

# BIOLOGICAL SCIENCES

## Programs

- Biochemistry/Molecular Biology, Bachelor of Science (<http://catalog.ben.edu/lisle-undergraduate/academic-programs/biological-sciences/biochemistry-molecular-biology-bs/>)
- Biology, Bachelor of Arts (<http://catalog.ben.edu/lisle-undergraduate/academic-programs/biological-sciences/biology-ba/>)
- Biology, Bachelor of Science (<http://catalog.ben.edu/lisle-undergraduate/academic-programs/biological-sciences/biology-bs/>)
- Health Science, Bachelor of Science (<http://catalog.ben.edu/lisle-undergraduate/academic-programs/biological-sciences/health-science-bs/>)
- Sport and Exercise Science, Bachelor of Science (<http://catalog.ben.edu/lisle-undergraduate/academic-programs/biological-sciences/sport-exercise-science-bs/>)
- Environmental Science (<http://catalog.ben.edu/lisle-undergraduate/academic-programs/biological-sciences/environmental-science/>)
- Exercise and Sports Studies (<http://catalog.ben.edu/lisle-undergraduate/academic-programs/biological-sciences/exercise-sports-studies/>)
- Biology, Minor (<http://catalog.ben.edu/lisle-undergraduate/academic-programs/biological-sciences/biology-minor/>)
- Strength & Conditioning, Minor (<http://catalog.ben.edu/lisle-undergraduate/academic-programs/biological-sciences/strength-conditioning-minor/>)
- Personal Fitness, Minor (<http://catalog.ben.edu/lisle-undergraduate/academic-programs/biological-sciences/personal-fitness-minor/>)
- Sport Management, Minor (<http://catalog.ben.edu/lisle-undergraduate/academic-programs/biological-sciences/sport-management-minor/>)

## Courses

### Biology

**BIOL 1116 Engaged Learning Experience in Biology.** (Formerly 116) Opportunity for motivated students to work on a continuing or delineated project with a faculty member. Students will develop practical skills rooted in basic biology knowledge. Prerequisite: "C" or better in BIOL 1197 or 2297. Cross listed as INQ 1116/BIOL 1116. 0 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 0.

**Designation:** Engaged Learning

**Campus:** LISLE (Typically Offered: Fall, Spring, and Summer Terms)  
MESA (Typically Offered: Fall, Spring, and Summer Terms)

**BIOL 1120 Genetics of Everyday Life.** (Formerly 120) Introduces the non-science major to the classical principles of genetics. Emphasis is on human genetic disease and genetic biotechnology including social, cultural and ethical implications. IAI L1906 3 semester credit hour/s.

**Designation:** Life-Scientific (QLS)

**Campus:** LISLE (Typically Offered: Periodically)  
MESA (Typically Offered: Periodically)

**BIOL 1124 Human Health and Disease.** (Formerly 124) Human Health and Disease is designed to introduce students to the general concepts of health and human diseases. The major goal of this course is to cover main principles of disease presentation, risk factors, diagnosis, treatment, and prevention. Diseases and physiological systems will vary from semester to semester. 3 semester credit hour/s.

**Designation:** Life-Scientific (QLS)

**Campus:** LISLE (Typically Offered: Periodically)  
MESA (Typically Offered: Periodically)

**BIOL 1134 Biology of Non-Human Primates.** (Formerly 134) This course is an introduction to the biology and behavior of non-human primates. Specifically, we will focus on the characteristics that define the primate order and examine the similarities and differences among the various groups of primates, including lemurs, lorises, tarsiers, monkeys and apes. Additionally, topics such as growth and development, cognition and communication, diet and feeding strategies and mating patterns will be explored. This course emphasizes scientific methodology and critical thinking. 3 semester credit hour/s.

**Designation:** Life-Scientific (QLS)

**Campus:** LISLE (Typically Offered: Periodically)  
MESA (Typically Offered: Periodically)

**BIOL 1135 Forensics.** (Formerly 135) Fundamental principles and methods of biological forensics. Intended for non-biology majors. 3 semester credit hour/s.

**Designation:** Life-Scientific (QLS)

**Campus:** LISLE (Typically Offered: Periodically)  
MESA (Typically Offered: Periodically)

**BIOL 1140 Origins of Humanity.** (Formerly 140) Introduction to human evolution. Introduces the nonscience major to what the fossil record reveals, the place of humans in the natural world and the biological reasons for modern human physical variation. 3 semester credit hour/s.

**Designation:** Life-Scientific (QLS)

**Campus:** LISLE (Typically Offered: Periodically)  
MESA (Typically Offered: Periodically)

**BIOL 1144 Science at the Movies.** (Formerly 144) An investigation of a wide variety of current scientific topics such as genetic engineering, space exploration and epidemiology through the lens of popular films and television. Students will learn the science behind the stories and critically consider how science and scientists are presented in popular media. 3 semester credit hour/s.

**Designation:** Life-Scientific (QLS)

**Campus:** LISLE (Typically Offered: Periodically)  
MESA

**BIOL 1150 Biology of Women.** (Formerly 150) Discusses biology of gender with special emphasis on the physical structure, function and health concerns of women. The intention is that both women and men understand the complex functioning of the female body and women's unique health issues. Intended for non-biology majors. 3 semester credit hour/s.

**Designation:** Life-Scientific (QLS)

**Campus:** LISLE (Typically Offered: Periodically)  
MESA (Typically Offered: Periodically)

**BIOL 1155 Anatomy and Physiology.** (Formerly 155) Integrated approach to structure and function of the human body. All the major organ systems will be studied. For physical education majors. Prerequisite: High School Biology and Chemistry. 4 semester credit hour/s. Department Consent Required.

**Designation:** Life-Scientific (QLS)

**Campus:** LISLE (Typically Offered: Spring Term)

MESA (Typically Offered: Spring Term)

**BIOL 1156 Introduction to Microbiology.** (Formerly 156) An introductory study of bacteria, viruses and other microbes. Includes identification techniques, microbial genetics, immunology, growth and control, and an overview of those microbes important to humans. Does not meet requirements for majors or minors in Biology or Health Science. 4 semester credit hour/s.

**Designation:** Life-Scientific (QLS)

**Campus:** LISLE (Typically Offered: Periodically)

MESA (Typically Offered: Periodically)

**BIOL 1157 Introductory Anatomy & Physiology I.** (Formerly 157) First semester of a two-semester sequence dealing with the structure and function of the human body and mechanisms for maintaining homeostasis within it. Lecture and lab. Includes the study of cells, tissues, and the integumentary, skeletal, muscular and nervous systems. Does not meet requirements for majors or minors in Biology or Health Science. 4 semester credit hour/s.

**Designation:** Life-Scientific (QLS)

**Campus:** LISLE (Typically Offered: Periodically)

MESA (Typically Offered: Periodically)

**BIOL 1158 Introductory Anatomy & Physiology II.** (Formerly 158) Second semester of a two-semester sequence dealing with the structure and function of the human body and the mechanisms for maintaining homeostasis within it. Lecture and lab. Includes study of the endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary and reproductive systems, as well as the concepts of development, metabolism, fluid and electrolyte balance, and acid-base balance. Does not meet requirements for majors or minors in Biology or Health Science. 4 semester credit hour/s.

**Designation:** Life-Scientific (QLS)

**Campus:** LISLE (Typically Offered: Periodically)

MESA (Typically Offered: Periodically)

**BIOL 1160 Plagues and People.** (Formerly 160) This is a course for non-biology majors, as an introductory survey of microbiology that focuses on plagues and their effects on people. It introduces students to collegiate-level thinking and investigating issues in science and biology. 3 semester credit hour/s.

**Designation:** Life-Scientific (QLS)

**Campus:** LISLE (Typically Offered: Periodically)

MESA

**BIOL 1165 Wine: Mystique and Madness.** (Formerly 165) This course will explore wine making, including all phases of small scale wine production and the biology and chemistry of wine and wine production. For non-science majors. 3 semester credit hour/s.

**Designation:** Life-Scientific (QLS)

**Campus:** LISLE (Typically Offered: Periodically)

MESA

**BIOL 1180 The Ecology of a Changing Planet.** (Formerly 180) Introduces the nonscience major to the basic ecological processes and science that are involved in many environmental concerns. IAI L1905 3 semester credit hour/s.

**Designation:** Sustainability; Life-Scientific (QLS)

**Campus:** LISLE (Typically Offered: Periodically)

MESA

**BIOL 1191 Selected Topics.** (Formerly 191) Special topics in biology at an introductory level. 1-3 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 9.

**Designation:** Life Science Core Elective

**Campus:** LISLE (Typically Offered: Periodically)

**BIOL 1195 Principles of Organismal Lab.** Methods and techniques of laboratory inquiry focused on organisms, evolution, and ecology. Prerequisite: Co-registration or credit in BIOL 1197 1 semester credit hour/s.

**Designation:** Engaged Learning

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

MESA

**BIOL 1196 Introduction to Biology Lab.** This course is designed with selected exercises to reinforce information learned in BIOL 1198, and to apply statistical and quantitative approaches to biology. This course does not meet the requirements for majors in the department of Biological Science. Coregistration or "C" or better in BIOL 1198 or equivalent and "C" or better in MATH 1110 or MATH 1105 or MATH 1108 or above. 1 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall Term)

**BIOL 1197 Principles of Organismal Biology.** (Formerly 197) Key concepts in organismal biology on which advanced courses will build. Includes introduction to evolution, ecology, development, and reproduction and survey of bacteria, protists, fungi, plants, and animals. 3 semester credit hour/s.

**Designation:** Sustainability; Life-Scientific (QLS)

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

MESA

**BIOL 1198 Principles of Biology.** (Formerly 198) Key concepts in biology on which advanced courses will build. Includes basic biological molecules, molecular biology, cell structure/function, transport processes, bioenergetics and genetics. For science majors. Prerequisite: Co-registration or credit in CHEM 1113 or CHEM 1103. 3 semester credit hour/s.

**Designation:** Life-Scientific (QLS)

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

MESA

**BIOL 1199 Principles of Biology Lab.** (Formerly 199) Methods and techniques of laboratory investigation. Co-registration or credit in BIOL 1198 and "C" or better in MATH 1110 or higher. 1 semester credit hour/s.

**Designation:** -

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

MESA

**BIOL 2201 Biological Anthropology.** Focuses on forces producing humans in their present form. The study of evolution, population genetics, and the fossil record. Prerequisite: "C" or better in: BIOL 1197 or BIOL 2297, BIOL 1198, and CHEM 1123. 3 semester credit hour/s.

**Campus:** LISLE

MESA

**BIOL 2202 Introduction to Natural History Museums.** (Formerly 202) Introduction to Nature History Museums examines the history, structure, organization, policies, and procedures of work in a natural history museum. This course includes a variety of topics: museum administration, collections management, curatorial practices, specimen preservation and conservation, emergency preparation and planning in museums, and the use of specimens in research, education, and exhibition. Prerequisite: "C" or better in BIOL 1197 or BIOL 2297, and instructor consent. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Periodically)

**BIOL 2204 Advanced Botany.** (Formerly 204) A detailed study of the plant kingdom using a morphological and anatomical approach. Labs will consist of microscope slide work, dissections and aspects of plant ecology and physiology. Prerequisite: "C" or better in BIOL 1197 or BIOL 2297, BIOL 1198, CHEM 1103/CHEM 1123. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Periodically)  
MESA

**BIOL 2205 Environmental Science.** (Formerly ENVS 205) A survey of environmental science with an emphasis on global concerns, biological and physical resources, resource use, conservation issues, and the interactions among science, society, and the environment. Prerequisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, and CHEM 1123. 3 semester credit hour/s.

**Designation:** Sustainability

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)  
MESA

**BIOL 2206 Applied Exercise Science.** (Formerly HLSC 200) This course covers key exercise science core principles from exercise physiology, kinesiology, biomechanics, and preventive health related fitness. Special emphasis will be given to the scientific principles and importance lifestyle for others through lifetime health related physical activity. Practical experience in the Exercise Physiology laboratory to complement the material covered during lecture. Students will participate both as subjects as well as testers. Prerequisite: For SES and ESS Majors only. "C" or better in BIOL 1155 or 1157. 4 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall Term)

**BIOL 2223 Field Studies in Biology.** (Formerly 223) This course introduces students to the biological complexity of ecosystems through participatory field experiences in a range of locations. Field trips and exercises are led by faculty, and experts will lecture on a variety of topics which may include the natural history of regional biota, patterns of species diversity, ecology, and conservation. Some course sessions require international travel to the field site. Pre-requisite: "C" or better in BIOL 1197 or 2297, BIOL 1198, CHEM 1123. 3 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 3.

**Designation:** Global

**Campus:** LISLE (Typically Offered: Spring Term)

**BIOL 2228 Vertebrate Embryology.** (Formerly 228) Developmental anatomy, genetics and physiology of vertebrates with emphasis on human development, pregnancy, and birth. Lecture and lab. Prerequisite: "C" or better in: BIOL 1195, 1197 or 2297, BIOL 1198, BIOL 1199, CHEM 1123. 4 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Periodically)

**BIOL 2249 Parasitology.** (Formerly 249) The morphology and life histories of animal parasites and their relation to the spreading of disease. Prerequisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, and CHEM 1123. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Periodically)

**BIOL 2250 Genetics.** (Formerly 250) A survey course emphasizing Mendelian inheritance, molecular, cellular and medical genetics as well as current genetic research and its applications. Prerequisite of "C" or better in BIOL 1197 or 2297, BIOL 1198, CHEM 1113 and CHEM 1123. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)  
MESA

**BIOL 2251 Genetics Laboratory.** (Formerly 251) Designed to illustrate principles formulated in BIOL 2250. Prerequisite: "C" or better in BIOL 1199 or 2299, co-registration or "C" or better in BIOL 2250. 1 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

**BIOL 2260 Recombinant DNA Lab.** (Formerly 260) Current techniques in manipulating DNA, such as PCR and subcloning, for expression of proteins. Gene and product will be isolated and used in subsequent experiments. This lab is intended for Biochemistry/Molecular Biology majors. Prerequisite: "C" or better in CHEM 1123 and credit or co-registration in BIOL 2250. 1 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Spring Term)

**BIOL 2271 Biology of Mammals.** (Formerly 271) The habits, classification, life histories, and economic relations of North American mammals. Museum work. Prerequisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, and CHEM 1123. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Periodically)

**BIOL 2272 Zoology.** (Formerly 272) An organized presentation of the animal kingdom. The class emphasizes the structure of animal traits and how they help the animal function as an integral whole entity. A secondary goal is comparative anatomy of the animal classes. Prerequisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, and CHEM 1123. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Periodically)

**BIOL 2275 Invertebrate Zoology.** (Formerly 275) Survey of major invertebrate animal groups through comparative study of their biodiversity, anatomy, physiology, development, and ecology. Focus on evolutionary relationships and importance of reproductive, development, feeding, mobility, skeletonization, bilaterality, cephalization, terrestrialization, parasitism, and carnivory. Prerequisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, and CHEM 1123. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Periodically)

**BIOL 2279 Freshwater Ecology.** (Formerly 279) Relationships between water, animals, plants and humans are investigated using the Shedd Aquarium as the laboratory. An introduction to the components of a freshwater habitat and a survey of the plants and animals that exist there, offered through the ACCA Cooperative College Program. Prerequisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, and CHEM 1123. 3 semester credit hour/s. Department Consent Required.

**Campus:** LISLE (Typically Offered: Periodically)

**BIOL 2281 ACCA Seminar.** (Formerly 281) Evening seminar dealing with advanced topics in biology. Prerequisite: "C" or better in BIOL 1197 or 2297, BIOL 1198 and CHEM 1123. Topics are announced. 1 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 9. Department Consent Required.

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

**BIOL 2283 Contemporary Ethnobotany.** (Formerly 283) A study of the influence of plants on our economic, social and political history, and plants humans have chosen to protect and cultivate. Lab includes horticultural and identification work with economically important plants, and trips to plant conservatories. ACCA Cooperative College Botany Program with the Morton Arboretum. Prerequisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, and CHEM 1123. 3 semester credit hour/s. Department Consent Required.

**Campus:** LISLE (Typically Offered: Periodically)

**BIOL 2284 Woody Plants of the Western Great Lakes Region.** (Formerly 284) An introduction to the composition and identification of the woody flora of the western Great Lakes region. The impact of geology, climate and soils on the development of woody flora will also be considered. ACCA Cooperative College Botany Program with the Morton Arboretum. Prerequisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, and CHEM 1123. 4 semester credit hour/s. Department Consent Required.

**Campus:** LISLE (Typically Offered: Periodically)

**BIOL 2285 Biology of Algae.** (Formerly 285) An introduction to the algae, including the classification, structure and reproduction of major groups. Lab includes field collections and laboratory studies of local freshwater and soil algae. Practical applications in waste management, environmental monitoring and agriculture will be considered. ACCA Cooperative College Botany Program with the Morton Arboretum. Prerequisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, and CHEM 1123. 4 semester credit hour/s. Department Consent Required.

**Campus:** LISLE (Typically Offered: Periodically)

**BIOL 2286 Biology of the Fungi.** (Formerly 286) An introduction to the fungi; including classification, structure, ecology, and identification of the significant groups. Prerequisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, and CHEM 1123. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Periodically)

**BIOL 2287 Plant Ecology.** (Formerly 287) Examination of the structure/function relationships of plants to environmental factors, interrelationships of plant communities, laboratory and field techniques, and appropriate literature. ACCA Cooperative College Botany Program with the Morton Arboretum. Prerequisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, and CHEM 1123. 4 semester credit hour/s. Department Consent Required.

**Campus:** LISLE (Typically Offered: Periodically)

**BIOL 2290 Marine and Island Ecology of the Bahamas.** (Formerly 290) Exploration of habitats and animals found on and around the Bahamian Islands. Includes a nine-day field experience in the Bahamas. Course offered ACCA Cooperative College Program at the Shedd Aquarium. Prerequisite: "C" or better in BIOL 1197 or 2297, BIOL 1198, BIOL 1199 or 2299, CHEM 1123 and complete an external application to Shedd Aquarium. 4 semester credit hour/s. Department Consent Required.

**Campus:** LISLE (Typically Offered: Spring Term)

**BIOL 2291 Selected Topics.** (Formerly 291) Special topics in biology chosen for the interests or needs of students. Prerequisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, and CHEM 1123. 4 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 9. Department Consent Required.

**Campus:** LISLE (Typically Offered: Periodically)

MESA

**BIOL 2292 Biology Teaching.** (Formerly 292) Opportunity for motivated students that have demonstrated excellent ability in theoretical aspects and practical techniques covered in prior laboratory coursework with experience to (1) assist in the teaching of an undergraduate laboratory science course, (2) grade assignments and tests, and (3) prepare reagents and equipment for laboratory use. Maximum of 2 credits allowed towards major. 1 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 9. Department Consent Required.

**Designation:** Engaged Learning

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)  
MESA

**BIOL 2293 Jurica Scholars ACCA Seminar.** (Formerly 293) Jurica Scholars discussion section of ACCA seminar. 0 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 0.

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

**BIOL 2295 Independent Study.** (Formerly 295) Provides opportunity for advanced major to pursue study in a field of biological interest. Prerequisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, and CHEM 1123. 1-3 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 9. Department Consent Required.

**Campus:** LISLE (Typically Offered: Periodically)

MESA

**BIOL 2296 Jurica Scholars Honors Project.** Jurica Scholars version of independent study taken in conjunction with a 2000-level course. Prerequisite: "C" or better in BIOL 1198, BIOL 1197 or BIOL 2297, CHEM 1113, CHEM 1123 and co-registration in a 2000-level BIOL course. 0 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 0.

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

**BIOL 2297 Honors Organismal Biology.** (Formerly 297) In-depth lecture and inquiry-based laboratory introduction to evolution, ecology, development, reproduction, and organismal structure/function for students in the Jurica Scholars Program. Prerequisite: "C" or better in BIOL 1198, CHEM 1113, Jurica Scholars Program students only. 4 semester credit hour/s.

**Designation:** Sustainability; Life-Scientific (QLS)

**Campus:** LISLE (Typically Offered: Spring Term)

**BIOL 2299 Quantitative Biology Laboratory for Transfer Students.** (Formerly 299) Methods and techniques of biology laboratory investigation. Experimental design, data collection and statistical analysis, graphical representation of data, interpretation of results. Includes Biological Science Department orientation activities for transfer students. Credit may not be earned in BIOL 1199 and BIOL 2299 at Benedictine University. Required for transfer students majoring in the biological sciences. Prerequisite: Transfer credit for BIOL 1197, BIOL 1198, and BIOL 1199; co-registration in MATH 2229 and LCOM 1151. 1 semester credit hour/s.

**Designation:** Life-Scientific (QLS)

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

**BIOL 3203 Human Anatomy.** Study of human organism structure through cadaver observation. Lecture and Lab. A biology major cannot receive credit for both BIOL 3203 and BIOL 3254. Prerequisite: "C" or better in BIOL 1197 or 2297, BIOL 1198, CHEM 1103/CHEM 1123. 4 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

MESA (Typically Offered: Fall and Spring Terms)

**BIOL 3208 General Microbiology.** Comprehensive survey of the biology of microorganisms, especially bacteria. Includes topics in growth, metabolism, physiology, taxonomy, ecology and biotechnology. Lecture and lab. Prerequisite [Main Campus]: "C" or better in BIOL 1197 or 2297, BIOL 1198, CHEM 1103/CHEM 1123. [Mesa campus]: "C" or better in BIOL 1196, BIOL 1197 or 2297, BIOL 1198, and CHEM 1103. 4 semester credit hour/s.

**Designation:** Writing Intensive; Engaged Learning

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)  
MESA

**BIOL 3216 Human Anatomy and Physiology I.** A basic course in the biology of the human body including study of cell and tissue structure and function, along with the energy concepts of the human. This is followed by a detailed presentation of the skeletal, muscular, integumentary, and nervous systems including the special senses. Laboratory work will be correlated with lecture material. Prerequisites: "C" or better in BIOL 1197, BIOL 1198, and CHEM 1123. 4 semester credit hour/s.

**Campus:** MESA

**BIOL 3217 Human Anatomy and Physiology II.** A continuation of BIOL 3216 with detailed study of structure and function of the circulatory, respiratory, digestive, excretory, endocrine, immune and reproductive systems, with correlated laboratory activities. Prerequisites: BIOL 3216; (three lecture hours and one three-hour lab weekly). 4 semester credit hour/s.

**Campus:** MESA

**BIOL 3230 Plant-Soil Relationships.** (Formerly 230) Topics include effects of soil on plant growth and nutrition and how plants affect the soil. ACCA Cooperative College Botany Program with the Morton Arboretum. Prerequisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, and CHEM 1123. 3 semester credit hour/s. Department Consent Required.

**Campus:** LISLE (Typically Offered: Periodically)

**BIOL 3256 Comparative Animal Physiology.** (Formerly 256) A study of basic life functions in animals emphasizing the mechanisms for maintenance of homeostasis in response to environmental factors such as water and dehydration, salts and ions, temperature, light, and daily and seasonal rhythms. Prerequisite of "C" or better in: BIOL 1197 or 2297, BIOL 1198, and CHEM 1103 or 1123. 4 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Spring Term)  
MESA

**BIOL 3258 Human Physiology.** (Formerly 258) The study of the control and function of human organ systems. Lecture only. Prerequisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, and CHEM 1113 and 1123. 4 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)  
MESA

**BIOL 3259 Human Physiology Laboratory.** (Formerly 259) Lab uses standard clinical equipment to illustrate principles of physiology. Prerequisite: "C" or better in BIOL 1199 or 2299 and credit or co-registration in BIOL 3258 or 3256. 1 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)  
MESA (Typically Offered: Fall and Spring Terms)

**BIOL 3300 Ecology of Lakes and Streams.** (Formerly ENVS 300) The study of the interrelations among the physical, chemical, and biological components of freshwater ecosystems. Includes taxonomy, adaptations, distributions, and abundance of aquatic organisms. Prerequisite: "C" or better in CHEM 1123 and one of: BIOL 2201, BIOL 3203, or BIOL 2250. 3 semester credit hour/s.

**Campus:** LISLE

**BIOL 3301 Human Evolution.** An in-depth look at the physical and behavioral evolution of humans. This course will focus primarily on the human fossil record from seven million years ago to the origin of Homo sapiens, with concentration on the functional anatomy of early humans. Prerequisite: "C" or better CHEM 1123 and one of: BIOL 2201 or BIOL 3203 or BIOL 2250. 3 semester credit hour/s.

**Designation:** -

**Campus:** LISLE (Typically Offered: Periodically)  
MESA

**BIOL 3313 Evolution.** (Formerly 313) A study of evolutionary processes, including Darwinian and non-Darwinian evolutionary theory, genetic mechanisms, social issues, and the role of natural selection in the formulation of species and higher categories. Emphasis is placed on the phylogeny of major animal groups. Prerequisite: "C" or better in BIOL 2250 and CHEM 1123. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall Term)  
MESA

**BIOL 3330 Plant-Animal Interactions.** (Formerly 330) Plant – Animal Interactions is the study of the special ecological and evolutionary relationships between plants and animals. The basic interactions between plants and animals (herbivore, pollination, and seed dispersal) will be studied by observing the natural history, conducting experiments, making observations, investigating the theories, and discussing current scientific literature. Course Prerequisite: CHEM 1123 and one of: BIOL 2204, BIOL 3256, BIOL 3258, BIOL 3301, BIOL 4363 or CHEM 3261. 4 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Periodically)

**BIOL 3370 Animal Behavior.** (Formerly 370) A study of how and why animals act and react in their environment, with an emphasis on the evolutionary and ecological aspects. Topics covered include neural mechanisms of behavior, learning, game theory, foraging, communication, reproductive behavior and mating systems, and social behavior. Prerequisite: "C" or better in CHEM 1123, BIOL 2250 and BIOL 3256 or BIOL 3258. 3 semester credit hour/s.

**Designation:** -

**Campus:** LISLE (Typically Offered: Periodically)

**BIOL 3389 Biological Research.** (Formerly 389) Research projects which require extensive use of laboratory or museum facilities. Prerequisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, CHEM 1113, and CHEM 1123. Does not count towards Health Science or (BA) Biology majors. 1-3 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 9. Department Consent Required.

**Designation:** Engaged Learning

**Campus:** LISLE (Typically Offered: Fall, Spring, and Summer Terms)

**BIOL 3391 Selected Topics.** (Formerly 391) Special courses on various topics with which the student has not become acquainted in formal course work. May be an extension of or a supplement to material previously encountered, or lectures from a completely new area. Prerequisite: Instructor consent and "C" or better in CHEM 1123 and one of BIOL 2204, BIOL 2205, BIOL 3208, BIOL 2250, BIOL 3258, BIOL 2272, BIOL 3313, or BIOL 4363. 1-4 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 9. Department Consent Required.

**Designation:** -

**Campus:** LISLE (Typically Offered: Periodically)  
MESA

**BIOL 3395 Independent Study.** (Formerly 395) Provides opportunity for advanced major to pursue study in a field of biological interest. Prerequisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, CHEM 1113, and CHEM 1123. 1-3 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 9. Department Consent Required.

**Campus:** LISLE (Typically Offered: Periodically)  
MESA

**BIOL 3396 Jurica Scholars Honors Project-Advanced.** (Formerly 396) Jurica Scholars version of independent study taken in conjunction with a 3000-level course. Prerequisite: "C" or better in BIOL 1198 and BIOL 2297, co-registration in a 3000-level course. 0 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 0.

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

**BIOL 3397 College of Science Research Techniques.** (Formerly 397) This is a zero credit research course training students in the skills needed for research or museum projects in the natural sciences. 0 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 0.

**Designation:** Engaged Learning

**Campus:** LISLE (Typically Offered: Fall, Spring, and Summer Terms)

**BIOL 3399 Jurica Scholars Capstone.** (Formerly 399) Semester-long preparation and research for the Jurica Scholars Capstone project/paper to be completed in the senior year. Pre-requisite: "C" or better in BIOL 1198 and BIOL 2297. 1 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Spring Term)

**BIOL 4303 Conservation Biology and Biodiversity.** This course focuses on the study of biological diversity, its rapid loss in recent decades, and approaches for its conservation. Students will focus on primary literature in this course, with an emphasis on interpretation of empirical data, and design of investigations in conservation biology. Pre-requisites: "C" or better in MATH 2229 and BIOL 2250; "C" or better in BIOL 4363 strongly recommended. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Periodically)

**BIOL 4322 Paleobiology.** (Formerly 322) Using fossils to understand the evolutionary and ecological history of life. Topics such as mass extinctions, evolutionary diversifications, quantification of evolutionary rates, microevolution and speciation in the fossil record, evolutionary development, evolutionary transitions, fossilization, climate change, competition, functional morphology, conservation biology, and long-term trends in evolution and ecology are covered. Prerequisites: "C" or better in MATH 2229 or BIOL 2204 or BIOL 2205 or BIOL 2275 and CHEM 1123. 4 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Periodically)

**BIOL 4340 Cell Biology.** (Formerly 340) The study of life processes at the level of molecules, macromolecules, subcellular particles and organelles; integration of structure and function of living things on the suborganismic level. Prerequisite: "C" or better in BIOL 2250 and CHEM 2242. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)  
MESA

**BIOL 4341 Cell Molecular Biology Laboratory.** (Formerly 341) Techniques in cell and molecular biology. Prerequisite of "C" or better in BIOL 1199 or 2299; credit or co-registration in BIOL 4340. 1 semester credit hour/s.

**Designation:** Writing Intensive

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

**BIOL 4342 BMB Cell Biology Laboratory.** (Formerly 342) Laboratory research problems in cell biology, including literature review, experimental design, data gathering, and evaluation of results. Students keep a laboratory journal, write a formal journal-style report about their research, and present their work orally in a research symposium. Intended for the BMB major. Prerequisite: Credit or co-registration in BIOL 4340 and CHEM 3261. 2 semester credit hour/s. Department Consent Required.

**Designation:** Writing Intensive

**Campus:** LISLE (Typically Offered: Spring Term)

**BIOL 4360 Basic Endocrinology.** An integrative study of the structure and function of the human endocrine system. Prerequisite: "C" or better in BIOL 3256 or 3258. 3 semester credit hour/s.

**Campus:** LISLE

**BIOL 4363 Ecology.** (Formerly 363) Study of the relationships of organisms to one another and to their environment. Includes evolutionary, behavioral, population, community, ecosystem, and applied ecology. Prerequisite: "C" or better in BIOL 2205 or BIOL 2250; MATH 2210 or higher. 3 semester credit hour/s.

**Designation:** Sustainability

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

**BIOL 4364 Ecology Laboratory.** (Formerly 364) A field and laboratory course designed to illustrate the principles of basic and applied ecology. Includes field trips, computer simulations, observational studies, and the design and implementation of ecological experiments. Prerequisite of "C" or better in MATH 2229, credit or co-registration in BIOL 4363. 1 semester credit hour/s.

**Designation:** Writing Intensive; Engaged Learning

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

**BIOL 4393 Great Ideas in Biology and Medicine.** (Formerly 393) A study in the original writings of some of the great biologists and medical scientists to understand their thoughts and work and the historical development of the scientific method in biology. Capstone course for HLSC majors on the Main Campus. Prerequisites: "C" or better in BIOL 1197 or 2297, BIOL 1198, and CHEM 1123; 90 credit hours standing. 1 semester credit hour/s.

**Designation:** Writing Intensive

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

**BIOL 4394 Nature Writing.** (Formerly 394) This course will introduce the literary genre of Nature Writing and explore its ongoing relationship with science. This interdisciplinary course will explore the nature writing of the past and other cultures, as well as trends leading to its future. May be taken as the capstone course for HLSC majors. Prerequisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, and CHEM 1123. 1 semester credit hour/s.

**Designation:** Writing Intensive; Sustainability

**Campus:** LISLE (Typically Offered: Spring Term)

MESA

**BIOL 4489 Advanced Biological Research.** Research projects which require extensive use of laboratory or museum facilities. Pre-requisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, CHEM 1113, and CHEM 1123. 1-3 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 9.

**Campus:** LISLE (Typically Offered: Fall, Spring, and Summer Terms)

**BIOL 4491 Selected Topics.** Special courses on various topics with which the student has not become acquainted in formal course work. May be an extension of or a supplement to material previously encountered, or lectures from a completely new area. Pre-Requisite: Instructor consent and "C" or better in CHEM 1123 and one of BIOL BIOL 2204, BIOL 2250, BIOL 3258, BIOL 2272, BIOL 3313, or BIOL 4363. 1-4 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 50.

**Campus:** LISLE (Typically Offered: Periodically)  
MESA

**BIOL 4496 Jurica Scholars Project - Acclereated.** Jurica Scholars version of independent study taken in conjunction with a 4000-level or above course. 0 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 0. Department Consent Required.

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

**BIOL 4497 Biology Internship.** Practical experiences in the life sciences under the supervision of the biology faculty. Pre-Requisite: "C" or better in: BIOL 1197 or 2297, BIOL 1198, CHEM 1113, and CHEM 1123. 1-3 semester credit hour/s.

**Designation:** Engaged Learning

**Campus:** LISLE (Typically Offered: Periodically)  
MESA

**BIOL 4499 Jurica Scholars Senior Capstone.** Completion of semester-long preparation and research for the Jurica Scholars Capstone project/paper and presentation to be completed in the senior year. Pre-Requisite: "C" or better in BIOL 1198, BIOL 2297, and BIOL 3399. 1 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

## Sport and Exercise Science

**SES 1103 General Phys Fitness.** (Formerly PHED 103) Introduction to physical fitness techniques. Various exercises and safety issues are addressed 1 semester credit hour/s.

**Campus:** LISLE

**SES 1107 Weight Training.** (Formerly PHED 107) Introduction to weight training technique. Various exercises and safety issues are addressed. 1 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall Term)

**SES 1112 Aerobic Conditioning.** (Formerly PHED 112) Introduction to aerobic conditioning techniques. Various exercises and safety issues are addressed. 1 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall Term)

**SES 1113 Beginning Yoga.** (Formerly PHED 113) Introduction to yoga practices. Various exercises and safety issues are addressed. 1 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall Term)

**SES 1114 Beginning Pilates.** (Formerly PHED 114) Introduction to pilates exercises. Various exercises and safety issues are addressed. 1 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Spring Term)

**SES 1123 Advanced Yoga.** Advanced yoga practices for students with yoga background. Various exercises and safety issues are addressed. 1 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Periodically)

**SES 1124 Advanced Pilates.** Advanced pilates practices for students with pilates background. Various exercises and safety issues are addressed 1 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Periodically)

**SES 1137 Physical Fitness and Technology.** (Formerly PHED 137) Introduction to purposeful daily physical activity using step counters to measure physical activity and set physical activity goals. Various exercises and safety issues are addressed. 1 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Annually)

**SES 1198 Health and Fitness Professional Seminar.** (Formerly PHED 198) This course covers a diverse selection of issues and complex problems that confront professionals in the exercise, fitness and sports industries. Independent thought and new insights will be encouraged. 1-3 semester hours. 1-3 semester credit hour/s.

**Campus:** LISLE

**SES 2170 Motor Development.** This course examines how interactions between a developing and maturing individual, an environment, and specific tasks bring about changes in a person's movements. Focus is given to understanding how maturational age and chronological age are distinct, and to how functional constraints affect motor skill development and learning. Special attention is given to how the four components of fitness 1) cardiorespiratory endurance, 2) strength, 3) flexibility, and 4) body composition interact to affect a person's movements over the life span. The affects of social, cultural, psychosocial, and cognitive influences on movement are also examined. 3 semester credit hour/s.

**Campus:** LISLE

**SES 2200 Introduction to Kinesiology.** (Formerly PHED 200) This course is an introduction to the field of kinesiology, or the study of movement. Attention is given to the means of understanding kinesiology through personal experience, professional experience, and formal study. The course focuses on bringing awareness to the five sub-areas of kinesiology in which students will be able to find careers related to sport and exercise. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall Term)

**SES 2216 Sport Sociology.** This course examines how sport and society interact. Topics include sport participation, deviance and violence, demographics, economy, media, politics, education, and religion 3 semester credit hour/s.

**Designation:** Writing Intensive; Sustainability; Individuals, Organizations, and Societies (QIO); Global

**Campus:** LISLE (Typically Offered: Spring Term)

**SES 2237 Sport Psychology.** (Formerly PHED 237) This course examines fundamental theories of psychology applied to sport organization, management, participation, and influence of major players in sport. This course will also discuss theories of learning, effects of motivation, personality, and attitude, as well as psychological effects of exercise. 3 semester credit hour/s.

**Designation:** Individuals, Organizations, and Societies (QIO)

**Campus:** LISLE (Typically Offered: Fall Term)

**SES 2257 Wellness.** (Formerly 257) Concepts and applications of cardiovascular fitness, nutrition and weight management, stress management life-style management, and substance abuse. Emphasis is on the interactive nature of these health-related components, on being an informed consumer, and on the development and implementation of a personal wellness program. Satisfies teaching certification Health/Physical Education requirement. 3 semester credit hour/s.

**Campus:** LISLE

**SES 2270 Motor Learning.** (Formerly PHED 270) This course examines principles of motor performance and learning. Focus is on building a strong understanding of how skills are acquired and perfected with practice. This course also explores how to apply the concepts to a variety of real-world settings by incorporating familiar scenarios. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Spring Term)

**SES 2291 Special Topics in Sport and Exercise Science.** (Formerly 291) This course covers a diverse selection of issues and complex problems that confront professionals in the exercise, fitness, and sports industries. Independent thought and new insights will be encouraged. 1-3 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 9.

**Campus:** LISLE (Typically Offered: Periodically)

**SES 2351 Exercise Psychology.** This course examines fundamental theories of psychology applied to sport organization, management, participation, and influence of exercisers. This course will also discuss theories of learning, effects of motivation, personality, and attitude, as well as psychological effects of exercise. 3 semester credit hour/s.

**Designation:** Individuals, Organizations, and Societies (QIO)

**Campus:** LISLE (Typically Offered: Periodically)

**SES 2999 Practicum in Sport and Exercise Science.** This is a supervised introductory field experience in one or more professional settings. The field experience requires 50 contact hours per semester hour of credit. 1-3 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 12.

**Campus:** LISLE (Typically Offered: Periodically)

**SES 3261 Athletic Injury Care and Prevention.** (Formerly PHED 261) This course is an introduction to basic concepts of prevention of athletic injuries, injury recognition, and treatment necessary for the management of athletic injuries. Prerequisite: BIOL 1155, BIOL 1157 or BIOL 3203, or department consent; 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Annually)

**SES 3265 Principles of Biomotor Training.** (Formerly PHED 265) This course examines methods of teaching biomotor skills (i.e., endurance, speed, flexibility, coordination, and strength) and their derivative applications (e.g., agility, quickness, power.) Emphasis is on creating effective training tasks for athletes and clients. Prerequisite: SES 2270 or department consent. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Spring and Summer Terms)

**SES 3297 Field Experience in Sport and Exercise Science I.** This is a supervised introductory field experience in one or more professional settings. The field experience requires 50 contact hours per semester hour of credit 1 semester credit hour/s. Department Consent Required.

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

**SES 3298 Field Experience in Sport and Exercise Science II.** This is a supervised introductory field experience in one or more professional settings. The field experience requires 50 contact hours per semester hour of credit. 1 semester credit hour/s. Department Consent Required.

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

**SES 3299 Field Experience in Sport and Exercise Science III.** (Formerly PHED 299) This is a supervised introductory field experience in one or more professional settings. The field experience requires 50 contact hours per semester hour of credit. 1-3 semester credit hour/s. Department Consent Required.

**Designation:** Engaged Learning

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

**SES 3302 Applied Kinesiology.** (Formerly PHED 302) This course examines musculoskeletal anatomy and its roles in human motion. Topics include origin and insertion of muscles, neuromuscular innervation, and requisite muscles for movement. Prerequisite: BIOL 1155, 1157, 3203, or Department Consent. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall Term)

**SES 3303 Introduction to Sport Management.** This course addresses skills related to strong leadership and management in the world of sport. This course focuses on the four central management functions: planning, organizing, leading, and controlling. This course goes beyond explaining important concepts in order to apply management principles and skills. Students will put concepts into action as sport managers, developing the skills of creative problem solving and strategic planning, and developing the ability to lead, organize, and delegate. Common Professional Component topics outlined by the Commission on Sport Management Accreditation (COSMA) are addressed in this course including the topics of sport management foundations, functions, environment, experiential learning, and career development. Prerequisite: Junior standing or Department Consent. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Spring Term)

**SES 3305 Measurement and Evaluation for Physical Education.** (Formerly PHED 305) This course provides students with an understanding of current assessment techniques for physical education and physical fitness in order to select and use developmentally appropriate strategies and instruments that align with physical education learning goals. Students will also learn to apply performance data to make informed curricular decisions relative to the physical education program. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall Term)

**SES 3307 Sport Law.** This course provides students with comprehensive information on the fundamental legal issues in sport and sport management. This course addresses legal and management matters most commonly found in sport management, including liability issues, protecting the legal rights of athletes and employees, and managing legal risk. Topics are applied in relation to the United States legal system, including the court system, the various types of law, and legal resources. Special attention is given to legal topics including labor law, risk management, employment law, gender equity, intellectual property, agency law, tort law, constitutional law, antitrust law, and contract law. Course concepts are taught using straightforward examples and case studies that help students apply sport law theory to practical applications. Prerequisite: SES 3303 or MNGT 3305 or Department Consent. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Annually)



**SES 3326 Sport Leadership.** This course provides a foundational and contextualized understanding of thought and practice in leadership. Students apply theoretical foundations of leadership in sport to sport-related organizations of all types and sizes. This course focused on four main areas: 1) understanding the elements of business and educational environments in which sport organizations operate, 2) applying leadership thought and action by addressing critical challenges of the present and future including decision making, organizational change, emotional intelligence, vision, strategic planning, and crisis management and, 3) creating a professional growth and development plan with the goals of continued self-understanding, personal development, and leadership mentoring. Pre-requisite: Junior standing or department consent. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Spring Term)

**SES 3355 Biomechanics.** (Formerly PHED 355) This course investigates the biomechanical design of human skeletal muscles and their interactions with the skeletal system. Kinetics and Kinematics are both investigated in detail. Investigation and application of mechanical principles to the study of human motion and the motion of sport objects is emphasized. Qualitative and quantitative analysis of the human movement is investigated as well. Prerequisite: SES 3302 or Department Consent. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Spring Term)

**SES 3999 Independent Study in Sport and Exercise Science.** This course covers a diverse selection of issues and complex problems that confront professionals in the exercise, fitness and sports industries. Topic should be based on student interest. Independent thought and new insights will be encouraged. 1-4 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 12.

**Campus:** LISLE

**SES 4197 Internship in Sport and Exercise Science I.** This is a supervised hands-on experience in one or more sport and exercise settings. Internships are aligned with a structured educational plan as indicated in the SES Internship Manual. The field experience requires 50 contact hours per semester hour of credit. 1-6 semester credit hour/s. Department Consent Required.

**Campus:** LISLE

**SES 4201 Exercise Assessment and Prescription.** (Formerly PHED 201) This course examines the assessment of biomotor skills (i.e., endurance, speed, flexibility, coordination, and strength) and their derivative applications (e.g., agility, quickness, power.) Creation and prescription of performance outcome-focused training sessions is emphasized. Prerequisite: BIOL 2206 or Department Consent. 3 semester credit hour/s.

**Designation:** Engaged Learning

**Campus:** LISLE (Typically Offered: Fall Term)

**SES 4284 Training Special Populations.** This course examines considerations for clients with unique needs. Topics include various conditions and disorders, cancer, children and adolescents, geriatrics, and female-specific conditions. Emphasis is on recognition and exercise accommodation. Emphasis is on preparation for the National Strength and Conditioning Association Certified Special Population Specialist exam (CSPS). 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Periodically)

**SES 4297 Internship in Sport and Exercise Science II.** This is a supervised hands-on experience in one or more sport and exercise settings. Internships are aligned with a structured educational plan as indicated in the SES Internship Manual. The field experience requires 50 contact hours per semester hour of credit. 1-6 semester credit hour/s. Department Consent Required.

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

**SES 4310 Research Methods in Sport and Exercise Science.** (Formerly PHED 310) This course examines the analysis and synthesis of research in sport and exercise science. Emphasis is on basic interpretation and reporting of research findings from peer-reviewed journals. Pre-Requisite: PSYC 2250 and senior status, or department consent. 3 semester credit hour/s.

**Designation:** Writing Intensive

**Campus:** LISLE

**SES 4313 Scientific Principles of Strength and Conditioning.** (Formerly PHED 313) . This course examines physiological responses and adaptations to exercise and training. Subtopics include mechanisms of muscle hypertrophy, endocrine and metabolic responses to aerobic and anaerobic exercise, mechanisms of overtraining, and rest and recovery techniques and their inclusive mechanisms. Prerequisite: BIOL 2206 or Department Consent. 3 semester credit hour/s.

**Campus:** LISLE

**SES 4314 Exercise Planning and Programming.** (Formerly PHED 314) This course examines methods of organizing training through a periodized approach. Periodization methods for biomotor skills (i.e., endurance, speed, flexibility, coordination, and strength) and their derivative applications (e.g., agility, quickness, power) are emphasized. Sub-topics include multiple methods of organizing and arranging macrocycles, mesocycles, and microcycles. Methods of tapering and peaking are addressed. Prerequisite: BIOL 2206 or Department Consent. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall Term)

**SES 4319 Thesis in Sport and Exercise Science.** This course allows a student to do independent research under the guidance of a faculty member. Emphasis is on review of literature, ethical approval of research, data collection, analysis, and reporting of findings. Prerequisite: Department Consent. 1-3 semester credit hour/s.

**Designation:** Writing Intensive

**Campus:** LISLE (Typically Offered: Periodically)

**SES 4323 Principles of Personal Training.** This course is an introduction to personal training. Topics include client consultation and appraisal, fitness assessment and testing, exercise technique, programme design, unique needs of clients, and safety and legal issues. Emphasis is on preparation for the National Strength and Conditioning Association Certified Personal Trainer exam (NSCA-CPT) 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Periodically)

**SES 4397 Internship in Sport and Exercise Science III.** This is a supervised hands-on experience in one or more sport and exercise settings. Internships are aligned with a structured educational plan as indicated in the SES Internship Manual. The field experience requires 50 contact hours per semester hour of credit. 1-6 semester credit hour/s. Department Consent Required.

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

**SES 4399 Internship in Sport and Exercise Science III.** (Formerly PHED 399). This is a supervised introductory field experience in one or more professional settings. The field experience requires 50 contact hours per semester hour of credit. 3-6 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 12. Department Consent Required.

**Designation:** Engaged Learning

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

**SES 4436 Principles of Tactical Strength and Conditioning.** This course is an introduction to tactical strength and conditioning. Topics include client consultation and appraisal, fitness assessment and testing, exercise technique, programme design, unique needs of clients, and safety and legal issues. Emphasis is on preparation for the National Strength and Conditioning Association Tactical Strength and Conditioning Facilitator exam (NSCA-TSAC-F). 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Periodically)

**SES 4491 Special Topics in Sport and Exercise Science.** (Formerly PHED 391) This course covers a diverse selection of issues and complex problems that confront professionals in the exercise, fitness and sports industries. Independent thought and new insights will be encouraged. 1-3 semester credit hour/s. Course Repeatable. Maximum number of units allowed: 9.

**Campus:** LISLE (Typically Offered: Periodically)

**SES 4497 Internship in Sport and Exercise Science IV.** This is a supervised hands-on experience in one or more sport and exercise settings. Internships are aligned with a structured educational plan as indicated in the SES Internship Manual. The field experience requires 50 contact hours per semester hour of credit. 1-6 semester credit hour/s. Department Consent Required.

**Designation:** Engaged Learning

**Campus:** LISLE (Typically Offered: Fall and Spring Terms)

**SES 4499 Professional Preparation Capstone.** This course reviews content from all major coursework. Emphasis is in preparation for the National Strength and Conditioning Association Certified Strength and Conditioning Specialist (NSCA-CSCS) exam. Prerequisite: Senior status or Department Consent. 2 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Spring Term)

## Faculty

**Preston Aldrich (2004), Ph.D.**

Biological Sciences

Professor, Biological Sciences

Ph.D., 1997, Botany, University of Georgia, Athens

M.S., 1991, Botany, University of Minnesota, St. Paul

B.A., 1987, Chemistry, St. Olaf College

**James Fackenthal (2017), Ph.D.**

Biological Sciences

Associate Professor, Biological Sciences

Ph.D., 1993, Molecular, Cellular, and Developmental Biology, Indiana University

B.S. 1983, Biology-Geology, University of Rochester

**Ian Hall (2016), Ph.D.**

Director of Undergraduate Programs, Biological Sciences

Associate Professor, Biological Sciences

Ph.D., 2010, Biology: Ecology, Evolution, and Behavior, Indiana University

B.S., 2004, Biological Sciences, University of Maryland Baltimore County

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**Leigh Anne Harden (2015), Ph.D.**

Biological Sciences

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Ph.D. 2013, Marine Biology, University of North Carolina Wilmington

B.S. 2007, Biology, Davidson College

**Cheryl Heinz (2004), Ph.D.**

Department Chair, Biological Sciences

Associate Professor, Biological Sciences

Ph.D., 2002, Entomology, Cornell University

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Ph.D., 2002, Entomology, Cornell University

B.S., 1993, Honors Biology, University of Illinois at Urbana

**William Law (2018), Ph.D.**

Biological Sciences

Professor, Biological Sciences

PhD 1985, Physiology and Biophysics, University of Illinois Med. Ctr.

Chicago

BA 1979, Augustana College, Rock Island, IL

**Lindsey Mao (2020), Ph.D.**

Biological Sciences

Assistant Professor, Biological Sciences

Ph. D. 2019 Developmental, Regenerative and Stem Cell Biology,

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M. S. 2018 Developmental Biology, University of Chicago

B.S. 2013, Biological Sciences, Carnegie Mellon University, PA

**Robert McCarthy (2012), Ph.D.**

Biological Sciences

Associate Professor, Biological Sciences

Ph.D. 2004, Hominid Paleobiology, George Washington University

M.Phil. 2000, Hominid Paleobiology, George Washington University

B.A. 1996, Anthropology, Rutgers University

**Philip Novack-Gottshall (2009), Ph.D.**

Biological Sciences

Professor, Biological Sciences

Ph.D 2004, Evolution, Ecology and Organismal Biology, Duke University

M.S., 1999, Geology, University of Cincinnati

B.S. 1996, Biology and Music Performance, Moravian College

**Tiara Perez Morales (2017), Ph.D.**

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Associate Professor, Biological Sciences

Ph.D. 2013, Microbiology, The University of Iowa

M.S. 2010, Microbiology, The University of Iowa

B.S. 2007, Industrial Microbiology, University of Puerto Rico, Mayaguez

Campus

**Mark Poch (2013), Ph. D.**

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Associate Professor, Biological Sciences

Ph. D. 1990 Biochemistry, Rush University, IL  
 B.A. 1984, Biology, Ripon College, WI

**Jayashree Sarathy (2010), Ph.D.**

Director of Graduate Programs, Biological Sciences  
 Professor, Biological Sciences  
 Ph.D. 1999, Physiology, University of Illinois at Chicago  
 M.Phil. 1991, University of Madras, India  
 M.S. 1990, University of Madras, India  
 B.S. 1988, University of Madras, India

**Regina Schurman (2007), Ed.D., ACSM-CEP, C.P.A.**

Director of Pre-Health Professions, Biological Sciences  
 Assistant Professor, Biological Sciences  
 Ed.D. 2012, Higher Education and Organizational Change, Benedictine University  
 M.S. Clinical Exercise Physiology, 2007, Benedictine University  
 B.S. Accountancy 1991, DePaul University  
 A.A.S. Data Processing 1984, Oakton Community College

**Lee Ann Smith (2004), Ph.D.**

Biological Sciences  
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 Ph.D. 2004, Biomedical Science, University of Connecticut Health Center  
 B.S. 1997 Biochemistry, Benedictine University

**Lecturers**

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Lecturer, Sport and Exercise Science

**Madhavi Chakravadhanula, Ph. D.**

Lecturer, Biological Sciences

**Majid Ghaninia-Tabarestani, Ph.D.**

Lecturer, Biological Sciences

**Donn Gobbie, Ph.D.**

Lecturer, Sport and Exercise Science

**Robert Holmes, Ph.D.**

Lecturer, Sport and Exercise Science

**Manjari Mishra, Ph.D.**

Lecturer, Biological Sciences

**Greg Munie, Ph.D.**

Lecturer, Biology/Health Science

**Roli Prasad, Ph.D.**

Lecturer, Biological Sciences

**Nicole Reinhart, M.S., A.T.C., L.A.T.**

Lecturer, Sport and Exercise Science

**Jennifer Salutric, M.S.**

Lecturer, Biological Sciences

**William R. Schubert, M.S.**

Lecturer, Biological Sciences

**Nathan VanRaden, M.S., L.A.T.**

Lecturer, Sport and Exercise Science

**Sarah Ware, Ph.D.**

Lecturer, Biological Sciences

**Debra Wollner, Ph.D.**

Lecturer, Biological Sciences

*The lecturers listed are individuals who have been employed as instructors on an as-needed basis, within the last several years, to teach courses at Benedictine University. Instructors listed may not currently be employed by Benedictine University. The University is fortunate to be able to provide our students with part-time faculty whose experience, credentials and commitment to education add to the high quality of our resident faculty.*