PROPOSAL

March 9, 2007

Undergraduate Major In

Urban Forestry

at the University of Georgia Griffin Campus

from

Daniel B. Warnell School of Forestry and Natural Resources

_____ _____

Robert J. Warren, Interim Dean date

Daniel B. Warnell School of Forestry & Natural Resources

Undergraduate Major
In
Urban Forestry

SUMMARY OF PROGRAM

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***Program description and objectives*:**
The Warnell School of Forestry and Natural Resources proposes a new undergraduate major in Urban Forestry. This major has no direct counterpart anywhere in Georgia and responds to continuing needs expressed by cities, counties, and resource professionals for trained graduates in urban and community forestry. This major would bring the rapidly expanding professional study of urban forestry to undergraduate transfer students at the Griffin Campus of UGA. Urban and community forestry is defined as "the art, science, and technology of managing trees, forests, and natural systems in and around urban areas for the health and well-being of communities." This major will emphasize urban components of forest resource management. An urban forestry major on the Griffin Campus of UGA would be surrounded by rapidly developing land-use changes and large population increases. The Griffin Campus of UGA would be ideal for demonstrating a diversity of management processes, presenting germane laboratory activities, and provide service learning activities in urban forestry.

The Urban Forestry major will prepare students for careers in commercial, utility, municipal, and consulting urban and community forestry and tree management. The major focuses on preparing students to work towards the management of individual trees, groups of trees and forest stands growing in the urban and suburban areas, including those that grow among urban hardscapes and infrastructures. This subject matter area is a professional specialty recognized and credentialed around the world and will be accredited by the new Society of American Foresters (SAF) accreditation scheme.

Courses included within the Urban Forestry major provide critical experiences and learning opportunities for students in a diverse group of subjects, all of which are essential for successful career placement, development, and advancement. The program of study is based on the SAF's proposed requirements for the urban forestry certification. The degree will take 123 hours to complete with the final two years of coursework performed on the Griffin campus. Students will transfer into the major following the completion of the Regent's core curriculum and specific courses currently required for the forestry major.

Required courses in the Urban Forestry major cover the following broad subject areas:

- Ecology and Biology Understandings
- Measures of Forests & Other Resources in an Urban Setting
- Management of Forests & Trees in an Urban Environment
- Policy, Economics, & Administration Understandings

Since this is a new major in the University system, on a different campus, it will be necessary to add faculty in order to cover the coursework and mentoring necessary for the degree. We are requesting three additional tenure-track FTEs as well as one technical staff person to help with GIS applications and technical course instruction. The total recurring personnel costs will be $258,300 in year 1 and $340,200 thereafter. There are no facility costs, provided that office space is available on the Griffin Campus to house the new faculty.

Upon completion of their studies, students will receive a BSFR degree with a major in Urban Forestry awarded through the Warnell School.

Undergraduate Major
In
Urban Forestry

Institution: **University of Georgia** *Date*: **March 9, 2007**
School/College/Division/Institute: **Warnell School of Forestry & Natural Resources**
Name of Proposed Program: **Urban Forestry Major at the Griffin Campus**
Degree: **BSFR** *Major*: **Urban Forestry** CIP Code_____
Proposed Starting Date: **Fall 2008**

Proposed New Major – It is proposed here that the Warnell School establish a new academic program (major) at the Griffin Campus of UGA in "Urban Forestry." This major would bring the rapidly expanding professional study of urban forestry to undergraduate transfer students at the Griffin Campus of UGA. This major will emphasize urban components of forest resource management. An urban forestry major on the Griffin Campus of UGA would be surrounded by rapidly developing land-use changes and large population increases. The Griffin Campus of UGA will be ideal for demonstrating a diversity of management processes, presenting germane laboratory activities, and providing service learning activities in urban forestry.

Context Summary for Urban Forestry – Georgia is an urban and suburban state, based upon census data and associated legislative representation information. Georgia and the nation have many valuable forestry and natural resources concentrated in and around where people live, work, and play. Management of these urban forest resources requires specialized knowledge for successfully dealing with ecological constraints, psychological perceptions, and societal issues.

A number of professional natural resource management organizations exist composed of a diversity of professionals from many areas of study, but possessing specific urban forestry knowledge. A significant job pool is currently unfilled but available for entry into the urban forestry area across a diversity of organizations in both the public and private sectors. The potential for entry jobs and mid-level managers is expected to continue to expand.

Justification and need for the program
1. Indicate the societal need for graduates prepared by this program.
Societal Viewpoint – We all live and work in communities. Some communities are intensely developed while other are spread across a wider landscape. Community hardscapes, like streets, drives, and buildings, support how we live our lives while community greenscapes help generate the quality of our lives. Trees play a critical role within community greenspaces. Trees are the roof, walls, backdrops, shields, and centerpieces in the places where we live. Urban trees are both an amenity and utility. All the trees where we live make up an urban forest. Urban forests are managed by professional urban and community foresters.

Defining Urban Forestry – The National Urban and Community Forestry Advisory Council (NUCFAC) to the United States Secretary of Agriculture (created by Congress in 1990 to advise the Secretary on all matters relating to the protection, planting, and care of trees and forests in our nation's cities and communities), defines *urban and community forestry* as "the art, science, and technology of managing trees, forests, and natural systems in and around urban areas for the health and well-being of communities." (NUCFAC Annual Report to the USDA-Secretary, 2002).

A working definition of *urban and community* ***forests*** is: "The trees, sustaining soils, and forest canopy, stems, and rooting volume in and around where people live, work, and play." Urban forests are composed of

trees along streets, in yards and parks, and found in and among the infrastructures which sustain human quality of life.

The current population data for Georgia (July, 2002 – US Census Bureau) shows that of the estimated 8.6 million people in the state, about 6.6 million reside in urban and suburban areas. On a percentage basis, 77% of Georgia's citizens live in urban or suburban communities. Of these 6.6 million citizens in urban or suburban areas, approximately 4.5 million live in the Atlanta metropolitan area. The Atlanta metro area is home to 52% of the states' entire population and 68% of all urban and suburban residents in Georgia. The remaining urban and suburban citizens are primarily concentrated in the six next largest metro areas (in order of population: Augusta, Savannah, Columbus, Macon, Athens, and Albany), representing about 22% of all Georgia's urban and suburban dwellers. The remaining 10% of all urban and suburban dwellers in Georgia live in the six emerging metropolitan areas in the state (Brunswick, Dalton, Hinesville, Rome, Valdosta, and the Chattanooga suburbs).

2. Indicate the student demand for the program in the region served by the institution. What evidence exists of this demand?

The State of Georgia has many two- and four-year colleges and universities which generate thousands of students graduating with associate degrees, all of which fulfill USG Regents' and various accrediting association criteria. A number of these associate degrees are designed to allow for transfer into a baccalaureate degree program (*i.e.*, a college preparation associate degree instead of a technical practice associates degree or certificate). Associate degree recipients have many choices for pursuing careers and furthering their education through both physical and virtual institutions. Of all the colleges and universities of Georgia, at least 23 institutions offer pre-forestry and pre-natural resource majors at the associate degree level which could serve as preparation for the Warnell School's urban forestry major at the Griffin Campus of UGA.

Some of these programs train technician-level personnel and some are generically educating students in order for them to transfer to four-year institutions. It should be noted there are only two forestry programs accredited by the Society of American Foresters within Georgia, the four-year forestry curriculum at the Warnell School at UGA, and the two-year forestry technician curriculum at ABAC in Tifton, Georgia.

Providing an educational path into the Warnell School presents a significant value to the student and the urban forestry profession. With increasing acceptance of transfer students into UGA and the Warnell School, examining colleges and universities which could serve as student reservoirs feeding the Warnell School enrollment for an undergraduate degree is important. The Warnell School urban forestry major at the Griffin Campus of UGA can serve as an important transfer student destination.

3. Give any additional reasons that make the program desirable (for example, exceptional qualifications of the faculty, special facilities, etc.)

Urban forestry activities and resource management involve many professionals, political action groups, and community natural resource sustainability organizations.

– By employment type, professional activities in urban forestry can be classified into municipal, utility, commercial, education and service, and consulting, with the strongest job demand growth in private commercial and municipal sectors.

– By traditional professional categories, urban forestry activities are performed by arborists, civil engineers, foresters, horticulturalists, landscape architects, landscape planners, nursery professionals, and public administrators. Professional credentials and educational degrees are

increasingly demanded in the job marketplace. More traditional forestry and urban forestry activities are being performed by holders of other professional degrees, credentials, and licenses.

Examples of professional organizations actively working in Georgia which have many urban forestry professionals as members include: International Society of Arboriculture (the largest membership of urban foresters and municipal arborists in the world) through its Southern Chapter; Georgia Nurserymen Association; MALTA -- Metropolitan Landscape and Turf Association; GGIA -- Georgia Green Industry Association; Georgia Arborist Association; Society of American Foresters – Urban Forestry Working Group; and Georgia Chapter of the Landscape Architecture Society. These are but a few of the professional groups striving to build a better Georgia through management of Georgia's urban forests.

There are a number of associated organizations which are partners with urban forestry professionals in sustaining Georgia's quality of life and natural resource health. Some of these active Georgia partners are the Georgia Urban Forest Council, Inc. (one of the oldest and most active councils in the Southern United States); Georgia Association of Garden Clubs; Keep Georgia Beautiful affiliates; Better Hometown boards; Cool Communities program members; National Home Builders 'Building with Trees' program participants; Riverkeeper groups; land trust organizations; and many local tree boards, tree foundations, and tree activist groups.

4. Include reports of advisory committees and consultants, if available.
See Appendix 1

5. List all public and private institutions in the state offering similar programs. Also, for doctoral programs, list at least five institutions in other southeastern states that are offering similar programs. If no such programs exist, so indicate.
There are no comparable programs to the Urban Forestry major in the state. UGA approved a Certificate Program in Community Forestry last year, which is jointly managed through the Warnell School, the College of Environment and Design, and the Department of Horticulture.

Procedures used to develop the program
Following discussions with the Vice President for Academic Affairs and Provost, several faculty and administrators of the Warnell School began developing a concept proposal. We made a site visit to the Griffin Campus and had a long discussion with administrators there regarding the feasibility of the program. We chose the Urban Forestry major as one that was entirely complementary to our existing programs. We were especially desirous of adding a program that would not detract from our existing majors but would create new opportunities for students. The proposal was approved by the Warnell faculty in January.

Curriculum
New Ways & Means – It is important to recognize that **the urban forestry major can only be offered by the Warnell School using new monies and new faculty that would be housed on the Griffin Campus of UGA**. Without an influx of new resources, no new major can be created and sustained. The new faculty would be tenure-track faculty with 75% resident instruction / 25% outreach appointments. This appointment split would help assure promotion and tenure consideration. These faculty would be dedicated to teaching a comprehensive urban forestry program and working with urban forestry students in their service learning activities. Some of the faculty outreach programming and the student service learning activities would be conducted under the Griffin Campus of UGA's Center for Urban Agriculture, a public service and outreach arm of the University of Georgia.

Some courses, and some portions of courses, would be taught by Athens Campus of UGA faculty using University-supported internet software based around WEB-CT. Rarely, an Athens-based faculty might be detailed for short periods of time to teach modular segments of different courses where expertise is not otherwise available. Use of both Griffin Campus and Athens Campus faculty of the Warnell School will provide for a varied and enriching educational environment for the students.

Students in the Urban Forestry major will take the same program of study for the first two years as students in the Forestry major at the Warnell School. The pre-professional core is shown in Table 1. These courses are available at all the of the Systems' two-year colleges

Table 1: - Pre-professional schedule of courses for the Urban Forestry major

Area A: Essential Skills
- ENGL 1101, English Composition I, 3 hours
- ENGL 1102, English Composition II, 3 hours
- MATH 1113, Pre-Calculus, 3 hours

Area B: Institutional Options
- CALC 2200L, Calculus lab, 1 hour
- Elective, 3 hours

Area C: Humanities/Fine Arts
- Humanities/Fine Arts Elective, 3 hours
- Humanities Elective, 3 hours

Area D: Science, Mathematics, and Technology
- BIOL 1107-1107L, Principles of Biology I, 4 hours
- CHEM 1211 and CHEM 1211L, Freshman Chemistry I, 4 hours
- MATH 2200, Analytic Geometry & Calculus, 4 hours*

Area E: Social Sciences
- ECON 2106, Principles of Microeconomics, 3 hours
- Elective (recommend HIST 2111/2 – American History), 3 hours
- Elective (recommend POLS 1101 – American Government), 3 hours
- Elective, 3 hours

Area F: Courses Related to the Program of Study
- BIOL 1108-1108L, Principles of Biology II, 4 hours
- CHEM 1212 and CHEM 1212L, Freshman Chemistry II, 4 hours*
- STAT 2000, Elementary Statistics, 4 hours
- SPCM 1100, Introduction to Public Speaking, 3 hours
- Elective, 3 hours

Table 2: **General course titles, subject matter coverage, and credits for the urban forestry major at the Griffin Campus of UGA.** (Based upon national survey of other urban forestry academic curricula, requirements of international professional certification programs, and SAF proposed urban forestry accreditation guidelines, Appendix 2. For course definitions see Appendix 3)

subject area	general course titles	credits
Biology / Ecology		
	FORS 3020-3020 Ecology of Natural Resources	4
	FORS 5010/7010 Urban Tree Management	3
	Urban Ecological Anthropology (new)	3
	CRSS(HORT) 4590/6590 Soil Fertility and Plant Nutrition	3 @
	FORS 3010-3010L Dendrology	3
	sub-total = 16	
Mensuration / Biometry		
	FORS 4710/6710-4710L/6710L Quantitative Decision Methods for Forest Management	3
	FORS 3910-3910L Spatial Analysis of Natural Resources	3 @
	FORS 3000-3000L Field Orientation, Measurements, and Sampling in Forest Resources	4
	sub-total = 10	
Public Policy / Governance		
	FORS 3810-3810D Society and Natural Resources	2
	PADP 4620 Public Administration and Democracy	3
	AAEC 3060, Principles of Resource Economics or FORS 3710-3710D, Economics of Renewable Resources	3 or 2 #
	FORS 4800/6800 Renewable Resources Policy	2 #
	sub-total = 10	
Professional Skills		
	Business Elective (suggest AAEC 3980)	3 @
	Management Elective (suggest AAEC 3040 or FORS 5760)	3 @
	Forestry Field Practicum (new)	3
	Free elective	3
	sub-total = 12	
Tree / Forest Management		
	HORT 4090 Landscape Horticulture	3
	Tree Health Care – service learning lab (new)*	4
	Urban Forestry – service learning lab (new)*	4
	Urban Wildlife Conservation and Control / lab (new)	3
	sub-total = 14	
	total = 62	

* service learning emphasis is teamwork, tools, skills, & leadership in the field.
# Courses taught at UGA which will be taught using distance education
spatial course work will also include self-study completion of courses from ESRI Virtual Campus.
@ courses available and taught by CAES faculty on the UGA Griffin Campus.)

Inventory of faculty directly involved
There are currently eight faculty members on the UGA campus that are involved with the Community Forestry Certificate Program; however, only the Warnell faculty will be directly involved in the Griffin program. These faculty are:

Unit	Name (last, first)	Rank	Phone	E-mail
FANR	Coder, Kim	Professor	542-9050	kcoder@arches.uga.edu
	Morris, Larry	Professor	542-3293	lmorris@uga.edu
	Newman, David	Professor	542-7649	newman@forestry.uga.edu

A minimum of three faculty EFTs and one laboratory staff EFT are required for start-up. The three tenure track faculty will be dedicated to teaching classes, facilitating the effective use of internet instructional resources from the Athens Campus, coordinating service learning activities, and advising students. The one staff member will be dedicated primarily to facilitating technology use by students, maintaining computer communications system for instruction, and for guiding student use of GIS / GPS materials and tools. These positions are necessary because of the high level of field coursework in the program and the fact that these individuals will be responsible for two cohorts of students in the program at all times.

Outstanding programs of this nature in other institutions
Overall, while there are a number of urban forestry programs across the country, most are quite small or serve as areas of emphasis in forestry programs. UGA would be fairly unique by having an individual, stand-alone major. Three of the larger programs are:

University of Wisconsin, Stevens Point, Urban Forestry Emphasis, Dean Christine Thomas, 715-346-4617
http://www.uwsp.edu/cnr/forestry.htm
Largest Urban Forestry program in the country with 66 students currently. Taught as an Emphasis area under the forestry major.

University of California, Davis, Environmental Horticulture and Urban Forestry Major, Chris van Kessell, 530-752-7523 http://www.plantsciences.ucdavis.edu/eh/
Major is located in the Department of Plant Sciences. Program has 40 students overall.

Clemson University, Arboriculture and Urban Forestry, Patricia Layton, 864-656-3302
http://www.clemson.edu/forestres/
Taught primarily as a minor in the forestry, horticulture and landscape architecture programs, similar to our certificate program.

Inventory of pertinent library resources
No additional library, computer, or instructional resources are needed for this program because the curriculum is composed of existing classes taught on a regular basis. Over time, a modification of teaching, research, and service faculty allocations within the academic units may be needed as the program grows.

Facilities
There are a number of activities currently at various stages of completion which deal with the physical plant at the Griffin Campus of UGA and are dedicated to resident instruction activities. Most notable is the newly completed renovation of laboratories, classrooms, computer classrooms, faculty offices, and student lounge

spaces in an existing building (Flynt Building). In addition, funding has been approved for a new state-of-the-art classroom building to house undergraduate instruction.

There exists, in both current and proposed facilities, ample faculty office space, modern classrooms, computer classrooms, and laboratory spaces for expanded instruction. Outdoor classroom / laboratory facilities are available on the main Griffin Campus and on Experiment Station lands which include forest land, streams, and ponds. The communities around the Griffin Campus of UGA have a strong demand for urban forestry activities and have informally committed to providing opportunities for laboratory and service learning activities.

Administration
The Urban Forestry major would be run under the administration of the Warnell School of Forestry and Natural Resources. We have good support with the Griffin administration regarding the program and a willingness to provide the necessary logistical support for the major.

Assessment
Since this will be a professional degree, the ultimate measure of success will be the effective job placement of the major's graduates.

Accreditation
The Society of American Foresters is instituting a professional accreditation scheme for urban and community forestry programs. The program of study that we are proposing meets the accreditation requirements proposed by the SAF. Within 3 years of implementing the major, we would plan to get accreditation for the major.

Affirmative Action impact
The Urban Forestry major should have a positive impact on the diversity of the Warnell School. The urban character of the major could provide a positive incentive for women and minority students to enter into the School.

Degree inscription
Bachelor of Science in Forest Resources with a major in Urban Forestry

Fiscal and enrollment impact, and estimated budget

ENROLLMENT PROJECTIONS	**FY2008**	**FY 2009**	**FY 2010**
	First Year	**Second Year**	**Third Year**
A. Student majors			
1. Shifted from other programs	2	5	6
2. New to institution	3	8	12
TOTAL MAJORS	**5**	**13**	**18**
B. Course sections satisfying program requirements			
1. Previously existing	1	5	5
2. New	9	12	12
TOTAL PROGRAM COURSE SECTIONS	**8**	**17**	**17**
C. Credit hours generated by those courses			
1. Existing enrollments	60	150	180
2. New enrollments	90	240	360
TOTAL CREDIT HOURS	**150**	**390**	**540**
D. Degrees awarded	5 (yr 2)	8 (yr 3)	10 (yr 4)

II. COSTS	**EFT**	**Dollars**	**EFT**	**Dollars**	**EFT**	**Dollars**
A Personnel--reassigned or existing positions						
1. Faculty	0	0	0	0	0	0
2. Part-time faculty	0	0	0	0	0	0
3. Graduate assistant	0	0	0	0	0	0
4. Administrators	0	0	0	0	0	0
5. Support staff	0	0	0	0	0	0
6. Fringe benefits		0		0		0
7. Other personnel costs		0		0		0
TOTAL EXISTING PERSONNEL COSTS		**0**		**0**		**0**
B. Personnel--new positions						
1. Faculty	2	140,000	3	205,000	3	205,000
2. Part-time faculty	0	0	0	0	0	0
3. Graduate assistant	0	0	0	0	0	0
4. Administrators	0.5	25,000	0.5	25,000	0.5	25,000
5. Support staff	1	40,000	1	40,000	1	40,000
6. Fringe benefits		53,300		70,200		70,200
7. Other personnel costs		0		0		0
TOTAL NEW PERSONNEL COSTS		**258,300**		**340,200**		**340,200**

	First Year	Second Year	Third Year
C. Start-up costs (one-time expenses)			
1. Library/learning resources	1,000	1,000	1,000
2. Equipment	30,000	15,000	5,000
3. Other (_____)	0	0	0
D. Physical facilities: construction or Major renovation	0	0	0
TOTAL ONE-TIME COSTS	**31,000**	**16,000**	**6,000**
E. Operating costs (recurring costs--base budget)			
1. Supplies/expenses	4,000	6,000	6,000
2. Travel	8,000	11,000	11,000
3. Equipment	1,000	1,000	1,000
4. Library/learning resources	0	0	0
5. Other (_____)	0	0	0
TOTAL RECURRING COSTS	**13,000**	**18,000**	**18,000**
GRAND TOTAL COSTS	**44,000**	**34,000**	**24,000**
III. REVENUE SOURCES			
A. Source of funds			
1. Reallocation of existing funds	0	0	0
2. New student workload	xxxxxxxxxx	xxxxxxxxxx	0
3. New tuition `	6,729	17,944	26,916
4. Federal funds	0	0	0
5. Other grants	0	0	0
6. Student fees	2,680	6,968	9,648
7. Other (_____)	0	0	0
Subtotal	9,409	24,912	36,564
New state allocation requested	258,300	340,200	340,200
GRAND TOTAL REVENUES	**277,118**	**390,024**	**413,328**
B. Nature of funds			
1. Base budget	_____	_____	_____
2. One-time funds	31,000	_____	_____
GRAND TOTAL REVENUES	**_____**	**_____**	**_____**

APPENDIX 1
(attached publication)

Urban Forestry Curricula for Undergraduates:
Approaching Educational Values & the Profession
(a national survey of urban forestry curricula)

Coder, Kim D. 2006. *Urban Forestry Curricula for Undergraduates: Approaching Educational Values & the Profession.* University of Georgia, Warnell School of Forestry & Natural Resources, Outreach publication SFNR06-9. Pp.11.

APPENDIX 2
SAF Professional Accreditations

To appreciate how forestry and urban forestry curricula can be different and similar, the Society of American Foresters (SAF) professional education accreditation guidelines provide assistance. This appendix is a point by point summary and comparison of SAF's professional education accreditation guidelines for forestry (current) and for urban forestry (pending approval 1/1/07). Note the current SAF professional forestry education accreditation guidelines are in a "standard" font and the pending SAF professional urban forestry education accreditation guidelines are in a "***bold italic***" font.

According to SAF, a professional education program must document depth, breadth, and balance among the following four categories: A) ecology and biology; B) measurements; C) management; and, D) policy, economics, and administration. Within each of these four categories, basic principles, typical laboratory applications, typical field applications, and current practices must be provided.

Ecology & Biology Understandings

1. Plant taxonomy, dendrology, species distribution, associated vegetation and associated wildlife.
   Plant taxonomy, dendrology, growth, and health in urban and suburban environments.

2. Soil properties, soil processes, hydrology, water quality, and watershed functions.
   Soil properties, soil processes, soil nutrients, soil compaction, hydrology, water quality, and watershed functions.

3. Ecological concepts / principles including ecosystem structure and function, plant and animal communities, competition, diversity, population dynamics, succession, disturbance, and nutrient cycling.
   Ecological concepts / principles including ecosystem structure and function, growth and performance of trees in urban / suburban settings, plant and animal communities of urban forests, competition, population dynamics, disturbance, and nutrient cycling.

4. Ecosystem, forest, and stand assessments.
   Landscape design decisions and assessments of urban forests, tree placement, and tree health.

5. Tree physiology and the impacts of climate, fire, pollutants, moisture, nutrients, genetics, and pests on tree and forest health and productivity.
   Tree physiology and the impacts of climate, fire, pollutants, moisture, genetics, and pests on tree and forest growth and health.

6. Ornamental tree health and growth.

7. Urban / suburban wildlife control, conservation, and management.

8. Practice arboriculture and urban forestry under multi-cultural, densely populated, and infrastructure constrained conditions.

Measurement Abilities ***(Measures of forests and other resources in an urban setting)***

1. Identify and place trees in appropriate locations relative to each other and to hardscapes in an urban / suburban environment, and evaluate the health and benefits of an urban forest.

1. Identify and measure land areas and conduct spatial analysis.

Measure land areas and understand spatial analysis.

1. Design and implement inventories using appropriate sampling and units of measure.

1. Measure, assess, and recommend the appropriateness and value of existing trees and urban forests.

3. Analyze inventory data and project forest, stand, and tree changes.
Sample, analyze, and model change of the urban forest, stands and trees based upon inventory data.

1. Conduct, assess, and anticipate future green space conditions through inventories within an urban / suburban environment.

2. Use of GIS and remote sensing tools.

Management Abilities ***(Management of forests and trees in an urban environment.)***

1. Develop, apply, and understand impacts of appropriate silvicultural prescriptions to meet management objectives including establishment, composition, growth, and quality of forests.
Develop, apply, and understand impacts of prescriptions to meet management objectives including establishment, composition, growth, and quality of trees and urban forests.

2. Analyze resource management strategies and decisions for their economic, environmental, and social consequences.
Analyze resource management strategies and decisions for their economic, environmental, and social consequences including the impact of trees and urban forests on real estate values.

3. Develop management plans with multiple objectives and constraints.
Develop management plans with multiple objectives and constraints.

4. Understand how valuation, market forces, processing, transportation and harvesting activities translate human needs for consumable products into product availability.

4. Understand how valuation, market forces, and non-market forces allow humans opportunities to enjoy non-consumptive goods and services from trees and urban forests.

5. Understand how valuation, market forces, and non-market forces allow humans opportunities to enjoy non-consumptive goods and services from forests.

5. Understand urban forests and urban forestry administration, ownership, and organization under both the public and private sectors.

6. Understand forest management business administration, ownership, and organization.
Urban planning, land use planning, and fundamentals of landscape architecture.

Policy, Economics, & Administration Understandings

1. Development and application of forest policy.
Development and legal foundation of municipal policies.

2. Federal, state, and local regulatory control of forestry practice.
   Federal, state, and local regulatory control of forestry and urban forestry practice.

3. Adherence to professional ethics standards on behalf of clients and the public.
   Adherence to professional ethics standards (SAF & ISA standards) on behalf of clients and the public.

4. Integration of technical, financial, human resources, and legal aspects for the public and private sector.
   Integration of technical, financial, human resources, and legal aspects for the public and private sector.

5. ***Communicating in both written and oral formats to diverse audiences is essential.***

The summarized accreditation guidelines listed above tend to demonstrate how closely aligned SAF forestry and urban forestry accreditation processes have been designed. In roughly 60% of the numbered points within all categories, the language and educational intent are similar. The uniqueness of urban forestry is demonstrated in the roughly 40% of the numbered points where the language and educational intent are significantly different, or where new points were required.

Because the urban forestry accreditation guidelines are proposed to take effect in early 2007, and the earliest the urban forestry major could begin is fall 2007 (more likely spring 2008), the curriculum proposed here for the urban forestry major is designed to meet the proposed SAF accreditation guidelines for urban forestry.

APPENDIX 3
Course Alignment with New SAF
Urban Forestry Accreditation Guidelines

This is a list of courses from the new major described by how they meet the new proposed SAF accreditation guidelines for urban forestry (listed in Appendix A). Additional course definitions and content descriptions can be reviewed in Table 5 of Appendix B.

The key to the numeric codes is at the bottom.

Ecology & Biology Understandings

- Plant taxonomy, dendrology, growth, and health in urban / suburban environments. 2, 17
- Soil properties, soil processes, soil nutrients, soil compaction, hydrology, water quality, and watershed functions. 12
- Ecological concepts / principles including ecosystem structure and function, growth and performance of trees in urban / suburban settings, plant and animal communities of urban forests, competition, population dynamics, disturbance, and nutrient cycling. 2
- Landscape design decisions and assessments of urban forests, tree placement, and tree health. 8, 14
- Tree physiology and the impacts of climate, fire, pollutants, moisture, genetics, and pests on tree and forest growth and health. 8, 9
- Ornamental tree health and growth. 8, 9
- Urban / suburban wildlife control, conservation, and management. 16
- Practice arboriculture and urban forestry under multi-cultural, densely populated, and infrastructure constrained conditions. 1,3, 14, 15

Measures of Forests & Other Resources in an Urban Setting

- Identify and place trees in appropriate locations relative to each other and to hardscapes in an urban / suburban environment, and evaluate the health and benefits of an urban forest. 1, 8, 14, 17
- Measure land areas and understand spatial analysis. 6, 11
- Measure, assess, and recommend the appropriateness and value of existing trees and urban forests. 11, 15
- Sample, analyze, and model change of the urban forest, stands and trees based upon inventory data. 11, 15
- Conduct, assess, and anticipate future green space conditions through inventories within an urban / suburban environment. 11,15
- Use of GIS and remote sensing tools. 6

Management of Forests & Trees in an Urban Environment.

- Develop, apply, and understand impacts of prescriptions to meet management objectives including establishment, composition, growth, and quality of trees and urban forests. 15
- Analyze resource management strategies and decisions for their economic, environmental, and social consequences including the impact of trees and urban forests on real estate values. 5, 15
- Develop management plans with multiple objectives and constraints. 15
- Understand how valuation, market forces, and non-market forces allow humans opportunities to enjoy non-consumptive goods and services from trees and urban forests. 13
- Understand urban forests and urban forestry administration, ownership, and organization under both the public and private sectors. 7, 10
- Urban planning, land use planning, and fundamentals of landscape architecture. 14

Policy, Economics, & Administration Understandings

- Development and legal foundation of municipal policies. 7, 10
- Federal, state, and local regulatory control of forestry and urban forestry practice. 10
- Adherence to professional ethics standards (SAF & ISA standards) on behalf of clients and the public. 8, 15
- Integration of technical, financial, human resources, and legal aspects for the public and private sector. 10,13
- Communicate in both written and oral formats to diverse audiences is essential. (All)

Code number	**generic course titles (from Tables 5 & 6) in alphabetical order**
1	Arboriculture
2	Ecological Basis for Natural Resource Management
3	Environmental Conflict Management
4	Forestry Field Practicum
5	Quantitative Urban Forest Decision Making
6	Remote Sensing and Resource Mapping (GPS & GIS)
7	State & Local Government and Budgeting
8	Tree Health Care
9	Tree Biology
10	Urban Natural Resources Policy & Administration
11	Urban Forest Measurements
12	Urban Soils, Water, & Watershed Management
13	Urban Natural Resource Economics
14	Urban Ecological Anthropology
15	Urban Forestry
16	Urban Wildlife Conservation and Control
17	Woody Landscape Plant Identification & Silvics