

All Undergraduate Courses Related to Sustainability

Undergraduate courses offered that include sustainability: Courses that are focused on a topic other than sustainability, but incorporate a unit or module on sustainability or a sustainability challenge, include one or more sustainability-focused activities, or integrate sustainability issues throughout the course.

Per the STARS guidelines, these courses were derived from conducting a search through the undergraduate and graduate course offerings for the 2017-18 school year including each of the following terms separately: Environment, environmental, sustain, sustainability, ecology, ecological, energy, climate, green, renewable, fuel, conserve, conservation, global change, pollution, geothermal, social wellbeing, economic prosperity, environmental health.

Total number of Undergraduate Courses Related to Sustainability: 141

1. AE 424 - Astronautics

Solar system; orbital mechanics; propulsion; atmospheric entry, including thermal protection materials, human factors in space flight, the space environment, and current topics.

2. ALEC 340 - Marketing and Public Strategies for Global Sectors

Examines how agricultural organizations communicate their mission, vision and goals for their company both in the United States and internationally. Students will examine agricultural companies in all sectors and analyze how they respond to global change.

3. ANSC 340 - Animal Breeding and Genetics

Principles of Mendelian, molecular, and population genetics. Genetic and environmental bases of animal variation. Selection and mating systems as mechanisms of genetic change. Planning breeding programs for economically important domestic species.

4. ANSC 348 - Honors: Animal Breeding and Genetics

Principles of Mendelian, molecular, and population genetics. Genetic and environmental bases of animal variation. Selection and mating systems as mechanisms of genetic change. Planning breeding programs for economically important domestic species.

5. ANTH 305 - Evolution and Society

No description

6. ARCH 271 - Architectural Design I: Place

Contextual determinants in architectural design. Role of the city in architectural design. Methods of analyzing place and form in determining design strategies. Introduction to spatial implications of structure and sustainable urbanism. Representational skills developed including drawing, diagramming, and modeling techniques.

7. ARCH 361 - Design Research in Technology

Input to the architectural design research from a range of technical issues. May include building codes, construction types, cost, fire resistance, area and bulk, along with comfort parameters, lighting intentions, energy performance targets, energy programming and schedules, etc. Focus on framing the designer's tasks and the technical support of architectural qualities. Supports technical aspects of program development in 370. Combination lecture and lab format. First half semester course.

8. ARCH 424 - Special Topics in Landscape Architecture

Faculty initiated professional elective involving landscape architecture, history and theory of landscape architecture, ecology, and related issues.

9. ARCH 471 - Integration Design Studio

Design project from conceptual through design development phase. Specification of component building systems including structures, mechanical, lighting, and construction details. Demonstration of principles of sustainability in design and building performance.

10. ARCH 372 - Architectural Design IV

Design synthesis. Integration of design determinants emphasizing structure, sustainability, materials and construction.

11. AREC 201 - Economics of the Global Food and Fiber System

Introduction to microeconomic and macroeconomic principles and their application to the global food and fiber system. Specific topics include consumer and producer behavior, market equilibrium, monetary and fiscal policy, and international trade.

12. AREC 331 - Agricultural Commodity Policy

Economics rationale for and effects of historical and current policies and programs for the agricultural commodity sector including price and income support, supply management, and crop insurance. Relationship of domestic commodity policy to international trade agreements.

13. AREC 443 - Food Industry Management and Marketing

Market analysis and business strategy for agricultural products from 'farm to fork'. Food industry procurement systems, transportation and logistics; supply chain forecasting and planning; management of food processing facilities; development of business plans for new food products and comprehensive marketing plans.

14. AREC 460 - Rural Economic Development

Use of economic principles in understanding rural economic development at community and regional levels, emphasizing the linkages between rural and urban communities, business location decisions, and how geography shapes markets. Integrating historical and current information, students will explore efficiency and equity as driving forces behind public and private sector policy to encourage, manage and forecast domestic and international development

15. BIOL 102 - Introduction to Biology: Biodiversity and Ecology

For non-biology majors, introduction to the principles of biology as they relate to biodiversity and ecological processes. Topics include a survey of evolutionary theory, an analysis of major representative organisms in the Tree of Life, and ecosystem dynamics including human impact on the environment.

16. BIOL 106 - The Living City

More than half the world's population lives in cities and is directly involved in ecological and evolutionary processes governing urban environments. Cities are unique ecosystems that develop novel organismal communities, alter weather patterns, and concentrate resources. The course will investigate urban ecosystems, and the health and financial implications for people.

17. BIOL 114 - Introductory Plant Biology II

Topics include plant anatomy, growth and nutrition, mechanisms of evolution, speciation, ecology (population, community, and ecosystem), and the interactions between plants and people (including origin of agriculture, the Green Revolution, genetic modification, plants as medicines, and a survey of current environmental issues related to plant biology).

18. BIOL 150 - Organismal and Ecological Biology

Intended for science majors, an introduction to the major biological concepts emphasizing the organismal and ecological aspects of life. Organized along themes of evolution, structure and function, information flow, exchange and storage, pathways of energy and matter, and systems.

19. BIOL 158 - Honors: Organismal and Ecological Biology

Same as 150 but designed for high achieving students.

20. BIOL 260 - Ecology

Relations between organisms and their environment, including human environmental problems. Topics include populations, communities, and ecosystems.

21. BIOL 269 - Ecology Field-Based Laboratory

Field-based activities that illustrate the relations between organisms and their environment, including human environmental problems.

22. BSE 416 - Environmental Hydrology

An introduction to hydrology and associated environmental implications including: the hydrologic cycle, evapotranspiration, runoff, erosion, unit hydrograph operations, routing, open channel flow, groundwater, infiltration, and urban stormwater.

23. BSE 418 - Honors: Environmental Hydrology

Honors version of 416 that requires an additional honors component.

24. BSET 125 - Fundamentals of Building Systems and Materials

Introduction to construction organization, building systems and construction materials. Emphasis on the building process including codes, zoning, material standards, standard practice, and sustainability.

25. BSET 414 - CAD Applications to Biosystems Engineering Technology

Computer Aided Drafting (CAD) applications in agriculture and environmental science. Essentials of CAD software to create drawings of components, systems, flow charts, and process diagrams. Applications in mechanical, structural, and biosystems. 2-D applications with limited exposure to 3-D applications. Computer intensive course. Hands-on experience.

26. BSET 434 - Production Monitoring and Automation

Precision technologies for monitoring and control of agricultural systems. Applications include yield monitoring; variable rate control and sensing systems for planters, sprayers, soil applied nutrients, water management, crop health, and pest pressure; electronic information transfer; and GPS-based vehicle guidance.

27. BSET 474 - Environmental Instrumentation and Monitoring

Equipment and techniques commonly used to measure all aspects of hydrologic cycle – precipitation, runoff, streamflow, and subsurface water movement. Sampling of all flows for contaminants. Design of monitoring systems. Analysis of data.

28. CBE 455 - Elements of Synthetic Biology and Metabolic Engineering

Cross-disciplinary course, an upper level continuation of 350, focuses on biocatalyst development for industrial biotechnology. The course covers synergistic approaches of synthetic biology and metabolic engineering to design complex cellular metabolisms to solve challenging problems related to health, energy, and environment with integration of state-of-the-art computational and experimental techniques.

29. CBE 475 - Applied Microbiology and Bioengineering

Course at the interface of chemical engineering, biomolecular engineering, environmental engineering, microbiology, and biochemistry, highlighting the use of microbial and molecular bioprocesses at industrial scale. Topics include analysis of enzymatic reactions, biodegradation/wastewater treatment, analysis of basic bioreactor systems, biosensors, and biomolecular immobilization methods.

30. CE 310 - Civil and Environmental Engineering Lab

Introduction to laboratory report writing, design of experimental/testing programs, and fundamental lab and field testing for civil and environmental engineers.

31. CE 381 - Environmental Engineering I

Introduction to drinking water treatment and distribution systems, wastewater treatment and collection systems, air pollution, solid/hazardous waste, and environmental regulations.

32. CE 391 - Water Resources Engineering I

Introductory coverage of water resources engineering including fluid properties; conservation of mass, energy, and momentum; hydraulics (flow measurement, pressure pipe, and open channels); and hydrology (hydrologic cycle, groundwater flow, and rainfall-runoff estimation).

33. CE 401 - Review of Engineering Fundamentals

Review of selected topics covered on the Fundamentals of Engineering exam. Emphasis is on those topics relating to civil and environmental engineering. Must be taken during either of the final two terms prior to graduation.

34. CFS 210 - Human Development

Conception through adulthood in various social/ecological contexts. Interrelationships among various aspects of development – physical, cognitive, emotional, social. Normative and non-normative development.

35. CFS 211 - Development in Infancy and Childhood

Development from conception through middle childhood in various ecological contexts. Interrelationships among cognitive, emotional, social, and biological aspects of ontogeny. Normative and non-normative development. Includes observation.

36. CFS 213 - Development in Adolescence and Adulthood

Development from adolescence through adulthood in various ecological contexts. Interrelationships among cognitive, emotional, social, and biological aspects of ontogeny. Normative and non-normative development. Includes observation.

37. CHEM 405 - Topics in the Development of Chemistry

Historical development of topics such as the atomic theory; chemical industry; interrelationship of population, energy, and food. Subject matter may vary from one offering to another. Assignments include readings from older original literature (Dalton, Faraday, Kekule) and from current journals and monographs. Includes the use and misuse of evidence, the impact of chemistry on society, how scientists reach conclusions, and the nature of scientific controversy. Written reports are required. Writing-emphasis course.

38. ECE 421 - Electric Energy Systems

Structure and operation of the electrical energy grid, load flow, economic loading, planning, control, and reliability. Balanced and unbalanced faults, system protection, and system stability. Includes Level 1 design projects.

39. ECE 427 - Honors: Electric Energy Systems

Same as 421 with additional honors project.

40. ECE 496 - Power and Energy Systems Seminar

Current topics in power and energy systems.

41. EEB 330 - Field Botany

Principles of taxonomy, basic ecological concepts and identification, recognition, collection and preservation of local, native and naturalized plants.

42. EEB 404 - Ecosystem Ecology

Integrated study of biotic and abiotic components of ecosystems and their interactions with emphasis on southeastern ecosystems and current topics such as global change and species invasions.

43. EEB 405 - Ecosystem Ecology Laboratory

Introduction to observational and experimental research in ecosystem ecology including field measurement of components of the carbon and nitrogen cycle, field and green house experiments, and laboratory manipulations. Requires periodic field trips to research sites and at least one overnight field trip.

44. EEB 409 - Perspectives in Ecology and Evolutionary Biology

Forefront considerations of ecology, behavior, and evolutionary biology. Emphasis on current developments for applications, including societal and economic impacts and moral and ethical implications. An oral presentation and a referenced library-research essay are required. Writing-emphasis course.

46. EEB 424 - Plant Diversity and Evolution

A survey of the evolutionary history of photosynthetic cyanobacteria and green plants (green algae, bryophytes, lycophytes, ferns and seed plants). A hands-on laboratory provides an in-depth understanding of major morphological and developmental features of each group.

47. EEB 433 - Plant Ecology

Principles, fundamental concepts and techniques in plant ecology, including topics such as plant interactions with climate, soils, microbiomes, community dynamics and plant-mediated ecosystem processes.

48. EEB 436 – Plant-Animal Interactions

Introduction to the evolutionary and ecological aspects of interactions between plants and animals, including herbivory, pollination, and seed dispersal. Emphasis is on historical development of the field, discussions of primary literature, design of experiments, and writing.

49. EEB 450 - Comparative Animal Behavior

Principles and methods of ethology with emphasis on ecological, developmental, physiological, and evolutionary aspects.

50. EEB 462 - Paleoecology

An introduction to ecological function in deep time. The course develops an integrative geological and organismic framework for understanding the ecological drivers of biodiversity change through time.

51. EPP 313 - Introductory Plant Pathology

Introduction to the microorganisms and environmental conditions causing disease in plants. Biology of pathogens, host-pathogen interactions, and disease development and principles of control.

52. ESS 120 - Soils and Civilizations

Investigation of the close linkage between soil conservation and degradation and the consequences to ancient civilizations and environmental degradation and its societal impacts during modern times. Comparison of past soil management practices to present-day issues of soil salinization, erosion, and siltation. Introduction to the role of soil resources in current global environmental issues and conflicts.

53. ESS 334 - Soil Nutrient Management and Fertilizers

Influence of soil properties on nutrient availability to plants. Management of inorganic and organic fertilizer materials and the determination of their fate in the soil-plant system. Nutrient management as it relates to agricultural sustainability and soil quality.

54. ESS 444 - Environmental Soil Physics

Basic understanding of soil physical properties and processes; influence of soil physical properties on water and chemical movement in soil; and practical experience in the measurement and analysis of soil physical properties, water flow, and chemical movement in soil.

55. FDSC 150 - History and Culture of Food

Impact of people and historical events on the production, distribution, and consumption patterns of food. The role of food as an indicator of cultural, societal, and historical changes around the world. Major technological advances in food processing and their impact on the globalization of the food supply.

56. FDSC 421 - Food Microbiology

Physical, chemical, and environmental factors moderating growth and survival of foodborne microorganisms. Pathogenic and spoilage microorganisms affecting quality of foods and their control.

57. FDSC 428 - Honors: Food Microbiology

Physical, chemical, and environmental factors moderating growth and survival of foodborne microorganisms. Pathogenic and spoilage microorganisms affecting quality of foods and their control.

58. FDSC 430 - Sensory Evaluation of Food

Principles and procedures of sensory evaluation of food, methods of test analyses, physiological, psychological, and environmental factors affecting sensory perception.

59. FORS 215 - Forest Ecology

Ecological interactions among tree species, other plant and animal species, and their environment. Forest ecosystem classification; energy, nutrient, and hydrologic cycles; and site quality. Perturbations and growth, survival and forest composition; forest succession; and fire ecology. Regeneration ecology through establishment and stand dynamics. Physiological ecology, ecological strategies, and adaptations of trees.

60. FORS 305 - Prescribed Fire Management

Prescribed fire ecology, use, and management in forest stands.

61. FORS 314 - Economics of Forest and Wildland Resources

Basic principles of forest resource economics. Microeconomic applications in forestry and non-market valuation and analysis. Financial analyses of private and public forest resource management decisions.

62. FORS 317 - Honors: Economics of Forest and Wildland Resources

Students will attend 314 classes with supplementary assignments.

63. FORS 420 - Forest Resource Management

Introduction to forest-level management concepts from an economic perspective. Harvest determination; goal setting under multiple-use concepts; taxes; classical approaches to regulation, linear programming and harvest scheduling; and goal programming.

64. FORS 422- Forest and Wildland Resource Policy

Policy formulation and criteria for policy determination. Forest and wildland law and regulation. Theory of conflict resolution. Formal and informal resolution.

65. FWF 317 - Principles of Wildlife and Fisheries Management

Ecological relationships of wild animals with other animals and their habitats. Biological, social, and economic aspects of their management.

66. FWF 324 - Applied Ecosystem Restoration

This course will build upon the principles of ecology to cover the theory and practical knowledge needed to restore the structure and function of ecosystems.

67. FWF 325 - Wildlife Vegetation and Habitat

Introduction to interactions between plants and wildlife, including species of conservation concern. Emphasis is on plant species that comprise east Tennessee's primary wildlife habitats, and the utility of vegetation data in management. Students will be required to participate in at least one day-long field trip.

68. FWF 420 - International Natural Resource Issues

Identification and analyses of issues regarding forestry, wildlife, fisheries, and associated natural resources beyond U.S. borders. Biophysical, economic, and cultural elements impacting natural resources at the international level. Cases — Northern Europe, Latin America, Indonesia, and Africa.

69. GEOG 320 - Cultural Geography: Core Concepts

Background and method of cultural geography. Basic concepts and theories focusing on cultural landscape, culture regions, cultural ecology, innovation and diffusion, cultural integration, and world patterns of cultural phenomena.

70. GEOG 340 - Economic Geography: Core Concepts

Concepts, theories, and practices in economic geography. Real and theoretical patterns in agriculture, manufacturing, and service activities.

71. GEOG 343 - Geography of Human Rights

Human rights and social justice issues around the world. Special consideration of Africa and the African diaspora.

72. GEOG 363 - Southern Spaces and Places

Geographical appraisal of the southeastern United States, including physical environment and human resources. Origin and development of contemporary economic and cultural traits of the area. Writing-emphasis course.

73. GEOG 431 - Environmental History from Lake Sediments

Analysis of pollen grains, charcoal fragments, and other materials in lake sediments as proxy indicators of past vegetation, climate, human activity, and natural disturbances.

74. GEOG 432 - Environmental History from Tree Rings

Principles, techniques, and interpretation in tree-ring science. Applications in geography, climate, ecology, forestry, archaeology, and earth sciences.

75. GEOG 433 - Landform Analysis and Landscape Planning

Overview of earth surface processes related to landscape planning. Topics include slope stability, water cycle, watershed and stream systems, sediment transport, soil erosion, and land use change. People as evaluators and agents of change is emphasized by case studies, discussion, and assignments.

76. GEOG 435 - Biogeography

Study of the changing distribution patterns of plants and animals on a variety of spatial and temporal scales. The effects of plate tectonics, climate change, and human activity on world biota.

77. GEOG 436 - Water Resources

Global water resources and hydrologic processes, including water availability, flooding, and water quality issues examined from physical and economic geographic perspectives.

78. GEOG 436 - Water Resources

Global water resources and hydrologic processes, including water availability, flooding, and water quality issues examined from physical and economic geographic perspectives.

79. GEOG 439 - Plants, People, and Climate in North America

Characteristics and distribution of major plant communities of Canada, the U.S., Mexico, and Central America. Relationships to climate, soil, fire, and human disturbance. Long-term history and future prospects.

80. GEOL 102 - Earth, Life, and Time

Fossils, evolution, and ancient environments, plus a review of 4.5 billion years of Earth history.

81. GEOL 104 - Exploring the Planets

Spacecraft investigation of the geology and geological processes operating on and within planetary bodies, as well as satellites, asteroids, and comets. Topics include planetary formation processes,

composition of the planets and their atmospheres, formation of moons and other small bodies, geologic processes (tectonics, volcanism, water- and wind-driven processes, climate evolution, impact cratering) that affect planetary surfaces, and the spacecraft missions that have provided data for geologic interpretation.

82. GEOL 108 - Honors: Earth, Life, and Time

Laboratory and field emphasis to understanding fossils, evolution, and ancient environments throughout 4.5 billion years of Earth history.

83. GEOL 205 - Age of the Dinosaurs

Survey of the major groups of dinosaurs. Skeletal structure, ecology, environments, evolutionary history, and extinction.

84. GEOL 292 - Careers in Geology and Environmental Studies

Introduction to the range of careers in geology and environmental studies, and how students can optimize their course of study to prepare for these careers, and build skills necessary for the job search or graduate school application process. This includes discussion of internships, minors, undergraduate research, and other activities that can enhance students' CVs and better prepare them for their careers.

85. GEOL 454 - Environmental Restoration

Applications of ecology and geological sciences toward restoring natural systems to become more fully functioning ecosystems. Topics include: geological mitigation, ecological succession, non-native species, and many case studies. At least one field trip to a nearby ecological restoration site will be required.

86. GEOL 459 - Introduction to Oceanography

Principles of oceanography, including physical, chemical, geological, and biological processes and patterns. Emphasis on the physical, chemical, and geologic structure of the oceans and their role in oceanic circulation, global climate change, and the biogeochemical evolution of the oceans through geologic time.

87. GEOL 461 - Organic Geochemistry

Fundamentals of organic geochemistry; primary production, diagenesis, and preservation of organic matter in the sedimentary rock records; and reconstruction of ancient geologic environments using biomarker compounds.

88. GEOL 462 - Environmental Aqueous Geochemistry

A survey of fundamental geochemical principles as applied to the fate and transport of inorganic and organic constituents in natural waters. Topics include thermodynamics, activity-concentration relations, mineral solubility and stability, chemical speciation and redox state of natural waters, and water-rock-biota interactions. Course will emphasize geochemical modeling to test hypotheses, explore assumptions, approximations, and equilibria in natural geochemical systems.

89. GEOL 465 - Geomicrobiology

Introduction to interactions between microbes and earth materials (rock, soil, water). Course will identify and evaluate key biogeochemical and genetic evidence used to determine biotic from abiotic processes in modern and ancient systems. Topics include microbial ecology and diversity, community structure, biogeochemistry, molecular biology, major environmental habitats, astrobiology, and geomicrobiological applications for geology, engineering, and mining.

90. HIST 307 - Honors: Introduction/Historical Problems

Historical analysis and philosophy of history. Principles and techniques of research emphasizing the roles of climates of opinion and frames of reference and the problems of evidence, interpretation, and objectivity. Required of students working for honors in history.

91. HIUS 365 - Food and Power in U.S. History

American history through lenses of food and agriculture; emphasizes social, political, economic, and environmental questions, and interactions with the non-human world. Writing-emphasis course.

92. HSP 288 - Energy in the Modern World

This interdisciplinary seminar examines the problems and possibilities in applying and using energy in the modern world.

93. IB 439 - Global Supply Chain Management

Explores the complexities of managing supply chains in a global context. Addresses issues relating to the drivers of globalization and managing the supply and demand fulfillment processes across an extended and global organization. Topics include discussions of cultural differences, regional trading blocs, global procurement, offshoring, global infrastructure, security and risk, sustainability, market entry, service quality, gray markets, customer lifetime value, demand/supply integration.

94. IE 404 - Industrial Engineering Design I

Current real-world problems will be drawn from local production and service organizations and presented by personnel from these organizations. Senior industrial engineering student teams will solve these real-world problems under the guidance of their instructor using industrial engineering methodology. These problems emphasize problem definitions, analysis, and presentation with considerations for engineering standards and realistic economic, environmental, ethical, safety, social, political, and other pertinent constraints.

95. IE 422 - Industrial Engineering Design II

Current real-world problems will be drawn from local production and service organizations and presented by personnel from these organizations. Senior industrial engineering student teams will solve these real-world problems under the guidance of their instructor using industrial engineering methodology. These problems emphasize problem definitions, analysis, and presentation with considerations for engineering standards and realistic economic, environmental, ethical, safety, social, political, and other pertinent constraints.

96. INSC 451 - Information Management in Organizations

Introduces concepts and techniques for the interdisciplinary study of information, organizations, technology, and individuals, sometimes referred to as knowledge management. Topics include characteristics of data, information and knowledge; introduction to knowledge management; sensemaking in organizations; organizational learning; intellectual capital; communities of practice; ecological approaches; knowledge acquisition, representation and sharing; uses of information technology for information and knowledge management; and roles of professionals in managing information management initiatives.

96. JREM 450: Writing about Science and Medicine

This course asks students to write nonfiction articles for lay readers about any science subject, including nature, ecology, and the environment. Students also read exemplary science-writing articles, some related to ecology, the environment, and sustainability.

98. JREM 451 - Environmental Writing

Writing for the news media (including the Internet) on such environmental issues as energy, sprawl, air pollution, forests, and invasive species. Students hear presentations from and interview experts in environmental science and reporting. Exemplary environmental writing is analyzed.

99. JREM 456: Science Writing as Literature

In this course students read and write analyses of accurate science writing of classified as nature and environmental writing, concerned with ecology and sustainability. Among the authors read are Rachel Carson, E. O Wilson, David Quammen, John McPhee, Robert Sapolsky, Carl Zimmer, Loren Eisely, Olivia Judson, and Mark and Delia Owens, Students may also write their own science-writing article on a topic of their choice. They often write on nature/ecology/environmental subjects

100. MATH 405 - Models in Biology

Difference and differential equation models of biological systems.

101. ME 480 - Introduction to Hybrid Electric Vehicles

Steady-state HEV force and power modeling. Introduction to internal combustion engines, motors, energy storage systems, and control strategies. Powertrain design and analysis using various computer simulation tools.

102. MICR 470 - Microbial Ecology

Physiological diversity and taxonomy of microorganisms from natural environments. Emphasis on the functional role of microorganisms in natural and simulated ecosystems.

103. MSE 460 - Solar Photovoltaics

Underlying physics of semiconductor materials used as photovoltaics and a review of the current state of the art of converting sunlight to electrical energy.

104. NE 404 - Nuclear Fuel Cycle

Covers all relevant components of the commercial nuclear fuel cycle, including methods for mining and milling, physics of uranium enrichment, fuel fabrication, in-core fuel management strategies, reactor

physics, spent fuel storage, reprocessing, and disposal of high-level radioactive wastes. Additional topics include decommissioning of nuclear facilities and the economics of electric power production as they apply to nuclear energy systems. Discussions of relevant issues in nuclear material accountancy and international safeguards for fuel cycle facilities.

105. NUTR 412 - Food and Nutrition in the Community

Influence of health characteristics, geographic, social, economic, educational, and cultural factors on food and nutrition programming. Relationship of community food and nutrition problems to programs and services for families and communities with particular attention to disease prevention and public policy.

106. PHIL 441 - Global Justice and Human Rights

Issues such as justice between distinct and diverse political communities; universal human rights; and moral issues in environment, trade, and development.

107. PLSC 115 - Plants That Changed the World

Introduction to a wide variety of plants used in different cultures and society to enhance health, beautify surroundings and facilitate recreational activities. Exploration of how cultures value their trees, flowers, vegetables, fruits, herbs and grasses, with emphasis on landscaping, people/plant interactions, sports turf, organic gardening and nutrition. Students will be exposed to broad global perspectives on plants that have changed the world and the people who live in it.

108. PLSC 210 - Horticulture: Principles and Practices

An introduction to the biology and technology underlying the use and production of horticultural crops and landscape plants. Structure, growth, and development of horticultural plants from a practical and scientific approach. Environmental effects, basic principles of propagation, and greenhouse and outdoor production. Nutrition, pruning and chemical control of growth. Pest control and branches of horticulture.

109. PLSC 250 - World Food and Fiber Plant Production

Introduction to important world crops and production systems. Emphasis on plant terminology, origin, distribution and use, world agro-ecosystems, environmental and economic sustainability, current technology in crop production.

110. PLSC 280 - Fundamentals of Landscape Design

History of landscape design as it relates to contemporary applications. Awareness and sensitivity to the landscape. Basic graphic skills and design theory with an emphasis on residential landscape planning. Introduction to landform, landscape materials, and planting design.

111. PLSC 328 - Conservatories: Management, Operations, and Display

Study of the history, value, and role of public garden conservatories. Management, operations, and display of plants in controlled environments for research, conservation, and public education and entertainment.

112. PLSC 415 - Agroecology

Application of ecological concepts to management of horticultural, agronomic and biofuel cropping systems. Examination of plant physiological ecology, population ecology, community ecology, and ecosystem ecology within the context of agroecosystems; discussion of current research in agroecology; assessment of sustainability of cropping systems from environmental, economic, and social perspectives.

113. PLSC 421 - Native Plants in the Landscape

Native plants and plant communities as a basis for landscaping and environmental restoration. Weekly lecture coupled with either an outing or service practicum of invasive exotic plant removals or planting of natives. Study and work sites will primarily be demonstration projects of the University of Tennessee Environmental Landscape Design Lab. They include local schoolyard habitats, greenways, wetlands, streambanks, and shorelines.

114. PLSC 430 - Greenhouse Management

Principles of greenhouse operation and management for commercial crop production. Greenhouse construction and operation, crop scheduling, and cost accounting. Environmental inputs and cultural practices as they affect plant physiological processes and influence plant growth and development. Weekend field trips may be required.

115. PLSC 441 - Advanced Turfgrass Management

Principles and scientific basis of turfgrass culture. Adaptation, ecology, physiology, climatic influences on grass culture, mowing, water management, and design impacts are discussed.

116. PLSC 466 - Turfgrass Strategies

Case studies of turfgrass management issues and discussion of their resolution with a focus on large scale environmental impacts. Development of problem solving skills in areas related to turfgrass management.

117. PLSC 454 - Plant Biotechniques

Lectures will discuss recombinant DNA technology, molecular assisted breeding of economically important crops, gene cloning and transformation technologies. Examples will be given of food and ornamental crops, pharmaceuticals, and renewable energy sources produced using biotechnology, as well as potential risks of this technology. Labs will include electrophoresis, tissue culture, plasmid preps, genomic DNA preps, PCR, plant transformation, and genomic techniques.

118. PLSC 456 - Turfgrass Weed Science

Identification of turf adult and seedling weeds, applied chemical control strategies, integrated weed management (including mechanical and cultural practices). Concepts discussed will include turfgrass weed ecology and invasiveness, herbicide regulations and an overview of select herbicidal modes of action.

119. PLSC 491 - International Study: History and Culture of International Gardens and Landscapes

International travel experience will provide opportunities to learn how historic estates, gardens, and arboreta reflect the climate, topography, history, philosophical social structure, art and politics at the time of their creation. Course will focus on observation of local plant material, study of different garden and landscape design styles, and will foster an appreciation of international cultures.

120. POLS 471 - International Political Economy

The politics of international economics. Topics include globalization, development, trade, crime, the IMF, the WTO, the environment, and challenges to the status quo.

121. POLS 473 - Negotiation, Bargaining, and Diplomacy

Diplomacy, negotiation, and foreign policy decision-making. Theories of diplomacy and negotiation are applied in a simulation focusing on issues from international crime and global economic stability to world health and the environment.

122. PSYC 220 - Behavior and Experience: Humanistic Psychology

Behavioral and phenomenological analysis of individuals and their development in natural environments.

123. PSYC 450 - Comparative Animal Behavior

(See Ecology and Evolutionary Biology 450.)

124. PUBH 401 - Global Public Health

Discussion of the social, economic, political, environmental, and cultural determinants of health including measurements of health and burden of disease.

125. SCED 496 - Teaching Science Grades 7-12

Methods, materials, recent trends in science and environmental education programs for secondary schools.

126. SOCI 110 - Social Problems and Social Justice

Problems of deviance, crime, and victimization, inequalities in exposure to environmental risks, and inequities in power and participatory democracy within the context of social change. Assessment of control strategies and redress of injustices.

127. SOCI 250 - Introduction to Global Studies

Exploration of how globalization is fostering change in culture, politics, economics, philosophy, and the environment. Uses interdisciplinary perspectives to understand the relationship between historic processes and the contemporary world and the reciprocal influences of local dynamics and global change.

128. SOCI 342 - Globalization and Justice

Sociological examination of globalization and related social justice issues.

129. SOCI 466 - Special Topics in Race and Ethnicity

Rotating topics on specific race and ethnicity areas. May include topics such as environmental racism, policing and race, race, terror and genocide, intersectionality, health disparities, immigration and ethnic change, and advanced Critical Race Theory.

130. SOWK 314 - Human Behavior and the Social Environment

Interrelatedness of biological, social, cultural, environmental, and psychological factors in human behavior. Person-in-environment over the life span with special attention to diversity, impact of racism, sexism, and other sociocultural factors. Integration of knowledge into a social work practice perspective.

131. SOWK 315 - Social Work Practice with Groups, Organizations and Communities

Generalist practice with emphasis on groups, organizations and communities, including treatment theories, techniques, and issues.

132. UNST 413 - Art and Organism - Integrative Biology of Aesthetic Experience

(See Ecology and Evolutionary Biology 413.)

133. WFS 305 - Prescribed Fire Management

Prescribed fire ecology, use, and management in forest stands.

134. WFS 340 - Wetlands Ecology and Management

Ecology, restoration, and management of wetland ecosystems, including biotic and abiotic processes, functions, and wildlife considerations.

135. WFS 350 - Wildlife Damage Management

Principles and methods for wildlife damage management, including biological, regulatory, practical, and social considerations. Weekend field trips (2) required.

136. WFS 401 - Ecology and Management of Wildlife Health

Review of ecological and environmental factors affecting wildlife health, and tools available for effective wildlife disease surveillance and management. Emphasis on the importance of multidisciplinary and interagency collaboration for management of wildlife health problems.

137. WFS 420 - Identification and Ecology of Freshwater Mussels

This class is devoted to the study of shells of freshwater mussel species found in the lakes, rivers, and streams of North America, with special attention given to the fauna of Tennessee.

138. WFS 441 - Stream Ecology

This course focuses on freshwater riverine ecology. Emphasis is placed on the stream environment and associated fauna, and the interrelationships therein. Upon completion, students should be able to identify habitat features, selected freshwater invertebrates and fishes, and demonstrate ecological knowledge.

139. WFS 444 - Ecology and Management of Wild Mammals

Biological and ecological characteristics of game mammals and endangered mammals. Current principles and practices of wild mammal management. Weekend field trip required.

140. WFS 445 - Ecology and Management of Wild Birds

Biological and ecological characteristics of game birds, endangered birds, and bird pests. Current principles and practices of wild bird management. Weekend field trip required.

141. WFS 450 - Fish Physiology

Mechanisms of gas transfer, circulation, excretion, osmoregulation, locomotion, and neural/hormonal control of these systems in fishes. Comparisons and contrasts with physiology of terrestrial animals. Practical applications of fish physiology to aquaculture, pollution assessment, and fisheries management.

All Undergraduate Courses About/Directly Related to Sustainability

***Undergraduate sustainability courses:** Courses for which the primary and explicit focus is on sustainability and/or understanding or solving one or more major sustainability challenge.*

Per the STARS guidelines, these courses were derived from conducting a search through the undergraduate and graduate course offerings for the 2017-18 school year including each of the following terms separately: Environment, environmental, sustain, sustainability, ecology, ecological, energy, climate, green, renewable, fuel, conserve, conservation, global change, pollution, geothermal, social wellbeing, economic prosperity, environmental health.

Total Number of Undergraduate Courses Focused on Sustainability: 87

1. AGNR 180 - Global Dynamics: Food, Biodiversity, and the Environment

By 2050, we will be challenged to feed the 9 billion inhabitants of planet Earth. We are charged to accomplish this sustainably while conserving water, atmospheric, and biodiversity resources to maintain healthy ecosystem functions. This course introduces global agriculture and natural resources issues, focusing on the connectedness of cultural, political, historical, and natural factors that drive contemporary innovations and policy in food production and conservation. Students will foster an appreciation for international agriculture and natural resources that empowers students to engage in international activities and make informed consumer and policy choices. May be used as the introductory course option for the minor in International Agriculture and Natural Resources.

2. AGNR 480 - How to Feed the World

Human population growth will require food production to double by 2050. Explore ways our global society might sustainably increase food production, in ways that protect our environmental resources while maintaining food security and food justices. Aspects include socio-political, business, technology,

cultural, religious, and natural sciences in various learning formats ranging from group discussions to guest lectures. Students are expected to develop potential solutions towards solving the world's food and environmental crises. May be used as capstone option for international agriculture and international resources minor.

3. ANTH 415 - Environmental Anthropology

Overview of theoretical and methodological approaches to the study of human/environmental interactions. Impacts of environmental change on society and culture; human impacts on environmental change.

4. ARCH 342 - Environmental Control Systems II

Building service systems and lighting design, including principles of electricity, wiring, daylighting, acoustics, and relevant codes, integrated with building envelope materials and assemblies. Principles of sustainability and the impact of environmental systems on human behavior, comfort, and the environment.

5. ARCH 365 - Performative Design II: Active and Hybrid Systems Design

Design and expression with mechanical heating, ventilation and cooling systems, electric lighting and their integration with passive design. Introduction to active systems computer modeling, carbon performance, and on-site renewable power generation. Supports applications in design studio of projects with simple HVAC in skin-loaded buildings with few thermal zones. Combination lecture and lab format. Second half semester course.

6. ARCH 452 - Special Topics in Sustainable Design

Faculty initiated professional elective involving sustainability and progressive environmental design.

7. AREC 270 - Economic Perspectives on Natural Resource and Environmental Issues

Exploration of the economic causes of natural resource depletion and environmental degradation, employing the concepts of externalities, public goods, and market failure. Use of economic logic and analysis to assess the relative effectiveness of alternative policy approaches for addressing such problems. Application to issues of air quality, climate change, water quality, water quantity, energy use, fisheries management, endangered species protection, and waste recycling.

8. AREC 314 - Environmental Law

Survey of legal topics related to the natural environment, including an overview of the most important federal environmental statutes and the regulatory tools and concepts used to mitigate environmental degradation.

9. AREC 332 - Food Policy

Economic rationale for and effects of policies and programs relating to food production and consumption, including hunger and nutrition, safety, labeling, advertising, organic production, and local food systems.

10. AREC 333 - Agricultural Conservation Policy

Economic rationale for and effects of policies and programs for the management of soil and water resources control, nutrient and pesticide application, and the protection of agricultural lands and wildlife habitats.

11. AREC 445 - Renewable Energy Economics

Overview of the economics of renewable energy including wind, solar, hydro, and biomass technologies. Assessment of the economic, environmental, and policy forces that are shaping the renewable energy industry. Exploration of methods for evaluating the economic feasibility of investment in renewable energy.

12. AREC 470 - Policy Analysis for Environmental and Natural Resource Management

Application of a policy analysis framework to conflicts and issues associated with natural resource use and related environmental quality impacts. Design of institutional changes to improve economic efficiency and equity, with emphasis on the potential applicability of market-type and incentive-based policy mechanisms.

13. AREC 472 - Natural Resource Economics

Economic analysis of natural resource use and conservation with emphasis on land, water and other renewable resources. Principles for benefit-cost analyses of natural resource projects and policies. Methods for valuation of non-market impacts associated with natural resource use. Sustainability as an economic concept.

14. BSET 326 - GIS/GPS Applications in Agriculture and Environmental Science

Introduction to the application of Geographic Information Systems (GIS) and Global Positioning Systems (GPS) in agriculture and in environmental science. Topics covered will include GIS software and concepts, GPS receivers, data acquisition, and spatial analysis of data to solve problems. Case studies in agricultural demographics, precision agriculture, pasture management, water quality, watershed management, and waste pollution will be used to provide hands-on experience with these emerging technologies.

15. BSET 345 - Green Construction and Construction Safety

Considerations for energy efficient and environmentally sustainable buildings and development practices, practical and measurable aspects of building elements and corresponding building certification systems; construction safety, including the recognition, avoidance, abatement, and prevention of construction safety and health hazards.

16. BSET 474 - Environmental Instrumentation and Monitoring

Equipment and techniques commonly used to measure all aspects of hydrologic cycle – precipitation, runoff, streamflow, and subsurface water movement. Sampling of all flows for contaminants. Design of monitoring systems. Analysis of data.

17. CBE 481 - Green Engineering

Principles and practical aspects of the design, commercialization, and use of processes and products for determining their feasibility and economic potential while minimizing the generation of pollution at the source and risk to human health and environment.

18. CBE 488 - Honors: Design Internship in Green Engineering

Selected students work in small groups to address the prevention of industrial pollution through improved design of chemical and biochemical processes. Directed by faculty and engineers from a host company.

19. CE 311 - Smart Infrastructure and Sustainability Engineering

Investigation of engineering concepts that impact the sustainable design of civil and environmental infrastructure critical for smart communities in an on-site study abroad course. Topics of the course include sustainability metrics, life cycle assessment, urban sustainability, smart transportation, environmental sustainability, low-impact development, resource recovery, influence of local culture, and sustainable energy systems.

20. CE 407 - Honors Undergraduate Research

Research in problems related to recent developments in civil and environmental engineering.

21. CE 409 - Special Topics

Recent developments and current practice in civil and environmental engineering through field internship and/or self-study.

22. CE 481 - Environmental Engineering II

Theory and design of drinking water treatment and distribution systems, and wastewater treatment and collection systems.

23. CE 482 - Environmental Engineering Laboratory

Laboratory methods and interpretation of results for physical, chemical and biological analysis of water and wastewater.

24. CE 487 - Honors: Environmental Engineering II

Same as 481 with additional honors project.

25. ECON 362 - Environmental and Natural Resource Policy

Application of introductory microeconomic principles to contemporary environmental and natural resource policy issues such as air pollution, global climate change, population growth, forest management, and endangered species protection. Writing-emphasis course.

26. ECON 463 - Environmental Economics

Economic foundations for public decision-making about environmental resources utilizing tools from intermediate microeconomic theory. Emphasis on the welfare economic approach for the provision of public goods with specific emphasis on market failure, externalities, benefit-cost analysis, and methods for valuing environmental resources and human health.

27. EEB 306 - Ecology and Society

Issues and controversies in ecology and their biological, social, and economic significance.

28. EEB 309 - Biology of Human Affairs

Current topics in biology and their public relevance, especially the interaction between biology and government. Issues include conservation, health, agriculture, national parks, population, etc.

29. EEB 421 - Community Ecology

Interactions between individuals, species, communities and environments, including competition, coexistence, predation, herbivory. Causes and consequences of biological diversity; biological invasions. Application of advanced sampling and analysis techniques. Local to global environmental change. Includes periodic field trips or laboratories.

30. EEB 484 - Conservation Biology

Application of principles and techniques of ecological research to conservation of biological diversity at genetic, population, community, and ecosystem levels.

31. EEB 495 - Evolutionary Ecology

Basic concepts in evolutionary and ecological genetics. Biogeography, climate, population genetics, evolution and natural selection, population growth and regulation, competition, niche, experimental ecology, predation, phylogenetics in ecology, and biodiversity and conservation.

32. ESS 110 - Energy for the World

Energy is one of the basic units of our physical world, and its availability strongly defines a populace's standard of living. Debates over the risks related to fracking, mining, nuclear power, hydroelectric dams, wind farms, solar farms, burning fossil fuels and implications for climate change will be weighed against the need to deliver power to an increasing human population. In this course we will investigate how energy is derived from all the available technologies: from coal to tidal. This will include the full aspect of energy consumption including: infrastructure, mining, energy storage, energy delivery, and waste disposal. As we discuss various countries and how they derive their energy, we will see that the proportion and the total amount of energy generated by the various technologies differ dramatically. Lastly we will discuss the inherent conflict generally between energy producers (generating self-wealth) and those downstream of the energy production (enduring poor environmental conditions), and how this conflict is becoming intergenerational.

33. ESS 210 - Introduction to Soil Science

Differences in soils; soil genesis; and the physical, chemical, and biological properties of soil. Relation of soil to agricultural and environmental sustainability, land use and pollution. Soil management relative to tillage, erosion, moisture supply, temperature, aeration, fertility, and plant nutrition.

34. ESS 220 - Waters and Civilizations

Investigation and discussion of the societal impacts on ancient and modern civilizations of water issues, including irrigation, flood control, droughts and desertification, dam construction, aquifers, drinking water, water pollution, and water rights.

35. ESS 424 - Environmental Stormwater Management

Investigation of sustainability issues regarding control of the hydrologic cycle, with special emphases on hydrologic estimation, hydraulic design, and best management practices for control of stormwater and associated erosion and water quality issues.

36. ESS 454 - Environmental Soil Biology

Biology and biochemistry of the soil environment as they apply to environmental and agricultural processes and sustainability. Topics include the soil habitat, microbial ecology and diversity, biogeochemical cycling of nutrients, biodegradation, and research methodology to investigate soil microorganisms.

37. ESS 462 - Environmental Climatology

Study of global energy budget, past climates, climate variability, climate distribution, and climate change. Emphasis on global warming and its potential impacts on ecosystems, societies, and global sustainability. Students are required to use quantitative, computer, and problem-solving skills to analyze and report climate data for environmental planning.

38. ESS 499 - Research Problem in Environmental and Soil Sciences

Special research problems in environmental and soil sciences.

39. FWF 250 – Conservation

Use and abuse of wildland resources. Historical perspectives and current management of forests, wildlife, and fish of North America including aspects of outdoor recreation and pollution problems.

40. FWF 320 - Human Dimensions of Natural Resources

Natural resource management as a social process focusing on how human, social and institutional factors interact and integrate with complex and dynamic biophysical systems. Influence on natural resource management of human institutions, values, attitudes and behaviors, and place.

41. GEOG 131 - Weather, Climate, and Climate Change

Characteristics and processes of the earth's surface and lower atmosphere; their interaction to produce a world pattern of distinctive environments significant to humanity. Covers elements and controls of climate, atmospheric circulation, precipitation and storms, the hydrological cycle, world climate and vegetation patterns, and climate change.

42. GEOG 132 - Landscapes and Environmental Change

Characteristics and processes of the earth's surface and lower atmosphere; their interaction to produce a world pattern of distinctive environments significant to humanity. Covers earth materials, tectonic activity, geomorphic processes and landforms, soils, and human impacts on the landscape.

43. GEOG 137 - Honors: Weather, Climate, and Climate Change

Honors-level introduction to physical geography, emphasizing characteristics and processes of the earth's surface and lower atmosphere and their interaction to produce a world pattern of distinctive environments significant to humanity. Covers elements and controls of climate, atmospheric circulation, precipitation and storms, the hydrological cycle, world climate and vegetation patterns, and climate change.

44. GEOG 200 - Environmental Issues in National Parks

Major environmental issues faced by national parks and other protected areas in the U.S. and abroad, including invasive species, changes in fire regimes, water and air pollution, visitor impacts, and climate change. Focus on interactions between physical and biological processes and human activities.

45. GEOG 204 - Understanding Climate Change

Overview of natural and human-caused mechanisms that have contributed to changes in Earth's climate, with an emphasis on climate change in the 20th and 21st centuries. Discussions focus on causes, mitigation, public attitudes, and government policy.

46. GEOG 206 - Sustainability: Reducing our Impact on Planet Earth

No description

47. GEOG 206S - Sustainability: Reducing our Impact on Planet Earth

No description

48. GEOG 333 - Climate Change and Human Response

Controversies and uncertainties about present-day climate change, future climate scenarios and mitigation strategies, and individual and policy responses to climate predictions.

49. GEOG 345 - People and Environment

Global and local patterns of human use of the environment. Geographical variations in demographic, cultural, economic, and technological aspects of environmental stewardship. Writing-emphasis course.

50. GEOG 409 - GIS for Environmental and Socio-Economic Applications

Integrates spatial analysis and modeling with GIS for real-world environmental and socio-economic applications.

51. GEOG 430 - Global Environments of the Quaternary

Physical and biotic evidence of climate and environmental history over the two to three million year period that humans have inhabited Earth. Geographical and temporal patterns of change, drivers of change, and interrelationships with human society.

52. GEOG 434 - Climatology

General circulation system leading to world pattern of climates. Climatic change and modification. Interrelationships of climate and human activity.

53. GEOG 345 - People and Environment

Global and local patterns of human use of the environment. Geographical variations in demographic, cultural, economic, and technological aspects of environmental stewardship. Writing-emphasis course.

54. GEOL 103 - The Earth's Environments

Contemporary problems and solutions related to nature and human disturbance of the environment. Topics include — natural hazards, global climate change, pollution, resource depletion.

55. GEOL 202 - Earth as an Ecosystem: Modern Problems and Solutions

Study of the earth as an integrated system between physical and biological processes. Focus is on human disturbances, such as habitat destruction and pollution.

56. GEOL 202S - Earth as an Ecosystem: Modern Problems and Solutions

Study of the earth as an integrated system between physical and biological processes. Focus is on human disturbances, such as habitat destruction and pollution.

57. GEOL 206 - Sustainability: Reducing our Impact on Planet Earth

An introduction to the field of “sustainable living,” which emphasizes reducing the environmental footprint of individuals and cultures. Topics include: environmental footprints, green living, green consumerism, ethical consumption, voluntary simplicity, green technologies and other ways for people to reduce their environmental impact.

58. GEOL 206S - Sustainability: Reducing our Impact on Planet Earth

An introduction to the field of “sustainable living,” which emphasizes reducing the environmental footprint of individuals and cultures. Topics include: environmental footprints, green living, green consumerism, ethical consumption, voluntary simplicity, green technologies and other ways for people to reduce their environmental impact.

59. GEOL 455 - Environmental Geology

Applications of the geological sciences toward a comprehension of the effects of geological processes on humans and the effects of human activities on the Earth's environments.

60. GEOL 456 - Global Climate Change

Examines natural and anthropogenic changes in global climate systems. Topics include biogeochemical cycles of greenhouse gases and the water cycle, including water resources and pollutants and changes in the biosphere (extinctions) as both cause and effects of physical global changes. Historical (baseline) dynamics are compared to current changes in order to predict human impacts and suggest technical and policy solutions.

61. GEOL 466 - Water and Air Pollution

This course focuses on the impacts of human activities on the water and atmospheric cycles. Emphasis is on field and lab activities to learn methods of measuring pollution. Topics include: industrial pollution, sewage contamination, heavy metals and some biological impacts.

62. HRT 484 - Critical Sustainable Tourism

Critical Sustainable Tourism: Explores the historic and current socio-cultural impacts of tourism on the environment, community, and government. Understand the complexities of tourism relationships from the host community and tourist perspective. Explain how tourism influences culture, communities, and societies through forces of racial/ethnic identity, class, gender, sex tourism, and the politicization of tourism. Identifying the power dynamics within tourism planning and development of a tourism destination. Emphasis on the study of both historic and current socio-cultural impacts of tourism on family, community, culture, government, and the environment, as well as other current issues.

63. IARC 261 - Materials, Resources and Textiles for Interiors

Application of interior architectural materials, textiles and resources used in designing interior environments. Focus on environmental sustainability, codes, function and aesthetics.

64. IARC 200 - Human-Environment Relations

Introduction to environmental psychology theories: examine behavior in relationship to biological, social and environmental factors; role of needs assessments and research-based issues guiding design process.

65. IARC 207 - Honors: Human-Environment Relations

Introduction to environmental psychology theories: examine behavior in relationship to biological, social and environmental factors; role of needs assessments and research-based issues guiding design process. Students will attend 200 classes, with supplementary assignments and/or class meetings.

66. IARC 261 - Materials, Resources and Textiles for Interiors

Application of interior architectural materials, textiles and resources used in designing interior environments. Focus on environmental sustainability, codes, function and aesthetics.

67. INSC 490 - Environmental Information

The role of information technology and best practices for data management in the context of environmental science. The nature of the scientific method and research, emphasizing techniques for informing scientific research. How data quality and access affect environmental decision making, policy creation, and large-scale problem solving, such as for climate change or environmental disasters. Concepts include data collection, management, and sharing; the data life cycle; environmental modeling and data visualization; metadata creation; big data, citizen science.

68. ME 472 - Sustainable Energy Engineering

An in-depth examination of engineering systems to convert, store, transport, and use energy, with emphasis on technologies that reduce dependence on fossil fuels and/or emission of greenhouse gases; examines various conventional energy production technologies such as fossil fuel and nuclear (both fission and fusion) and renewable energy conversion technologies such as solar, wind, hydro, geothermal, wave, and thermoelectric energy; Examines their end-use practices and consumption practices. The course will emphasize using quantitative methods to assess and compare different technologies.

69. PHIL 255 - Sustainability Ethics

An introduction to the concept and ethical implications of sustainability.

70. PHIL 255S - Sustainability Ethics

An introduction to the concept and ethical implications of sustainability.

71. PHIL 346 - Environmental Ethics

Issues concerning the nature of the environment and the place of humanity within it.

72. PHIL 348 - Honors: Environmental Ethics

Honors version of 346, with Service Learning component.

73. PHIL 442 - Topics in Applied Ethics

Topic varies, but often includes aspects of environmental ethics. Climate ethics seminar in fall 2017.

74. PHYS 405 - Science, Technology, and Public Policy

The United States faces challenges which include climate change, energy independence, human genomics, nanotechnology, and modified food crops. The process by which public policy decisions are made, currently and historically, in the federal government is examined with an eye to the role scientists, advocacy groups, industry, researchers, national laboratories and individual citizens play in setting public policy. The role played by political values in setting the research agenda is explored.

75. PLSC 275 - Organic and Sustainable Crop Production

Introduction to organic and sustainable production practices and principles for vegetable, fruit, field, and forage crops. Introduction to organic certification, soil fertility & quality, tillage systems, crop rotation, cover crops, propagation, composting, season extension, and management of weeds, insects, & diseases in organic cropping systems.

76. PLSC 470 - Professional Practices for the Green Industry

Professionalism, sales, sales proposals, budgeting, managerial skills, estimating, specifications, and contract management in the turf, public horticulture, and landscaping professions.

77. PSYC 482 - Topics in Psychology

Intensive analysis of special topics, such as sustainability psychology or intersectionality.

78. PSYC 485 - Special Topics in Psychology

Intensive analysis of special topics, such as sustainability psychology or intersectionality.

79. PUBH 420 - Environmental Public Health

Designed to help students understand the Public Health issues related to environment and human activities.

80. PUBH 420 - Environmental Public Health

Designed to help students understand the Public Health issues related to environment and human activities.

81. SOCI 360 - Environment and Resources

Relationship between scarcity of natural resources and changes in societal beliefs and social structure. Topics include social and physical limits to growth and collective action problems. Writing-emphasis course.

82. SOCI 363 - Food, Agriculture, and Society

Social and environmental dimensions of production, distribution, and consumption of food, with particular emphasis on historical and cross-national examples.

83. SOCI 463 - Community Sociology

The environment shapes human interactions and human interactions shape the construction of environments. This course explores how individuals construct and participate in communities.

84. SOCI 465 - Social Values and the Environment

Human dimensions of ecosystem management and public policy. An applied focus on how social values are activated within specific biophysical and social settings. Writing-emphasis course.

85. WFS 425 - Tropical Ecology, Conservation, and Field Methods

This study abroad course will cover tropical ecology and conservation concepts, issues, principles, and practices. In addition, it will provide experience in the field methods and techniques used by managers and researchers to study terrestrial natural resource ecology and conservation in tropical regions.

86. FS 433 - Amphibian Ecology and Conservation

In-depth examination of amphibian life-history strategies, community interactions, and hypothesized mechanisms of amphibian declines. Also covers amphibian monitoring, conservation and management.

87. WFS 452 - Ecology and Management of Fishes

This course will cover theoretical and applied conservation and management issues relating to the ecology and regulation of fish populations and assemblages. Topics will include the abiotic (physical, chemical) and biotic (predation, competition) interactions facing fishes and how these interactions may be affected by humans, as well as how humans can manage these interactions to conserve and sustain fish populations and assemblages.

Graduate courses offered that include sustainability: Courses that are focused on a topic other than sustainability, but incorporate a unit or module on sustainability or a sustainability challenge, include one or more sustainability-focused activities, or integrate sustainability issues throughout the course

Per the STARS guidelines, these courses were derived from conducting a search through the undergraduate and graduate course offerings for the 2017-18 school year including each of the following terms separately: Environment, environmental, sustain, sustainability, ecology, ecological, energy, climate, green, renewable, fuel, conserve, conservation, global change, pollution, geothermal, social wellbeing, economic prosperity, environmental health

Total Number of Graduate Courses Related to Sustainability: 130

1. ANSC 536 - Ecology of Grazing Land Systems

No description

2. ANTH 490 - Primate Evolution

Living and fossil primate taxonomy, ecology, and comparative anatomy. Survey of primate fossil record with emphasis on the origin or major primate lineages.

3. ARCH 501 - Introduction to the Built Environment

Introduction to the design disciplines from an intellectual perspective. Intended as a framework for understanding architectural form, its production, and interpretation, the course analyzes the built environment through discussions of space, place, and culture. Human experience, the performance of materials, social concerns, technological developments, and natural contexts provide ways of understanding design form. Texts explore the integrated relationship of history, theory, representation, and design. Content coordinated with Architecture 538 and 518/519.

4. ARCH 509 - Seminar in Design Integration

Technological aspects influencing building form and space. Integral application of technical aspects of structural, environmental control, and construction supporting sustainability, experience, use, contextual fit, meaning, and expression. Whole building simulation and other methods for higher performance building. Bases for integrating design knowledge.

5. ARCH 516 - Design Implementation: Construction Methods I

Fundamentals of design implementation introducing properties of interior and exterior building materials and their relation to construction methods and detailing. Theory and practice of material selection and especially detailing, in service of architectural expression, sustainability, aesthetics, spatial order and perception, performance, experience, and meaning.

6. ARCH 521 - Principles of Architectural Form

Historical and contemporary architectural theory through investigation of literature and related examples. Theories of understanding and theories of application related to generation of architectural form and space in response to both cultural and environmental focus.

7. ARCH 524 - Special Topics in Landscape Architecture

Faculty initiated professional elective involving landscape architecture, history and theory of landscape architecture, ecology, and related issues.

8. ARCH 538 - Design I: Fundamentals

Elements of form, space, and place in compositions, simple structures, and site designs. The introduction of significant ideas, context, human experience, purpose, construction, and ecological literacy as the basis of design. Application and engagement of representational and theoretical skills and knowledge in design process. Content coordinated with Architecture 501 and 518/519.

9. ARCH 548 - Materials and Methods in Architecture

Fundamentals of design implementation introducing properties of interior and exterior building materials and their relation to construction methods and detailing. Theory and practice of material selection and especially detailing, in service of architectural expression, sustainability, aesthetics, spatial order and perception, performance, experience, and meaning. Incorporates seminar sessions exploring a broader culture of technology. Includes a workshop/lab component.

10. ARCH 549 - Building Systems in Architecture

Design and expression with mechanical heating, ventilation, and cooling systems, solar energy, plumbing systems, electric lighting, daylighting, acoustics, and electrical systems in buildings. Incorporates seminar sessions exploring a broader culture of technology. Includes a workshop/lab component.

11. ARCH 556 - Design Implementation: Construction Methods II

Development of design implementation including advanced properties of interior and exterior building materials and their relation to construction methods and detailing. Advanced building systems design and detailing in service of architectural expression, sustainability, aesthetics, spatial order and perception, performance, experience, and meaning.

12. ARCH 583 - Architectural Design: Urbanism

Investigations analyzing cultural, physical, and environmental influences and precedents of community on architectural form, space and structure. Design of projects: civic realm of urban forms and spaces.

13. ARCH 587 - Advanced Architectural Design: Development & Design

Exploration of image making, consumerism and the allocation of scarce resources. Issues of finance, economics, urban economics, and marketing are analyzed in relation to urban and architectural design. Application of financial feasibility models.

14. AREC 520 - Research Methodology in Agricultural Economics

An overview of the logic and process of economic inquiry. Topics covered include the relationship between theory and applied research, problem formulation, definition of research problems, development of research problem statements with goals and objectives, and presentation and interpretation of results.

15. AREC 524 - Econometric Methods in Agricultural Economics

Application of statistical methods to agricultural economic models; estimation of supply, demand and production functions; microeconomic forecasting models; interpretation of results.

16. AREC 570 - Advanced Natural Resource Economics

Analysis of natural resource allocation issues; applied welfare economics, external effects and evaluation of public policy.

17. AREC 593 - Special Topics in Agricultural Economics

Topics to be assigned.

18. AREC 640 - Agricultural Production and Supply Analysis

Advanced topics in agricultural production economics and supply analysis with emphasis on optimization modeling, duality, flexible production systems, efficiency and nonparametric analysis, risk, contracting, incentive systems, cooperative efforts, and the roles of information, insurance and credit

19. AREC 650 - Agricultural Markets and Demand Analysis

Advanced theory and topics in market and price analysis; technical and pricing efficiency in agricultural markets; interregional and international competition; consumer demand.

20. ARTD 410 - Advanced Typographic Investigation

Expands on principles introduced in Typography (Art Design/Graphic 400). Projects will include work in reflective as well as electronic environments with an emphasis on personal exploration.

21. BSE 516 - Environmental Hydrology

Introduction to hydrology and associated environmental implications including: the hydrologic cycle, evapotranspiration, runoff, erosion, unit hydrograph operations, routing, open channel flow, groundwater, infiltration, and urban stormwater.

22. BSE 555 - GIS and GPS Applications to Biosystems

Theory and applications of Geographical Information Systems (GIS) and Global Positioning Systems (GPS); acquiring, managing, and analyzing spatially-varying data. Site-specific resource management, watershed analysis, environmental site assessment, natural resource management.

23. BSE 572 - Selected Topics in Machinery, Control, and Instrumentation Systems

Topics in the engineering of machinery, sensors, and data collection and analysis systems, and the use of these systems in ways that enhance productivity, increase efficiency, boost economic return, and protect environmental resources.

24. BSET 514 - CAD Applications to Biosystems Engineering Technology

Computer Aided Drafting (CAD) applications in agriculture and environmental science. Essentials of CAD software to create drawings of components, systems, flow charts, and process diagrams. Applications in mechanical, structural, and biosystems. 2-D applications with limited exposure to 3-D applications. Computer intensive course. Hands-on experience.

25. BSET 574 - Environmental Instrumentation and Monitoring

Equipment and techniques commonly used to measure all aspects of hydrologic cycle: precipitation, runoff, streamflow, subsurface water movement. Sampling of all flows for contaminants. Design of monitoring systems. Analysis of data.

26. CBE 576 - Applied Microbiology and Bioengineering

Cross-disciplinary course combining basic concepts in microbiology, biochemistry, reaction kinetics, and biochemical and environmental engineering. Commercial processes, biodegradation/wastewater treatment, analysis of basic bioreactor systems, biosensors, and immobilization methods.

27. CE 559 - Transportation Safety

Transportation safety defined from a multi-disciplinary perspective and characterized by crashes, injuries and deaths. Significant challenges to transportation safety are identified. Environmental, roadway, vehicle, and human factors involved in crashes are explored using descriptive analysis and advanced modeling/simulation techniques. Discussion of current state-of-the-practice in Highway Safety Manual.

28. CE 634 - Engineering Soil Characteristics and Behavior

Nature of soils and its influence on soil behavior. Soil composition, particle characteristics, characteristics of particulate media, the influence of a polar fluid, conduction and diffusion phenomena, volume change behavior, strength/deformation behavior, and applications of physico-chemical principles in soil engineering.

29. CE 653 - Intelligent Transportation Systems

Examine how Intelligent Transportation Systems (ITS), including connected and automated vehicles, can enhance mobility, safety, and the environment. ITS apply information and communication technologies in transportation. Systems engineering approach and modeling/simulation methodologies applied to ITS, connectivity and automation, ITS deployment and transportation operations, transportation system management, traveler response to technologies and information, ITS planning, evaluation, and institutional issues.

30. CEM 507 - Epidemiology of Vector-Borne, Bacterial, and Viral Zoonotic Diseases

Emphasis is placed on understanding the host, agent, and environmental factors that determine the distribution of selected diseases of importance to both human and animal populations. Selected topics include vector-borne zoonoses, rabies, brucellosis, and psittacosis. This is an online course.

31. CEM 508 - Epidemiology of Parasitic, Foodborne, and Bacterial Zoonotic Diseases

Emphasis is placed on understanding the host, agent, and environmental factors that determine the distribution of diseases of importance to both human and animal populations. Selected topics include anthrax and leptospirosis, in addition to parasitic and foodborne zoonoses. This is an online course.

32. CEM 530 – Wildlife Diseases

Monitoring and evaluating disease in wildlife populations is not only important for the health of the affected animal population, but can also be used as an indicator for both environmental and human

health risks. As human populations continue to grow, interactions with wildlife will undoubtedly increase. This increased interaction can lead to stress for animals (with possible increases of disease) as well as increased exposure to zoonotic diseases for people. This course will focus not only on diseases of wildlife, but also the concept of "One Health" which encompasses human, animal and environmental health.

33. CEM 531 - Wildlife Medicine: Conservation and Policy

Both online and in-person study abroad components. The online portion of the course will explore policy and economics of wildlife medicine as well as address human health concerns in developing nations. A clinical component abroad will allow students to learn to handle and treat medical and surgical conditions in wild animals. Students must satisfactorily complete online modules and associated assignments, participate in didactic and clinical activities while abroad, and write a reflective paper upon completion of the course.

34. ECE 620 - Ultra-Wide-Area Resilient Electrical Energy Transmission Networks

Will include ultra-wide-area monitoring, measurement, situational awareness analysis, visualization, actuation and control; modeling, simulation and fast computation for power system analysis; power system state estimation and prediction; transmission network architecture; multi-level flat control architecture; market effect and social impact of energy issues; communication and cyber security; large-scale system test bed; and hardware test bed.

35. ECON 632 - Industrial Organization II

Economics of regulation and antitrust. Topics include public utility regulation, consumer product regulation, occupational safety regulation, environmental regulation and antitrust legislation.

36. ECON 678 - Economics of Environmental Policy

Topics in environmental policy analysis. Consideration of alternative policy instruments, defining policy objectives and role of risk in decision-making process.

37. EEB 426 - Plant-Animal Interactions

Introduction to the evolutionary and ecological aspects of interactions between plants and animals, including herbivory, pollination, and seed dispersal. Emphasis is on historical development of the field, discussions of primary literature, design of experiments, and writing.

38. EEB 461 - Special Topics in Organismal Biology

Evolution, ecology, biogeography, classification, and anatomy of selected animal and plant taxa.

39. EEB 470 - Aquatic Ecology

Introduction to the physio-chemical nature of inland waters with description of biotic communities and their interrelationships.

40. EEB 503 - Ecology and Evolutionary Biology Seminar

Advanced topics in ecology, behavior, and evolutionary biology. Required of all first- and second-year graduate students. Senior departmental majors are encouraged to enroll.

41. EEB 507 - Seminar in Ecology and Evolutionary Biology

Research presentations by EEB graduate students.

42. EEB 509 - Core: Ecology

Readings, lectures, and discussion about key concepts in ecology.

43. EEB 582 - Mathematical Ecology II

No description

44. EEB 583 - Zoogeography

Processes determining geographic distribution of animals and distribution and composition of animal communities.

45. EEB 602 - Advanced Topics in Ecological Process and Structure

Exposure and in-depth training in contemporary topics and approaches important to advanced research in ecological process and structure. Consult departmental listing for offerings.

46. EEB 607 - Seminar in Ecology and Evolutionary Biology

Readings and discussion based on current literature.

47. EEB 610 - Advanced Topics in Mathematical, Theoretical and Computational Ecology

Exposure and in-depth training in contemporary topics and approaches important to advanced research in mathematical, theoretical, and computational ecology. Consult departmental listing for offerings.

48. EEB 612 - Advanced Topics in Environmental Toxicology

Exposure and in-depth training in contemporary topics and approaches important to advanced research in environmental toxicology. Consult departmental listing for offerings.

49. EEB 681 - Advanced Mathematical Ecology I

No description

50. EEB 682 - Advanced Mathematical Ecology II

No description

51. ENVE 511 - Environmental Chemistry

A fundamental and quantitative treatment of the chemical processes that govern the formation, fate, and treatment of pollutants in natural and engineered systems. Chemical thermodynamics of pollutants; atmospheric reaction pathways; phase equilibria; aqueous solution equilibria; reduction-oxidation chemistry.

52. ENVE 512 - Environmental Transport and Kinetics

Engineering principals that govern the transport, fate, and treatment of pollutants in natural and engineered systems. Material balances; convection and dispersion; diffusion and mass transfer; interfacial phenomena; chemical kinetics; reactor design and modeling.

53. ENVE 513 - Environmental Microbiology

Fundamental aspects of microbiology governing environmental and engineered applications emphasizing bioenergetics, enzyme and microbial kinetics, metabolic diversity, microbial ecology and biochemical cycling.

54. ENVE 526 - Ecological Engineering for Stream Rehabilitation

Course introduces the design concept and selected topics used in ecological engineering. Topics include environmental flows, fluvial geomorphology, stream ecology and lotic habitat, indicators for biotic stress, and biomonitoring/bioassessment. Concepts are discussed within the context of an ecohydraulic, habitat-based approach for stream restoration/rehabilitation design.

55. ENVE 574 - Air Pollution Engineering and Control

Introduction to the fundamentals of air pollution, light scattering and visibility reduction, air quality laws and regulations, estimating concentrations from emission factors, theory and design of settling chambers, cyclone separators, wet collectors, fabric filters, electrostatic precipitator and control methods for gaseous air pollutants.

56. EPP 410 - Diseases and Insects of Ornamental Plants

Symptoms, identification, and management of diseases and insect pests that affect plants in greenhouse, nursery, and landscape environments.

57. EPP 512 - Soilborne Plant Pathogens

Causal agents; host-parasite-soil environment interactions; epidemiology; detection and identification of soilborne plant pathogens; biological, cultural, and chemical control.

58. EPP 514 - Phytobacteriology

Morphology, taxonomy, ecology, physiology, and genetics of bacterial plant pathogens; infection and disease development, pathogenesis and resistance; diagnosis, detection, effect of environment, and management of bacterial plant diseases; beneficial plant-bacterial interactions.

59. EPP 523 - Field Crop and Vegetable Entomology

Identification, biology, ecology and management of insects affecting field crops, commercial vegetables and home garden crops.

60. EPP 551 - Biological Control

Examines the concepts, ecological principles, fundamentals, history, and applied practices of biological control of arthropod pests, plant pathogens, and weeds; investigate the role of biological control in natural biological processes, as well as in integrated pest management programs directed at pests and pathogens affecting agricultural production, landscapes, turfgrass, natural areas, forests, and human and animal health; examine the biology, role and implementation of microbial antagonists,

entomopathogens, predators and parasitoids in suppressing populations of plant pathogens, arthropods, and weeds; discuss examples of successful and unsuccessful biological control programs.

61. EPP 602 - Advanced Topics in Entomology

Morphology, systematics, physiology, ecology and genetics of arthropods, apiculture, medical and veterinary entomology, insect biodiversity, and insect pathology.

62. EPP 606 - Advanced Topics in Nematology

Specialized instruction on systematics, physiology, ecology, genetics, genomics, and evolution of nematodes, plant, insect, mollusk, medical and veterinary nematology, nematode biodiversity, entomopathogenic nematodes, nematode-microbe interactions, plant-nematode interactions, and biological control.

63. EPP 630 - Advanced Integrated Pest and Pathogen Management

Use of principles and concepts of IPM to focus on real-life, practical applications of IPM programs. Builds on EPP 530/PLS 530: Integrated Pest Management [IPM]), where students are introduced to principles and concepts of pest and plant disease management and investigate its importance as an environmentally sound practice based on economic, ecological and sociological consequences. EPP 630 extends these concepts to focus on real-life, practical applications of IPM programs. Will have a seminar-type format with presentations, guest lecturers, and field trips to both regulatory centers and businesses that have implemented IPM programs.

64. ESS 434 - Environmental Soil Chemistry

Composition and chemical properties of soils and processes that govern fate and behavior of chemicals in soil environment. Topics include - clay mineralogy; soil organic matter; mineral weathering and stability; aqueous speciation; surface chemistry; ion exchange, adsorption, and molecular retention; oxidation-reduction; and soil acidity, alkalinity, and salinity.

65. ESS 511 - Soil-Plant Nutrient Cycling in Managed Ecosystems

Principles of nutrient cycling and soil exchange processes affecting nutrient availability to plants; management of soil nutrients to optimize crop growth; environmental implications of nutrient management; effects of both traditional and non-traditional nutrient amendments; and constraints to measuring plant-available nutrients in the soil.

66. ESS 513 - Advanced Soil Chemistry

Chemical properties and processes that operate in soil environment: thermodynamics of soil solutions and surface chemistry of soils, soluble complex formation, mineral solubility, electrochemical equilibria, geochemical modeling, ion exchange equilibria, surface functionality and reactivity, adsorption phenomena, and surface complexation modeling.

67. ESS 514 - Methods of Soil Physical Analysis

Principles of water, gas, heat, and solute movement in soil/water systems; application of appropriate models for the description of these processes; methods for characterizing hydraulic and chemical transport properties of soil; applications of the science of soil physics to solution of contemporary

problems in water conservation, prevention of surface/ground water contamination, and management of plant water status.

68. ESS 515 - Soil and Environmental Biogeochemistry

Soils as interface between the biosphere, hydrosphere, atmosphere, and geosphere. Soil and environmental biogeochemical interfaces: cycles of critical elements, coupled biogeochemical cycles, feedbacks between biogeochemistry, climatology, ecology, and soil science.

69. ESS 516 - Soil Biology and Biochemistry

Soil organisms and their activities in soils: soil ecology, biogeochemical cycling of important elements, organic matter dynamics, and applications of agricultural and environmental biology and biochemistry.

70. ESS 524 - Environmental Stormwater Management

Investigation of sustainability issues regarding control of the hydrologic cycle, with special emphases on hydrologic estimation, hydraulic design, and best management practices for control of stormwater and associated erosion and water quality issues.

71. ESS 544 - Environmental Soil Physics

Basic understanding of soil physical properties and processes; influence of soil physical properties on water and chemical movement in soil; practical experience in the measurement and analysis of soil physical properties, water flow, and chemical movement in soil.

71. ESS 554 - Environmental Soil Biology

Biology and biochemistry of the soil environment as they apply to environmental and agricultural processes and sustainability. Topics include the soil habitat, microbial ecology and diversity, biogeochemical cycling of nutrients, biodegradation, and research methodology to investigate soil microorganisms.

72. ESS 593 - Special Problems in Environmental and Soil Science

No description

73. ESS 601 - Special Topics in Soil Science

Thermodynamics of soil solutions, clay structure and surface chemistry, soil mineralogy, plant mineral nutrition, soil microbiology, water movement and use by plants, soil structure, soil thermal properties, interaction in the soil-plant environment.

74. FORS 514 - Tree Physiology

Tree structure, growth and development, and function, and how these are related to the environment and to cultural practices. Influence of environmental variables on plant growth and distribution; effects of forest management practices on growth and function.

75. FORS 515 - Forest Conservation Workshop

Relation of forest biology, ecology and management to conservation issues; integration of current conservation issues into classroom work and student projects; environmental education strategies.

76. FORS 630 - Forest Growth and Development

Forest stand dynamics, analysis of changes in species composition and forest stand structure (physical and temporal) during forest succession, response of stands to disturbances (anthropogenic and natural), modeling techniques to make predictions of future stand development.

77. EPP 606 - Advanced Topics in Nematology

Specialized instruction on systematics, physiology, ecology, genetics, genomics, and evolution of nematodes, plant, insect, mollusk, medical and veterinary nematology, nematode biodiversity, entomopathogenic nematodes, nematode-microbe interactions, plant-nematode interactions, and biological control.

78. GEOG 512 - Environmental Modeling and Geospatial Analysis

Geographic applications in environmental modeling and geospatial analysis. Topics include but are not limited to: modeling concepts, frameworks and approaches; Geographic Information Science (GIS) for modeling; spatial decision support systems and environmental modeling; modeling human-environmental systems; and dynamic systems modeling.

79. GEOG 518 - GIS Project Management

Interactions between management, technical, and application aspects of Geographic Information Systems project through simulated environment of real-world GIS sites.

80. GEOL 526 - Biospheric Change and the Fossil Record

Students will gain a temporal understanding of the evolution of the biosphere from its inception through the present day. Course concentrates on evidence derived from the fossil record and investigates the consequences of major transformative events such as tectonics, oxygenation of the biosphere, and the origination and extinction of major clades.

81. GEOL 559 - Introduction to Oceanography

Principles of oceanography, including physical, chemical, geological, and biological processes and patterns. Emphasis on the physical, chemical, and geologic structure of the oceans and their role in oceanic circulation, global climate change, and the biogeochemical evolution of the oceans through geologic time.

82. GEOL 562 - Environmental Aqueous Geochemistry

A survey of fundamental geochemical principles as applied to the fate and transport of inorganic and organic constituents in natural waters. Topics include thermodynamics, activity-concentration relations, mineral solubility and stability, chemical speciation and redox state of natural waters, and water-rock-biota interactions. Course will emphasize geochemical modeling to test hypotheses, explore assumptions, approximations, and equilibria in natural geochemical systems.

83. GEOL 690 - Seminar in Earth and Environmental Science

No description

84. IE 519 - Human Factors Engineering and Ergonomics

Application of human factor and ergonomic concepts and principles to design and analysis of manned systems and products. Human as biomechanical system; human information processing; minimization of human error; anthropometry; anatomy and physiology; physical and mental workload; effects of environmental factors: temperature, lighting, weightlessness, and vibration on humans; manual materials handling and back injuries; design of workstations and office ergonomics; design of displays and controls; hand tool design; and cumulative trauma injuries.

85. INSC 546 - Environmental Informatics

Focuses on the interdisciplinary field of environmental informatics. Explores collection, classification, storage, retrieval, dissemination, integration and visualization of environmental information. Reviews the role of computer technology including geographic information systems.

86. LAR 534 - Operative Landscapes

Surveys the evolving socio-ecological conditions resulting from urbanization, climate dynamics, evolving economies and technological innovation. Landscape architects around the world increasingly engage these complexities in the built environment to create new possibilities for the economic, social, and environmental performance of landscapes in public, private, and infrastructural territories. Will use contemporary projects as a basis for understanding multi-scalar design approaches, technical details, and maintenance regimes. Emphasis will be placed on built landscapes and living systems as integral parts of more dynamic, resilient, and sustainable approaches to landscape design, implementation, and management across scales from the site to the watershed.

87. LAR 553 - Design Studio III

Focus on regional landscape systems with emphasis on community development, spatial planning, urban/rural networks, and natural resource sustainability. Students engage with community partners to tackle complex issues such as water resource stewardship, infrastructure adaptation, ecological resilience, environmental justice, policy innovation, and economic development. Interdisciplinary teams of architecture and landscape architecture students are encouraged.

88. LAR 556 - Design Studio VI

An advanced studio with a focus on strategic approaches to landscape architecture and planning. Particular emphasis will be placed on the development of systemic strategies, which include physical landscape components, policy innovations, economic mechanisms, PR campaigns, and more.

89. LAW 843 - Bankruptcy

Basic elements of federal bankruptcy law providing relief for insolvent debtors and their creditors through liquidation of debtor assets or reorganization of the debtor. The course may include the following: The effect of bankruptcy law on business transactions and commercial and tort litigation, as well as family law and environmental law matters, a review of state creditor collection law, analysis of claims of creditors (e.g., lenders, tort victims, providers of goods or services), property of the estate used to pay claims, the automatic stay of creditor actions, the bankruptcy trustee's powers to avoid pre-bankruptcy transfers, and other basic bankruptcy rules. No prerequisites.

90. LAW 866 - Environmental Law and Policy

Study, through methods of public policy analysis, of responses of legal system to environmental problems: environmental litigation; Clean Air Act; Clean Water Act; National Environmental Policy Act; and selected regulatory issues.

91. LAW 867 - Environmental Law Seminar

Selected topics in environmental law.

92. LAW 892 - International Human Rights Law

Examines the norms, institutions, and application of key international and regional human rights regimes. The substance and procedure of the United Nations human rights system (treaty and non-treaty-based mechanisms) and regional human rights systems, including the European, Inter-American, and African systems, will be explored in detail, as well as other treaties and mechanisms related to the development and protection of human rights. Specific topics include individual and group rights, political and economic/cultural rights, the interaction between human rights and trade, globalization, and the war on terror.

93. LAW 945 - Environmental Practicum

Supervised fieldwork requiring students to respond to specific environmental challenges in practice. Students will help local governments, state agencies, landowners, and non-profit organizations develop quality land use and growth management policies and practices. Students will coordinate with graduate students from other departments. This opportunity will allow students and faculty to work with other disciplines in integrated environmental decision-making and problem-solving thus improving their ability to understand, communicate with, and influence other disciplines.

94. LAW 892 - International Human Rights Law

Examines the norms, institutions, and application of key international and regional human rights regimes. The substance and procedure of the United Nations human rights system (treaty and non-treaty-based mechanisms) and regional human rights systems, including the European, Inter-American, and African systems, will be explored in detail, as well as other treaties and mechanisms related to the development and protection of human rights. Specific topics include individual and group rights, political and economic/cultural rights, the interaction between human rights and trade, globalization, and the war on terror.

95. LAW 945 - Environmental Practicum

Supervised fieldwork requiring students to respond to specific environmental challenges in practice. Students will help local governments, state agencies, landowners, and non-profit organizations develop quality land use and growth management policies and practices. Students will coordinate with graduate students from other departments. This opportunity will allow students and faculty to work with other disciplines in integrated environmental decision-making and problem-solving thus improving their ability to understand, communicate with, and influence other disciplines.

96. LFSC 510 - Special Topics in Life Sciences

Specializations in biotechnology; cellular, molecular, and developmental biology; environmental toxicology; ethology; plant, physiology and genetics; and physiology.

97. MATH 581 - Mathematical Ecology I

Deterministic and stochastic models of populations, communities, and ecosystems.

98. MATH 582 - Mathematical Ecology II

Continuation of 581.

99. MATH 583 - Mathematical Evolutionary Theory

Population genetics and evolutionary ecology.

100. MATH 589 - Seminar in Mathematical Ecology

No description

101. ME 588 - Introduction to Hybrid Electric Vehicles

Series, parallel, and dual configurations. Sizing and analysis of typical HEV components: motors, auxiliary power sources, on-board energy storage, and fuels. Steady-state HEV force and power modeling schemes. Power train design using various computer simulation tools.

102. MICR 606 - Journal Club in Microbial Ecology

Readings and discussions based on current literature.

103. MGT 623 - Overview of Strategic Management

Survey of research and theory focusing on the interrelationship among strategy, structure, and performance at the organizational and industry levels. Business strategy, corporate strategy, governance, performance, environmental and industry forces, resource-based views of the firm.

104. MSE 450 - Introduction to Nuclear Fuels and Materials

Introduction to nuclear fuels and materials in light water reactors, with a focus on the effect of irradiation on properties and performance.

105. NE 542 - Management of Radioactive Materials

Technology for processing, treatment, handling and storage of radioactive nuclides. Analytical and numerical methods for evaluating environmental impact of radioactive materials. Licensing and regulation issues.

106. NE 575 - Equipment and Systems Prognostics

The three types of prognostic techniques will be introduced with theoretical foundations, assumptions, and data requirements: Conventional reliability-based using failure times (e.g. Weibull analysis), Population based with environmental considerations (e.g. proportional hazards modeling), Individual based (e.g. general path model).

107. PHIL 545 - Topics in Environmental Ethics

Content may vary.

108. PLSC 532 - Environmental Plant Ecophysiology

Physiological and ecological principles of plants and the relation of those principles to plant responses to the environment. Water relations, gas exchange, stress physiology, seed biology, plant competition, plant defense.

109. PLSC 536 - Ecology of Grazing Land Systems

Multi-university, field-oriented course. Components and functions of grazing lands and how these vary in different ecoregions; research needs, objectives and techniques in soil-plant-animal research; forage-livestock ecology and systems in grazing lands (cropland, pastureland, rangeland and forestland); role of forages in conservation practices, wildlife habitats, and sustainable agriculture; and industries involved with forages and livestock. Requires two-week field trip, inclusive report, and examination.

110. PLSC 554 - Plant Biotechniques

Lectures will discuss recombinant DNA technology, molecular assisted breeding of economically important crops, gene cloning and transformation technologies. Examples will be given of food and ornamental crops, pharmaceuticals, and renewable energy sources produced using biotechnology as well as potential risks of this technology. Labs will include electrophoresis, tissue culture, plasmid preps, genomic DNA preps, PCR, plant transformation, genomic techniques.

111. POLS 549 - Environmental Policy

Overview of contemporary environmental policy and its evolution. Examines the roles of values in the environmental arena. Provides a framework for policy analysis and analytical tools for selection and choosing among policy options.

112. RHTM 614 - Theories in Retail, Hospitality and Tourism Management

Analysis and evaluation of theory in retail, hospitality and tourism environment and its application to research in retail, hospitality and tourism.

113. RHTM 617 - Tourism Analysis

Trade theory and regional analysis methodologies applied to tourism and the service industry, including travel balance account, retail tourism, interregional transactions flow, economic impacts, environmental economics, demand theory and forecasting.

114. SCED 509 - Global Science Education: Making Connections

Holistic and interdisciplinary approach that encourages educators and learners to engage in dialogue in order to acquire through experiences and creativity skills and knowledge needed to maintain a balance between socio-economic, political and environmental goals.

115. SCED 510 - Theoretical Foundations of Environmental Education

Study of history and philosophy of environmental education, pedagogical approaches, and current status, including model programs and standards for environmental education. Addresses

implementation of environmental education in formal and non-formal educational settings. A technology-enhanced course with both online and fieldwork components.

116. SCED 565 - Instructional Trends and Issues in Science Education

Analysis of current trends in science instruction, instructional issues facing elementary, secondary, and community college science teachers, and application of learning theory to teaching biological, physical, and environmental sciences.

117. SCED 596 - Curriculum Trends in Science Education

Analysis of elementary and secondary curriculum projects for biological, physical and environmental sciences. Impact of current learning theories on future curriculum development projects.

118. SOCI 503 - Foundations of Environmental Sociology

Systematic treatment of current research in environmental sociology. Social impact analysis and conflicts over environmental issues.

119. SOCI 543 - Sociology of Development and Globalization

Sociological theories of global development: modernization, dependency, world-systems, post-colonialism, and globalization. Topics range from impact of various development and underdevelopment projects and paths on social structures and inequalities to revolutionary/social movements of resistance and transformation.

120. SOCI 616 - Advanced Topics in Race and Ethnicity

Rotating topics on race and ethnicity. Examples include, environmental racism; policing and race; race, terror and genocide; intersectionality; health disparities, immigration and ethnic change; disproportionate minority contact, advanced Critical Race Theories.

121. SOCI 657 - Alternative Visions of Justice

Explores the pluralization of alternative forms of justice across time and space, including rights discourse, social justice movements, and their relationship to various forms of justice (criminal, racial, economic, environmental, etc.)

122. SOCI 665 - Advanced Topics in Environmental Sociology

Topical seminar covering particular lines of research and theory within area.

132. SOWK 510 - Social Work and Social Welfare Policies and Programs

Will identify issues in social welfare policy and social service delivery at the micro, mezzo and macro levels of practice within the profession of social work. This includes neighborhood, local, state, national and international levels of policy practice. Will address methods which will expand the student's capacity to promote social, economic and environmental justice and access to services. Such areas of policy practice as policy analysis and advocacy will be discussed and simulated. The history of the social work profession's role in policy as well as ethical considerations will also be addressed.

124. SOWK 512 - Introduction to Macro Social Work Practice

Will allow students to explore the social, economic, environmental, and political factors that impact society, particularly those groups who are negatively impacted by such societal forces. This knowledge will be applied to the practice of macro social work. Particularly, the essential skills of engagement, assessment, planning, implementation, evaluation and termination while focused on strengths, capacities and resources of communities and organizations. Cultural competency and technological issues of concern within the macro practice environment will also be considered.

125. SOWK 528 - Neurophysiology for Social Work Practice

For Advanced Standing students. Covers the basis of neurophysiology. Students will explore the effects of genetics and epigenetics on human development and behavior; brain development and functioning; and physiological responses to stress and trauma. Particular focus is placed on understanding interactions between environment (including intra-uterine, cultural, and other environments) and physiological processes and how these topics relate to social work practice and all system levels.

126. SOWK 547 - Advanced Organizational Theory and Practice

Serves as an introduction to social service/nonprofit organizations through the lens of social, economic and environmental justice. The content provided will afford the knowledge/skill needed for entrance into management positions in human service/nonprofit/governmental/quasi-governmental organizations. Topics will include multi-organization initiatives such as partnerships, community coalitions and alliances, theories in economic development such as how economic factors affect the social sector with particular attention to entrepreneurship/venture philanthropy, and collective impact. Will consider aspects of governmental relations, operational best practices including practical skills such as running meetings, employee development, advanced strategic planning and futuring, understanding and incorporating accreditation standards, organizational culture and ethical practice in organizations. Topics such as nonprofit governance and accountability, human resource development, supervision, compensation strategies, management theories and employment law will also be addressed.

127. VMD 837 - Food Hygiene and Zoonoses

Host-agent relationships, public health aspects of veterinary medicine and role of veterinarians in ecology and food hygiene.

128. WFS 501 - Ecology and Management of Wildlife Health

Review of ecological and environmental factors affecting wildlife health, and tools available for effective wildlife disease surveillance and management. Emphasis on the importance of multidisciplinary and interagency collaboration for management of wildlife health problems. Build skills on grant proposal writing for a disease study that involves a team of experts as collaborators and includes a budget, Biosafety forms (if appropriate), and an IACUC proposal (if appropriate).

129. WFS 520 - Identification and Ecology of Freshwater Mussels

Devoted to the study of shells of freshwater mussel species found in the lakes, rivers, and streams of North America, with special attention given to the fauna of Tennessee.

130. WFS 552 - Ecology and Management of Fishes

Theoretical and applied conservation and management issues relating to the ecology and regulation of fish populations and assemblages. Abiotic (physical, chemical) and biotic (predation, competition) interactions facing fishes and how these interactions may be affected by humans, and how humans can manage these interactions to conserve and sustain fish populations and assemblages.

All Graduate Courses About/Directly Related to Sustainability

Graduate sustainability courses: Courses for which the primary and explicit focus is on sustainability and/or understanding or solving one or more major sustainability challenge.

Per the STARS guidelines, these courses were derived from conducting a search through the undergraduate and graduate course offerings for the 2017-18 school year including each of the following terms separately: Environment, environmental, sustain, sustainability, ecology, ecological, energy, climate, green, renewable, fuel, conserve, conservation, global change, pollution, geothermal, social wellbeing, economic prosperity, environmental health

Total Number of Graduate Courses about Sustainability: 53

1. ARCH 513 - Non-Western and Indigenous Architecture

Building responsive to climate, material availability, and economic level, as designed by anonymous builders. Examples from prehistoric times to present including the fertile crescent; the Indus Valley; Hindu, Buddhist, and Mughal architecture of India, China, and Japan.

2. ARCH 545 - Principles of Environmental Control I

Introduction to heating, ventilating, air conditioning, solar energy, plumbing, and fire-protection systems.

3. ARCH 546 - Principles of Environmental Control II

Introduction to electrical design and wiring, lighting and acoustics in buildings.

4. ARCH 552 - Special Topics in Sustainable Design

Faculty initiated professional elective involving sustainability and progressive environmental design.

5. ARCH 586 - Advanced Architectural Design: Sustainable Architecture

Architectural design studio emphasizing concern for the environment, consideration of energy conservation techniques, and use of renewable resources.

6. AREC 670 - Advanced Topics in Natural Resource Economics

Applications of microeconomic theory to the use, allocation and control of scarce, exhaustible, and renewable natural resources, including soil, water, minerals, forests, and fish, in both static and dynamic

contexts. Optimal control theory, dynamic programming, supply of, and demand for, natural resources, social versus private decisions, market and non-market considerations, regulation, uncertainty, property rights, equity considerations, and landscape pattern and change.

7. BCMB 612 - Advanced Topics in Environmental Toxicology

Cross-listed: (See Ecology and Evolutionary Biology 612.)

8. BSE 562 - Selected Topics in Natural Resource Engineering

Topics in engineering for the characterization, conservation, and protection of soil, water, and air resources in spite of human activities such as off-road vehicle use, agriculture, mining, construction and land development, or waste application.

9. CBE 586 - Sustainable Engineering, Design, and Analysis

Principles and practical aspects of the design, commercialization, and use of processes and products that are feasible and economical while minimizing the generation of pollution at the source and risk to human health and environment.

10. CE 548 - Sustainable Transportation

Sustainability in the context of the transportation system including all aspects of sustainability that focus on environment, equity, and economy. Relative merits of transportation demand management, technologies, land use, and alternative fuels are compared. For the environmental analysis, a full life cycle accounting approach, teaching specific approaches, data, and tools to assess environmental impacts through all phases of vehicles, fuels, and infrastructure life cycles.

11. CE 558 - Transportation Planning Models

Transportation planning process and travel patterns, data collection, trip generation, trip distribution, mode split, and traffic assignment. Applications of travel demand modeling. Proposing transportation alternatives and evaluation. Social, economic, and environmental impacts of transportation. Innovative travel demand modeling techniques.

12. CE 681 - Rating and Analysis of Sustainable Infrastructure Systems

Assessment of the impact of civil infrastructure on societal sustainability using life-cycle assessment, systems analysis, modeling and simulation, and economic valuation. Applications in mitigation and sustainability rating systems.

13. CEM 506 - One Health

Online course that will address the link between human, animal, and environmental health. Each online module focuses on some aspect of "One Health" and may include topics such as emergency preparedness, zoonotic diseases, antibiotic resistance and food safety, responsible pet ownership and the human-animal bond, and the effects of climate on disease prevalence. Methods of intervention and problem solving such as research design, program evaluation, community education, and policy analysis are also incorporated.

14. ECE 525 - Alternative Energy Sources

Energy outlook, interconnection issues of distributed energy resources, efficiency of power production, electric energy conversion and storage. Photovoltaics, fuel cells, wind turbines, microturbines.

15. ECON 677 - Environmental and Natural Resource Economics

Alternative paradigms for allocating and valuing environmental resources. Exploration of issues related to market failure and differences between renewable and nonrenewable resources.

16. EEB 606 - Advanced Topics in Conservation Biology

Exposure and in-depth training in contemporary topics and approaches important to advanced research in conservation biology. Consult departmental listing for offerings.

17. ENVE 508 - Seminar

Reports on current research in environmental engineering at the University of Tennessee, Knoxville.

18. ENVE 533 - Green Infrastructure Design

Modification of hydrologic methods for urban systems, urban pollutants of concern, stormwater regulations, low impact development, green infrastructure, design of stormwater control measures, and discussions of stormwater control performance. Class projects will be design focused, offer real world challenges, and require the application of a diverse set of methods and tools.

19. ENVE 561 - Climate and Environmental Informatics

Introduction to applied time series, spatial statistics, and geographical data sciences for climate and the environmental applications with an emphasis on extreme events, regional analysis, uncertainty characterization and risk management. Case studies and class projects focused on integration of disparate data and analysis techniques to solve problems in climate change impacts.

20. ENVE 562 - Three Dimensional Climate Modeling

Theory and applied algorithms for three-dimensional climate modeling including conservation laws, prognostic and diagnostic relationships and climate model formulations. Emphasis on numerical methods, coordinate systems, spatial and temporal discretizations, parameterization and model validation.

21. ENVE 577 - Air Pollution Climatology

Linkages between climate change and pollutant emissions, transport, transformation, and deposition. Both the impact of air quality on climate and the impact of climate on air quality will be examined using general circulation and meteorological models. Regional-scale effects of land utilization, incident radiation, climate perturbations and air quality parameters such as ozone, particulate matter, and greenhouse gases will be investigated.

22. ENVE 586 - Sustainable Engineering, Design, and Analysis

No description

23. ENVE 590 - Special Problems in Environmental Engineering

Enrollment limited to environmental engineering students in non-thesis program.

24. ENVE 650 - Environmental Engineering Laboratory

Experimental measurements of water quality and advanced laboratory investigation of water/waste treatment and environmental restoration processes. Emphasis is placed on research methods, experimental design, and application of laboratory data to field scale solutions.

25. ENVE 671 - Advanced Concepts of Air Pollution Engineering

Multidisciplinary approach to the principles and chemistry of incineration, adsorption theory and design of adsorbers in transient state, absorption theory and column design, applications and chemistry of non-thermal plasma, computational design and optimization of air pollution control facilities.

26. ENVE 672 - Air Pollution Dispersion Modeling

Diffusion of air pollution in the atmosphere; application of USEPA computer models for atmospheric dispersion from industrial, area, mobile sources, and spills; evaluation of meteorological data and comparison of model predictions to ambient measurements; new source review and permitting requirements.

27. ENVE 691 - Special Topics in Environmental Engineering

No description

28. ESE 511 - Introduction to Energy Science and Technology I

Topics include: Energy basics, history of energy and society, current and future supply and demand, political and environmental aspects of energy production, energy technologies (fossil fuels, biomass, nuclear fission, nuclear fusion, solar, wind, geothermal), energy conversion, storage, transportation, and distribution, energy efficiency, and innovation.

29. ESE 512 - Introduction to Energy Science and Technology II

Topics include: Energy basics, history of energy and society, current and future supply and demand, political and environmental aspects of energy production, energy technologies (fossil fuels, biomass, nuclear fission, nuclear fusion, solar, wind, geothermal), energy conversion, storage, transportation, and distribution, energy efficiency, and innovation.

30. FORS 521 - Composite Materials from Renewable Resources

Manufacturing processes, science and engineering of composite materials derived from renewable resources. Overview of renewable resources and utilization; structure and properties of natural fibers, thermosets, thermoplastics, and bioplastics; fundamentals of adhesion; engineered wood composites; natural fiber reinforced composites; and mechanical property and durability testing.

31. FWF 520 - Natural Resource Issues at International Level

Identification and analyses of issues regarding forestry, wildlife, fisheries and wildland park resources beyond U.S. borders. Political, economic, social, and biophysical elements impacting natural resources in different parts of world: Northern Europe, Latin America, Asia, Africa, and South America. In-depth case study and class presentation required by student teams.

32. FWF 535 - Environmental Impacts to Natural Ecosystems

Current environmental problems impacting natural ecosystems: climatic change, acidic deposition, air pollution, species declines, and introductions of exotic species. Management methodologies to mitigate environmental problems. Overnight field trips required.

33. FWF 540 - Seminar on Integrated Resources Management in Biosphere Reserves

MAB program, UNESCO-sanctioned global conservation initiative. Analysis of integrated resources management practices that demonstrate concept of sustainable development. Environmental policy and application of science to management practice. Applicable to majors in forestry and in wildlife and fisheries science.

34. GEOG 532 - Topics in Global Change

Emerging trends, anticipated problems and methods in global change research and response.

35. GEOL 566 - Water and Air Pollution

Focuses on the impacts of human activities on the water and atmospheric cycles. Emphasis is on field and lab activities to learn methods of measuring pollution. Topics include: industrial pollution, sewage contamination, heavy metals and some biological impacts.

36. GEOL 558 - Global Climate Change

Examines natural and anthropogenic changes in global climate systems. Topics include: biogeochemical cycles of greenhouse gases and the water cycle, including water resources and pollutants and changes in the biosphere (extinctions) as both cause and effects of physical global changes. Historical (baseline) dynamics are compared to current changes in order to predict human impacts and suggest technical and policy solutions.

37. LAR 583 - Design Theory and Methods I

Provides an introduction to design and planning as intellectual disciplines that shape and sustain regional and global environments. Discussion will address landscape architecture, architecture, urban design, and planning perspectives and theory.

38. MATH 681 - Advanced Mathematical Ecology I

Selected topics in theoretical and applied mathematical ecology: population, community, ecosystem ecology and applied topics such as demography, ecotoxicology, epidemiology, environmental change, and resource management.

39. MATH 682 - Advanced Mathematical Ecology II

Continuation of 681

40. MATH 689 - Seminar in Mathematical Ecology

Repeatability: May be repeated. Maximum 12 hours.

41. ME 572 - Sustainable Energy Engineering

An in-depth examination of engineering systems to convert, store, transport, and use energy, with emphasis on technologies that reduce dependence on fossil fuels and/or emission of greenhouse gases; Examines various conventional energy production technologies such as fossil fuel and nuclear (both fission and fusion) and renewable energy conversion technologies such as solar, wind, hydro, geothermal, wave, and thermoelectric energy; Examines their end-use practices, consumption practices. The course will emphasize using quantitative methods to assess and compare different technologies.

42. PLSC 515 - Agroecology

Application of ecological concepts to management of horticultural, agronomic and biofuel cropping systems. Examination of plant physiological ecology, population ecology, community ecology, and ecosystem ecology within the context of agroecosystems; discussion of current research in agroecology; assessment of sustainability of cropping systems from environmental, economic, and social perspectives.

43. POLS 551 - Energy Policy

Analysis of current policy problems involving production, distribution, consumption and conservation of energy.

44. POLS 554 - Sustainable Communities

Development and implementation of sustainable development approaches and strategies for local communities.

45. PUBH 510 - Environmental Health Science

Health risks and complexities of macro and micro environments impacting population health as well as individual's health and response to a diverse and dynamic world. Principles of environmental health and potential exposures. Survey of contemporary environmental issues and their implications for healthful living.

46. RSM 554 - Environmental Sustainability in Sport

Will provide a holistic examination of the relationships between sport organization operations and the natural environment. Sport, in its participative and experiential forms, works with and within, the natural environment. The physical environmental footprint made by sport-related activities demands attention as with any other form of human activity. The social and cultural position of sport makes it an important example of natural environment responsibilities. Sport is a platform for bringing education and behavioral change to those who participate in as well as those who support it.

47. SOCI 562 - Sociology of Environmental Policy

Examines the history of environmental use and environmental protection; the policy process; the institutional and cultural barriers to improved environmental policies; and potential policies for sustainability.

48. SOCI 661 - Environmental Theory

Historical and contemporary studies of interaction between humans and their environment.

49. SOWK 546 - Evidence-based Social and Economic Development Practice Across Systems

Advanced course examining programmatic, national, and global issues related to social and economic development. Topics include history, philosophies, alternative approaches and critical thinking about social and economic development, applied across multiple, at-risk and culturally diverse systems: individuals, families, groups, communities, organizations, nations, and the world. Students will develop knowledge and skills for assessing and planning ethically sound, evidence-based sustainable development interventions across systems and environments including micro-enterprise and asset-building, participatory change strategies, and other skills.

50. VMD 820 - Wildlife Medicine: Conservation and Policy

No description

51. VMD 849 - One Health

Online course addresses the link between human, animal, and environmental health. Each online module focuses on some aspect of "One Health" and may include topics such as emergency preparedness, zoonotic diseases, antibiotic resistance and food safety, responsible pet ownership and the human-animal bond, and the effects of climate on disease prevalence. Methods of intervention and problem solving such as research design, program evaluation, community education, and policy analysis are also incorporated.

52. WFS 515 - Avian Ecology and Conservation

Readings and discussion based on current literature on contemporary topics in avian ecology and management. Additional credit awarded for writing review paper on contemporary topic of interest to student.

53. WFS 533 - Amphibian Ecology and Conservation

An in-depth examination of amphibian life-history strategies, community interactions, and hypothesized mechanisms of amphibian declines. Amphibian monitoring, conservation and management techniques also are covered.