

PUBLIC HEALTH AND COMMUNITY HEALTH EDUCATION

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Public Health and Community Health Education Major

The Public Health and Community Health Education program is an interdisciplinary major that provides a foundation in principles of community health, an understanding of the biological basis of disease, social and psychological aspects of health and disease, distribution and determinants of health and disease and practical strategies for implementing health promotion programs. Evidence-based practice is emphasized throughout the curriculum, and students will design and implement health interventions. Through coursework and field experiences, this program will prepare students for successful completion of the Certified Health Education Specialist examination and for a career in community health education.

Students graduating with a major in Public Health and Community Health Education will be able to:

- Understand and apply fundamental concepts in the discipline;
 - Find and analyze primary literature in the field;
 - Analyze data, with appropriate statistical analysis;
 - Demonstrate basic knowledge and skills related to evidence-based practice;
 - Communicate health information verbally and in writing;
 - Apply health concepts, health promotion and evidence-based practice in a real-world setting.
- Public Health and Community Health Education, B.S. (<https://catalog.mcla.edu/undergraduate/academic-programs-study/public-health-and-community-health-education/public-health-and-community-health-education-bs/>)

Health

HLTH 100 Clinical Observation

1 cr

Allows the student to learn about a specific health care field through direct observation of clinical practice. The student will work with a faculty sponsor and a clinical supervisor. Students will complete clinical observation and will participate in scheduled discussions about the observation experience. This course is graded on a pass-fail basis and is repeatable to 3 credits. HLTH 100 may be paired with BIOL 500 Independent Study for advanced exploration of the field.

Prerequisite: Department approval

Repeatable: Maximum of 3 credits

HLTH 105 Medical Terminology

1 cr

Allows recognition and accurate use of terminology that describes the human body and its pathological processes, conditions and diseases. Terminology related to procedures and clinical tests will also be addressed.

HLTH 110 Introduction to Healthcare

3 cr

Provides content for a comprehensive survey and introduction to the U.S. health care system. Topics and discussions will include public health, financing of health care, health insurance, politics, health care providers, and delivery of health care. The course will introduce concepts of regulation, legislation, ethics, and elements of health care reform.

HLTH 150 Introduction to Community and Public Health

3 cr

Introduces the fields of Public Health, Health Education and Health Promotion. Topics will include the history of public health, health status, health care philosophy, health and wellness, chronic and infectious diseases, health-related behavior, health theories and program models. Students will learn to use library databases and write a review of health-related literature. A service learning component will allow students to establish projects and relationships that will benefit the community.

Attributes: Core Self & Society (CSS)

HLTH 150H Honors: Introduction to Community and Public Health

3 cr

Introduces the fields of Public Health, Health Education and Health Promotion. Topics will include the history of public health, health status, health care philosophy, health and wellness, chronic and infectious diseases, health-related behavior, health theories and program models. Students will learn to use library databases and write a review of health-related literature. A service learning component will allow students to establish projects and relationships that will benefit the community.

Attributes: Core Self & Society (CSS), Honors Program (HONR)

HLTH 195 Special Topics in Health Studies

1-4 cr

Provides students with an opportunity to explore different topics and current issues in health or related fields. This course is designed to focus on health topics or issues at the introductory level.

Repeatable: Unlimited Credits

HLTH 200 Health Promotion and Planning

3 cr

Introduces students to health promotion programs. Students will develop health education curricula and teaching strategies for individuals and groups across the life span and in a variety of settings. Students will explore curricular design theory, health education needs assessments, instructional strategies, learner characteristics, teaching materials and aids, learning environments, and evaluation methods.

HLTH 201 Exercise Science

3 cr

Facilitates an understanding of exercise based on the principles related to training basics, energy systems, muscular fitness and biomechanics. Students will learn to develop training programs for better physical performance and health.

Attributes: Core Science & Tech w/o lab (CST)

HLTH 210 Human Growth and Development

3 cr

Explores the life cycle from conception to death. Biological, sociological and psychological perspectives will be examined and applied to everyday situations and social issues.

Attributes: Core Self & Society (CSS)

HLTH 210H Honors: Human Growth and Development

3 cr

Explores the life cycle from conception to death. Biological, sociological, and psychological perspectives will be examined and applied to everyday situations and social issues.

Attributes: Core Self & Society (CSS), Honors Program (HONR)

<p>HLTH 295 Special Topics in Health Studies 1-4 cr Provides students with an opportunity to explore different topics and current issues in health or related fields. This course is designed to focus on health topics or issues at the high introductory level. Prerequisite: Will vary depending on the course Repeatable: Unlimited Credits</p>	<p>HLTH 350 Health Communication 3 cr Examines how communication affects and is intertwined with issues of health, medicine and ethics. Communication will be discussed on a personal, intimate level in the way patients and caregivers interact in the examination and hospital room; at the organizational level, in the way policies and community relations affect how health care is provided and how people feel about providers; and in media campaigns that seek to educate people about health. Prerequisite: Junior/senior status</p>
<p>HLTH 300 Ethical Issues in Health Care 3 cr Examines the moral traditions and ethical principles relevant to life, and their application in present-day clinical care and biomedical research. Introduces students to the historical, theoretical, and thematic dimensions of health care ethics. Focuses on main ethical terms and concepts, as well as decision-making procedures that students can use to discern and defend moral courses of action in health care. Prerequisite: Junior/senior status</p>	<p>HLTH 395 Special Topics in Health Studies 1-4 cr Provides students with an opportunity to explore different topics and current issues in health or related fields. This course is designed to focus on health topics or issues at the advanced level. Prerequisite: Will vary depending on the course Repeatable: Unlimited Credits</p>
<p>HLTH 310 Environmental Health 3 cr Provides a multidisciplinary understanding of the science, practice, laws and policy of environmental health sciences, addressing why risk of disease is modulated by the environment. Topics include types and sources of environmental contaminants, exposure assessment, types of microenvironments, human behavior and time-location-activity patterns, toxicology, the risk assessment paradigm, basics of environmental and occupational epidemiology, and communicating about environmental health sciences. Prerequisite: Junior/senior status and BIOL 150 or HLTH 150 or HLTH 150H</p>	<p>HLTH 495 Special Topics in Health Studies 1-4 cr Provides students with an opportunity to explore different topics and current issues in health or related fields. This course is designed to focus on health topics or issues at the high advanced level. Prerequisite: Will vary depending on course Repeatable: Unlimited Credits</p>
<p>HLTH 321 Lower Body Assessment 4 cr Explores all aspects of injury evaluation. Injuries to the lower extremity and lumbar spine will be stressed through lecture and lab. Required laboratory. Prerequisite: BIOL 342</p>	<p>HLTH 500 Health Science Independent Study 1-3 cr Open to junior and seniors who wish to read in a given area or to study a topic in depth. Written reports and frequent conferences with the advisor are required. Prerequisite: Junior/senior status and department approval Repeatable: Maximum of 12 credits</p>
<p>HLTH 322 Upper Body Assessment 4 cr Explores all aspects of injury evaluation. Injuries to the upper extremity and cervical spine will be emphasized through lecture and lab. Required laboratory. Prerequisite: BIOL 342</p>	<p>HLTH 510 Health Science Independent Research 1-3 cr For health science majors who desire to conduct research on a specific topic in a health science field. The research will be under the direction of the instructor and will require scholarly report. Prerequisite: Junior/senior status, department approval Repeatable: Maximum of 12 credits</p>
<p>HLTH 337 Therapeutic Modalities 4 cr Explores the physiology of inflammation and pain in the context of injury. Describes the principles and effects of therapeutic modalities (including thermal, acoustic, electrical, light, and mechanical) and promotes appropriate selection and application of the modalities. Required laboratory. Prerequisite: BIOL 150 and sophomore, junior, or senior status</p>	<p>HLTH 540 Internship in Community Health Education 3 cr Provides students with hands-on experience outside of the college in the field of community health and wellness. The student will work with a faculty sponsor and an off-campus supervisor, as appropriate. Repeatable up to 12 credits. Prerequisite: HLTH 200 and junior/senior status Repeatable: Maximum of 12 credits</p>
<p>HLTH 338 Therapeutic Exercise 3 cr Offers students the opportunity to study the techniques and principles involved in rehabilitation of athletic injuries. It includes all aspects of reconditioning exercise and rehabilitation program development. Prerequisite: BIOL 342</p>	<p>HLTH 590 Health Internship 1-15 cr Provides students with hands-on experience in health fields. The student will work with a faculty sponsor and an off-campus supervisor, as appropriate. Prerequisite: Junior/senior status Repeatable: Maximum of 15 credits</p>
<p>HLTH 339 Therapeutic Exercise with Lab 4 cr Offers students the opportunity to study and practice the techniques and principles involved in rehabilitation of athletic injuries. It includes all aspects of reconditioning exercise and rehabilitation program development. Required laboratory. Prerequisite: BIOL 342</p>	<p>Biology</p> <p>BIOL 100 Concepts in Biology 4 cr Provides the non-major knowledge of basic biological concepts. Concepts in Biology deals with the development of concepts in the biological science of life. Among the areas to be studied are evolution, genetics, and developmental biology: all deal with the fundamental characteristic of life: its ability to replicate over time. Required laboratory. Attributes: Core Science & Tech w/lab (CSTL)</p>

<p>BIOL 101 Biology Seminar for Majors 1 cr</p> <p>Introduces students to scientific skills that will support majors in their academic work. Explores the diversity of biological and health fields through presentations, scientific literature and communication activities, and interactions with peers and mentors. This seminar is required for students majoring in biology, health sciences and community health education.</p> <p>Prerequisite: BIOL or HLTH or CHLT Major</p>	<p>BIOL 240 Genetics 4 cr</p> <p>Examines the major aspects of heredity, with emphasis on Mendelian principles as well as multiple genes, linkage, sex chromosomes, chromosome numbers, and biochemical and population genetics. Required laboratory.</p> <p>Prerequisite: BIOL 150</p>
<p>BIOL 102 Nutrition for Healthy Living with Lab 4 cr</p> <p>Introduces the non-major to the importance of diet for present and future good health. Examines the importance of carbohydrates, fats, proteins, vitamins and minerals, and their interactions. Explores topics such as label-reading, popular diets, dietary analysis, and other issues of current interest in the field of nutrition. Required laboratory. Students may take either BIOL 102 (4 credit lab course) or BIOL 103 (3 credit non-lab course) but not both.</p> <p>Attributes: Core Science & Tech w/lab (CSTL)</p>	<p>BIOL 245 Zoology 4 cr</p> <p>Introduces the student to the biology of the invertebrate and vertebrate animals of the world through evolutionary and phylogenetic relationships. The course serves as an introduction to the major phyla. Required laboratory.</p> <p>Prerequisite: BIOL 150</p> <p>Attributes: Environmental Studies (ENVI)</p>
<p>BIOL 103 Nutrition for Healthy Living 3 cr</p> <p>Introduces the non-major to the importance of diet for present and future good health. Examines the importance of carbohydrates, fats, proteins, vitamins and minerals, and their interactions. Explores topics such as label-reading, popular diets, dietary analysis, and other issues of current interest in the field of nutrition. Students may take either BIOL 102 (4 credit lab course) or BIOL 103 (3 credit non-lab course) but not both.</p> <p>Attributes: Core Science & Tech w/o lab (CST)</p>	<p>BIOL 250 Nutrition 3 cr</p> <p>Investigates the importance of diet for present and future good health. Examines the importance of carbohydrates, fats, proteins, vitamins and minerals, and their interactions. In addition, the course explores topics such as label-reading, diets, dietary analysis and other issues of current interest.</p> <p>Prerequisite: BIOL 100 or BIOL 150</p>
<p>BIOL 105 Human Biology 3 cr</p> <p>Provides the non-major with the knowledge about the structure and function of the human body. Students will develop ability to critically evaluate a large number of issues in this field, as presented in scientific publications and the news media. Students will gain a foundation essential for making knowledgeable decisions regarding quality of life. Students will be encouraged to share experiences based on their own culture and gender.</p> <p>Attributes: Core Science & Tech w/o lab (CST)</p>	<p>BIOL 255 Biodiversity 4 cr</p> <p>Provides the non-major with focus on global, regional and local patterns of biological diversity and processes that influence these patterns. Central to discussions of biodiversity pattern and process will be scientific principles from ecology, evolution and conservation biology. The impact of humans on natural systems and biodiversity loss will also be discussed. Case studies will be used to illustrate biodiversity loss and proposals to protect and restore biodiversity. Required laboratory.</p> <p>Attributes: Core Science & Tech w/lab (CSTL)</p>
<p>BIOL 150 Introduction to Biology I: Cells 4 cr</p> <p>Introduces the student to cell biology, mitosis, meiosis, genetics, photosynthesis, respiration and cellular organisms. This course is designed for, but not limited to, students pursuing a major/minor in science. Required laboratory.</p> <p>Attributes: Core Science & Tech w/lab (CSTL), Environmental Studies (ENVI)</p>	<p>BIOL 295 Special Topics in Biology 1-4 cr</p> <p>Provides students with an opportunity to explore different topics and current issues in the field of biology. This course is designed to focus on biological issues at the high introductory level.</p> <p>Prerequisite: Will vary depending on the course</p> <p>Repeatable: Unlimited Credits</p>
<p>BIOL 160 Introduction to Biology II: Organisms 4 cr</p> <p>Introduces the student to evolution, ecology, and diversity of life. This course is designed for, but not limited to, students pursuing a major/minor in science. Required laboratory</p> <p>Prerequisite: BIOL 150 or ENVI 150H</p>	<p>BIOL 302 Applied Statistics in Biology 1 cr</p> <p>Utilizes a format of mini-lectures and group discussions of statistical analyses used in biology and health fields. One hour weekly.</p> <p>Prerequisite: MATH 232 and sophomore status</p>
<p>BIOL 195 Special Topics in Biology 1-4 cr</p> <p>Provides students with an opportunity to explore different topics and current issues in the field of biology. This course is designed to focus on biological issues at the introductory level.</p> <p>Repeatable: Unlimited Credits</p>	<p>BIOL 305 Immunology 3 cr</p> <p>Examines the structure and function of antigens, antibodies and the cellular system of immunity. Additional topics include a study of the complement system, antibody classification, and immunological tolerance. The interaction of all systems will be emphasized.</p> <p>Prerequisite: BIOL 240</p>
<p>BIOL 235 Botany 4 cr</p> <p>Overview of the fundamental principles of plant biology with emphasis on anatomy, taxonomy, physiology and evolution of algae, non-vascular and vascular plants, including major divisions of gymnosperms and angiosperms. The focus will be on plants of economic, cultural or ecological significance. Required laboratory.</p> <p>Prerequisite: BIOL 100 or BIOL 150</p> <p>Attributes: Environmental Studies (ENVI)</p>	<p>BIOL 307 Pharmacology 3 cr</p> <p>Examines the basic principles of pharmacology. Focuses on prescription and non-prescription drugs, their use, actions, indications, contraindications, misuse and abuse. Drugs will be considered on a body system basis with the appropriate consideration of the application of pharmacological principles as applied to specific body systems. Emphasis is on pharmacological applications to athletic training. Stresses the use of electronic media in both learning exercises and as a source of drug information.</p> <p>Prerequisite: BIOL 150, CHEM 150</p>

<p>BIOL 312 Epidemiology 3 cr</p> <p>Introduces the student to the field of epidemiology. Students will learn about the distribution, frequency, and determinants of patterns of disease and health conditions in various human populations.</p> <p>Prerequisite: MATH 232 and BIOL 150 or HLTH 150 or HLTH 150H</p>	<p>BIOL 332H Honors: Bryology and Lichenology 4 cr</p> <p>Provides skills in identification and knowledge of taxonomy, biology and ecology of bryophytes (mosses, liverworts, hornworts) and macrolichens, with focus on the taxa found in northeastern North America. Students will gain experience identifying these groups using hand-lenses and microscopes, dissections, and chemical testing, and will learn techniques for preparing a personal reference collection and specimens for museum-vouchered collections. Required laboratory; lab mostly outdoors.</p> <p>Prerequisite: BIOL 160 or BIOL 235</p> <p>Attributes: Honors Program (HONR)</p>
<p>BIOL 316 Functional Human Anatomy 3 cr</p> <p>Studies human anatomy as it pertains to human motion, with respect to anatomical and musculoskeletal fundamentals. Includes a review of anatomy with emphasis on the function of joints and muscles as they relate to normal human movement.</p> <p>Prerequisite: BIOL 100 or BIOL 150</p>	<p>BIOL 334 Field Botany 4 cr</p> <p>Provides skills in plant identification through extensive fieldwork and study of live and pressed specimens. Emphasis on use of keys and associated terminology, exposure to the major vascular plant groups of northeastern North America, and practice identifying unknown plants. Students will learn about identification, morphology, ecology, taxonomy, and nomenclature of large taxonomic groups such as Poaceae (grasses) and Asteraceae (aster family). Required laboratory; labs mostly outdoors.</p> <p>Prerequisite: BIOL 160 or BIOL 235</p>
<p>BIOL 317 Advanced Genetics 3 cr</p> <p>Studies selected topics in the field of genetics. Emphasizes the genetic mechanism as well as how this enables us to understand how genetics fits into the growing field of biology as well as its impact upon society.</p> <p>Prerequisite: BIOL 240</p>	<p>BIOL 340 Developmental Biology 4 cr</p> <p>Investigates the development of plants and animals at the cellular, tissue and organismal level. Topics include gametogenesis, fertilization, early development, organogenesis and the control of these processes. Required laboratory.</p> <p>Prerequisite: BIOL 240</p>
<p>BIOL 320 Microbiology 4 cr</p> <p>Investigates prokaryotic and viral microbes with emphasis on both general and clinical applications. Major topics covered are taxonomy, anatomy, morphology, reproduction and growth, bacterial control, pathogenicity, genetics and genetic engineering. Extensive laboratory protocol is provided. Required laboratory.</p> <p>Prerequisite: BIOL 240</p> <p>Attributes: Environmental Studies (ENVI)</p>	<p>BIOL 341 Conservation Biology 3 cr</p> <p>Introduces the preservation of biodiversity at all levels: genetic, population, community, ecosystem and biosphere. Topics will include population biology, extinction, wildlife and land-use management, and socioeconomic factors involved in conservation decision making.</p> <p>Prerequisite: BIOL 160 or ENVI 150 or ENVI 150H</p> <p>Attributes: Environmental Studies (ENVI)</p>
<p>BIOL 324 Marine Biology 3 cr</p> <p>Explores the factors that limit the abundance and distribution of marine organisms. Topics include the diversity of habitats, reproductive strategies and the interrelationships between organisms, as well as the influence of currents, light, temperature and nutrient supply on the abundance and distribution of life in the oceans.</p> <p>Prerequisite: BIOL 160</p> <p>Attributes: Environmental Studies (ENVI)</p>	<p>BIOL 342 Anatomy and Physiology I 4 cr</p> <p>Explores structure and function of the organ systems of the human body, with emphasis on the integumentary, skeletal, muscular, nervous and endocrine systems. The required laboratory includes histology, gross anatomy and physiology exercises. Required laboratory.</p> <p>Prerequisite: BIOL 150</p>
<p>BIOL 327 Plants and Society 3 cr</p> <p>Introduces students to the interactions between people and plants in cultures throughout the world. Topics to be discussed include the current and historical use of plants as food, fiber, fuel and medicine.</p> <p>Prerequisite: Junior/senior status</p> <p>Attributes: Environmental Studies (ENVI)</p>	<p>BIOL 343 Anatomy and Physiology II 4 cr</p> <p>Explores structure and function of the organ systems of the human body, with emphasis on the respiratory, cardiovascular, immune, renal and reproductive systems. The required laboratory includes histology, gross anatomy and physiology exercises. Required laboratory.</p> <p>Prerequisite: BIOL 150, BIOL 342</p>
<p>BIOL 327H Honors: Plants and Society 3 cr</p> <p>Introduces students to the interactions between people and plants in cultures throughout the world. Topics to be discussed include the current and historical use of plants as food, fiber, fuel and medicine.</p> <p>Prerequisite: Sophomore/junior/senior status</p> <p>Attributes: Environmental Studies (ENVI), Honors Program (HONR)</p>	<p>BIOL 351 Ornithology 4 cr</p> <p>Provides an overview of the fundamental principles of avian biology with emphasis on ecological and behavioral aspects of ornithology. Students will learn to identify about 100 regional species by sight and/or sound. A semester long project will encourage students to investigate and read the ornithological peer-reviewed scientific literature. Lab activities will include field trips to practice identifying birds and collecting avian field data. Required laboratory.</p> <p>Prerequisite: BIOL 100 or BIOL 150 or ENVI 150 or ENVI 150H</p> <p>Attributes: Environmental Studies (ENVI)</p>
<p>BIOL 330 Journal Article Discussion 1 cr</p> <p>Utilizes a format of individual presentations and group discussions of journal articles related to topics in biology or health. One hour weekly.</p> <p>Prerequisite: BIOL 101 and junior/senior status</p> <p>Repeatable: Unlimited Credits</p>	
<p>BIOL 332 Bryology & Lichenology 4 cr</p> <p>Provides skills in identification and knowledge of taxonomy, biology and ecology of bryophytes (mosses, liverworts, hornworts) and macrolichens, with focus on the taxa found in northeastern North America. Students will gain experience identifying these groups using hand-lenses and microscopes, dissections, and chemical testing, and will learn techniques for preparing a personal reference collection and specimens for museum-vouchered collections. Required laboratory; labs mostly outdoors.</p> <p>Prerequisite: BIOL 160 or BIOL 235</p>	

<p>BIOL 353 Entomology 4 cr</p> <p>Prepares students to confidently key specimens of New England insects and other relevant taxa to the family, genus or species level. Students will gain extensive practice in examining insects and other relevant invertebrates using hand-lenses and microscopes, as well as identifying live and preserve specimens using dichotomous keys and associated terminology. Students will learn techniques for assembling a personal reference collection and preparing specimens for museum-vouchered collections. Required laboratory.</p> <p>Prerequisite: BIOL 160</p>	<p>BIOL 403 Applied Nutrition 3 cr</p> <p>Explores current issues and topics of interest in nutrition, including but not limited to athletic performance, human development, human disease and nutritional therapy, with focus on primary literature.</p> <p>Prerequisite: BIOL 250, junior/senior status</p>
<p>BIOL 354 Ecology 4 cr</p> <p>Investigates community and ecosystem structure and function, energy transformation, matter cycling, abiotic factors, food webs, symbiosis and populations. Required laboratory.</p> <p>Prerequisite: BIOL 160 or ENVI 150 or ENVI 150H</p>	<p>BIOL 405 Animal Physiology 4 cr</p> <p>Explores structure and function of major animal organ systems, addressing mechanisms for maintaining homeostasis and body functions. Both vertebrate and invertebrate examples will be used, and experimentation and primary literature will be emphasized. Required laboratory.</p> <p>Prerequisite: BIOL 160, junior/senior status</p>
<p>BIOL 360 Biochemistry 3 cr</p> <p>Surveys the structure and properties of biologically important compounds: carbohydrates, proteins, amino acids, lipids, nucleic acids, and vitamins. Other topics to be covered include enzyme activity, cellular metabolism and protein synthesis.</p> <p>Prerequisite: CHEM 201</p>	<p>BIOL 410 Biotechniques 4 cr</p> <p>Explores major techniques in the fields of biochemistry, cellular biology and molecular biology. This course is designed to be completely laboratory based.</p> <p>Prerequisite: BIOL 160, BIOL 240, junior/senior status</p>
<p>BIOL 361 Advanced Biochemistry 3 cr</p> <p>Studies the chemical dynamics in living systems. Topics include enzymes mechanisms, metabolism and its regulation, and energy production and utilization.</p> <p>Prerequisite: BIOL 360</p>	<p>BIOL 412 Research Methods in Epidemiology 3 cr</p> <p>Introduces the student to research methods in the field of epidemiology. Students will learn the value of research methodology as applied to the field of epidemiology with a focus on concepts and interpretation of basic research design and statistical analysis.</p> <p>Prerequisite: BIOL 312 and junior/senior status</p>
<p>BIOL 361H Honors: Advanced Biochemistry 3 cr</p> <p>Studies the chemical dynamics in living systems. Topics include enzymes mechanisms, metabolism and its regulation, and energy production and utilization.</p> <p>Prerequisite: BIOL 360</p> <p>Attributes: Honors Program (HONR)</p>	<p>BIOL 418 Parasitology 4 cr</p> <p>Introduces students to the principles of parasitology and the related health concerns to humans and animals. Parasites from the following categories will be covered: protozoa, platyhelminthes, nematoda and arthropoda. Required laboratory.</p> <p>Prerequisite: BIOL 150 and junior/senior status</p>
<p>BIOL 375 Aquatic Ecology 4 cr</p> <p>Focuses on the physical, chemical, and biological environment of freshwater systems, as well as on common methods used in the study of these systems. Concepts will be applied to addressing current challenges in conserving freshwater resources. Required laboratory.</p> <p>Prerequisite: BIOL 100 or BIOL 150 or ENVI 150H</p>	<p>BIOL 420 Bioinformatics 3 cr</p> <p>Introduces the fundamental algorithms used in bioinformatics and how these algorithms can be used to solve biological problems. In this class, the students will learn how bioinformatics algorithms work, as well as how to obtain sequence data from scientific databases and analyze these data using tools available on a high-performance computer.</p> <p>Prerequisite: CSCI 243, BIOL 240, junior/senior status</p>
<p>BIOL 380 Evolution 3 cr</p> <p>Examines the history of evolutionary thought and the processes of organic evolution. Students will present selected topics to the class. Guest speakers will present the effects of Darwinian thinking in such disciplines as philosophy, anthropology, psychology, sociology and religion.</p> <p>Prerequisite: BIOL 240</p>	<p>BIOL 424 Field Study in Marine Biology 4 cr</p> <p>Students will conduct research studies in marine habitats. Field work will take place in the Bahamas over spring break. Students will have the opportunity to visit a variety of habitats, such as sandy intertidal zones, estuaries, mangrove forests, shallow benthic areas and coral reefs (barrier, fringing and patch). Students will plan studies, conduct research at the field station, prepare a research report and present their findings.</p> <p>Prerequisite: BIOL 324, instructor approval, and junior/senior status</p> <p>Attributes: Additional Fees Apply (FEE)</p>
<p>BIOL 390 Biometry 3 cr</p> <p>Application-oriented introduction to data analysis in the context of biology. Students will learn to statistically analyze and interpret data collected from a variety of biological experiments.</p> <p>Prerequisite: Junior status and MATH 150, or MATH 220, or MATH 232</p>	<p>BIOL 440 Exercise Physiology 4 cr</p> <p>Develops an understanding of the phenomena involved in optimum physiological functioning during work performance, whether it be in everyday living or athletic participation. Provides students with an understanding of the physiological aspects of exercise and its practical applications. Required laboratory.</p> <p>Prerequisite: BIOL 343 and junior/senior status</p>
<p>BIOL 395 Special Topics in Biology 1-4 cr</p> <p>Provides students with an opportunity to explore different topics and current issues in the field of biology. This course is designed to focus on biological issues at the advanced level.</p> <p>Prerequisite: Will vary depending on the course</p> <p>Repeatable: Unlimited Credits</p>	

<p>BIOL 445 Pathophysiology Provides an in-depth survey of physiological causes and pathological development of diseases that affect various organ systems in the body. Pathologies will be examined at the molecular, cellular, tissue and organ levels, with emphasis on the homeostatic disturbances that lead to disease conditions. Current research insights relating to disease states will be addressed throughout the course. Prerequisite: BIOL 343</p>	3 cr	<p>BIOL 493 BMC: Clinical Immunology Introduces the student to the immune system and the immune response. Discusses immune detection, immunodeficiency disorders, autoimmune diseases, hypersensitivity, and tumor and transplant immunology. Discusses the antigen-antibody complex and the relationship to current testing methodology. The student applies this theory in the clinical lab using current immunologic techniques and instrumentation to correlate lab results to disease processes. Tech. Clinical Lab Experience. Prerequisite: Department approval, requires acceptance and enrollment in MCLA-BMC Med</p>	1 cr
<p>BIOL 450 Animal Behavior Introduces the topic of animal behavior, exploring the principles of ecology, evolution, development, and ethology. The course will examine behavioral adaptation (including physiological, ecological, and evolutionary aspects) from individuals to population-level interactions. Topics include: foraging, anti-predator, and mating strategies; mechanistic control of behavior, sociality, and aggression. Laboratory component will focus on observation, communication, and experimental design. Prerequisite: BIOL 160, BIOL 240, junior/senior status</p>	4 cr	<p>BIOL 494 BMC: Clinical Hematology Introduces students to the study of the hematopoietic system including the relationship of hematologic diseases to diagnostic characteristics. Discusses erythrocyte and leukocyte disorders; cellular morphology, mechanisms and disorders of hemostasis and fibrinolysis; and principles of test methodology. The student applies this theory in the clinical lab using current diagnostic techniques and instrumentation to correlate lab results to disease processes. Tech. Clinical Lab Experience. Prerequisite: Department approval, requires acceptance and enrollment in MCLA-BMC Med</p>	8 cr
<p>BIOL 475 Special Topics in Biology Provides students with an opportunity to explore different topics and current issues in the field of biology. This course is designed to focus on biological issues at the high advanced level. Prerequisite: Will vary depending on the course Repeatable: Unlimited Credits</p>	1-4 cr	<p>BIOL 495 BMC: Clinical Urinalysis and Body Fluids Introduces the student to the study of body fluids including urine, cerebral spinal fluid, synovial fluid, serous fluids, seminal fluid and miscellaneous other fluids. Discusses specimen collection and analysis. The student applies this theory in the clinical lab using current diagnostic techniques and instrumentation to correlate lab results with disease processes. Tech. Clinical Lab Experience. Prerequisite: Department approval, requires acceptance and enrollment in MCLA-BMC Med</p>	1 cr
<p>BIOL 480 Cell & Molecular Biology Examines the pioneering research in eukaryotic cell and molecular biology. Topics covered include structure and function of organelles, membrane dynamics, intracellular targeting, metabolism, eukaryotic replication, transcription, and translation, and applications to biotechnology. The required laboratory component emphasizes current cell and molecular techniques. Prerequisite: BIOL 240 and junior/senior status</p>	4 cr	<p>BIOL 496 BMC: Clinical Microbiology Introduces the student to the study of bacterial, fungal, parasitic and viral infections in humans. Discusses transmission, clinical symptoms, specimen collection and laboratory methods used to identify suspect organisms. Discusses prevention, as well as antibiotic therapy. The student applies this theory in the clinical lab to isolate and identify pathogens, to provide antibiotic sensitivity information, and to correlate culture results with disease states. Tech. Clinical Lab Experience. Prerequisite: Department approval, requires acceptance and enrollment in MCLA-BMC Med</p>	8 cr
<p>BIOL 484 Biomechanics Provides instruction in those competencies essential to the study of the human body as a machine for the performance of work. Enables effective understanding and/or evaluation of motor skills and their effect on the human structure. Prerequisite: BIOL 316 or BIOL 342 and junior/senior status</p>	3 cr	<p>BIOL 497 BMC: Clinical Immunohematology Introduces the student to the different human blood groups, blood components, the antibody screening and identification process, transfusion protocols, blood donor screening, and state and federal regulations. The student applies this theory in the clinical lab to process blood and its components, determine blood product compatibility, apply appropriate quality control and correlate patient results to blood disorders. Tech. Clinical Lab Experience. Prerequisite: Department approval, requires acceptance and enrollment in MCLA-BMC Med</p>	5 cr
<p>BIOL 491 BMC: Clinical Chemistry Introduces the student to the physiology of the organ systems of the body and the various analytes that interact with them. Discusses abnormal physiology and relates to various disease states. Discusses the principles of test methodology. The student applies this theory to the clinical lab using current diagnostic techniques and instrumentation to correlate lab results to disease processes. Prerequisite: Department approval, requires acceptance and enrollment in MCLA-BMC Med Tech Clinical Lab Experience</p>	8 cr	<p>BIOL 499 Teaching Assistant in Biology Provides the opportunity for a student to assist in the preparation and implementation of a biology course. Prerequisite: Department approval Repeatable: Maximum of 6 credits</p>	1-3 cr
<p>BIOL 492 BMC: Clinical Molecular Biology Introduces the student to the basic structure and function of DNA. Discusses the impact of molecular genetics in medicine and specific methods for analysis. The student applies this theory in the molecular biology laboratory using current diagnostic techniques and instrumentation to correlate lab results with disease. Tech. Clinical Lab Experience. Prerequisite: Department approval, requires acceptance and enrollment in MCLA-BMC Med</p>	1 cr		

BIOL 500 Biology Independent Study 1-3 cr

Open to juniors and seniors who wish to read in a given area or to study a topic in depth. Written reports and frequent conferences with the advisor are required.

Prerequisite: Junior/senior status, department approval

Repeatable: Maximum of 12 credits

BIOL 510 Biology Independent Research 1-3 cr

For biology majors who desire to conduct research on a specific topic in biology. The research will be under the direction of the instructor and will require a scholarly report.

Prerequisite: Department approval

Repeatable: Maximum of 15 credits

BIOL 540 Biology Internship 1-15 cr

Offers the student an opportunity to practice in a professional situation relevant to the biology major. The student will work with a faculty sponsor and an off-campus supervisor, as appropriate.

Prerequisite: Department approval, junior/senior status

Repeatable: Maximum of 15 credits