

# ENVIRONMENTAL SCIENCES

## Courses

### ENVR 1113 Elements of Environmental Science (N)

**Description:** Application of biology, chemistry, ecology, economics, geology, hydrology, mathematics, physics, and other agricultural sciences to environmental issues. Addressing environmental problems from the standpoint of ethics, risk, and scientific and social feasibility. Emphasis on agricultural systems and natural resources.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Dean of Agriculture

**General Education and other Course Attributes:** Natural Science Reasoning

### ENVR 3101 Career Development in Environmental Sciences

**Description:** Develop career readiness skills in the environmental science field through resume building. Identify necessary skills to meet job requirements. Learn about career development resources and networking with environmental professionals. Understand the steps of the job/graduate school search, application and interview process.

**Credit hours:** 1

**Contact hours:** Lecture: 1 Contact: 1

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Dean of Agriculture

### ENVR 3113 Environmental Sampling and Analysis

**Prerequisites:** ENVR 1113 and CHEM 1215 or CHEM 1314 and BIOL 1114 or (BIOL 1111 and BIOL 1113) and STAT 2013; SOIL 2124 (or concurrently)

**Description:** Sampling and analysis for environmental characterization. Introduction of methods to analyze air, soil, water, vegetation, and biological samples. Applying state and federal criteria to evaluate environment.

**Credit hours:** 3

**Contact hours:** Lecture: 2 Lab: 3 Contact: 5

**Levels:** Undergraduate

**Schedule types:** Lab, Lecture, Combined lecture and lab

**Department/School:** Dean of Agriculture

### ENVR 4010 Internships in Environmental Science

**Description:** Supervised internships with business, industry, or governmental agencies in environmental policy, natural resources, and water resources. Offered for variable credit, 1-6 credit hours, maximum of 6 credit hours.

**Credit hours:** 1-6

**Contact hours:** Contact: 1-6 Other: 1-6

**Levels:** Undergraduate

**Schedule types:** Independent Study

**Department/School:** Dean of Agriculture

### ENVR 4033 Ecology of Invasive Species

**Prerequisites:** BIOL 1114 or (BIOL 1113 and BIOL 1111); and PBIO 1404 and BIOL 1604 recommended.

**Description:** Ecological principles and their application to invasive species. Population level characteristics, community and ecosystem level effects of a wide variety of taxa including microbial, fungal, plant invertebrate and vertebrate examples. Global consequences and governmental policies/programs designed to limit the spread of invasives. Same course as NREM 4033. May not be used for degree credit with NREM 5033.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Dean of Agriculture

### ENVR 4112 Land Measurement and Site Analysis

**Prerequisites:** MATH 1513 or equivalent.

**Description:** Methods and techniques used to locate sites and evaluate physical conditions. Includes map interpretation and land description, use of Global Positioning Systems, Rectangular System of Land Description and determination of land elevations, areas and slopes. Same course as AST 4112. Previously offered as MCAG 3311 and MCAG 4112.

**Credit hours:** 2

**Contact hours:** Lecture: 1 Lab: 2 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lab, Lecture, Combined lecture and lab

**Department/School:** Dean of Agriculture

### ENVR 4113 Advanced Environmental Sampling and Analysis

**Prerequisites:** ENVR 3113.

**Description:** Advanced sampling and analysis methods for environmental assessment. Development of Sampling and Analysis Plan and Quality Assurance Project Plan. Emphasis on data synthesis and understanding relationships between environmental media.

**Credit hours:** 3

**Contact hours:** Lecture: 2 Lab: 3 Contact: 5

**Levels:** Undergraduate

**Schedule types:** Lab, Lecture, Combined lecture and lab

**Department/School:** Dean of Agriculture

### ENVR 4363 Environmental Soil Science

**Prerequisites:** BIOL 1114 or (BIOL 1113 and BIOL 1111) and SOIL 2124.

**Description:** Re-emphasis of soil science concepts vital in the understanding of processes that are within the realms of the ecological regulator function of the soil; discussions on the role of soil as the foundation of forest, rangeland/pastureland, agricultural, urban and suburban, as well as wetland ecosystems; impact of soil processes on global environmental concerns; soil as the ultimate recipient of waste; impact of soil processes on groundwater and surface water quality Same course as SOIL 4363.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Dean of Agriculture

**ENVR 4500 Environmental Science Problems**

**Prerequisites:** Upper-division standing, GPA of 2.50 or better, and consent of instructor.

**Description:** Individual or small group study of selected problems in environmental science. Course may be used twice for up to six credit hours to meet degree requirements. Offered for variable credit, 1-6 credit hours, maximum of 6 credit hours.

**Credit hours:** 1-6

**Contact hours:** Contact: 1-6 Other: 1-6

**Levels:** Undergraduate

**Schedule types:** Independent Study

**Department/School:** Dean of Agriculture

**ENVR 4512 Introduction to National Environmental Policy Act**

**Description:** Outline of the National Environmental Policy Act (NEPA) documentation of potential environmental impacts for decision makers. Development of environmental assessment, environmental impact statements, and categorical exclusion documents that result from the NEPA processes.

**Credit hours:** 2

**Contact hours:** Lecture: 2 Contact: 2

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Dean of Agriculture

**ENVR 4573 Ethical Issues in Agriculture and the Environment**

**Description:** Application of ethical concepts and economics theory to real-world agricultural and environmental issues. Recognition of the moral, ethical, and economic dimensions of value that aid in understanding and resolving the controversial aspects of these private and public issues.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Dean of Agriculture

**ENVR 4811 Capstone Project Planning**

**Prerequisites:** Senior standing. ENVR 1113 and ENVR 3113 (with a grade of "C" or better) or ENVR 3113 concurrent.

**Description:** Collaborate in a team setting to develop a comprehensive proposal and strategic timeline addressing a real-world environmental science problem. Apply essential teamwork skills, integrate knowledge from prior coursework, and engage with environmental stakeholders, advisors, and experts. Develop a written proposal aimed at resolving the issue or implementing an innovative solution.

**Credit hours:** 1

**Contact hours:** Lecture: 1 Contact: 1

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Dean of Agriculture

**ENVR 4813 Environmental Science Capstone**

**Prerequisites:** ENVR 4811 with a grade of "C" or better. Must be taken the immediate semester after completion of ENVR 4811.

**Description:** Team-based project to develop and recommend solutions and communicate recommendations to stakeholders as part of a senior capstone project. Research results are presented by oral and written reports directly to stakeholders.

**Credit hours:** 3

**Contact hours:** Lecture: 1 Lab: 4 Contact: 5

**Levels:** Undergraduate

**Schedule types:** Lab, Lecture, Combined lecture and lab

**Department/School:** Dean of Agriculture

**ENVR 4893 Environmental Soil Chemistry**

**Prerequisites:** SOIL 2124 and CHEM 1225 or CHEM 1515.

**Description:** Chemistry of soil systems with an emphasis on environmental health and quality. Topics include organic matter dynamics, the role of plant and microbial inputs, ion exchange processes, sorption phenomena, properties of clay minerals, and soil acidity. Same course as SOIL 4893.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Dean of Agriculture

**ENVR 4913 Animal Waste Management**

**Prerequisites:** SOIL 2124.

**Description:** Aspects of animal waste management related to animal nutrition, system design, land application, socioeconomic issues and environmental impacts. Same course as ANSI 4913 and SOIL 4913.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Undergraduate

**Schedule types:** Lecture

**Department/School:** Dean of Agriculture

**ENVR 5000 Master's Thesis**

**Prerequisites:** Approval of advisory committee and departmental steering committee.

**Description:** Research leading to master's thesis or report. Offered for variable credit, 1-6 credit hours, maximum of 6 credit hours.

**Credit hours:** 1-6

**Contact hours:** Contact: 1-6 Other: 1-6

**Levels:** Graduate

**Schedule types:** Independent Study

**Department/School:** Graduate College

**ENVR 5033 GIS Applications for Water Resources**

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Graduate College

**ENVR 5050 Readings in Environmental Science**

**Prerequisites:** Consent of the instructor.

**Description:** This course provides an avenue for masters students to extend their knowledge of Environmental Science topics not covered in other courses. This course is not available for doctoral students. Offered for variable credit, 1-3 credit hours, maximum of 9 credit hours.

**Credit hours:** 1-3

**Contact hours:** Contact: 1-3 Other: 1-3

**Levels:** Graduate

**Schedule types:** Independent Study

**Department/School:** Graduate College

**ENVR 5123 Environmental Problem Analysis**

**Description:** This course reviews the process of environmental problem analysis using current practical examples. This course draws on theories from various disciplines and applies appropriate techniques of analysis.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Graduate College

**ENVR 5200 Special Topics in Environmental Science****Prerequisites:** Graduate standing.**Description:** Topics and issues in the broad field of environmental science. Group discussions and projects not covered by existing courses such as ecological risk assessment, water chemistry and environmental law. Offered for variable credit, 1-4 credit hours, maximum of 10 credit hours.**Credit hours:** 1-4**Contact hours:** Contact: 1-4 Other: 1-4**Levels:** Graduate**Schedule types:** Independent Study**Department/School:** Graduate College**ENVR 5210 Seminar in Environmental Science****Prerequisites:** Consent of the instructor.**Description:** This seminar is offered as a special topics course for masters students. The theme of the seminar will vary in accordance with recent advances in environmental science and the interests of the faculty instructor. Offered for variable credit, 1-3 credit hours, maximum of 6 credit hours.**Credit hours:** 1-3**Contact hours:** Contact: 1-3 Other: 1-3**Levels:** Graduate**Schedule types:** Independent Study**Department/School:** Graduate College**ENVR 5303 Issues in Environmental Sustainability****Description:** The course reviews human-nature relationships and how they affect the ability of future generations to sustainably improve their quality of life. The course also considers methods of environmental stewardship that can contribute to sustainability. In-class and/ or online discussions of issues, guest presentations by outside experts, and reports on selected topics are included.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Graduate College**ENVR 5313 Clean Air Act: Regulation, Compliance and Reporting****Description:** This course will present an overview of the Federal Clean Air Act including regulatory history and framework, key concepts such as technology forcing, enforceability and adequate margin of safety. This course addresses the preparation of emissions calculations for reporting and permitting, discussion of emissions monitoring and control technologies, and review of reporting requirements and legal standards for compliance. Course will focus on U.S. Federal and State application.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Graduate College**ENVR 5353 Environmental Outreach and Education****Description:** Techniques for environmental education and outreach programs for adults and children in the classroom and in the public arena.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Graduate College**ENVR 5403 Water Resource Management, Law, and Policy****Description:** This course explores ways to secure the right to obtain and use water, as well as the law relating to water pollution permitting. Surface and groundwater resources will be the focus. The course covers doctrines of water allocation, groundwater management regimes, the public rights to water, federal and tribal water management and regulation of water resources, and the permitting regime under the Clean Water Act.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Graduate College**ENVR 5413 Legal Framework for Resource Decision - Making and Public Land Management****Description:** This course focuses on the federal, state, and local agencies, policies, strategies, and public law that influence public lands management of the United States, and, to a lesser extent, other countries. Focus is on the historical and contemporary land management approaches used to protect, exploit, manage, and/or use public lands, with specific emphasis on the application of the National Environmental Policy Act (NEPA), jurisdiction, and contemporary issues.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Graduate College**ENVR 5433 Environmental Law for Management Professionals****Description:** This course blends fundamental environmental policy with legal and practical information for the management professional with emphasis on case and statutory histories. The course will explore why environmental laws and policies developed, how they are implemented, and how compliance is achieved. Students will gain the ability to evaluate the need for permits and know how to work practically and cooperatively with relevant state and federal agencies.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Graduate College**ENVR 5443 Hazardous Waste Regulations for Environmental Managers****Description:** Covers air, water and waste permitting and plans as well as DOT transportation of hazardous materials and several OSHA standards.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Graduate College**ENVR 5453 Bioremediation for Environmental Managers****Description:** Teaches the fundamental biological mechanisms that allow microorganisms and plants to degrade and/or remove contaminants from the environment.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Graduate College

**ENVR 5503 Environmental Management Practicum****Prerequisites:** 18 graduate credit hours.**Description:** This course explores methods of analyzing sustainable solutions to complex environmental, safety and health problems using an integrated team approach. This approach combines technical, legal, economic, and sociopolitical information into a coherent analytical framework.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Graduate College**ENVR 5510 Environmental Management Internship****Prerequisites:** ENVR 5503 and consent of program director.**Description:** The student must identify and solve an environmental problem under the supervision of a competent professional environmental manager, and submit and defend a formal report presenting the problem, solution analysis methodologies, and recommended solution. The internship must involve at least 240 contact hours with the manager. The course is required of all masters students pursuing a plan of study in environmental management. Course previously offered as ENVR 5600. Offered for fixed credit, 3 credit hours.**Credit hours:** 3**Contact hours:** Contact: 3 Other: 3**Levels:** Graduate**Schedule types:** Independent Study**Department/School:** Graduate College**ENVR 5513 Advanced Environmental Impact Analysis****Description:** National Environmental Policy Act (NEPA) outlines documentation of potential environmental impacts for decision makers. Development of environmental assessment, environmental impact statements, and categorical exclusion documents that result from the NEPA processes. Development of environmental assessment projects graded on a pass/fail basis.**Credit hours:** 3**Contact hours:** Lecture: 2 Lab: 2 Contact: 4**Levels:** Graduate**Schedule types:** Lab, Lecture, Combined lecture and lab**Department/School:** Graduate College**ENVR 5523 Industrial Ecology****Prerequisites:** General biology.**Description:** Provides students with an overview and broad understanding of ecology principles as applied to an industrial setting. The course begins with an overview of general ecological principles such as ecosystem components and structures, biogeochemical cycles, energy flows, and properties of populations. The course concludes with a consideration of industrial ecology principles such as sustainability, pollution prevention, life cycle assessment and waste minimization.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Graduate College**ENVR 5533 Genres of Environmental Writing****Description:** This course focuses on three written genres: proposals, reports and academic articles. Students will learn the basic Introduction, Methods, Results, and Discussion (IMRD) structure. This structure is the basis of workplace reports and research articles in a wide variety of academic disciplines. Students will examine how the language features and organizational structure of these documents are influenced by their audience and context.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Graduate College**ENVR 5543 Environmental Management Systems****Description:** This course introduces strategies for the design and operation of environmental management systems that reduce environmental impacts in conformance with ISO 14000 standards. Topics include aspect identification, impact assessment, impact reduction strategies, and management oversight. Other topics such as training, internal and external auditing, and integration with other management programs will also be addressed.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Graduate College**ENVR 5563 Transportation of Hazardous Materials****Description:** This course will fulfill the Federal Department of Transportation (DOT) training requirements for General Awareness and Security Awareness in accordance with 49 CFR, Part 172, Subpart H. The course covers shippers' responsibilities associated with the many hazardous materials regulated by the DOT. Students will learn how to use the hazmat table and complete shipping papers; when to use specific hazard placards, markings and labels; and how to appropriately package specific hazardous materials.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Graduate College**ENVR 5573 Applied Standards for Environmental Managers****Description:** Foundational understanding of the complex regulatory framework related to waste management.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Graduate College**ENVR 5583 Safety Aspects for Environmental Managers****Description:** This course fulfills OSHA's 30-hour General Industry training requirements as per 29 CFR 1910. The course provides environmental managers with specialized training to recognize, avoid, and prevent potential jobsite hazards. Students will gain a practical understanding of hazard analysis calculations and their application within the rules and regulations of OSHA.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Graduate College

**ENVR 5593 Hazardous Waste Operations and Emergency Response: HAZWOPER**

**Description:** This course fulfills the off-site requirements of OSHA 40-hour Hazardous Waste Operations and Emergency Responses Standard (HAZWOPER) requirements for General Site Workers as per 29 CFR 1910.120. The course uses discussion, demonstration, simulations, and hands-on experiences to address personal protective equipment use, decontamination procedures, and tactics for establishing safe work areas at hazardous waste sites or in emergency response work.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Graduate College

**ENVR 5613 Introduction to Environmental Toxicology & Industrial Hygiene**

**Description:** An introduction to the basic principles, concepts, and issues associated with environmental toxicology and industrial hygiene. Environmental toxicology addresses biological, chemical and physical contaminants in the environment, their fate and transport, and their potential adverse effects. Also covers environmental factors that contribute to worker illness and injury resulting from exposure to chemical, physical and biological contaminants.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Graduate College

**ENVR 5633 Physical Geology for Environmental Managers**

**Description:** Overview of the physical and chemical nature of the solid and fluid earth. Focuses on how these physical attributes and processes influence interactions between humans and the earth's environment.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Graduate College

**ENVR 5673 Applied Hydrology & Hydrogeology for Environmental Managers**

**Description:** Aspects of surface and groundwater of direct interest to environmental managers. Hydrology is considered from the perspective of irrigation and stormwater management. Hydrogeology is addressed as it applies to industrial and commercial sites. Emphasis on use of monitoring equipment and preparation of stormwater manager plans, groundwater investigation reports, and groundwater management plans.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Graduate College

**ENVR 5703 Chemical Aspects of Environmental Science I**

**Prerequisites:** CHEM 1225, MATH 2155.

**Description:** For non-chemists with a basic understanding of industrial environmental chemistry. For the environmental professional student in the calculations required for permitting, such as the Clean Air Act, the Clean Water Act, release reporting (CERCLA), RCRA and Industrial Hygiene. The chemical interpretation of MSDS sheets and review of basic chemistry for individuals sitting for professional examinations. Fundamental scientific basis required for dealing with any environmental area.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Graduate College

**ENVR 5713 Chemical Aspects of Environmental Science II**

**Prerequisites:** ENVR 5703.

**Description:** A continuation of 5703. Applications of statistical methods for environmental monitoring, environmental sampling, chemical wastewater treatment, fugacity (air emission calculations) and environmental chemical analysis.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Graduate College

**ENVR 5723 Field Investigation for Environmental Managers**

**Description:** This course focuses on practical environmental investigations of soil, surface water, and groundwater contamination within an industrial setting. Students will research study sites to design, estimate cost, and implement actual field investigations. Samples will be analyzed and results used to make recommendations for operational improvement and/or remediation.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Graduate College

**ENVR 5733 Environmental Site Assessment**

**Description:** This course introduces concepts associated with conducting environmental site assessments (ESAs) and contaminant remediation. Topics include review of federal regulations regarding site assessments, an overview of Phase I and Phase II ESA methodologies, proper soil/water sampling techniques, soil/geology/hydrogeology principles relating to environmental assessments, and various remediation strategies. The course includes field exercises simulating Phase I and Phase II ESA investigations, interpretation of historical aerial photos, and wetland identification.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Graduate College



**ENVR 5743 Environmental Impact Assessment**

**Description:** The course teaches students how to understand and apply the National Environmental Policy Act to evaluate and document potential environmental impacts for decision makers. The course reviews the development of environmental assessment, environmental impact statement and categorical exclusion documents that result from the NEPA process. Emphasis is placed on the development of an environmental assessment program.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Graduate College

**ENVR 5753 Environmental Site Remediation**

**Description:** Introduction to concepts associated with environmental site remediation. Emphasis will be placed on the application and assessment of site clean-up.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Graduate College

**ENVR 5823 Watershed Management**

**Description:** This course provides an overview of watershed management that integrates law, politics, economics, watershed science, engineering, education, social marketing, and conflict resolution. Students will also learn how to critically evaluate watershed management programs. Field trips to watersheds are included.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Graduate College

**ENVR 5853 Field Stream Assessment**

**Description:** Techniques for evaluating the health of streams. Laboratory techniques for fish and aquatic insect collection, habitat assessments, chemical water quality analysis, and stream discharge measurement.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Graduate College

**ENVR 6000 Doctoral Research for Dissertation**

**Prerequisites:** Approval of advisory committee.

**Description:** Research leading to the PhD dissertation. Offered for variable credit, 1-12 credit hours, maximum of 24 credit hours.

**Credit hours:** 1-12

**Contact hours:** Contact: 1-12 Other: 1-12

**Levels:** Graduate

**Schedule types:** Independent Study

**Department/School:** Graduate College

**ENVR 6011 Survey of Environmental Science**

**Description:** This course introduces newly admitted environmental science students to environmental research conducted by faculty at OSU. The course also helps students prepare interdisciplinary plans of study that support their professional and research goals. It is required of all ES doctoral students during their first year of enrollment. The course may also be taken by ES masters students, but is not required.

**Credit hours:** 1

**Contact hours:** Lecture: 1 Contact: 1

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Graduate College

**ENVR 6023 Research Methodologies in Environmental Science**

**Prerequisites:** Permission of student's research adviser.

**Description:** Introduction to research techniques and literature in environmental science for doctoral students.

**Credit hours:** 3

**Contact hours:** Lecture: 3 Contact: 3

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Graduate College

**ENVR 6031 Interdisciplinary Research Report Preparation**

**Prerequisites:** ENVR 6023 or AGED 5983 and permission of the student's research adviser.

**Description:** This course teaches students how to prepare and defend interdisciplinary dissertations. Students will learn how to interpret results, articulate findings, justify conclusions, and identify implications. They will also learn how to deliver professional conference presentations and write professional papers. The course requires permission of the student's research adviser. The course is required of all ES doctoral students just before they intend to prepare and defend their dissertations. ES master's students who want to learn more about preparing and defending a thesis may also enroll.

**Credit hours:** 1

**Contact hours:** Lecture: 1 Contact: 1

**Levels:** Graduate

**Schedule types:** Lecture

**Department/School:** Graduate College

**ENVR 6050 Advanced Readings in Environmental Science**

**Prerequisites:** Consent of the instructor.

**Description:** This course provides an avenue for doctoral students to extend their knowledge of environmental science topics not covered in other courses. Offered for variable credit, 1-3 credit hours, maximum of 9 credit hours.

**Credit hours:** 1-3

**Contact hours:** Contact: 1-3 Other: 1-3

**Levels:** Graduate

**Schedule types:** Independent Study

**Department/School:** Graduate College

**ENVR 6210 Advanced Seminar in Environmental Science****Prerequisites:** Consent of the instructor.**Description:** This course is offered as a special topics course for doctoral students. The theme of the course will vary in accordance with recent advances in environmental science and the interests of the faculty instructor. No masters student may enroll in this course. Offered for variable credit, 1-3 credit hours, maximum of 9 credit hours.**Credit hours:** 1-3**Contact hours:** Lecture: 1-3 Contact: 1-3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Graduate College**ENVR 6310 Advanced Topics in Environmental Science****Prerequisites:** 24 credit hours of graduate credit and permission of instructor.**Description:** This course covers current topics and issues in environmental science. Though the topics will vary, each course will typically include environmental assessment, environmental sustainability and environmental policy. Group discussions and team projects may be required. Offered for variable credit, 1-3 credit hours, maximum of 6 credit hours.**Credit hours:** 1-3**Contact hours:** Contact: 1-3 Other: 1-3**Levels:** Graduate**Schedule types:** Independent Study**Department/School:** Graduate College**ENVR 6503 Advanced Environmental Management Practicum****Prerequisites:** 30 graduate credit hours.**Description:** This course discusses and compares advanced methods of analyzing sustainable solutions to complex environmental, safety and health problems. A framework for integrating technical, legal, economic, and sociopolitical analysis into a risk-based model will be developed and applied to a real-world case study. Required for doctoral students pursuing a plan of study in environmental management.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Graduate College**ENVR 6516 Advanced Environmental Management Internship****Prerequisites:** ENVR 6503 and consent of program director.**Description:** The student must identify and solve an environmental problem in collaboration with a competent professional environmental manager, and submit and defend a formal report presenting the problem, problem and solution analysis methodologies, and recommended solution. The internship must involve at least 480 contact hours with the manager. The course is an experience for all ES doctoral students pursuing a plan of study in environmental management.**Credit hours:** 6**Contact hours:** Lecture: 6 Contact: 6**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Graduate College**ENVR 6623 Social Aspects of Environmental Planning****Description:** This course develops students' theoretical and practical understanding of social aspects of environmental planning. The course addresses topics such as social impact assessment, the role of public involvement, environmental justice, and other social considerations in the implementation of environmental programs. It will also demonstrate the application of social science techniques in environmental planning and prepare students for the application of social perspectives in environmental decision-making - in both the public and private sectors.**Credit hours:** 3**Contact hours:** Lecture: 3 Contact: 3**Levels:** Graduate**Schedule types:** Lecture**Department/School:** Graduate College