DEPARTMENT OF EARTH AND ENVIRONMENTAL SCIENCES

UNIVERSITY OF WEST FLORIDA

GRADUATE HANDBOOK

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The Department of Environmental Studies offers a program of study leading to the Master of Science in Environmental Science. The program provides advanced research and educational opportunities in earth and environmental sciences. Departmental areas of concentration include coastal science, meteorology/climatology, geographic information science, hydrogeology, biogeography, and soil science. The program includes both a thesis and non-thesis option, which provides a foundation for employment in the private and public sectors of the environmental fields. In addition, the thesis option prepares students for advanced study leading to the doctoral degree.

ADMISSION REQUIREMENTS

Applicants seeking admission to the graduate program in Environmental Science should submit the following to the Office of Graduate Admissions by the Departmental deadlines of April 1 for Fall admission and November 1 for Spring admission:

1. A graduate admission application, along with official transcripts of all college work and a nonrefundable processing fee.
2. A formal letter of interest, background, and professional goals, including a preference for the thesis or non-thesis track. Applicants for the thesis track are encouraged to contact departmental faculty in their field of interest before applying to secure availability of a thesis advisor.
3. Three letters of recommendation by individuals in professionally relevant fields.
4. A current curriculum vitae.
5. Official scores on the Graduate Record Examination (GRE). A minimum ranking in the 50th percentile and 40th percentile for the verbal and quantitative parts of the GRE respectively are recommended by the department.

Students seeking admission to the M.S. program must hold a bachelor’s degree from an accredited college or university (or its foreign equivalent). The bachelor’s degree may be in any environmental discipline, and a minimum GPA of 3.0 is required. The completed application will be reviewed by the Departmental Graduate Program Committee. Conditional admission may
require the student to complete the appropriate foundation courses with grades of “B” or better. Students entering the M.S. program from other bachelor’s programs should have the equivalents of the following courses:

1. a college-level course in chemistry
2. two upper-level science courses in the geo-, earth, or environmental sciences
3. two upper-level techniques courses, e.g., GIS, aerial photo interpretation, remote sensing, field methods, analytical chemistry, instrumental analysis, etc.
4. an upper-level course in statistics or quantitative methods

Students without the equivalents of any of the above courses will be advised to enroll in a suite of appropriate foundational courses prior to being considered for admittance to the M.S. program. Students having some of the foundational proficiencies may be admitted to the M.S. program with the understanding that the missing courses be taken successfully during the first year of graduate study.

NOTE: Of the foundational proficiencies, only statistics (GEO 5165 or BIO 5176) may be taken for graduate credit AND included in the graduate program of study.

PROGRAMS OF STUDY

Students accepted into the MS program should select the thesis or non-thesis option and must file a Program of Study with the Graduate Coordinator. This program is a formal list of courses the student will complete to fulfill the requirements of the degree and should consist solely of courses directly related to the master's degree. Ideally, students should file their Program of Study by the end of their first semester and no later than the end of the second semester. Students who select the thesis track must develop their Program of Study in consultation with their Thesis Advisor and the Program of Study must be approved by the Graduate Coordinator.

Non-Thesis Track

The non-thesis track entails 36 semester hours (sh), of which 15 must be at the 6000 level and may include up to 3 sh of internship. The remaining hours must be 5000 level or higher.

Students who select or are advised into the non-thesis track must maintain an active discourse with, and seek advice from the Graduate Coordinator regarding program requirements. Non-thesis students will be given a Comprehensive Exam by the end of the student’s last semester of residence. Students will be required to demonstrate competence in their area of emphasis as well as ability to relate this competence to practical environmental problems. The examining faculty will expect a high level of expertise in the area of emphasis (based on the courses taken) through comprehensive and detailed answers.

The comprehensive exam is a written exam but is followed by an oral exam at a later date if the student receives a provisional pass. The written exam will be closed book/notes unless explicitly stated otherwise. The student must arrange to take the exam in the Department on a word processor unless otherwise agreed, and should plan to have an uninterrupted period of four hours to complete the exam. After the student has completed the written exam, the Examination Committee will
review the answers and deliberate as to their overall quality. The written exam will be graded as Pass, Provisional Pass or Fail:

**Fail:** Your written exam was unsatisfactory. No oral exam will be scheduled, and the failure will be recorded within your Student Academic File. You will receive your exam back from each faculty member with his/her written comments and a copy will be retained in your file. You should discuss your performance with each Committee member and prepare to retake the written exam. You may not re-take the exam until the following semester (summers excluded). If you fail the exam a second time, you must leave the graduate program without a degree.

**Provisional Pass:** Your written answers were marginal, and an excellent performance in the oral exam is required to compensate for them. In this situation, your performance on the oral exam will determine whether you pass or fail the comprehensive exam.

**Pass:** Your written exam was satisfactory, and an oral exam is not required.

If the written exam is graded “provisional pass”, an oral comprehensive exam will be scheduled, usually within two weeks of the written exam. The purpose of the oral exam is to provide the student with the opportunity to clarify, expand upon, and correct written answers. The student may also be asked additional questions that go beyond the scope of the written exam. No notes except the original written answers are permitted during the oral exam. The student should be prepared to present complete explanations of any inadequately or incorrectly answered questions. The faculty may also ask additional questions that allow the student to demonstrate their general and specific knowledge.

**Thesis track**

The thesis track is considered essential for students with career goals in advanced research or academic fields. The thesis track entails 30 semester hours (sh), of which 15 must be at the 6000 level and may include up to 6 sh of thesis. The remaining hours must be 5000 level or higher.

Research conducted by graduate students reflects the core specializations of the Department (coastal science, meteorology/climatology, geographic information science, hydrogeology, biogeography, and soils science). Within each of these broad areas, there are numerous opportunities for students to pursue their interests in collaboration with faculty. To learn about specific research areas, prospective graduate students should review the research interests of the faculty, and the descriptions of current graduate research opportunities.

Students should formalize, no later than the end of the second semester, their Thesis Advisor and Thesis Committee members. Completion of the thesis track is contingent upon identification of a suitable Thesis Advisor. Applicants who intend to pursue this track are strongly encouraged to contact faculty in their field of specialization during the application process to secure a Thesis Advisor. Once a faculty member has agreed to act as a Thesis Advisor, the student will submit a detailed Research and/or Course Plan (the Program of Study) to a Thesis Committee consisting of at least three faculty including the Thesis Advisor; at least two Committee members must be Environmental Studies faculty. The Thesis Committee guides students through their course of study and their research. The Committee will advise the student on the acceptability of the
Program of Study and will decide on any further steps to be taken in shaping the thesis research project. Students are expected to maintain an active discourse with, and seek advice from, their Committee. Committee meetings should be scheduled by the student or Thesis Advisor as specific problems or accumulated research demands.

**COURSE REQUIREMENTS**

The coursework in a student’s Program of Study must be developed in consultation with the Graduate Coordinator for non-thesis track students and in consultation with the Thesis Advisor for thesis-track students. Students may request to include a maximum of two on-line courses (8 sh maximum) in their Program of Study. Requests will be considered on a case-by-case basis by an ad-hoc committee consisting of the chair of the department, the graduate coordinator, the student’s advisor and, if available, an Environmental Studies faculty that teaches a related face-to-face class.

*Environmental Studies Core (9 sh).* All students must enroll in GEO 6936 (Graduate Seminar) during their first Fall semester of residency and at least one section of EVR 6930 (Special Topics in Environmental Sciences); the focus of the latter course varies with each offering, and students are permitted to enroll in the course two times. These courses are formatted as a participatory, seminar-style environment that critically examines key scholarship in Environmental Studies as an interdisciplinary science.

- GEO 6936 Graduate Seminar (3)
- EVR 6930 Special Topics in Environmental Sciences (3)

*Choose one:*
- EVS 6196C Sampling and Analysis in Environmental Sciences (3)
- GEO 6159 Advanced Topics in Geographic Information Science (3)

*Thesis Option (30 sh).* The thesis option entails 30 sh, of which 15 sh must be at the 6000 level (in addition to the 9-sh core) and may include up to 6 sh of EVS 6971 (Thesis). (Note: Students may enroll in Thesis for more than 6 sh, but only 6 sh can count toward the Program of Study.) The remaining hours must be at the 5000 level or higher.

- EVS 6971 Thesis (1-6)
- Thesis-Committee-approved graduate course work (15-20)

It is recommended that all students enroll in GEO 6115 (Research Design) during their first or second semester of residency. This course provides the student with the tools to complete comprehensive literature reviews, develop research questions and prepare research proposals.
**Non-Thesis Option (36 sh).** The non-thesis option entails 36 sh, of which 15 must be at the 6000 level (in addition to the 9-sh core) and may include up to 3 sh of internship. The remaining hours must be at the 5000 level or higher.

GEO 6115 Research Design (3)

Choose one: EVS 6940 Internship (1-3) or GEO6905 Directed Study (1-3)

Graduate-Coordinator-approved graduate course work (21)

**Electives.** When selecting elective courses, students in both the thesis and non-thesis tracks must ensure that they have a minimum (over all courses) of 15 sh of 6000-level courses. As many as three courses may be from outside the Department, including two from outside the University. Students may, if approved by the Graduate Coordinator or Thesis Advisor, enroll in up to 6 sh of GEO 6905 (Directed Study). As for the 5000-level courses, they may be selected from the departmental list below or from a selection offered by other academic departments.

EVR 5061 Environmental Field Research (3)
EVR 5413 Environmental Aspects of Urban Growth (3)
EVS 5xxx Environmental Soil Science (3)
GEA 5214 Geography of North America (3)
GEA 5408 Geography of Latin America (3)
GEO 5139 Applications in Remote Sensing (3)
GEO 5157 Applications in Geographic Information Systems (3)
GEO 5177 Special Topics in Geographic Information Science (3)
GEO 5225 Coastal Morphology and Processes (3)
GEO 5225L Coastal Morphology and Processes Laboratory (1)
GEO 5945 GIS Internship (1-3)
GEO 5xxx Global Agricultural Sustainability (3)
GEO 5317 Landscape Biogeography (3)
GEO 5317L Landscape Biogeography Laboratory (1)
GEO 5824 Environmental Impact Assessment (3)
GEO 5xxx Advanced Climatology (3)
GLY 5246 Geochemistry (3)
GLY 5266 Biogeochemistry (3)

It is a university requirement that all coursework (including transferred credit) must be taken within six years prior to the date the UWF degree is awarded. The department may recommend that UWF and transferred courses which are older than six years be included in the student's program of study if the department validates that the student has current knowledge related to the course subject matter. A course validation plan will be determined by the faculty most closely related to the course subject in conjunction with the student. Options for the course validation plan include but are not limited to a professional portfolio related to the subject of the course, a project, or an exam.
STUDENT ACADEMIC FILES

The Department maintains a privacy-protected academic file for each graduate student. The file is started upon receipt of a request for information about the program, and is kept current thereafter. It contains the student’s application form, letters of recommendation, copies of letters sent to the student as well as those received from the student, memos of discussion with the student, transcripts, his or her program of study, approval from the Graduate Coordinator or Thesis Advisor, results from the Comprehensive Exam (if appropriate), memoranda by faculty on the student, and so on. A student has the right to review the contents of his or her file, if he or she wishes. The only items the student will not be shown are letters of reference which were written in confidence. A student has the right to add to his or her file anything believed to be pertinent. If he or she feels the file contains misleading information, the student may include a corrective statement.

As part of the academic file, the Graduate Coordinator will conduct a general review of the students in our Graduate Program and of the progress they have made at the end of the fall and spring semesters. The review will be routine; however, an attempt will be made to identify problems. As a result of the review, an attempt will be made to advise students appropriately. Students who are judged not to be in good standing will be informed in writing by the Graduate Coordinator or Thesis Advisor and of the steps they need to take to return to good standing. To be considered in "good standing" in the graduate program, students must be making timely progress toward meeting their degree requirements. Students must maintain a cumulative 3.0 (B) grade average. More than one grade of C or lower for each year completed in the program may jeopardize a student’s good standing, as well as his or her ability to obtain or retain a research or teaching assistantship.

THESIS GUIDELINES

Thesis Proposal

The thesis proposal should be prepared when the student and Thesis Advisor have settled on a research topic, and the student has completed a preliminary exploration of the sources and identified the problem and defined a research strategy. Ideally, the thesis proposal should take the form of a paper of about 10 to 20 pages in length including a research statement of the problem, a discussion of the research context in which it is set, a brief outline of sources, methodology, anticipated results, and suggested timetable for completion. Preparation and presentation of the thesis proposal will facilitate the production of the final thesis but should not constitute a draft of the final thesis. The thesis proposal should be developed in consultation with the Thesis Advisor. A student must take one to three thesis hours (EVS6971) in one semester when preparing the thesis proposal. The proposal has to be defended successfully before additional thesis hours are taken.

Thesis Proposal Defense

The thesis proposal shall be defended through a formal (20-30 minute) presentation to the Thesis Committee prior to extensive research. Ideally, the thesis proposal defense will take place before the end of the second semester in residence and before the end of the semester in which the first thesis hour(s) (EVS6971) were taken. The thesis proposal shall be submitted to the Thesis Committee no later than two weeks prior to the thesis proposal defense. The thesis proposal
defense shall be no less than four weeks prior to the semester in which the student wishes to be classified as a ‘thesis student’ for GA or GTA purposes, or to sign up for a second (or) additional thesis hours. Based upon the comments of the Committee members, students are expected to make appropriate modifications to their thesis proposal and circulate the amended documents to the Committee members for approval. A final, signed copy must be filed with the Graduate Coordinator. Students wishing to make substantial changes to their thesis research must do this in consultation with their Advisor and Committee.

**Thesis**

The student shall present a thesis embodying the results of original investigation, conducted by the student on the approved topic. Students should work closely with their Thesis Advisor and Committee during the research and writing stages. Students must enroll in at least one additional thesis hour (EVS 6971) after the successful defense of the thesis proposal and may enroll in thesis hours until the thesis is successfully defended. A maximum of 6 thesis hours total may be included in the degree program. Students who have completed their coursework but not their thesis must enroll for at least one graduate-level sh every semester until the thesis is completed. Typically, students sign up for one sh of EVS 6971 each semester.

A thesis should have a coherent topic with an introduction presenting the general theme of the research and a conclusion summarizing and integrating the major findings. Upon completion of the thesis, the Thesis Advisor will critically review the document for content, make appropriate suggestions for changes and return the document to the student for revisions. This will most likely be an iterative process with several drafts possible. Copies of the revised and completed thesis will be distributed to all members of the Thesis Committee. Each member of the Committee should confer personally with the student to discuss the strengths and weaknesses of the thesis. If major problems are found or if there is disagreement regarding any aspect of thesis among Committee members a Committee meeting may be necessary to resolve thesis issues prior to the formal defense.

Thesis sections and formatting are outlined in the UWF Thesis and Dissertation Guide (http://www.research.uwf.edu/grad-studies/) issued by the Office of Research and Graduate Studies. The style of referencing to be used throughout the text and within the bibliography should be acceptable to and approved by the Thesis Advisor and the Thesis Committee. It is recommended that the selected format be one widely used in the student’s area of emphasis (e.g. specific journal format), the geosciences (e.g., GSA format for Geology, AAG format for Geography), or one listed in popular style manuals.

**Thesis Defense**

There shall be no less than 16 weeks between the date of the thesis defense and the date of the thesis proposal defense. The thesis defense shall be no less than one month prior to the deadline for submitting the thesis to the Graduate School in the semester in which the student wishes to graduate. The thesis shall be submitted to the Thesis Committee no less than 2 weeks before the thesis defense. The defense will be conducted in an open forum presided over by the Thesis Advisor. In the defense, the student will give a 20-30 minute presentation highlighting the various components of the thesis with an emphasis on the research results. After the presentation, the student will field questions from the audience and the Thesis Committee. Once comments made
during the defense are addressed, a copy of the thesis in final form should be presented to the Committee for signatures. After that, the thesis will be routed to the College of Arts and Sciences and the Office of Research and Graduate Studies per the routing guidelines provided by the university.

**RESPONSIBILITY OF THE THESIS ADVISOR AND STUDENT**

The Thesis Advisor is to serve as intellectual and professional mentor to his/her graduate students by:

- Helping students develop interpretive, writing, oral, quantitative, or other relevant professional skills required by the discipline;

- Helping advanced students design research programs that take advantage of their individual interests and strengths and that can be completed in a timely manner;

- Encouraging, by example and precept, a dedication to high-quality teaching;

- Encouraging faculty-graduate student collaborations which entail the sharing of authorship or rights to intellectual property developed in research or other creative or artistic activity.

- Encouraging students to be open about any problems in their working relationships (including the relationship with the advisor), and being open to making accommodations to deal with such problems.

- Providing students with evaluation of their progress and performance in regular and informative ways. Although the frequency may vary according to circumstances and academic cultures, a suggested minimum is two meetings each semester. It is especially important for faculty to provide students with timely and candid advice when their performance is deficient or their lack of progress might prevent them from attaining the desired degree.

For their part, graduate students should:

- Understand the Thesis Advisors' central role, as well as their constraints. This includes:
  - recognizing that the Thesis Advisor provides the intellectual and instructional environment in which the student conducts research/study
  - recognizing that the Thesis Advisor is responsible for monitoring the accuracy, validity, and integrity of the student's research, and for ensuring that the contributions of all participants in the research are properly acknowledged in any publications
  - being aware of time constraints and other demands imposed on faculty members and staff
  - taking the initiative to arrange meetings with the Thesis Advisor as often as necessary and to keep the advisor informed of any factors that might affect the progress of their research or time to degree
recognizing the importance of seeking an early and informal resolution of any problems in their working relationships with their advisor or others by first consulting with the advisor

- Take primary responsibility for informing themselves of the regulations, policies, and practices governing their financial aid, degree and course requirements, research activities, and conflict resolution. This may involve seeking clarification from the Thesis Advisor or Graduate Coordinator when they are uncertain about the precise meaning or application of a regulation or policy statement.

- Exercise high professional standards in all aspects of their work.

**FINANCIAL SUPPORT**

The policy of the Department of Environmental Studies is to ensure that graduate students have adequate funding. Funding is provided through a combination of graduate assistantships (GA, GTA), graduate research assistantships (GRA), and scholarships. Because of the importance of research funding from advisors, prospective graduate students (planning to enter the thesis track) should contact potential Thesis Advisors prior to applying for graduate studies to determine whether or not funds are available.

The Department of Environmental Studies offers a limited number of graduate assistantships (GA). The assistantships are awarded on a competitive basis and are initially based on evaluation of undergraduate transcripts, GRE scores, letters of recommendation and the needs of the department. To be considered as a graduate teaching assistant (GTA), the student must successfully complete at least 18 sh of graduate-level coursework (in the field in which he or she will be instructing). GTAs will be under the direct supervision of a faculty member experienced in the teaching discipline and be evaluated regularly.

Each graduate assistant (GA, GTA, or GRA) with at least a 0.25 FTE (10 hours/week) appointment and who is in good academic standing is entitled to a Graduate Assistant Matriculation Fee Waiver which is applicable toward tuition for coursework in the graduate assistant's approved program of study (i.e. degree plan).

Graduate research assistantships (GRA) are available only if a faculty member has a research project in which funds for research assistants are provided by the funding agency. To be considered a graduate research assistant (GRA), the student must possess the skills and knowledge to carry out the research-related support associated with the research assistantship.

Although assistantships are initially awarded on the basis of past qualifications, the student is required to maintain satisfactory job performance and academic progress. Poor performance in academic achievement or assigned duties may result in nonrenewal of assistantships. Conversely, students admitted into the program without assistantships may, on the basis of outstanding academic and professional performance, be awarded assistantships during the course of their graduate studies (pending availability). If satisfactory levels of academic and job performance are maintained, students are guaranteed a minimum of 4 semesters of assistantship support. Assistance beyond 4 semesters is RARELY granted and should not be expected but may be possible through
faculty research grants or other unforeseen funding. Summer funding is typically not available except for possible research grants.

Financial assistance may be available through several other avenues:

- Graduate Student Scholarly and Creative Grant Support: grant in support of research with funding to support field studies, conference attendance, etc.

- Merit and Pace Scholarships: recognizes and rewards academic achievement on a competitive basis.

- Professional organizations: usually a grant based on the student’s research proposal or funding to present an oral paper or poster at a conference.

- Internships: available with local agencies.

Funds permitting, the department will assist in covering limited expenses related to presenting posters or papers at professional meetings.

OFFICE SPACE

Desk space is provided by the Department for shared use by students with teaching and research assistantships. A student with a continuing assistantship may retain his or her office during the summer. The occupant of an office is responsible for the furniture therein. Furniture is not to be moved or removed without the permission of the Department Chair.

FACULTY

Tenured/tenure-track

Zhiyong Hu, Ph.D., University of Georgia, 2004, Associate Professor – GIS, remote sensing, cartography

Johan Liebens, Ph.D., Michigan State University, 1996, Professor – soil science, geomorphology, soil and sediment pollution

Klaus J. Meyer-Arendt, Ph.D., Louisiana State University, 1987, Professor – coastal studies, cartography, tourism impacts, Latin America

John Derek Morgan, Ph.D., Florida State University, 2010, Assistant Professor – GIS

Jason Ortegren, Ph.D. UNC-Greensboro, 2008, Assistant Professor – atmospheric science, natural resources, land use management

Matthew C. Schwartz, Ph.D., University of Delaware, 2002, Associate Professor and Chair – oceanography, hydrogeology, geochemistry

Phillip Schmutz, Ph.D., Assistant Professor – Coastal geomorphology