, structure, community composition and physical features of these systems are explored through a variety of lectures and field trips. Ecosystem services and human impacts are examined.

**Prerequisite:** ((BI 211 with C- or better or BI 211H with C- or better) and (BI 212 [C-] or BI 212H [C-]) and (BI 213 [C-] or BI 213H [C-])) or ((BI 221 [C-] or BI 221H [C-]) and (BI 222 [C-] or BI 222H [C-]) and (BI 223 [C-] or BI 223H [C-])) or (BI 204 [C-] and BI 205 [C-] and BI 206 [C-])

## BI 358, SYMBIOSES AND THE ENVIRONMENT, 3 Credits

Overview of the diversity of mutualistic symbioses and their roles in the natural environment. Integrative approach, from ecosystem to molecule, to the examination of certain key mutualisms. Lec. Offered alternate years.

**Prerequisite:** ((BI 211 with C- or better or BI 211H with C- or better) and (BI 212 [C-] or BI 212H [C-]) and (BI 213 [C-] or BI 213H [C-])) or ((BI 221 [C-] or BI 221H [C-]) and (BI 222 [C-] or BI 222H [C-]) and (BI 223 [C-] or BI 223H [C-])) or (BI 204 [C-] and BI 205 [C-] and BI 206 [C-]) and (CH 123 [C-] or (CH 233 [C-] or CH 233H [C-]) and (CH 263 [C-] or CH 263H [C-]))

## BI 370, ECOLOGY, 3 Credits

The study of interactions between organisms and their biotic and abiotic environments at the population, community, ecosystem, and biosphere levels of organization.

**Prerequisite:** ((BI 211 with C- or better or BI 211H with C- or better) and (BI 212 [C-] or BI 212H [C-]) and (BI 213 [C-] or BI 213H [C-])) or ((BI 221 [C-] or BI 221H [C-]) and (BI 222 [C-] or BI 222H [C-]) and (BI 223 [C-] or BI 223H [C-])) or (BI 204 [C-] and BI 205 [C-] and BI 206 [C-])

**Equivalent to:** BI 370H

*Available via Ecampus*

## BI 370H, ECOLOGY, 3 Credits

The study of interactions between organisms and their biotic and abiotic environments at the population, community, ecosystem, and biosphere levels of organization.

**Attributes:** HNRS – Honors Course Designator

**Prerequisite:** ((BI 211 with C- or better or BI 211H with C- or better) and (BI 212 [C-] or BI 212H [C-]) and (BI 213 [C-] or BI 213H [C-])) or ((BI 221 [C-] or BI 221H [C-]) and (BI 222 [C-] or BI 222H [C-]) and (BI 223 [C-] or BI 223H [C-])) or (BI 204 [C-] and BI 205 [C-] and BI 206 [C-])

**Equivalent to:** BI 370

**BI 371, ^ECOLOGICAL METHODS, 3 Credits**

Experimental design, data collection, analysis and synthesis in ecological studies; local ecosystems emphasized. May have field trip fee. Lec/lab. (Writing Intensive Course)

**Attributes:** CWIC – Core, Skills, WIC

**Prerequisite:** BI 370 with D- or better or BI 370H with D- or better

**BI 373, ^FIELD METHODS IN MARINE ECOLOGY, 3 Credits**

Exposure to research methods used in field studies of the marine rocky intertidal ecosystem. Research projects and writing exercises provide students with hands-on experience of collecting, analyzing, and presenting marine ecological data. Field trip fee. Lab fee. Lec/lab. (Writing Intensive Course)

**Attributes:** CWIC – Core, Skills, WIC

**Prerequisite:** (BI 351 (may be taken concurrently) with D- or better or BI 370 with D- or better or BI 370H with D- or better) and (ST 351 [D-] or ST 351H [D-])

**Recommended:** ST 352

**BI 375, FIELD METHODS IN ECOLOGICAL RESTORATION, 4 Credits**

Observation and application of theory and practice in ecological restoration. Using site visits and hands-on research, explores the roles in restoration of fire, local adaptation, disturbance history, natural history, beaver, and soils, including visits to several active and completed restoration projects and overnights in the field. Lab.

**Prerequisite:** ((BI 211 with C- or better or BI 211H with C- or better) and (BI 212 [C-] or BI 212H [C-]) and (BI 213 [C-] or BI 213H [C-])) or ((BI 221 [C-] or BI 221H [C-]) and (BI 222 [C-] or BI 222H [C-]) and (BI 223 [C-] or BI 223H [C-])) or (BI 204 [C-] and BI 205 [C-] and BI 206 [C-])

**BI 399, SPECIAL TOPICS, 0-16 Credits**

May be repeated for 16 total credits.

**Equivalent to:** BI 399H

*This course is repeatable for 16 credits.*

**BI 401, RESEARCH AND SCHOLARSHIP, 1-16 Credits**

**Equivalent to:** BI 401H

*This course is repeatable for 16 credits.*

**BI 401H, RESEARCH AND SCHOLARSHIP, 1-16 Credits**

**Attributes:** HNRS – Honors Course Designator

**Equivalent to:** BI 401

*This course is repeatable for 16 credits.*

**BI 405, READING AND CONFERENCE, 1-16 Credits**

**Equivalent to:** BI 405H

*This course is repeatable for 16 credits.*

**BI 406, PROJECTS: CURATORIAL ASSISTANT, 1-6 Credits**

Students assist with curatorial projects in OSU biological collections.

Admission is by application. See Cordley 3029 for details.

*This course is repeatable for 6 credits.*

**BI 407, SEMINAR, 1 Credit**

Departmental seminar. Graded P/N.

**Equivalent to:** BI 407H, BI 407H, BOT 407, BOT 407H

*This course is repeatable for 16 credits.*

**BI 407H, SEMINAR, 1 Credit**

Departmental seminar. Graded P/N.

**Attributes:** HNRS – Honors Course Designator

**Equivalent to:** BI 407

*This course is repeatable for 16 credits.*

**BI 409, ADVANCED TEACHING PRACTICUM, 1-6 Credits**

Advanced practicum experience for students assisting in Biology or Zoology courses. Includes advanced training in course content and development of instructional materials. Admission is by application. See Cordley 3029 for details.

*This course is repeatable for 6 credits.*

**BI 410, INTERNSHIP, 1-16 Credits**

Graded P/N.

*This course is repeatable for 16 credits.*

*Available via Ecampus*

**BI 420, \*VIRUSES IN MODERN SOCIETY, 3 Credits**

Impact of viruses on modern civilization. Molecular mechanisms of viral infectivity. Approaches to the prevention and cure of viral diseases. Role of viruses in agriculture and industry. Offered alternate years. (Bacc Core Course)

**Attributes:** CSST – Core, Synthesis, Science/Technology/Society

**Prerequisite:** BI 311 with D- or better or BI 311H with D- or better or BI 314 with D- or better or BI 314H with D- or better

**BI 427, PALEOBIOLOGY, 4 Credits**

Fossils provide a direct window into the evolution, extinction, and ecology of past life on Earth. A process-based study of the marine and terrestrial fossil record is taken to explore the topics of preservation, macroevolution, extinction of biotas, biomechanics, paleoecology, and climate change. Required laboratory and weekend field trip.

**Prerequisite:** ((BI 211 with C- or better or BI 211H with C- or better) and (BI 212 [C-] or BI 212H [C-]) and (BI 213 [C-] or BI 213H [C-])) or ((BI 221 [C-] or BI 221H [C-]) and (BI 222 [C-] or BI 222H [C-]) and (BI 223 [C-] or BI 223H [C-])) or (BI 204 [C-] and BI 205 [C-] and BI 206 [C-]) or GEO 203 [D-]

**Equivalent to:** Z 427

**BI 445, EVOLUTION, 3 Credits**

Formal analysis of genetic and ecological mechanisms producing evolutionary change; special topics include speciation, ecological constraints, adaptive radiations, paleontology, biogeography, the origin of life, molecular evolution, and human evolution.

**Prerequisite:** BI 311 with D- or better or BI 311H with D- or better

**Equivalent to:** BI 445H

## BI 445H, EVOLUTION, 3 Credits

Formal analysis of genetic and ecological mechanisms producing evolutionary change; special topics include speciation, ecological constraints, adaptive radiations, paleontology, biogeography, the origin of life, molecular evolution, and human evolution.

**Attributes:** HNRS – Honors Course Designator

**Prerequisite:** BI 311 with D- or better or BI 311H with D- or better

**Equivalent to:** BI 445

## BI 450, ^MARINE BIOLOGY AND ECOLOGY, 15 Credits

A comprehensive lecture and laboratory introduction to the flora and fauna of the marine environment approached from the level of the organism to ecosystem. Ecological patterns and processes characteristic of marine communities will be emphasized. Lec/lab. Taught at Hatfield Marine Science Center, Newport, OR. (Writing Intensive Course)

**Attributes:** CWIC – Core, Skills, WIC

**Prerequisite:** (BI 370 with D- or better or BI 370H with D- or better) and (ST 351 [D-] or ST 351H [D-])

**Recommended:** ST 352

*Available via Ecampus*

## BI 451, FUNCTIONAL ANATOMY OF THE HUMAN MUSCULAR SYSTEM, 4 Credits

In-depth dissection of the orientation, innervation, and functional significance of muscles and muscle groups. Topics include muscle identification, joint anatomy and variation of human form. BI 451 student expectations include vascularization and detailed joint anatomy. The laboratory component will consist of the dissection of the muscular anatomy of a human cadaver. Lab fee. Lec/lab.

**Prerequisite:** ((BI 231 with D- or better and BI 241 [D-]) or (BI 331 [D-] and BI 341 [D-])) and ((BI 232 [D-] and BI 242 [D-]) or (BI 332 [D-] and BI 342 [D-])) and ((BI 233 [D-] and BI 243 [D-]) or (BI 333 [D-] and BI 343 [D-]))

**Equivalent to:** Z 451

## BI 454, EVOLUTIONARY GENOMICS, 3 Credits

Examines the evolutionary forces that have produced such varied and complex genomes across the tree of life. The processes by which genomes can be structured, maintained, and remodeled (by nature or by humans) are explored through scientific literature. Special emphasis will be given to recent technological advances in genomics, along with their potential impacts on individuals and society.

**Prerequisite:** BI 311 with D- or better or BI 311H with D- or better

## BI 456, PHYLOGENETICS, 4 Credits

Explores the theory and practice of modern phylogenetic analysis. Emphasis placed on tree reconstruction algorithms, assessment of statistical support, and contemporary issues in phylogenetics. Lab will focus on the use of phylogenetic software and the analysis of molecular data sets. Lec/lab.

**Prerequisite:** (ST 351 with D- or better or ST 351H with D- or better) and (ST 352 (may be taken concurrently) [D-] or ST 411 (may be taken concurrently) [D-]) and (BI 311 [D-] or BI 311H [D-] or BI 445 [D-] or BI 445H [D-])

## BI 481, BIOGEOGRAPHY, 3 Credits

Biogeography is the study of the distribution of biodiversity. We focus on abiotic (geological, climatological) and biotic (ecological, evolutionary) factors that govern diversity across space and through time, emphasizing assembly of communities, global change, and conservation in today's rapidly changing world. The course format includes lecture, computer-based activities, and discussion. Offered winter term in odd years.

**Prerequisite:** BI 370 with D- or better or BI 370H with D- or better

**Equivalent to:** Z 481

## BI 483, POPULATION BIOLOGY, 3 Credits

Theoretical and empirical views of the structure and function of populations from across the tree of life, emphasizing the integration of ecological and evolutionary approaches. Lec.

**Prerequisite:** (MTH 241 with D- or better or MTH 251 with D- or better or MTH 251H with D- or better or MTH 227 with D- or better) and (ST 351 [D-] or ST 351H [D-]) and (ST 352 (may be taken concurrently) [D-] or ST 411 (may be taken concurrently) [D-]) and (BI 311 [D-] or BI 311H [D-] or BI 370 [D-] or BI 370H [D-])

*Available via Ecampus*

## BI 485, MONSTER BIOLOGY, 3 Credits

Scientists seek to explain what exists and why things are. An alternative approach is to ask why things are not. Biological and physical laws are used to critically and rigorously assess why monsters from literature, television and film are not possible in the real world.

**Prerequisite:** (BI 311 (may be taken concurrently) with D- or better or BI 311H (may be taken concurrently) with D- or better) and (BI 370 (may be taken concurrently) [D-] or BI 370H (may be taken concurrently) [D-])

## BI 495, DISEASE ECOLOGY, 3 Credits

An introduction to disease ecology—the study of disease processes in natural populations and communities. The course focuses on (I) the role parasites play in the ecology and evolution of animal populations, including humans; and (II) the relevance of ecological and evolutionary considerations in managing infectious diseases.

**Prerequisite:** BI 370 with C- or better or BI 370H with C- or better

## BI 498, SENIOR BIOLOGY FIELD TEST, 0 Credits

A comprehensive, two-hour exam to assess the biological knowledge of Biology and Zoology seniors. Students must complete the exam in their final undergraduate term or during spring term if graduating during summer when it is not offered. A pass will be given to all students who complete the exam. More details at <http://ib.oregonstate.edu/advising/MFT-info>.

*Available via Ecampus*

## BI 499, SPECIAL TOPICS, 0-16 Credits

Topics and credits vary.

**Equivalent to:** BI 499H

*This course is repeatable for 16 credits.*

## BI 499H, SPECIAL TOPICS, 1-16 Credits

Topics and credits vary.

**Attributes:** HNRS – Honors Course Designator

**Equivalent to:** BI 499

*This course is repeatable for 16 credits.*