Biology (BI)

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

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

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

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.

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.

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

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
Prerequisites: 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-])
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
Prerequisites: 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) with D- or better) and (CH 261H (may be taken concurrently) [D-] or CH 271 (may be taken concurrently) [D-] or CH 271H (may be taken concurrently) [D-]))

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
Prerequisites: 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
Prerequisites: 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-]))
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
Prerequisites: 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
Prerequisites: 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 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.
Prerequisites: 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.
Prerequisites: 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.
Prerequisites: 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.
Prerequisites: 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.
Prerequisites: 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.

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 biodiversity. 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 302. BIOLOGY AND CONSERVATION OF MARINE MAMMALS. (4 Credits)
An examination of the biology of whales, pinnipeds, and other marine mammals, include general adaptations to a marine existence; systematics and biogeography; reproduction; diving physiology; communication and echolocation; feeding and migratory behavior; and marine mammal/human interactions, including conservation issues. CROSSLISTED as FW 302. Taught at Hatfield Marine Science Center, OR online through Ecampus.
Equivalent to: FW 302
Recommended: One year of introductory biology is mandatory.

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) (Writing Intensive Course)
Attributes: CSGI – Core, Synth, Global Issues; CWIC – Core, Skills, WIC; HNRS – Honors Course Designator
Equivalent to: BI 306
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) (Writing Intensive Course)
Attributes: CSGI – Core, Synth, Global Issues; CWIC – Core, Skills, WIC; HNRS – Honors Course Designator
Equivalent to: BI 306
Recommended: One year of college biology and chemistry

BI 311. GENETICS. (4 Credits)
Fundamentals of Mendelian, quantitative, population, molecular, and developmental genetics. Lec/rec.
Prerequisites: ((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 204 [C-] and BI 205 [C-] and BI 206 [C-])
Equivalent to: BI 311H

BI 311H. GENETICS. (4 Credits)
Fundamentals of Mendelian, quantitative, population, molecular, and developmental genetics. Lec/rec.
Attributes: HNRS – Honors Course Designator
Prerequisites: ((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 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. CROSSLISTED as BB 315.
Prerequisites: BB 314 (may be taken concurrently) with C- or better or BB 314H (may be taken concurrently) with C- or better
Equivalent to: BB 315

BI 317. *SCIENTIFIC THEORY AND PRACTICE. (3 Credits)
Teaches students the practice of biological science. Topics cover scientific theory, communications, and critical evaluation. CROSSLISTED as BB 317. (Writing Intensive Course)
Attributes: CWIC – Core, Skills, WIC
Equivalent to: BB 317
Recommended: One year of college biology.

BI 319. *CRITICAL THINKING AND COMMUNICATION IN THE LIFE SCIENCES. (3 Credits)
Teaches students the practice of biological science. Topics cover scientific theory, written and spoken communications, ethics and critical evaluation. (Writing Intensive Course) CROSSLISTED as Z 319.
Attributes: CWIC – Core, Skills, WIC
Prerequisites: (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-]) and (ST 351 [D-] or ST 351H [D-]) and ST 352 (may be taken concurrently) [D-]
Equivalent to: Z 319
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.
Prerequisites: (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-]) 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.
Prerequisites: 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.
Prerequisites: 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

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. Lecture (Bacc Core Course).
Attributes: CSST – Core, Synthesis, Science/Technology/Society
Prerequisites: 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

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

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.
Prerequisites: ((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 204 [C-] and BI 205 [C-] and BI 206 [C-])

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.
Prerequisites: ((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 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.
Prerequisites: ((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 (CH 233 [C-] or CH 233H [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.
Prerequisites: ((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 204 [C-] and BI 205 [C-] and BI 206 [C-])
Equivalent to: BI 370H
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**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

*Prerequisites*: (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 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.

*Attributes*: CWIC – Core, Skills, WIC

*Prerequisites*: 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.

*Attributes*: CWIC – Core, Skills, WIC

*Prerequisites*: (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.

*Prerequisites*: (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 204 [C-] and BI 205 [C-] and BI 206 [C-])

**BI 399. SPECIAL TOPICS. (0-16 Credits)**
May be repeated for 16 total credits.

*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)**

*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

*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.*

**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

*Prerequisites*: 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 421. AQUATIC BIOLOGICAL INVASIONS. (4 Credits)**
An overview of the background, theory, evolution, ecology, politics and conservation of invasions by introduced species in aquatic environments. Taught at Hatfield Marine Science Center. CROSSTLISTED as FW 421.

*Equivalent to*: FW 421

*Recommended*: One year of university-level biology.

**BI 427. PALEO BIOLOGY. (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.

*Prerequisites*: (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 204 [C-] and BI 205 [C-] and BI 206 [C-])

**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.

*Prerequisites*: 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

*Prerequisites*: 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
**Prerequisites:** (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 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 551 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.
**Prerequisites:** ((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-]))

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.
**Prerequisites:** (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.
**Prerequisites:** BI 370 with D- or better or BI 370H with D- or better

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.
**Prerequisites:** (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-])

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.
**Prerequisites:** (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.
**Prerequisites:** 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/MFTinfo.

BI 499. SPECIAL TOPICS. (0-16 Credits)
Topics and credits vary.
**Equivalent to:** BI 499H

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.*