

URBAN FORESTRY (UFOR) B.S. Degree Program Course Descriptions

151B. URBAN FORESTRY (Credit, 3 hours). The course introduces the participants to basic concepts and practices associated with urban forestry science, urban vegetation inventory, appraisal, benefit/economic value assessment, planning and management, green space in land use planning and zoning, program administration and budget analysis, urban wildlife conservation and management, professional ethics and legal implications, and career opportunities.

251B. URBAN FORESTRY SOIL AND ENVIRONMENT (Credit, 3 hours) (Lec., 2 hours; Lab, 2 hours). Emphasis on soil physical and chemical properties and their relations to the growth and development of urban forest communities.

260B. Insects in the Environment (Credit, 3 hours) (Lec., 2 hours; Lab, 2 hours). This course will introduce the students to the fascinating world of insects, and will cover their significant role in relation to the environment and human activities. The topics will include basic concepts in entomology, and the importance of insects in the environment including major insect pests of crops, ornamentals and forest settings as well of insect vectors of diseases. Insect pollinators, decomposers, and natural enemies provide beneficial services and will be discussed in detail. The collection of insects, proper mounting and identification in the laboratory will provide students with hands-on experiences.

271B. ENVIRONMENTAL SCIENCE (Credit, 3 hours) (Lec., 2 hours; Lab, 2 hours). An introductory course to basic principles of science and ecology, environmental protection and sustainability, natural and human systems, population, resource issues, pollution, environmental ethics, policy, and economics, and society. This course addresses the sustainable development imperative. Prerequisite: SBIO 101B. Field trip and laboratory exercises required.

Course focuses on the principles of science and ecology, population, resources, pollution, environment, and society.

278B. URBAN DENDROLOGY (Credit, 3 hours) (Lec., 1 hour; Lab/Field, 4 hours). Taxonomy and identification of important forest trees in the United States and Canada with special emphasis on trees suitable for the urban environment.

288B. URBAN WILDLIFE MANAGEMENT (Credit, 3 hours) (Lec., 2 hours; Lab, 2 hours). Principles and techniques of urban wildlife management. Required field trips.

333B. FOREST SCIENCE (Credit, 3 hours) (Lec., 2 hours; Lab, 2 hours). Basic principles and practices of traditional forestry including forestry biology, programs, management, products, and policies.

364. ARBORICULTURE I (Credits, 3 hours). (Lec., 2 hours; Lab, 2 hours). Basic principles of tree care and management.

368B. INTRODUCTION TO REMOTE SENSING (Credit, 3 hours). This course covers introduction to satellite and airborne systems. Detailed discussions of different satellites systems will be covered. Strengths and weaknesses of both spaced-based and airborne systems and instruments will be explored in detail. Some of the characteristics of commercially available digital airborne camera systems in the market will be discussed in relation to the spectral range, band, accuracy and sensor resolution.

371B. PLANT HEALTH CARE (Credit, 3 hours) (Lecl, 2 hours; Lab, 2 hours). Consolidation of all plant protection disciplines into an ecologically based multidisciplinary approach to the protection of plants, especially woody plants. Contributions from the fields of plant pathology, entomology, and weed science will be explored. Economic planning and current IPM models related to urban forestry will be studied.

375B. INTRODUCTION TO GIS (Credit, 3 hours). A study of Geography Information Systems (GIS). Global Positioning System (GPS), an overview of the functions and capability of ARC-VIEW GIS.

381B. CARTOGRAPHIC THEORY AND DESIGN (Credit, 3 hours) (Lec. 2 hours: Lab 2 hours). This course teaches students the concepts of map design. Both theoretical and practical considerations for making maps will be taught in relation to the fundamental principles of map reading and analysis. The course is structured to develop design skills and use of computer mapping programs and hands-on experience related to the effective creation of maps Graphic techniques are emphasized that relate to the effective display and communication of spatial phenomena. Thorough exposure to grid coordinate systems, representative fractions/scale, analysis and interpretation of topographic maps, cartographic symbolization, map projections and mapping systems.

391B. URBAN FOREST ECOLOGY (Credit, 3 hours) (Lec., 2 hours; Lab, 2 hours). This course introduces ecological principles and their applications in forest and urban forest ecosystems. Major topics include ecological concepts, production ecology, biogeochemistry, adaptations and evolution, physical determinants and their impacts on plant and animal communities common to urban forest, population and community ecology, temporal and spatial changes in forest and urban forest ecosystems, sustainability and renewability of natural resources, environmental ethics and implications for forest and urban forest management. Lab and field exercises are required. Prerequisite: UFOR271B or equivalent.

392B. ENVIRONMENTAL LEADERSHIP, COMMUNICATION AND ETHICAL PERSPECTIVES (Credit, 3 hours) (Lec., 3 hours). This course introduces students to general principles of leadership, communication and ethical perspectives concerning the environment, such as environmental justice, deep ecology, biocentrism, sustainability, economics, and capitalism.

393B. FIRE MANAGEMENT IN URBAN AND RURAL/WILDLAND INTERFACE (Credit, 3 hours) (Lec., 2 hours; Lab, 2 hours). This course provides an historical perspective on human-fire interactions at the landscape scale in urban-rural settings. The course covers important role that fire plays in the natural cycle of forest as well as causes and impact of wildfire. The connection between climate change and wildfires will be examined. Legislation, laws, mitigation, and other wildland fire management policies from both local and international context will be discussed in detail. Case studies will be drawn from communities across United States on community planning and wildfire protection plans. The use of geospatial technologies in wildfire monitoring and detection will be discussed to allow students gain deeper understanding in the use these technologies i.e. geographic information system, satellite data, drone, and airborne data system in fire management.

394B. ENVIRONMENTAL ETHICS (Credit, 3 hours) (Lec., 3 hours). This course will provide an in-depth discussion of the field of environmental ethics. The course will cover a range of issues including the relationship between human and nonhuman world. Some of the main competing paradigms pertaining to the environment such as anthropocentric, biocentric, theocentric and ecocentric viewpoints will be discussed in relation to the concept of philosophical roots of anthropocentrism. In addition, central ideological and theoretical responses to the environmental challenges movements in the late 1970s and early 1980s such as Deep Ecology, Social Ecology, Radical Environmentalism, Ecological Feminism, Political Action, environmental racism, the problems posed by overpopulation, economic policy and globalization will be discussed. The course will provide case studies to assist build student understanding of how world views and ethical considerations influence and shape decision making and develop sustainable environmental management.

395B. SOIL EROSION CONTROL, REMEDIATION AND CONSERVATION TECHNOLOGIES (Credit, 3 hours) (Lec., 2 hour; Lab, 2 hours). This course deals with soil erosion mechanics, soil loss prediction, remediation and reclamation of disturbed lands, and effective erosion control technologies for sustainable land use in urban and suburban areas. The focus will be on the critical natural resources (soil and water) management and conservation that affect sustainability of agricultural, forest, recreational and disturbed urban soil ecosystems. These resources have great impact in the mitigation to climate change, environmental pollution and quality of life in the urban environment. The course will also include sustainable management of wetlands for carbon sequestration and wildlife habitat preservation.

396B. NATURAL HAZARDS AND DISASTERS. (Credit, 3 hours) (Lec., 2 hour; Lab, 2 hours). This course will explore natural hazards and disasters. Some of the geophysical processes such as earthquakes, floods, cyclones, hurricanes, tsunamis, tornadoes, volcanoes, drought, and windstorms will be examined in addition to man-made disasters and other hazards driven by biological processes. The course will also evaluate human impacts of disasters by type. Case studies of natural hazards and disasters will be drawn from the United States as well as global trends and patterns in disaster occurrence. Finally, the course will introduce mitigation and management techniques of disaster as well as the use of earth observations (EO) and space-based technologies as decision support tool in disaster preparedness and disaster risk management.

397B. COASTAL ZONE MANAGEMENT. (Credit, 3 hours) (Lec., 2 hour; Lab, 2 hours). The course explores ecological, environmental, social, and economic aspects of coastal zone management. It will examine past and present coastal zone management strategies at the national, regional, and local level. Laws, policies, regulations, and cases that guide approaches to coastal and ocean resources, including beaches, wetlands, reefs, fisheries, endangered and threatened species, ports, urban waterfronts, declining water quality, habitat protection, beach erosion, hazard mitigation, public access to the beach, water resources, and special marine area will be examined from both federal and the states level. The course will also provide an overview of coastal applications of GIS-based decision support tools, spatial data infrastructures, remote sensing technology including LiDAR.

398B. ENVIRONMENTAL ECOLOGY (Credit, 3 hours) (Lec., 2 hour; Lab, 2 hours). Elements, principles and applications of environmental ecology with emphasis on interrelationships among organisms and their environment and ecological implications of human impacts on environment.

399B. URBAN FORESTRY SUMMER INTERNSHIPS (Credit, 3-6 hours). Individual experience in approved institutional or industrial position related to urban forestry (8-10 weeks during the summer).

400B. URBAN FOREST EVALUATION, INVENTORY, AND MENSURATION (Credit, 3 hours) (Lec., 2 hour; Lab, 2 hours). Use of statistics, remote sensing, integrated geographic information systems (GIS) and global positioning systems (GPS) to evaluate urban forest and natural resources such as urban trees, soils, water and wildlife. Prerequisite: UFOR 278.

401B. BIOSECURITY AND INVASIVE SPECIES MANAGEMENT. (Credit, 3 hours) (Lec., 2 hours; Lab, 2 hours). This course will introduce the concept of invasive species and their impact to the environment. Examples will focus on non-native insects and plants that are threatening agriculture, urban settings, and forest ecosystems in southern USA. Biosecurity related to trade and border control, phytosanitary treatments, and surveillance methods will be discussed. Management tactics used against invasive species will be covered using examples from Louisiana.

410B. SUSTAINABLE NATURAL RESOURCES IN A CHANGING CLIMATE (Credit, 3 hours) (Lec., 2 hours; Lab, 2 hours). This course focuses on how climate change impacts natural resources and ecosystems in urban environment and coastal regions, and how to mitigate the impacts. The course intends to enhance students' competence and workforce preparedness through research model application training in natural resources, climate change, and ecosystems. The course provides an understanding of social and biological complexities of managing natural resources sustainably in a changing climate. Particular emphasis is placed on regional and national impacts and mitigation strategies.

415B. URBAN FOREST PATHOLOGY (Credit, 3 hours) (Lec., 2 hours; Lab, 2 hours). Diseases of forest and shade trees and their effects on management and utilization of urban forests.

417B. URBAN FOREST ENTOMOLOGY (Credit, 3 hours) (Lec., 2 hours; Lab, 2 hours). Study of insects that attacks forest trees. Special emphasis on insects that attack tree species in urban areas.

438B. URBAN TREE PHYSIOLOGY (Credit, 3 hours) (Lec., 2 hours; Lab, 2 hours). The fundamental principles of plant physiology with particular reference to the growth and development of woody plants. Consideration of the influence of genetic and environmental factors, especially urban environment, on physiological processes in trees. Major emphasis focuses on tree structure and wood formation, vegetative and reproductive growth, gas exchange, primary and secondary products, tree nutrition, water relations, and seed physiology.

455B. URBAN FOREST MANAGEMENT (Credit, 3 hours) (Lec., 2 hours; Lab, 2 hours). Principles and modern methods of urban forest planning and management: organizational, legal economic, cultural, and environmental relations. Major emphasis on urban forestry concepts and issues, tree and landscape ordinances, tree appraisal, planning and tree master plans, urban forestry program management and funding, tree boards and community volunteerism, and special topics.

457B. URBAN HYDROLOGY (Credit, 3 hours) (Lec., 2 hours; Lab, 2 hours). Water and its interrelationships with man, introduction to city physiology and anatomy, analyses of stream flow, stream water quality, hydrologic change flow, stream water quality, hydrologic change due to urbanization, modeling of water quantity and quality of urban watershed, and structure and non-structure control measures in urban water resources planning.

462B. URBAN SILVICULTURE (Credit, 3 hours) (Lec., 2 hours; Lab, 2 hours). The art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands in urban areas to meet the diverse needs and values of landowners and society on a sustainable basis. The course will emphasize on tending of a forest or the growing of trees in urban areas. The course is concerned with meeting human needs by manipulating urban forest using silvicultural practices modified for urban areas.

464B. ARBORICULTURE (Credit, 3 hours) (Lec., 2 hours; Lab, 2 hours). Advanced techniques of species selection, establishment, and cultural practices used in the care and maintenance of shade and ornamental trees. Physiological relationships involved in plant propagation with emphasis on environmental factors as they relate to plant growth, structure, and nursery conditions. Required field trips.

466B. URBAN RECREATION AND PARK MANAGEMENT (Credit, 3 hours) (Lec., 2 hours; lab, 2 hours). Management of urban outdoor recreation areas. Planning, development, and maintenance of parks and city forest recreation areas. Required field trips.

470B. ADVANCED REMOTE SENSING (Credit, 3 hours) (Lec. 2 hours: Lab, 2 hours). This course introduces the students with the advanced principles of remote sensing and develops skills in using remote sensing data and techniques for urban forestry and natural resources. The first part of the course will cover the principles and techniques of acquisition, enhancement, and analysis of remote sensing imagery, as well as visual and computer-based image interpretation. The second part of the course deals with application of remote sensing principles and data in urban forestry and natural resources. Topics include the use of Remote Sensing for environmental applications related to different studies of vegetation, soil, water, air and land use/land cover. The course emphasizes a hands-on learning environment, with in depth insights into theoretical and conceptual underpinnings in satellite remote sensing. Prerequisites; introductory remote sensing course or equivalent course or experience using remote sensing in the work environment with permission from the instructor.

473B. SEMINAR IN URBAN FORESTRY (Credit, 3 hours) (Lecture). Current and emerging topics in urban forestry and arboriculture, including concepts, principle, research methodologies, and practices, to improve students' involvement and skills in research, literature review, scientific discussion, paper writing, and presenting research results.

475B. ADVANCED GIS (Credit, 3 hours) (Lec., 2 hours; Lab., 2 hours). This course covers the advanced concepts and analytical methods in Geographic Information Systems (GIS) technology and how it is being applied in areas such as forestry and natural resources, agriculture, urban and regional planning for urban development, infrastructure planning, environmental management, transportation planning and a host of other purposes. Several advanced topics in the form of 3D modeling, surface analysis, geocoding, queries, path analysis and network applications will be introduced. Students will also be exposed to preparing data for analysis such as creating graphs, clipping layers and exporting data. An advanced form of symbolizing features and rasters: changing symbology, symbolizing features by categorical attributes, using styles and creating layer files will be taught. Prerequisites: Introduction to GIS UFOR or equivalent courses or experience using GIS in the work environment with permission from the instructor.

477B. URBAN FOREST RESOURCE POLICY, ETHICS, AND LAW (Credit, 3 hours) (Lec., 2 hours; lab, 2 hours). This course is designed to introduce students to policy, ethics, and law. The students will experience an intensive study of urban tree law and management conceptions with a focus on basic urban forestry governance through the lens of social-ecological systems (SESs) of linked human and natural components. Students will be provided a broad but reasonably detailed examination of the central issues of moral philosophy of policies and how they can be applied to contemporary environmental problems. Students will also be introduced to standard duty of care, torts law, principle of negligence, right of way issues and boundary line conflict resolution will be studied with practical application in legal based decision making.