

Forest and Natural Resource Management (FNRM) B.S. Urban and Community Forestry Specialization (UCF)

Curriculum Guide – Last updated Fall 2016

This guide is subject to change at any time.

Learn to manage urban natural resources to improve the quality of life for people in towns and cities while also protecting environmental resources. Graduates are involved in the planning, design, and management of trees and vegetation in parks, greenbelts, open spaces, and private lands. Employers include city government, tree care firms, state and federal forestry agencies, nurseries, and utility companies. Graduates may also qualify for traditional forestry positions. This track is accredited by the Society of American Foresters.

Communication Skills

- _____ Freshman Composition
- _____ COMM 1101 Introduction to Public Speaking [CIV] (3 cr, F/S/Sm)
or AFEE 2421 Professional Communication for Agriculture, Food, and the Environment (3 cr, F/S)

Physical and Biological Sciences

- _____ BIOL 1001 Introductory Biology: Evolutionary and Ecological Perspectives [BIOL] (4 cr, F/S)
or BIOL 1009 General Biology [BIOL] (4 cr, F/S/Sm, prereq high school chemistry)
- _____ BIOL 2022 General Botany (3 cr, F/S, prereq one semester of college biology)
- _____ SOIL 2125 Basic Soil Science [PHYS, ENV] (4 cr, F/S, prereq CHEM 1015/1017 or CHEM 1061)
or SOIL 1125 The Soil Resource [ENV] (4 cr, F/S)

Mathematical Thinking

- _____ MATH 1151 Precalculus II [MATH] (3 cr, F/S/Sm, prereq MATH 1031 or 1051 or by placement)
or MATH 1142 Short Calculus [MATH] (4 cr, F/S/Sm, prereq MATH 1031 or 1051 or by placement)
or MATH 1271 Calculus I [MATH] (4 cr, F/S/Sm, prereq MATH 1151 or 1155 or by placement)
- _____ ESPM 3012 Statistical Methods for Environmental Scientists and Managers [MATH] (4 cr, S, prereq 2 years high school math)
or STAT 3011 Introduction to Statistical Analysis [MATH] (4 cr, F/S/Sm)

Chemistry

- _____ CHEM 1015 Introductory Chemistry: Lecture (3 cr, F/S/Sm, prereq high school chemistry)
and CHEM 1017 Introductory Chemistry: Lab (1 cr, F/S/Sm)
or CHEM 1061 Chemical Principles I [PHYS] (3 cr, F/S/Sm, prereq CHEM 1101 or 1015 or by placement)
and CHEM 1065 Chemical Principles I Lab [PHYS] (1 cr, F/S/Sm)

Social Sciences

- _____ ESPM 3261 Economics and Natural Resources Management [SOCS, ENV] (4 cr, S, prereq MATH 1031, 1051, 1142, 1155, or 1271 or ESPM 3012 or STAT 3011 or SOC 3811)
- _____ ESPM 3241W Natural Resource and Environmental Policy [SOCS, CIV, WI] (3 cr, S)

Major Professional Courses

- _____ FNRM 1001 Orientation and Information Systems (1 cr, F)
- _____ FNRM 1101 Dendrology: Identifying Forest Trees and Shrubs (3 cr, F)
- _____ FNRM 3131 Geographic Information Systems (GIS) for Natural Resources [TS] (4 cr, F/S, prereq soph, jr, sr, or UHP fr)
- _____ FNRM 4232W Managing Recreational Lands [WI] (4 cr, S)

Liberal Education Requirements and Writing Intensive

	Required Credits	UCF courses that fulfill requirements
Diversified Core		
Arts/Humanities [AH]	3	-
Biological Science [BIOL]	4, must include lab or field experience	BIOL 1001 or 1009
Historical Perspective [HIS]	3	-
Literature [LIT]	3	-
Mathematical Thinking [MATH]	3	MATH 1151, 1142, or 1271 ESPM 3012 or STAT 3011
Physical Science [PHYS]	4, must include lab or field experience	SOIL 2125 CHEM 1015/1017 or 1061/1065
Social Sciences [SOCS]	3	ESPM 3261, ESPM 3241W
Designated Themes	<i>Four of the following five themes must be satisfied</i>	
Civic Life and Ethics [CIV]	3	COMM 1101, ESPM 3241W
Diversity and Social Justice in the US [DSJ]	3	-
The Environment [ENV]	3	SOIL 2125, ESPM 3261
Global Perspectives [GP]	3	-
Technology and Society [TS]	3	FNRM 3131
Writing Intensive [WI]: first year writing requirement and four writing intensive courses (two of which must be taken at the upper division level, one of which must be in your major)		

Urban and Community Forestry (UCF) Core

- _____ FNRM 3501 Arboriculture: Selection and Maintenance of Trees (3 cr, S, prereq FNRM 1101 or HORT 1012, BIOL 2022)
- _____ HORT 1015 Woody and Herbaceous Plants (4 cr, F)
- _____ HORT 4141W Plant Production I (4 cr, F, prereq HORT 1001 or 1015)
or LA 3501 Environmental Design and Its Biological and Physical Context (3 cr, S/Sm)
- _____ ENT 4251 Forest and Shade Tree Entomology (3 cr, F)
- _____ PLPA 3003 Diseases of Forest and Shade Trees (3 cr, S)
- _____ FNRM 4501 Urban Forest Management: Managing Greenspaces for People (3 cr, S, prereq FNRM 1101, FNRM 3501, ENT 4251, PLPA 3003)
- _____ FNRM 3104 Forest Ecology (4 cr, F, prereq BIOL 1001 or 1009, college chemistry recommended)
- _____ FNRM 3411 Managing Forest Ecosystems: Silviculture (3 cr, F, prereq FNRM 3104 and 5413, FNRM major/minor, or permission number)
- _____ BIOL 3002 Plant Biology: Function (2 cr, S, prereq BIOL 1002 or 1009 or 2003, CHEM 1011 or one semester chemistry with some organic content)
- _____ FNRM 3218 Measuring and Modeling Forests (3 cr, S, prereq STAT 3011 or ESPM 3012 and MATH 1151)
or ESPM 3211 Survey, Measurement and Modeling for Environmental Analysis (3 cr, S, prereq MATH 1031 or 1051, ESPM 3012 or Stat 3011 or FW 4001)
- _____ FNRM 3114 Hydrology and Watershed Management (3 cr, F, prereq MATH 1151, BIOL 1001 or 1009, and CHEM 1015/1017 or CHEM 1061/1065)
or ESPM 4061W Water Quality and Natural Resources (3 cr, S)
- _____ URBS 1001 W Introduction to Urban Studies: The Complexity of Metropolitan Life (3 cr, F/S)
or URBS 3001W Introduction to Urban Studies: The Complexity of Metropolitan Life (3 cr, F/S)
or URBS 3751 Understanding the Urban Environment (3 cr, S)

Introductory Field Training in Assessment and Biology of Forests (at Cloquet Forestry Center in August)

- _____ FNRM 2101 Identifying Forest Plants (1 cr, Summer only)
- _____ FNRM 2102 Northern Forests: Field Ecology (2 cr, Summer only, prereq BIOL 1001 or 1009)
- _____ FNRM 2104 Measuring Forest Resources (1 cr, Summer only)

Experiential Learning

_____ FNRM 4232W Managing Recreational Lands fulfills this requirement

or FNRM 2102 Northern Forests: Field Ecology fulfills this requirement or other course approved by major coordinator

Interdisciplinary Learning

_____ One of the following courses fulfills this requirement:

ESPM 1011 Issues in the Environment [ENV] (3 cr)

ESPM 2021 Environmental Sciences: Integrated Problem Solving (3 cr)

ESPM 3575 Wetlands (3 cr)

ESPM 4021W Problem Solving: Environmental Review [WI] (4 cr)

ESPM 4041W Problem Solving for Environmental Change [WI] (4 cr)

AGRO 3203W Environment, Global Food Production, and the Citizen [GP, WI] (3 cr)

AGRO 3305 Agroecosystems of the World [GP] (3 cr)

AGRO 4103 World Food Problems [GP] (3 cr)

ANSC 3203W Environment, Global Food Production, and the Citizen [GP, WI] (3 cr)

APEC 3202 An Introduction to the Food System: Analysis, Management, and Design (3 cr)

APEC 4103 World Food Problems [GP] (3 cr)

BBE 4412W Biocomposites and Biomass Energy [WI] (4 cr)

CFAN 1501 Biotechnology, People, and the Environment [TS] (3 cr)

CFAN 3333 Insects, Microbes, and Plants [TS] (3 cr)

FSCN 1102 Food: Safety, Risks, and Technology [CIV] (3 cr)

FW 2001W Introduction to Fisheries, Wildlife, and Conservation Biology [ENV] [WI] (3 cr)

HORT 4850 Pollinator Protection in Managed Landscapes (3 cr)

PLPA 2003 Plague, Famine, and Beer: The Impact of Microscopic Organisms on Human Civilization [HIS] (3 cr)

SSM 4407W Sustainable Manufacturing Principles and Practices [WI] (3 cr)

Electives

At the University, 120 credits are required for graduation. After completing the major requirements, credits from any discipline may be used to reach 120 credits.

Minors and Certificates

Minors and certificates are an excellent way to further focus your studies in a related area of interest. The following are minors and certificates typically of interest to students in natural resources.

Environmental Sciences, Policy and Management (16 cr)

Fisheries and Wildlife (16-18 cr)

Forest Ecosystem Management and Conservation (18 cr)

Geographic Information Science (16 cr)

Mass Communications-Emphasis in Public Relations (18 cr)

Parks and Protected Area Management (18-20 cr)

Sustainable Tourism Certificate (12 cr in addition to FNRM 3101)

Sustainability Studies (15-18 cr)

Study Abroad

The University encourages students to incorporate international study into their academic programs. In addition to those programs offered at the University level, the College of Food, Agricultural and Natural Resource Sciences also offers international programs specific to many of the majors housed within the college. Visit the Learning Abroad Center or CFANS International Programs Office to learn more about the many study abroad experiences available.

Subject/ Career Options

Students may also use their elective credits to develop additional coursework to further build knowledge and skill for employment. These are not required or equivalent to minors. See your advisor or faculty leader(s) noted for more information and assistance selecting courses. Subject and/or career option areas to consider include:

- Urban Natural Resource Management
- Urban Tree Care
- Graduate Study Preparation

The **Urban Natural Resource Management** (Faculty: *G. Johnson*) option is for students interested in enhancing their background for agency or municipal urban greenspace management. Careers include urban forester and specialist positions in regional urban forest management and in municipal environmental resource management. Coursework could include ESPM 3245 Sustainable Land Use Planning, ESPM 4061W Water Quality and Natural Resources, FNRM 3262 Remote Sensing of Natural Resources and Environment, HORT 5071 Restoration and Reclamation Ecology, LA 4755 Infrastructure, Natural Systems, and Space of Inhabited Landscapes, or URBS 3751 Understanding the Urban Environment.

The **Urban Tree Care** (Faculty: *G. Johnson*) option is for students interested in specializing in urban tree care. This option enhances preparation for professional careers in commercial and utility arboriculture, urban forestry consulting, urban forest analysis and management and property management. Coursework could include ENT 5009 Pesticides in Horticulture, HORT 4061W Turfgrass Management, LA 3501 Environmental Design and its Biological and Physical Context, PLPA 5480 Principles of Plant Pathology, SOIL 3416 Plant Nutrients in the Environment, or SOIL 5611 Soil Biology and Fertility.

Graduate Study Option (Faculty: *All*) Students interested in graduate school should strengthen their undergraduate core and take prerequisites for classes likely to be needed in graduate school. Students should meet with faculty in their area of interest to develop their coursework. Math, science and basic courses also help students prepare for the Graduate Record Exam (GRE).