Urban and Forestry
NATURAL RESOURCES

College of Agricultural, Family and Consumer Sciences

Doctor of Philosophy in Urban Forestry

College of Agricultural, Family and Consumer Sciences

Chancellor-Dean: Dr. Bobby R. Phillis

Department of Urban Forestry

DOCTOR OF PHILOSOPHY IN URBAN FORESTRY (PhD/UFOR)

Graduate Director: Dr. Qi, Yadong
Department of Urban Forestry and Natural Resources
Fisher Hall Room 102
College of Agricultural, Family and Consumer Science
Southern University and A&M College
Baton Rouge, LA 70813
Phone: (225) 771-3535 or 3427
Fax: (225) 771-4464
Contact Person: Dr. Qi, Yadong
E-mail:Yadong_Qi@subr.edu

FACULTY

Professor:

Abdollahi, Kamran K.
Ph.D., Forestry/Ecophysiology
S. F. Austin State University

Ghebreiyessus, Yemane
Ph.D., Soil Sciences
University of Missouri

Ning, Zhu H.
Ph.D., Forestry/Tree Physiology & Anatomy
S.F. Austin State University

Qi, Yadong
Ph.D., Forestry/Ecology & Silviculture
S.F. Austin State University

Associate Professor:

Twumasi, Yaw
Ph.D., Plant & Soil Science/GIS & Remote Sensing
Alabama A&M University

Assistant Professor:

Chappell, Christopher
Ph.D., Urban Forestry/Management
Southern University and A&M College

Ferchaud, Vanessa
Ph.D., Urban Forestry/Ecology & Tree Biology
Southern University and A&M College

Manrique, Veronica
Ph.D., Entomology/Invasive Species & Biological Control
University of Florida

Introduction

The Urban Forestry PhD Graduate Program was established in the fall of 2004. The available areas of concentration include Urban Forest Science (Eco- physiology, Tree Physiology/Anatomy, Urban Forest Health and Risk Assessment, Urban Forest Ecology, Urban Forest Soil, Urban Forest & Climate Change, Biotechnology and Nanotechnology, Urban Forest Sustainability and Bioenergy, and Urban Forest Management (Arboriculture, Urban Forest Management, Water Resource Management/GIS). The nature of the program is essentially defined by an advanced training in the theory and practice of urban forestry and the conduct of research in issues and concerns in urban forestry and urban natural resources. The objectives of the proposed degree program are: a) to offer the targeted students opportunities to acquire a broad-based knowledge of several areas in urban forestry and natural resources that impact the State of Louisiana and the nation, and b) to enable the graduates of the program to be highly marketable and competitive in the field. The overall goal of the program is to produce high caliber scientists in urban forestry and natural resources. The program will uniquely address the increasing concerns on (a) the decline of the quality and quantity of our urban and community forests and natural resources, (b) the preservation, restoration and enhancement of environmental quality, and (c) the long-term effects on the urban infrastructure. In addition, the program will train future professionals in urban forestry to effect planning, management, and policy of urban societies and to provide a healthier urban environment to live in.

The uniqueness of the program will address urban forestry problems and emerging issues in urban forestry and natural resources. The Ph.D. training program will effectively prepare students for a variety of job opportunities in State and Federal agencies, industries, and academia.

Special Requirements:

In addition to the general requirements specified by the Southern University Graduate School, the Urban Forestry Ph.D. Program has the following special requirements:

1. **Admission requirements:**

A master's degree in urban forestry, forestry, renewable and natural resources, plant and soil sciences, biology, chemistry, natural and environmental sciences, and other related areas are required for all applicants.

Must have a minimum overall grade point average (G.P.A.) of 3.0 on a 4.0 scale for all master level graduate work completed.

Must take the Graduate Record Examination (GRE). A minimal score of 1370 calculated from the GPA multiplied by 200 and added to the GRE combined verbal and quantitative scores (based on the prior scales of verbal 800/quantitative 800).

Must submit a Curriculum vitae/Resume

Must submit a concise essay on research background and career goals.

Three written letters of recommendation, two of which must be from advisors in student major field.

Applicants with master degrees in other disciplines may be admitted with conditions. The student must remove conditional status by earning at least a B (3.0) average in the first nine hours

of graduate courses; failure to achieve this average will result in withdrawal from the program.

Students without the backgrounds mentioned above are required to take 9 to 12 hours of remedial courses from the following listed urban forestry courses plus any other urban forestry core courses as deemed necessary by the major professor and graduate committee.

Intro to Urban Forestry (UFOR 151)

Soil and Environment (UFOR 251)

Dendrology (UFOR 278)

Urban Forest Ecology (UFOR 391)

Urban Forestry Management (UFOR 400)

Tree Physiology (UFOR 438)

2. **Period of Continuous (Concentrated Study) Registration**: A student enrolled in the doctoral program must complete a minimum of a full year of residency as a full-time student on the Baton Rouge campus of Southern University. A student may satisfy the residency requirement by continuous enrollment for a total of 18 semester credit hours, during one academic year (including enrollment in the "Maymester" intersession (if available) and summer sessions).

3. **Plan of Study:** A plan of study will be developed for every student indicating the set of courses to be taken, credits to be obtained, and dissertation to be completed. An individual student's plan of study may vary with the selected option, with the academic level of the student at the time of admission, and the quality of the previous program completed. A student holding a master's degree in a natural resource discipline, or holding a master's equivalent, will follow the standard curriculum described above. This assumes that the master's degree already held is current and sufficiently comprehensive; if not, some additional courses may be required. Several elective courses are available to the students while they are taking the required core courses. These are discipline specific graduate courses which fit within a given option. In addition to the common core courses, detailed course requirements based on the candidate's academic background, professional experience and career goals, will be specified in the plan of study.

4. **Research Proficiency:** Students will develop research proficiency in courses such as advanced statistics and experimental design, quantitative research methods, and advances in research methods in urban forestry, and dissertation research. Research topics for individual students will be selected based on the candidate's academic background, professional experience and career goals. It should be noted that the research requirements are essential for this program. It is expected that the dissertation research will lead to publications in refereed journals. Research and subsequent publications are central to the positive impact that this program and its graduates are to have on the University educational mission in particular and the American educational enterprise in general.

5. **General Qualifying Examination:** A qualifying examination is required of all candidates for the degree of Doctor of Philosophy. It consists of written and oral testing by the student supervisory committee in the student's major and minor fields. The student must complete a minimum of 80% of the required course work for their approved Plan of Study before submitting a request to schedule the qualifying exam.

The Department has developed a specific guideline for conducting the written and oral portions of the qualifying exam. It is the student's responsibility to obtain the guideline from the Department and to follow it under the guidance of the supervisor committee.

The primary purpose of the qualyfing exam is to assess the students understanding of the broad body of knowledge of urban forestry and natural resources. The exam also affords the advisory committee an opportunity to review the students proposed research and understanding of research methods and literatures in the chosen field. If this examination reveals deficiencies in any areas, the advisory committee may recommend remedial work, re-examination, or discontinuation of doctoral study. The student must be registered in school in the term in which the qualifying examination is given.

The examination, prepared and evaluated by the full supervisory committee of the major and minor departments (if a minor is chosen), should have both a written and oral component covering the major subjects (and minor subjects where applicable). At least five faculty members, including the supervisory committee, must be present with the student at the oral portion. If a student fails the qualifying examination, the Graduate School must be notified immediately. The supervisory committee has the responsibility at this time of deciding whether the student is qualified to continue work toward a Ph.D. degree. A re-examination may be requested, but it must be recommended by the supervisory committee and approved by the dean of the Graduate School. At least one semester of additional preparation is considered essential before re-examination. A student may request a maximum of two reexaminations.

Successful completion of the general examination is required before a student becomes a candidate for the degree. After candidacy has been achieved a student has five calendar years to complete all requirements for the doctoral degree. After the examination, the major advisor shall communicate the results to the candidate as soon as a final decision can be made and immediately send the official report on the examination bearing the signature of each member of the supervisory committee to the Graduate School. There must be a minimum of two semesters between the oral portion of the qualifying examination and the date of the degree.

6. **Admission to Candidacy:** A graduate student does not become a candidate for the Ph.D. degree until granted formal admission to candidacy. Such admission requires the approval of the student's supervisory committee, the department chairperson, the college dean, and the dean of the Graduate School. The approval must be based on (1) the academic record of the student, (2) the opinion of the supervisory committee concerning overall fitness for candidacy, (3) an approved dissertation topic, and (4) passing a qualifying examination as described above. Application for admission to candidacy should be made as soon as the qualifying examination has been passed and the student's supervisory committee has approved a dissertation topic. A student may register for Research for Dissertation in the term when he or she is admitted to candidacy for a doctoral degree.

7. **Supervisory Committee**: Supervisory committees are nominated by the department chairperson and appointed by the dean of the Graduate School.

The supervisory committee for a candidate for the doctoral degree shall consist of no fewer than four members selected from the Graduate Faculty. At least two members, including the chairperson, will be from the department recommending the degree, and at least

one member will be drawn from a different educational discipline.

The committee should be appointed as soon as possible after the student has begun doctoral work and in general no later than the end of the second semester of equivalent full-time study. The dean of the Graduate School is an ex-officio member of all supervisory committees.

Duties of the supervisory committee are as follows:

- ✓ To inform the student of all regulations governing the degree sought. It should be noted, however, that this does not absolve the student from the responsibility of informing himself/herself concerning these regulations.
- ✓ To meet immediately after appointment to review the qualifications of the student and to discuss and approve a program of study.
- ✓ To meet to discuss and approve the proposed dissertation project and the plans for carrying it out.
- ✓ To give the student a yearly letter of evaluation in addition to the Southern University grades awarded for the research.
- ✓ The chair should write this letter after consultation with the supervisory committee.
- ✓ To conduct the qualifying examination or, in those cases where the examination is administered by the department, to take part in it. In either event, no fewer than five faculty members shall be present with the student for the oral portion of the examination. This examination must be given on campus.
- ✓ To meet when the work on the dissertation is at least one half completed to review procedures, progress, and expected results and to make suggestions for completion
- ✓ To meet on campus when the dissertation is completed and conduct the final oral examination (defense) to assure that the dissertation is a piece of original research and a contribution to knowledge.

No fewer than five faculty members, including all members of the supervisory committee shall be present with the candidate for this examination. However, only members of the official supervisory committee may sign the dissertation and they must approve the dissertation unanimously.

The Graduate School desires each supervisory committee to function as a University committee, as contrasted with a departmental committee, in order to bring University-wide standards to bear upon the various doctoral degrees.

A co-chairperson may be appointed to serve on a student committee and to serve as a chair in the absence of the chair person.

8. **Dissertation Proposal and Dissertation**: Every candidate for a doctoral degree is required to prepare and present a dissertation that shows independent investigation and is acceptable in form and content to the supervisory committee and to the Graduate School. The dissertation must be written in English.

Before preparation of the dissertation is well underway, the candidate must develop a dissertation proposal and file the request for proposal defense using the appropriate form from the Graduate School. The student must defend the proposal in front of the supervisor committee.

When the dissertation proposal has been completed and signed by the student, the members of the supervisory committee must approve it. The proposal then is submitted to the head of the department or program to which the student was admitted who then submits it to the Graduate School for approval.

The candidate shall file a dissertation proposal of the proposed research, using the special form obtained from the Graduate School and follow the guidelines. Failure to file the proposal early may result in wasted effort on a dissertation if changes are required in the project.

If human or animal subjects are involved in the proposed research, the major advisor certifies by signing the dissertation proposal form that all required institutional (and external approvals where appropriate), have already been obtained and that documentary evidence of these approvals can be produced by the major advisor upon request.

<u>The dissertation proposal must be approved by the doctoral supervisory committee at least one semester prior to the dissertation defense.</u>

9. **Dissertation Defense:** Final dissertation defense must be in accordance with the rules and regulation of the Graduate School of Southern University and A&M College, Baton Rouge, LA.

Permission for holding the dissertation defense will be granted by the dean of the Graduate School upon recommendation of the student's advisor and doctoral committee.

Announcement of the defense will be made in the appropriate university news media and communicated to appropriate members of the university community through the Office of Graduate Studies.

The oral defense is open to the public; the university community and all interested individuals are encouraged to attend.

The defense is chaired by the Dissertation Committee Chair who, acting as moderator, rules on questions of procedure and protocol that may arise during the defense. The overall goal is the public presentation and defense of the study.

The defense shall be oral and under the jurisdiction of the advisory committee. It shall deal mainly with the subject matter of the dissertation. The defense shall be held within the time period designated by the Graduate School.

An invitation to participate in the examination is issued by the advisory committee, although members of the faculty may attend. <u>Five or more faculty members, including all members of the candidate's advisory committee, shall participate in the final examination unless written approval for a lesser number has been secured in advance from the dean of the Graduate School.</u>

<u>It is required that notification of the time and place of the examination be sent to the Graduate School no later than seven days prior to the examination.</u>

The decision as to whether a student is successful or fails the defense rests solely with the supervising committee. Satisfactory performance on the examination and adherence to all Graduate School regulations outlined above complete the requirements for the degree.

The Graduate School may return work deemed poor quality. Immediately following the examination, the major advisor shall communicate the results to the student and send the official report on the examination to the Graduate School. While the Graduate School sets minimum requirements, it is important for students to

realize that work toward this degree is not merely a matter of accumulating course credits or of satisfying other requirements.

The degree will be conferred only after the supervisory committee and the Graduate Faculty are convinced that the student has developed independence of judgment and mature scholarship in the chosen field.

An individual may not earn more than one Ph.D. degree in a single field of study at this institution.

10. **Time Limitations** (Statute of Limitations for Doctoral Degree): Requirements of all work for a doctoral degree must be completed within five calendar years after the qualifying examination, or this examination must be repeated. <u>However, all doctoral work must be completed and the degree must be earned in no more than eight calendar years from the initial date of enrollment (registration) in a doctoral program, regardless of the time of completion of the qualifying examination.</u> At the time of graduation, the student must NOT have any courses applied toward the doctoral degree which exceed the statute of limitations (8 years for doctoral degree)

Curriculum for the Ph.D. in Urban Forestry Degree Program

In addition to the general requirements of the Graduate School, the Ph.D. Degree in Urban Forestry requires at least three academic years of graduate study beyond the M.S. degree. A student must complete 66 credit hours of graduate work for credits, of which a minimum of 30 hours must be in required technical courses and seminar work in the Urban Forestry Program at Southern University and A&M College, 6 hours of electives, 24 hours of dissertation research and 6 hours of advanced research.

- Earn a minimum cumulative Grade Point Average of 3.0 on all graduate course work, and all course work applied specifically to the degree.
- Only two "C" grades are permissible towards a degree program and NO GRADE OF "D" COUNTS TOWARDS A DEGREE PROGRAM.
- The "C" grade must not be in the required courses.

Table 1. Urban Forestry Ph.D. Curriculum/Full-Time Plan of Study

Fall, Year1		**Credits**
UFOR 701	Urban Forestry and Arboricultural Research	3
UFOR 702	Advanced Statistics and Experimental Design	3
UFOR 704	Remote Sensing and Environmental Model Simulations in Urban Forestry	3

Spring, Year 1		**Credits**
UFOR 705	Seminar	3
UFOR 706	Applied Urban Forest Ecology	3
UFOR 707	Urban Tree Stress Physiology	3

Summer, Year 1		**Credits**
UFOR 799	Advanced Research	6

Fall, Year 2		**Credits**
UFOR 708	Planning and Management of Urban Green Spaces	3
UFOR 712	Urban Plant Entomology	3
UFOR 722	Proposal Development and Grant Writing	3

Spring, Year 2		**Credits**
UFOR 723	Urban Soil and Urban Trees	3
UFOR	Technical Electives	6

Qualifying Exam (Written and Oral)

Admission to Candidacy

Summer, Year 2		**Credits**
UFOR 800	Dissertation Research	6

Proposal Defense

Fall, Year 3		**Credits**
UFOR 800	Dissertation Research	9

Spring, Year 3		**Credits**
UFOR 800	Dissertation Research	9

Dissertation Defense and Dissertation

Technical electives toward the degree study must be selected from courses listed in the electives:

Technical electives:

UFOR 703	Louisiana Watershed Management Issues	3
UFOR 709	Ecology of Urban Tree Roots	3
UFOR 710	Advanced Urban Ecosystem Studies	3
UFOR 711	Ecology & Mgt of Soilborne Plant Pathogens	3
UFOR 713	Urban Phyto-remediation	3
UFOR 717	Biogeochemistry	3
UFOR 718	Sustainable Urban-Wildland Interface	3
UFOR 719	Microscopy as a Research Tool	3
UFOR 720	Special Problems	3
UFOR 721	Bioenergy & Natural Resources	3
UFOR 735	Urban Soil Fertility and Fertility Mgmt	3
UFOR 738	Urban Plant Pathology	3

COURSE DESCRIPTIONS

UFOR 701. Urban Forestry and Arboricultural Research (3 credit hours). An extensive research in urban forestry and arboriculture. Provides an understanding of the advanced arboricultural research within the context of urban forest ecosystem preservation and restoration. Particular emphasis is placed upon the areas of municipal arboriculture, commercial arboriculture and consulting arboriculture. Each area is explored in terms of advanced techniques utilized in research and development. The course follows the International Society of Arboriculture's (ISA) current research agenda.

UFOR 702. Advanced Statistics and Experimental Design (3 credit hours). A thorough and practical course in design and analysis of experiments for experimental workers and applied statisticians. SAS statistical software is used for analysis. Taken by graduate students from many fields. Previous knowledge of SAS not required but helpful. Knowledge of regression helpful.

Topics include design fundamentals, completely randomized design; randomized complete blocks; latin square; multiclassification; factorial; nested factorial; incomplete block and fractional replications for 2n ; 3n ; 2m 3n, confounding; 12 lattice designs; general mixed factorials; split plot; analysis of variance in regression models; optimum design. Upon completion of this course, students will be able to explain the basic concepts underlying univariate statistical methods, to interpret the findings from quantitative research in urban forestry, and to conduct analyses of data sets using statistical methods. Students also will be able to use the statistics software programs to produce data analyses and statistical plots.

UFOR 703. Louisiana Urban Watershed Management Issues (3 credit hours). A qualitative understanding of watershed management in urban areas, advanced methods of quantifying hydrologic parameters and processes associated with these environmental systems.

UFOR 704. Remote Sensing and Environmental Simulation in Urban Forestry (3 credit hours). A qualitative understanding of environmental remote sensing application urban areas, methodology and specific applications of model simulation of urban environmental systems.

UFOR 705. Seminar (3 credit hours). Coverage of various urban forestry research issues and trends and literature review and writing techniques for scientific publication in urban forestry. Emphasis is placed on strategies to effectively develop and disseminate scholarly research materials.

UFOR 706. Applied Urban Forest Ecology (3 credit hours). Application of ecological principles to urban forest analysis including modeling ecosystems, assessing ecological changes, measuring the urban forest effects on environment, exploiting biotic and abiotic variability, managing populations and pests, conserving communities, and establishing urban forest ecosystems.

UFOR 707. Urban Tree Stress Physiology (3 credit hours). Assessment of advance studies pertaining to the effects of environmental stresses on the whole tree ecological and physiological processes in urban environments. Subjects include the advanced ecological and physiological background, causes and consequences of environmental stresses, stress tolerance and mitigation.

UFOR 708. Planning and Management of Urban Green Spaces (3 credit hours). Addressing how to plan for, establish, and manage urban and community trees, forests, and other elements of nature in the urban ecosystem. Emphasis will be placed on addressing the management of tree populations and other green spaces. 3 credit hours.

UFOR 709. Ecology of Urban Tree Roots (3 credit hours). The study of root growth, form, and functions under environmental conditions. Subjects include root strategies used to meet essential functions of water and nutrient acquisition, and transport, storage and structural support under urban conditions.

UFOR 710. Advanced Urban Ecosystem Studies (3 credit hours). A qualitative understanding of Urban Forest Ecosystem Analysis, advanced methods of urban forest ecosystem assessment and technology and processes associated with the analysis. Fundamental concepts in understanding urban forest ecosystem assessment and quantifying ecological benefits and costs. This course is designed to train students in latest advances in urban forest ecosystem analysis and assessment. The students will be utilizing different urban forestry tools to accomplish many tasks leading to a complete urban forest ecosystem analysis. Special emphasis will be on the proper utilization of the i-Tree software for assessment purposes.

UFOR 711. Ecology and Management of Soilborne Plant Pathogens (3 credit hours). This advanced course will cover the ecology, disease diagnostic and management of plant pathogens affecting Louisiana environments. The ecological principles and concepts in integrated pest management will be discussed in relation to plant diseases. Students will learn about chemical and cultural practices, disease resistance, biological control, and legislation and regulations. Laboratory and field trips will provide hands-on activities during disease collection, diagnosis and management.

UFOR 712. Urban Plant Entomology (3 credit hours). This advanced course will cover the biology and ecology of insect pests of agriculture, urban and forest settings in Louisiana. The ecological principles and concepts in integrated pest management will be discussed in addition to management tactics including chemical, cultural, plant resistance, and biological control. Laboratory and field trips will provide hands-on activities during insect collection, mounting and identification.

UFOR 713. Urban Phyto-mediation (3 credit hours). Comprehensive and up-to-date information on phytoremediation properties of vegetation, specifically urban forest trees and urban greening as an overall strategy to remediate damaged and contaminated urban sites. Remediation of urban ecosystems will be discussed using laboratory, field research sites and case studies.

UFOR 717. Biogeochemistry (3 credit hours). Biogeochemistry deals with nutrient cycles in biogeochemical, biochemical, and geochemical processes and their interactions. It investigates the nutrient dynamics and movements from individual living organisms to ecosystems to landscape. The class will provide students with ecosystem, regional and global perspectives on cycles of carbon, water, nitrogen, phosphorus, sulfur, and other elements, and the role of trees and forests in biogeochemistry and impacts of urbanization. The knowledge gained will help student develop systematic views in nature resource planning and management in urbanized society.

UFOR 718. Sustainable Urban-Wildland Interface (3 credit hours). This course provides an understanding of social and biological complexities of managing natural resources in urban-wildland interface, or wildland-urban interface (WUI). Particular emphasis is placed on realizing resource managers' potential roles in reducing risks to natural resources and human communities, while sustaining the benefits accruing to both as parts of functioning human ecosystems.

UFOR 719. Microscopy as a Research Tool (3 credit hours). Utilization of optical, digital and electron microscopy techniques in urban forestry and natural resource research.

UFOR 720. Special Problems (3 credit hours). Coverage of contemporary and emerging issues in the field of urban forestry and natural resources or specialized topics not represented in the main curriculum and often required to address in-depth issues to assist in research in urban forestry and natural resources.

UFOR 721. Bioenergy and Urban Wood Waste (3 credit hours). Fundamental concepts in understanding biofuel/bioenergy; renewable feedstocks, their production,

availability and attributes for biofuel/bioenergy production; types of biomass-derived fuels and energy; urban wood-waste/urban forestry wood waste and municipal solid waste conversion to biofuel/bioenergy; thermochemical conversion of biomass to heat, power, and fuel; biochemical conversion of biomass to fuel; biodiesel production; environmental impacts of biofuel production; economics and life-cycle analysis of biofuel; value-added processing of biofuel residues; case studies on biofuel production.

UFOR 722. Proposal Development & Grant Writing (3 credit hours). The course is designed to offer students with an in-depth look at the principles in developing a proposal, to teach students how to write a proposal, to lead students in explore the funding opportunities, and to guide students in preparing a grant application.

UFOR 723. Urban Soil & Urban Trees/Urban Soil Ecosystem/Fertility (3 credit hours). This course will cover urban soil ecosystem with respect to its capabilities, limitations and sustainability to support urban vegetation. Emphasis will be placed on characterization and management of urban soils, assessment of fertility status and fertilizer application, storm water management including erosion prediction and control and soil water/air stress management (irrigation and drainage systems) under various environmental conditions.

UFOR 735. Urban Soil Fertility and Fertility Mgmt (3 credit hours). This course will cover urban soil ecosystem with respect to soil chemical properties, nutrient assessment and fertilizer management to support urban trees and forests. Emphasis will be placed on assessment of fertility status and fertilizer application and management for environmentally sustainable urban land use. Soil Fertility is an applied science that deals with the sources and availability of essential nutrients for optimum plant growth.

UFOR 738. Urban Plant Pathology (3 credit hours). This course will cover the basic concepts and terminology in plant pathology, describe the major pathogen groups and abiotic factors causing plant diseases, and examines the ecological, physiological and genetic plant-pathogen interactions. Understanding the specific signs and symptoms caused by different plant diseases, in addition to disease cycles, proper diagnoses and management will provide students with important tools when confronted with real life problems in the field. Plant diseases of forest trees, ornamental and turfgrass will be discussed in depth using examples from Louisiana. The text books are not required but readings are recommended before each class.

UFOR 799. Advanced Research (3 to 15 credit hours: Pass/Fail grade). Urban forestry research at doctoral level, under the guidance of the doctoral supervisory committee chair, committee members, and course instructor.

UFOR 800. Dissertation Research (3 to 9 credit hours: Pass/Fail grade). Doctoral research and dissertation writing, under the guidance of the doctoral dissertation committee chair, committee members, and course instructor. The course is open to urban forestry PhD candidates only.