Chairperson: Jerry Smosky, Ph.D.
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BIOLOGY

PROGRAMS AVAILABLE

BACHELOR OF ARTS IN BIOLOGY
BIOLOGY MINOR
CONCENTRATION IN PRE-MED
CONCENTRATION IN SPORTS MEDICINE
CONCENTRATION IN MEDICAL TECHNOLOGY
CONCENTRATION IN CYTOTECHNOLOGY
TEACHING LICENSURE

BIOLOGY MAJOR PROGRAM

The Department of Biology offers a four-year program leading to a Bachelor of Arts in Biology. The program employs traditional and contemporary approaches to the study of life. Students of traditional biology seek to learn and understand plants and animals in their natural environments. Contemporary biology entails detailed exploration of the molecular processes essential to the origin, evolution, and physiological mechanisms of all forms of life. The combination of traditional and contemporary approaches supplies the basic knowledge for molecular biology, allied health, and environmental biology and provides preparation for advanced study in other biological disciplines. Upon completion of their program, graduates will be able to:

- communicate effectively both orally and in writing;
- enhance thinking, reasoning and problem solving skills, so as to build a repertoire of laboratory and other technical skills

Foundation Courses

BIOL	150	Foundations of Biology (1st semester)	4 cr
BIOL	235	Botany (2nd semester)	4 cr
BIOL	240	Genetics (3rd semester)	4 cr
BIOL	245	Zoology (4th semester)	4 cr

Biology Major Requirements

BIOL	330	Seminar (2)	2 cr
BIOL	460	Ecology	4 cr
BIOL	480	Cell Biology	4 cr

Biology Electives 9 cr
upper division biology courses
(excluding BIOL 316, 336, 337, 338, 484)

CHEM	150	Introduction to Chemistry I	4 cr
CHEM	152	Introduction to Chemistry II	4 cr
CHEM	201	Organic Chemistry I	4 cr
CHEM	202	Organic Chemistry II	4 cr
PHYS	131	General Physics I	4 cr
PHYS	132	General Physics II	4 cr

TOTAL BIOLOGY MAJOR REQUIREMENTS 59

CONCENTRATION IN PRE-MED

The Biology Department's Pre-Med Concentration provides the solid science background necessary for admission to medical school. In addition to classwork, pre-med students are strongly encouraged to gain experience through undergraduate research, clinical internships, and volunteer work in the medical field. The Biology Department's pre-med concentration facilitates this process.

Pre-Med Concentration Requirements

Biology Major Foundation Courses		16 cr
BIOL 310	Animal Physiology	4 cr
BIOL 330	Seminar (2)	2 cr
BIOL 360	Biochemistry	4 cr
BIOL 480	Cell Biology	4 cr
PHYS 131	General Physics I	4 cr
PHYS 132	General Physics II	4 cr
CHEM 150	Introduction to Chemistry I	4 cr
CHEM 152	Introduction to Chemistry II	4 cr
CHEM 201	Organic Chemistry I	4 cr
CHEM 202	Organic Chemistry II	4 cr
Biology Electives (upper level Biology)		9 cr

Recommended Courses

MATH 220 Calculus
MATH 232 Statistics
1 year of English
BIOL 314 Human Anatomy
Ethics courses

TOTAL PRE-MED CONCENTRATION REQUIREMENTS 63

MCLA-NEW YORK COLLEGE OF PODIATRIC MEDICINE ARTICULATION PROGRAM

This agreement allows MCLA students to simultaneously complete their senior year of undergraduate study and their first year of podiatric medicine at the New York College of Podiatric Medicine (NYCPM). MCLA will count credits from NYCPM toward a B.A. in Biology. Students must meet admission requirements of NYCPM and fulfill departmental and articulation agreement requirements to be eligible for this program. Please contact the Biology Department for more information.

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CONCENTRATION IN SPORTS MEDICINE

The Biology Department offers a program that qualifies students for certification by the National Athletic Trainer's Association. Completion of the required course work and 1500 clinical clock hours fulfills requirements to be eligible for certification as an athletic trainer. Clinical hours are conducted in the MCLA training room under the supervision of the College's Certified Athletic Trainer. Experience in this setting involves work with intercollegiate athletes, intramural programs, special events, and local high school athletes.

Students wishing to enter this concentration must take Beginning Athletic Training and Advanced Athletic Training and make formal application by the end of the freshman year. Grades, career intentions, and interest in sports medicine will be the primary criteria for acceptance into the concentration.

Sports Medicine Concentration Requirements

Biology Major Foundation Courses			16 cr
BIOL	220	Beginning Athletic Training	3 cr
BIOL	225	Adapted Physical Education	3 cr
BIOL	250	Nutrition	3 cr
BIOL	310	Animal Physiology	4 cr
BIOL	314	Human Anatomy	4 cr
BIOL	316	Functional Human Anatomy	3 cr
BIOL	336	Advanced Athletic Training	3 cr
BIOL	337	Modalities in Athletic Training	3 cr
BIOL	338	Principles & Procedures of Reconditioning Exercise	3 cr
BIOL	440	Physiological Aspects of Exercise	3 cr
BIOL	484	Biomechanical Analysis of Human Movement	3 cr
BIOL	540	Biology Internship	3-15 cr
CHEM	150	Introduction to Chemistry I	4 cr
CHEM	152	Introduction to Chemistry II	4 cr
PHED	108	Community First Aid and Safety	1 cr
PHED	215	Lifetime Wellness	3 cr
PSYC	100	Introduction to Psychology	3 cr
PSYC	210	Developmental Psychology	3 cr

TOTAL SPORTS MEDICINE CONCENTRATION REQUIREMENTS 72-84

CONCENTRATION IN MEDICAL TECHNOLOGY

The Department of Biology offers a four-year program in medical technology.

Students spend their first three years on the Massachusetts College of Liberal Arts campus obtaining a liberal arts education with a broad background in science, thereby providing the education necessary for professional responsibilities. The fourth year of the program consists of coursework in an accredited hospital with a school of medical technology. During the hospital coursework, students receive clinical laboratory training. Hospitals and adjunct faculty affiliated with Massachusetts College of Liberal Arts are as follows:

BERKSHIRE MEDICAL CENTER, Pittsfield
Lori Moore, B.S., MT (ASCP) Educational Coordinator
Rebecca Johnson, MD, Medical Director

Medical Technology Concentration Requirements

Biology Major Foundation Courses			16 cr
BIOL	305	Immunology	3 cr
BIOL	310	Animal Physiology	4 cr
BIOL	314	Human Anatomy	4 cr
BIOL	320	Microbiology	4 cr
BIOL	491	BMC: Clinical Chemistry	8 cr
BIOL	492	BMC: Clinical Molecular Biology	1 cr
BIOL	493	BMC: Clinical Immunology	1 cr
BIOL	494	BMC: Clinical Hematology	8 cr
BIOL	495	BMC:Clinical Urinalysis & Body Fluid	1 cr
BIOL	496	BMC: Clinical Microbiology	8 cr
BIOL	497	BMC: Clinical Immunohematology	5 cr
CHEM	150	Introduction to Chemistry I	4 cr
CHEM	152	Introduction to Chemistry II	4 cr
CHEM	201	Organic Chemistry I	4 cr
CHEM	202	Organic Chemistry II	4 cr
or BIOL	360	BioChemistry	
MATH	232	Introduction to Statistics	3 cr

TOTAL MEDICAL TECHNOLOGY CONCENTRATION REQUIREMENTS 82

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CONCENTRATION IN CYTOTECHNOLOGY

The Department of Biology offers a four-year program in cytotechnology.

Students spend their first three years on the Massachusetts College of Liberal Arts campus obtaining a liberal arts education with a broad background in science, thereby providing the education necessary for professional responsibilities. The fourth year of the program consists of an internship in an accredited hospital with a school of cytotechnology. During the hospital internship, students receive clinical laboratory training. Hospitals and adjunct faculty affiliated with Massachusetts College of Liberal Arts are as follows:

BERKSHIRE MEDICAL CENTER, Pittsfield
Judy Shaffer, SCT (ASCP) Educational Coordinator
Rebecca Johnson, MD, Medical Director

Cytotechnology Concentration Requirements

Biology Major Foundation Courses			16 cr
BIOL	310	Animal Physiology	4 cr
BIOL	314	Human Anatomy	4 cr
BIOL	590	Internship (Clinical Lab Exper.)	30-32 cr
CHEM	150	Introduction to Chemistry I	4 cr
CHEM	152	Introduction to Chemistry II	4 cr
CHEM	201	Organic Chemistry I	4 cr
4 credits of BIOL electives at 300-level			4 cr
TOTAL CYTOTECHNOLOGY CONCENTRATION REQUIREMENTS			**70-72**

BIOLOGY MINOR PROGRAM

Requirements

BIOL	100	Concepts in Biology	4 cr
or BIOL	150	Foundations in Biology	
BIOL	235	Botany	4 cr
BIOL	240	Genetics	4 cr
BIOL	245	Zoology	4 cr
1 additional upper level 3-4 cr course			3-4 cr
TOTAL BIOLOGY MINOR REQUIREMENTS			**19-20**

TEACHING LICENSURE

Students majoring in biology may opt to pursue initial teacher licensure as an early childhood teacher or elementary teacher. Also, biology majors may pursue initial licensure as a teacher of biology for the middle school or secondary levels. Students seeking any of these licensures must complete a biology major, education major and a licensure program in education.

BIOLOGY AWARDS

Awards will be given annually to graduating seniors who have demonstrated outstanding performance in course work as well as in independent research. Students recommended for this award must meet the following criteria:

- A minimum overall GPA of 3.20
- A minimum GPA of 3.50 in courses counting towards the Biology major
- Above average achievement in at least one semester of independent research. Result of the research project must be presented at the College's Undergraduate Research Conference.
- A minimum of 16 BIOL credit hours taken at MCLA (not counting independent research credit hours)

COURSE LISTINGS

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.
Prerequisite: None

BIOL 105 Human Biology **3 cr**
Provides students with 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.
Prerequisite: None

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BIOL 150 Foundations of Biology **4 cr**
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.
Prerequisite: None

BIOL 220 Beginning Athletic Training **3 cr**
Explores fundamental principles of athletic training, which include terminology, injury cycles, human anatomy, and specific injuries.
Prerequisite: None

BIOL 225 Adapted Physical Education **3 cr**
Provides knowledge and skills to plan, implement, and evaluate motor development and physical education programs for those with special needs. Learning disabilities, mental retardation, sensory disorders, and orthopedic disabilities are some of the areas emphasized.
Prerequisite: None

BIOL 235 Botany **4 cr**
Surveys the plant kingdom through an examination of anatomy, morphology, and reproduction of the major plant divisions. Required laboratory.
Prerequisite: BIOL 100 or BIOL 150

BIOL 240 Genetics **4 cr**
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.
Prerequisite: BIOL 150

BIOL 245 Zoology **4 cr**
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.
Prerequisite: BIOL 150 or its equivalent

BIOL 250 Nutrition **3 cr**
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.
Prerequisite: BIOL 100 or BIOL 150

BIOL 255 Biodiversity **4 cr**
Focuses on global, regional, and local patterns of biological diversity and the processes that influence these patterns. Central to discussions of biodiversity pattern and process will be the relevant scientific principles from ecology, evolution, and conservation biology. The impact of humans on natural systems and biodiversity loss will also be discussed. Specific case studies will be used to illustrate biodiversity loss and proposals to protect and restore biodiversity.
Prerequisite: None

BIOL 260 Applied Pharmacology **3 cr**
Examines the basic principles of pharmacology and drug usage emphasizing applications to Sports Medicine. 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. Stresses the use of electronic media in both learning exercises and as a source of drug information.
Prerequisite: BIOL 150

BIOL 300 Histology **4 cr**
Observes human tissues from the structural and functional viewpoint. Emphasis is placed on cell types and the function of each tissue in the body's organs and organ systems. Required laboratory.
Prerequisite: BIOL 240

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BIOL 305 Immunology **3 cr**
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.
Prerequisite: BIOL 240

BIOL 310 Animal Physiology **4 cr**
Explores man and other vertebrates, in regard to the structure and function of the basic tissue types and the major organ systems with major emphasis on normal functions and the interactions of each organ system to insure homeostasis. Required laboratory.
Prerequisite: BIOL 150

BIOL 314 Human Anatomy **4 cr**
Covers basic concepts associated with the discipline of Human Anatomy at the cellular histological and gross anatomy level. Body systems such as skeletal, muscular, circulatory, nervous and endocrine are included. Oral and written communications and critical thinking will also be emphasized. Required Laboratory.
Prerequisite: BIOL 150

BIOL 316 Functional Human Anatomy **3 cr**
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.
Prerequisite: BIOL 100 or BIOL 150

BIOL 317 Advanced Genetics **3 cr**
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.
Prerequisite: BIOL 240

BIOL 318 Parasitology **4 cr**
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.
Prerequisite: BIOL 245

BIOL 320 Microbiology **4 cr**
Investigates procaryotic 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.
Prerequisite: BIOL 240

BIOL 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 314 or BIOL 310

BIOL 322 Upper Body Assessment **4 cr**
Explores all aspects of injury evaluation. Injuries to the upper extremity, head and cervical spine will be stressed through lecture and lab. Required laboratory.
Prerequisite: BIOL310 or BIOL 314

BIOL 324 Marine Biology **3 cr**
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.
Prerequisite: BIOL 235 & BIOL 245 or permission of instructor

BIOL 325 Aquatic and Wetland Botany **4 cr**
Introduces the student to the biology of aquatic and wetland plants, including their identification and distribution. Emphasis will be on the plants of New England. Required laboratory.
Prerequisite: None

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BIOL 327 Plants and Society **3 cr**
Introduces students to the plants of the world and their influence on various cultures. Topics to be discussed include: economic plants (positive and negative on society), spread of plants by various cultures, world-wide problems due to the movement of plants, and the future of plants in relationship to humans and society.
Prerequisite: None

BIOL 330 Biology Seminar **1 cr**
Utilizes a format of individual reports and/or group discussions of current papers, topics, or problems in the biological sciences. One hour weekly.
Prerequisite: Junior/senior biology majors

BIOL 335 Biology of Australia **3 cr**
Introduces the student to the biology of Australia based on the interaction of man with the land, fauna and flora. Topics discussed include the formation of the continent, geography, political boundaries, history of settlement, biogeography and natural history of representative animals including invertebrates, reptiles, birds, and mammals.
Prerequisite: Junior status or permission of instructor

BIOL 336 Advanced Athletic Training **3 cr**
Investigates in depth, functional human anatomy and its relationship with mechanisms of injury. Students will develop injury assessment protocols.
Prerequisite: BIOL 220

BIOL 337 Modalities in Athletic Training **3 cr**
Studies neurophysiology and human physiology. Students will learn how these systems are affected when microfailure has occurred. Students will also learn how to use the therapeutic modalities and develop specific protocols that will affect the recovery of the microfailure.
Prerequisite: Acceptance into the Sports Medicine Concentration or instructor approval

BIOL 338 Principles and Procedures of Reconditioning Exercise **3 cr**
Studies the techniques and principles involved in rehabilitation of athletic injuries. Topics included are therapeutic and re-conditioning exercise, weight training/conditioning, psychological and physiological considerations, and proper program construction.
Prerequisite: BIOL 337

BIOL 340 Developmental Biology **4 cr**
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.
Prerequisite: BIOL 240

BIOL 345 Vertebrate Natural History **3 cr**
Surveys the life histories, ranges, behavior, and general information of the vertebrates of North America, including fishes, amphibians, reptiles, birds and mammals.
Prerequisite: BIOL 100 or BIOL 150

BIOL 360 Biochemistry **4 cr**
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. Required laboratory.
Prerequisite: CHEM 201

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BIOL 371 Forest Environment **4 cr**
Provides the student a background and introduction to the forest ecosystem. The temperate forest of the Northeast will exemplify the principles discussed. Required laboratory.
Prerequisite: Junior status

BIOL 380 Evolution **3 cr**
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.
Prerequisite: Junior status and/or department approval

BIOL 395 Special Topics in Biology **1-4 cr**
A course or seminar for students who have taken a substantial number of biology courses. This course may explore any of a variety of topics.
Prerequisite: Junior/senior status and department approval

BIOL 440 Physiological Aspects of Exercise **3 cr**
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.
Prerequisite: BIOL 150, BIOL 310, or department approval

BIOL 460 Ecology **4 cr**
Investigates community and ecosystem structure and function, energy transformation, matter cycling, abiotic factors, food webs, symbiosis, and populations. Required laboratory.
Prerequisite: BIOL 245

BIOL 480 Cell Biology **4 cr**
Explores the eukaryotic and prokaryotic cell. Examines the cellular processes of transport phenomena, membrane metabolism, growth, and reproduction, with detailed coverage of the ultrastructure and function of cellular organelles. Laboratory emphasizes development of investigative techniques and genetic engineering. Required laboratory.
Prerequisite: Senior status

BIOL 484 Biomechanical Analysis of Human Movement **3 cr**
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

BIOL 491 BMC: Clinical Chemistry **8 cr**
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 Medical Technology Clinical Lab Experience

BIOL 492 BMC: Clinical Molecular Biology **1 cr**
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.
Prerequisite: Department approval, requires acceptance and enrollment in MCLA-BMC Medical Technology Clinical Lab Experience

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BIOL 493 BMC: Clinical Immunology **1 cr**
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.
Prerequisite: Department approval, requires acceptance and enrollment in MCLA-BMC Medical Technology Clinical Lab Experience

BIOL 494 BMC: Clinical Hematology **8 cr**
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.
Prerequisite: Department approval, requires acceptance and enrollment in MCLA-BMC Medical Technology Clinical Lab Experience

BIOL 495 BMC: Clinical Urinalysis and Body Fluids **1 cr**
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.
Prerequisite: Department approval, requires acceptance and enrollment in MCLA-BMC Medical Technology Clinical Lab Experience

BIOL 496 BMC: Clinical Microbiology **8 cr**
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.
Prerequisite: Department approval, requires acceptance and enrollment in MCLA-BMC Medical Technology Clinical Lab Experience

BIOL 497 BMC: Clinical Immunohematology **5 cr**
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.
Prerequisite: Department approval, requires acceptance and enrollment in MCLA-BMC Medical Technology Clinical Lab Experience

BIOL 500 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

BIOL 510 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

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BIOL 540 Biology Internship **3-15 cr**
Internships in areas such as ecology, molecular/cellular biology, botanical, microbial science or as health or laboratory teaching assistants may be elected by students of advanced standing. The objective is for students to gain actual field experience in a particular area under professional supervision.
Prerequisite: Department approval, junior or senior status

BIOL 580 Special Topics in Biology **1-4 cr**
Examines topics in biology including cell biology, organismal biology, ecology, and evolution. Emphasis is on biology content related to Elementary and/or Middle School Biology. Not open to biology majors.
Prerequisite: Department approval

BIOL 590 Medical Technology/Cytotechnology Internship **30-32 cr**
A specialized internship taken during the fourth year in an accredited hospital with a medical technology or cytotechnology program. During the internship students receive clinical laboratory training.
Prerequisite: Department approval/senior status