NATURAL RESOURCES (NRES)

NRES 101 Dev Sense Place Gr Lakes Reg 3 Credit Hours (3,0)
This course helps students understand, explore, and develop connections to the Great Lakes region. Students will be introduced to tools to identify and connect to place through a focus on ecology, culture, history, and action (community engagement) in the Great Lakes region.

NRES 103 Fund of Natural Resources 3 Credit Hours (3,0)
This course will introduce students to the history of natural resource conservation and management, career opportunities within the field of natural resources, and interaction between humans and the environment. The course will focus extensively on basic concepts in human dimensions as they apply to natural resource conservation and management. Course topics include assessing social attitudes and values, social conflicts and conflict resolution, legal and regulatory framework of natural resource management, and the role of stakeholder groups in conservation and management.
Pre or Corequisite(s): ENGL110

NRES 107 Fld Bio Fish Wldlife Ecol/Iden 3 Credit Hours (2,3)
Introduction to organisms and their environmental interactions and conservation concerns with emphasis on regional game species, endangered species, and invasive species. Lab consists primarily of field experiences and speciman indentification.
Pre or Corequisite(s): ENGL110

NRES 199 Freshman Seminar 1 Credit Hour (1,0)
A partial focus for this course will be on academic skills and the transition from high school to college. Topics will include time management, use of campus resources, development of critical thinking, and strengthening study skills. At other times students will meet in discipline-based groups in conjunction with BIOL or NRES299, BIOL399 and BIOL499. These meetings will include discussion of literature relevant to the discipline and progress reports from upper-class students engaged in scholarly projects.

NRES 230 Introduction to Soil Science 4 Credit Hours (3,3)
A course dealing with the soil ecosystem as a natural resource and as an environmental medium. Beginning with factors involved in soil formation, the course will survey soil physical, chemical, and organic properties and how they respond to disturbance. Soil reactions to wastes and wetland interactions will be discussed. Laboratories will focus on description of local soils and the use of soil survey information in making soil interpretations.
Prerequisite(s): CHEM108 and CHEM109 or above; NSCI103 or BIOL132

NRES 240 Natural Hist of the Vertebrate 3 Credit Hours (3,0)
A survey course covering the taxonomy, phylogeny and ecology of vertebrates with an emphasis on North American taxa.
Prerequisite(s): NRES107 or BIOL132

NRES 250 Quantitative Ecology 3 Credit Hours (3,0)
This course will introduce students to the field of quantitative ecology. Students will explore quantitative solutions to ecological problems, learn how to manage and summarize ecological datasets in MS Excel and common database applications, and become competent in data visualization in MS Excel.
Prerequisite(s): BIOL132 and MATH111

NRES 284 Principles Forest Conservation 4 Credit Hours (2,4)
An introduction to forest structure, function, and ecology. Important fundamentals of conservation biology such as the effects of disturbance, fragmentation, and biodiversity on forest ecosystems will be emphasized. Students will master identification of tree and shrub species of the Eastern Upper Peninsula and perform commonly used techniques to evaluate the forest resource. The lab portion of the course is in the field and proper dress is required.
Prerequisite(s): BIOL132 or NSCI103

NRES 286 Principles of Watersheds 3 Credit Hours (3,0)
Overview of the geomorphology, hydrology and biota of various watersheds, with emphasis on hydrographic methods, sampling techniques, land use and management principles.
Prerequisite(s): MATH111

NRES 287 Conservation Biology 3 Credit Hours (3,0)
This course will provide a strong background in the field of conservation biology. The course will discuss patterns in, valuation of, and threats to biodiversity. The course will also examine tools and strategies for conserving biodiversity at the population and species levels and discuss the application of conservation biology in today's society. Specific topics include: (1) Principles of and issues in conservation; (2) Threats to biodiversity; (3) Methods and approaches to evaluate and mitigate threats; (4) Application of principles in the design of conservation reserves, restorations, and sustainable development.
Prerequisite(s): BIOL131 and BIOL132

NRES 289 Aquatic Res Sampling Methods 3 Credit Hours (2,3)
A variety of sampling techniques are introduced as they relate to the various disciplines of aquatic science. These methods include sampling and preservation of biotic (plankton, fish, benthic invertebrates, DNA, pathogens) and abiotic (water quality, sediments, climate) data.
Prerequisite(s): NRES107, CHEM108, CHEM109, MATH111 and Permission of Instructor

NRES 290 Ind Study in (Discipline) 1-4 Credit Hours
Special studies and/or research in biology for individuals or small seminar groups. Course content to be arranged by student(s) and a supervising professor with approval of department and college dean. Independent study courses may be repeated for a maximum of eight credits. Additional information is available at the School of Natural Science. Also listed as BIOL290.
Prerequisite(s): Students must have an overall gpa of at least 2.50, and no I grades on their transcript

NRES 299 Sophomore Seminar 1 Credit Hour (1,0)
Students meet in discipline-based, student-faculty groups in conjunction with BIOL/NRES199, BIOL399 and BIOL499. Weekly meetings will include discussion of literature relevant to the discipline and progress reports from upperclass students engaged in scholarly projects. Sophomores will assist with ongoing projects and will be guided by faculty and juniors enrolled in BIOL399 to conduct a comprehensive, annotated literature search in their area of interest.
Prerequisite(s): BIOL199 or NRES199 and ENGL111

NRES 304 The Human Environment 3 Credit Hours (3,0)
Designed to assist the participant in understanding how the individual can become involved with solving environmental problems.
Prerequisite(s): Junior Status

NRES 310 Ichthyology 3 Credit Hours (2,3)
Study of the anatomy, physiology, behavior, taxonomy and natural history of fishes, with emphasis on freshwater species, particularly those in the Great Lakes region.
Prerequisite(s): BIOL132

NRES 311 Mammalogy 3 Credit Hours (2,3)
An investigation of the natural history, biology and taxonomy of mammals. Techniques for measuring and monitoring mammalian populations will be presented. The Laboratory will focus on field techniques and the identification by skin, skull and track of mammals of the Great Lakes region.
Prerequisite(s): BIOL243 or BIOL330

NRES 312 Ornithology 3 Credit Hours (2,4)
A study of the biology and taxonomy of birds. Labs will focus upon bird anatomy and bird recognition using video tapes and specimens,
Prerequisite(s): BIOL132

NRES 333 Fish Ecology 3 Credit Hours (3,0)
A study of the relationship of fishes to their physical, chemical and biological environments in natural and perturbed aquatic ecosystems with an emphasis on response and adaptation at the organism, population and community levels. Various types of aquatic ecosystems will be examined with respect to habitat accommodations of fish and the impact of human activities. Includes ecological principles as applied to important sport, commercial and forage fish species.
Prerequisite(s): NRES310

NRES 339 Wildlife Ecology 3 Credit Hours (3,0)
A quantitative analysis of the ecology and management of wildlife populations. Theories of population dynamics and distribution are presented. Community interactions including competition, predation, and herbivory, are explored in detail.
Prerequisite(s): NRES250, BIOL280 and BIOL337

NRES 345 Limnology 4 Credit Hours (2,4)
An investigation of the principles of freshwater ecosystems with an emphasis on lakes. The physics and chemistry of natural systems are presented, as well as a survey of the dominant biota and their ecological interactions.
Prerequisite(s): NRES250 and CHEM115

NRES 350 Eco Data Analysis & Interpret 3 Credit Hours (2,3)
This course introduces and develops concepts critical to the proper use, understanding, and interpretation of statistics and experimental design in ecology and natural resources fields, including human dimensions.
Prerequisite(s): NRES250

NRES 372 Freshwater Fish Culture 3 Credit Hours (2,3)
Instruction in water quality monitoring, production systems, feeding and nutrition, disease identification and management, and reproduction principles of freshwater fishes used for recreational and commercial fisheries management, bait and food products. Students will learn propagation and rearing techniques for important fishes, particularly those with recreational or commercial value.
Prerequisite(s): NRES250 and NRES310

NRES 389 Internship in: (Discipline) 3,4 Credit Hours
A variable credit practicum course in which the students will perform research and/or gain work experience under the direction of a faculty mentor and a qualified supervisor. Students are expected to spend a minimum of 45 hours in an approved work setting for each credit earned. The course may be repeated once for a maximum of eight credits. Student interns will be required to write weekly updates or journal entries to be submitted to their LSSU faculty mentor for evaluation of what the student has learned. (3-4) 3-4
Prerequisite(s): 2.50 gpa in major and permission of faculty mentor or department chair

NRES 398 Plan Experiential Lrn Project 1 Credit Hour (1,0)
A weekly seminar class for students planning a major experiential learning project, such as a capstone academic service learning project or internship. Students will work with the course instructor to define the project objectives, outline the tasks, plan the work with the host agency, plan the project assessment techniques and budget, and design the academic evaluation. The outcome of class will be a proposal for the project.
Prerequisite(s): NRES/BIOL299

NRES 399 Research Project Design 1 Credit Hour (1,0)
This seminar style course is designed to help students develop their senior thesis project. Topics include literature analysis, scientific writing, and oral presentation of scientific information. In addition, all students will work with their senior thesis mentor, finalize a topic for their senior thesis project and present their proposed study in a seminar format. Students in NRES399 are Required to attend the poster session and senior thesis oral presentations.
Prerequisite(s): NRES199 or USEM101 and NRES299

NRES 432 Fisheries Management 3 Credit Hours (2,3)
A course covering the history, theory and practice of fisheries management with an emphasis on basic strategies used in effective management of fish populations in freshwater ecosystems. Students will learn methods of collection and synthesis of data regarding fish population dynamics and manipulation, habitat modification, and human management to achieve specific fisheries management goals and objectives.
Prerequisite(s): BIOL280, NRES333 and NRES345

NRES 439 Wildlife Management 3 Credit Hours (2,3)
The application of ecological principles to develop practical wildlife management strategies to preserve, enhance or create viable wildlife habitats and populations. Students will have the opportunity to observe and practice standard field and laboratory techniques.
Prerequisite(s): NRES311 or NRES312 and NRES339

NRES 450 Apprenticeship in (Discipline) 1 Credit Hour (0,3)
Students will assist in classroom laboratories or operation of university facilities (e.g., CFRE Fish Hatchery and Mesocosm Room), under daily direction of faculty or staff and supervision of faculty. Course may be repeated for a maximum of two credits. Students must gain approval of the supervising faculty member.

NRES 470 Restoration Ecology 3 Credit Hours (3,0)
This course will provide a broad overview of restoration of both terrestrial and aquatic ecosystems, including praries, wetlands, lakes, and streams. Through lectures, field trips, and case study discussions, students will be introduced to ecological principles and techniques used to restore and rehabilitate ecosystems. Students also will be involved in identifying, designing, and evaluating local restoration projects in conjunction with local resource agencies.
Prerequisite(s): BIOL337

NRES 475 Aquatic Entomology 3 Credit Hours (2,3)
Survey and identification of regional lake and stream insects, with additional emphasis on life history strategies and community ecology. Insect physiology, ecology, behavior, importance as fish food organisms, and utility as indicators of water quality is also presented.
Prerequisite(s): BIOL337 and Junior Standing

NRES 495 Senior Project 2 Credit Hours (0,6)
A practicum under the guidance of a faculty member. The student will conduct a scholarly project based on the proposal submitted by the student in NRES399 (or an appropriate substitute).
Prerequisite(s): NRES399

NRES 497 Experiential Learning Project 3 Credit Hours
A full semester/summer practicum experience. Students will develop work goals, responsibilities, and outcomes with their agency supervisor and faculty mentor. Students will prepare formal communication components (workshop or oral presentation and a poster). The experience should be 12 weeks at 40 hours per week. 3
Prerequisite(s): NRES398

NRES 499 Senior Capstone 1 Credit Hour (1,0)
Senior Capstone is required of all seniors majoring in conservation biology, environmental science, and fisheries and wildlife. Students will write a scholarly paper detailing their individual research or experiential learning project. An oral seminar and a poster presentation are also required components of this course. Students must attend the presentations of the other students enrolled in this course.
Prerequisite(s): NRES495 or NRES497 or EVRN495