

State University of New York
College of Environmental Science and Forestry

GRADUATE PROGRAM
IN
ENVIRONMENTAL SCIENCE

Doctor of Philosophy
(Ph.D.)
Degree

HANDBOOK

2008 - 2009

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I. INTRODUCTION

Welcome to the Graduate Program in Environmental Science (GPES). We are delighted that you have joined a unique set of graduate students, faculty, and researchers who share a deep concern for the development and application of multidisciplinary approaches to the stewardship of our natural and built environments. This Handbook is intended as our primary guide to GPES for both students and faculty.

The operation of GPES is moderately complex. This is a result of the diversity of student backgrounds, the participation of faculty from across the College and Syracuse University, and the curricula design which balances a Core, with Area-of- Study depth, and individualized synthesis.

Hierarchically, the State Education Department and S.U.N.Y. establish basic policy for all graduate programs. Within E.S.F, a comprehensive set of Graduate Policies have been adopted by the College Faculty. These are published in the College Catalog. The policies and the procedures which implement College policy can be found at <http://www.esf.edu/graduate/policies.htm>. These are available for review with your major professor. Internally GPES has evolved a number of specific policies, procedures, and guidelines for the effective delivery of the program.

GPES' primary vehicle for engaging multidisciplinary subjects is the **Area of Study**. These represent the loci of faculty research and scholarship interests which have been formally approved by the Faculty. Minimum thresholds include three active faculty including a coordinator, and five graduate E.S.F. courses. Areas of Study are periodically revised to reflect evolving interests and resources. Areas of Study are structured as standing subcommittees, with a coordinator, and participating Major Professors. Subcommittees may have student members.

All students in GPES are admitted directly into an Area of Study. Students are strongly encouraged to network with their peers and to actively participate in their Area of Study.

NOTE: The PhD area of study Environmental and Natural Resource Policy is housed in the Department of Forest and Natural Resources Management if a student's major professor is from that department. But, if an ENRP student has a major professor from another department, they are classified as a GPES student.

The GPES web page provides a link to the areas of study and their participating faculty at <http://www.esf.edu/environmentalscience/graduate>.

II. REQUIREMENTS FOR THE Ph.D. DEGREE

This guide summarizes program requirements and advice for students in the Graduate Program in Environmental Science (GPES). It may be used as a guideline for program planning for doctoral students in all GPES study areas.

Definition

A. Policy - A formal written statement of organizational purpose and course of action.

B. Procedure - A formal written set of required steps to implement a policy.

C. College Policy and Procedures - Described in the College Catalog 2008-2009 at: www.esf.edu/graduate/phd.htm.

D. G.P.E.S. Policy and Procedures - These are contained in this document. Changes to policy are by formal approval of the study area faculty. Individual modifications of the policy may be done by formal petition.

E. Guideline - These are recommendations, not requirements. They may be interpreted by the Major Professor and steering committee as best fits the individual situation without petitions.

Academic Planning

The development of an academic plan is a continuing responsibility of the student and associated faculty which is critical to the successful and timely completion of a Ph.D. program. The planning process addresses two complementary but distinct educational objectives: adequate preparation for and successful completion of the Doctoral Candidacy Exam; and the development and approval of the dissertation research proposal. Students will be assigned a Major Professor upon admission. An initial steering committee will be formed in the first semester of matriculation.

Coursework and the Academic Plan

The Doctor of Philosophy degree requires a minimum of 60 graduate credits, of which 30 to 48 credits are for course work and 12 to 30 credits are awarded for dissertation. Individual program study areas will determine the applicable credit hour requirements within these ranges to reflect individual program requirements and emphases. The graduate credits earned for master's degree that are applicable to a student's doctoral program of study are determined on an individual basis by the steering committee.

Doctoral Candidacy Examination

The student may request, with the consent of the steering committee, to take the Candidacy exam after completion of 48 hrs credit of coursework. The purposes of the exam are to determine the critical thinking skills and the depth and breadth of knowledge in Environmental Science of the study area within which the student is enrolled. The form of the exam will be selected by the examination committee following College Policies.

Research Proposal

Doctoral students are required to produce a research proposal which must be approved and signed by the Steering Committee. Timing for producing the proposal is determined in consultation with the Major Professor. A copy of the approved proposal is to be informally bound (e.g., plastic binding) and placed on file in the Graduate Program in Environmental Science (GPES) Office. We expect that the student will offer a public presentation of the research proposal through the program's seminar series. A PROPOSAL APPROVAL FORM must be completed (see page 8).

Capstone Seminar

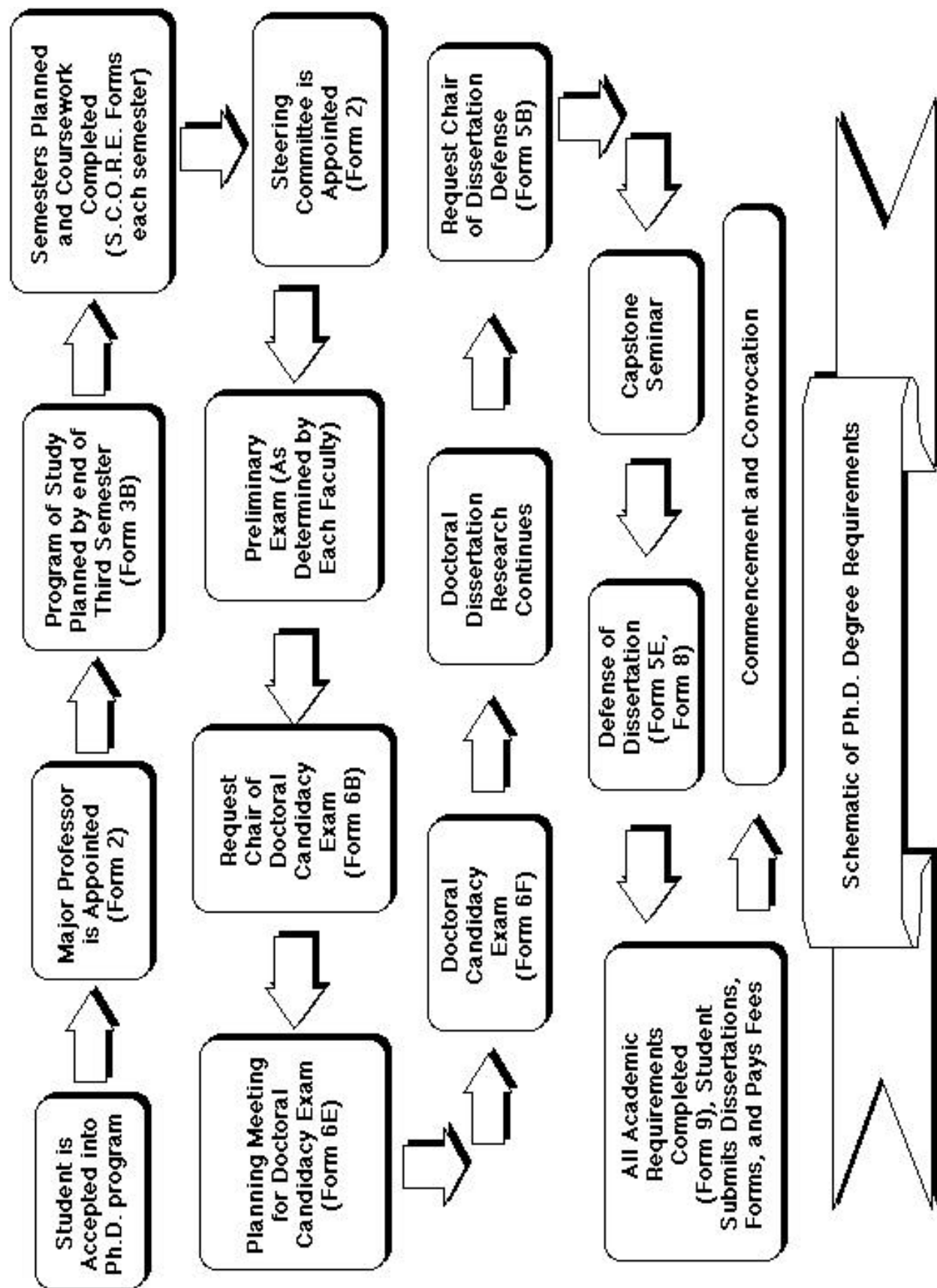
The College's capstone seminar, which presents results of dissertation research to the academic community, required of all doctoral candidates. The seminar frequently is delivered, presented or scheduled immediately preceding the Dissertation Defense Examination.

Dissertation Defense Examination

The examination is conducted by the student's Steering Committee and one or more additional Examiners (a total examining committee of five persons), under the supervision of an Examination Chair appointed by the Dean of Instruction and Graduate Studies. Students are advised to work closely with the Major Professor to schedule meetings and meet deadline.

Schematic Diagram

See the diagram on the following page for an overview of program requirements and progress toward the degree.



NOTES

1. The Steering Committee "is composed of the major professor and at least two faculty members or other qualified persons." See the College Catalog 2008-2009.
2. The Steering Committee "should be appointed within the first semester". The Steering Committee" must be established and must have met by the end of the third semester of graduate study.
3. The Defense Committee "consists of members of the steering committee, and at least one additional faculty member" as Examiner. The Dean of Instruction and Graduate Studies appoints a committee Chair who is not from the student's degree program. See the College Catalog 2008-2009.
4. "Form 5B should be submitted to the Dean's office, according to academic year deadlines.
5. The student "must inform the Dean's office of the agreed upon date, time, and location for the defense at least two weeks in advance of the defense date." Form 5A.
6. One final copy must be delivered to each member of the Defense Committee, including the Chair, at least seven (7) days prior to the scheduled defense date Form 5A. The student should be aware that Syracuse University faculty serving on the committee may require the delivery of their copies at least fourteen (14) days prior to the defense.

Ph.D. TRACKING SHEET

Student: _____ **Semester Entered:** _____
Phone: _____ **Email:** _____ **Area:** _____

Semester:

Course	Cr. Hrs.	Grade GPA	Seminars	App. Soc. Sci.	Env. Sci.	Methods	Study Area	Diss.
Totals:								
Cumulative Totals:		/3.0min						

Semester:

Course	Cr. Hrs.	Grade GPA	Seminars	App. Soc. Sci.	Env. Sci.	Methods	Study Area	Diss.
Totals:								
Cumulative Totals:		/3.0min						

Semester:

Course	Cr. Hrs.	Grade GPA	Seminars	App. Soc. Sci.	Env. Sci.	Methods	Study Area	Diss.
Totals:								
Cumulative Totals:		/3.0min						

Semester:

Course	Cr. Hrs.	Grade GPA	Seminars	App. Soc. Sci.	Env. Sci.	Methods	Study Area	Diss.
Totals:								
Cumulative Totals:		/3.0min						

PROGRAM ADMINISTRATION

Student: _____ **Semester Entered:** _____

Degree: Ph.D. M.S. M.P.S. Area of Study: _____

Address: _____

Phone: _____ **Email:** _____

Deficiencies: _____ **Semester Remedied:** _____

Administrative Requirements Completed:

3B Form Yes Date: _____

Thesis/Internship Proposal: Yes Date: _____

Title: _____

Steering Committee:

1) _____ Phone _____
2) _____ Phone _____
3) _____ Phone _____
4) _____ Phone _____

Examiners (M.S., Ph.D. only):

1) _____ Phone _____
2) _____ Phone _____
3) _____ Phone _____
4) _____ Phone _____

Defense/Exam Chair (M.S., Ph.D. only):

_____ Phone _____

Capstone Seminar: Yes Date: _____ Time and Location: _____

TA/RAs Held:

Semester	_____	Course/Project	_____	Supervisor	_____
Semester	_____	Course/Project	_____	Supervisor	_____
Semester	_____	Course/Project	_____	Supervisor	_____
Semester	_____	Course/Project	_____	Supervisor	_____
Semester	_____	Course/Project	_____	Supervisor	_____
Semester	_____	Course/Project	_____	Supervisor	_____

**Graduate Program in Environmental Science
PHD DISSERTATION PROPOSAL APPROVAL FORM**

Approval of Proposals

Students are required to prepare a Ph.D. Dissertation Proposal. This proposal must be formally approved by the student's Major Professor and Steering Committee using this form (below) for signatures with a copy of the proposal attached.

Although progress in developing a proposal may vary from student to student, students are normally required to produce an approved proposal before registering for more than 3 credits of ENS 999 Dissertation Research.

Content of Proposals

Proposals will vary in content according to the nature of the planned research. In general, these should be succinct statements of research plans, normally about 10 pages in length, describing the planned work as follows:

1. Tentative title.
2. Research objective or hypothesis.
3. Background. A brief statement summarizing pertinent literature.
4. Key data or information sources.
5. Method of analysis.
6. Expected results.
7. Timetable for research, writing, and defense examination.
8. Brief bibliography.



PROPOSAL APPROVAL

Student Name: _____

Dissertation Title: _____

Approved:

Major Professor	_____	Date	_____
Committee Member	_____	Date	_____
Committee Member	_____	Date	_____

A copy of the approved proposal should be affixed to this form, and copies of this document with attached proposal should be provided to each of the above signers, and to the Graduate Program in Environmental Science (GPES) Office, 107 Marshall Hall.

III. RESOURCES

The Graduate Program in Environmental Science has limited staff, facility, and financial resources. Over the past few years we have developed management approaches for their effective and equitable utilization.

A. Graduate Program in Environmental Science (GPES) Office is 107 Marshall Hall

The office has two primary segments: Production Staff, Records and Communications. The Office maintains files (unofficial) of student records, folders of job and research announcements, course syllabi, and internship requests. It maintains a collection of GPES Thesis, Dissertations, Research Proposals, and Internship Reports which are available for reference.

Most students at some time during their studies encounter problems of a personal or academic nature for which they require assistance. An early full discussion of the situation and options is often the key to their resolution. Major Professors and the GPES Director are all available to facilitate this process. Office staff can assist in making appointments as necessary.

B. Conference Room 105 Marshall Hall

The Conference Room is the setting for Faculty Meetings and GPES seminars, including graduate students' capstone seminars. The room may be scheduled for student meetings. During unscheduled periods it is available for informal graduate student discussions and study. Stored in the conference room are the Faculty's Slide Projector, VCR, TV, Laptop Computer, and LCD Projectors which may be borrowed by graduate students for class presentations.

GPES Mailboxes - Outside 105 Marshall Hall

These are the primary mechanism for internal College and Faculty communications. Students should make it a practice to visit their box at least once a week. The mailboxes should not be used to receive U.S. Mail, and the GPES Office Staff cannot receive personal phone messages for students.

C. Office Space

It has been the general practice of the College that graduate students are provided with a desk space on an as-need basis. Because of limited facilities and the flux of students in residence, the assignment of such space usually takes a few weeks each fall. Students should first ask for space available from their major professor. GPES has some space for available in B5 Marshall Hall, B7 Marshall Hall and 406B Bray Hall. The Office Staff maintains a list of requests and vacancies. Periodically, GPES arranges with other Faculties to use surplus space on a semester by semester basis.

D. Assistantships

There are two basic forms of assistantships, Graduate (GA), and Research (RA). GA's are awarded by the College each year based on Faculty recommendations. They are primarily used for Teaching Assistantships in undergraduate and graduate courses. In 2008-2009 GPES had 12 semester positions for its approximately 75 graduate students. Each spring students who will be returning in the Fall are notified by the GPES Director of the projected GA allocation and requested to formally apply. Incoming admitted students are also included in the selection process. A faculty committee prioritizes the applications for administrative action.

As a graduate-research College ESF is involved in numerous externally funded projects most of which involve RA's. Each project is managed by a Principal Investigator who has the responsibility of selecting staff. GPES has no direct involvement in this process. Students interested in RA's should discuss opportunities with their Major Professor. Throughout the year the Graduate Office and Research Office circulate research, fellowship, and internship announcements. Students should periodically check their mailboxes, the appropriate ES folders, and the ES bulletin board.

The Edna Bailey Sussman Fund provides stipends to support graduate student summer internship experiences. The Fund has supported approximately 20 ESF students per year, about one-quarter of whom have been GPES students. Sussman supports a broad range of interest areas, from environmental policy, regulation and communication to various environmental sciences. Sussman applications are treated competitively; awards are usually in the range of \$4,800 for full-time internship employment. Applications must be filed by the annual application deadline, usually in early March. Awards are announced in early May. Proposal guidelines are available in February from the Office of Instruction and Graduate Studies located in 227 Bray.

APPENDIX A

**GRADUATE PROGRAM IN ENVIRONMENTAL SCIENCE
STAFF AND PARTICIPATING FACULTY
107 Marshall Hall
315-470-6528**

Staff:

PATRICIA A. GIBEAULT (Patti)
107 Marshall Hall, 470-6528
Secretary for Graduate Program/Receptionist

DAVID L. JOHNSON (Director of GPES)
419 Jahn Lab, 470-6829
(Environmental Chemistry)

Abbreviation Definitions:

ECLP-Environmental & Community Land Planning
ECPP-Environmental Communication & Participatory Processes
ENRP – Environmental and Natural Resource Policy
EPDP-Environmental Policy & Democratic Processes (MS, MPS only)
ESRM-Environmental Systems & Risk Management
WWRS-Water & Wetland Resources Studies

ESF and other adjunct, faculty, who participate in GPES change from time to time. Please check the GPES home page for the most current list at

<http://www.esf.edu/environmentalscience/graduate/default.htm>

Participating ESF Faculty:

COLIN M. BEIER – ESRM
Adirondack Ecological Center, 518-582-4551
(Forest Ecology)

GREGORY L. BOYER – WWRS
320 Jahn Lab, 470-6825
(Algal Toxins, Algal CO₂ Sequestration)

MARGARET M. BRYANT – ECLP
333 Marshall Hall, 470-4929
(Land Planning)

EMANUEL J. CARTER – ECLP
312 Marshall Hall, 470-6665
(City Planning, Urban Design, Rural Development, Design History and Theory)

CHERYL S. DOBLE – ECLP
322 Marshall, 470-6553
(Community Design and Planning; Public Participation in Decision Making Process; Rural Planning and Land Use Management)

THEODORE A. ENDRENY – WWRS
423 Baker Lab, 470-6565
(Watershed Modeling)

CHARLES A. HALL – ESRM
354 Illick Hall, 470-6870
(Systems Ecology)

MYRNA H. HALL - ESRM, ECLP
112 Marshall Hall, 470-4741
(Spatial Analysis and Modeling, Land Change Science, Urban Ecology)

JAMES M. HASSETT – WWRS
404 Baker Lab, 470-6633
(Watershed Modeling)

RICHARD S. HAWKS – ECLP
331 Marshall Hall, 470-6541
(Community Design and Planning; Natural Resource Information in the Land Use Design Process)

CHARLES N. KROLL – ESRM, WWRS
424 Baker Lab, 470-6699
(Decision Analysis)

DIANE M. KUEHN – ECPP
310A Bray Hall, 470-6561
(Recreation Management and Research)

PATRICK J. LAWLER - ECPP
105 Moon Library, 470-6914
(Environmental Communication)

KARIN E. LIMBURG – WWRS, ESRM
249 Illick Hall, 470-6741
(Aquatic Ecology & Fisheries, Watershed Ecology, Man/Nature Interactions)

VALERIE A. LUZADIS – ESRM, EPDP, ENRP
307 Bray Hall, 470-6693
(Natural Resource Economics)

JACK P. MANNO – WWRS, EPDP, ENRP
211A Marshall Hall, 470-6816
(Sustainable Development, Ecological Economics, Great Lakes Policy)

MARK S. MEISNER – ECPP, EPDP
108B Marshall Hall, 470-6908
(Environmental Discourse and Communication)

MYRON J. MITCHELL – WWRS
210 Illick Hall, 470-6765
(Biogeochemistry of Forest and Aquatic Ecosystems; Decomposition Processes;
Stable Isotopes)

SHARON D. MORAN - ECPP, ECLP, EPDP, ENRP, ESRM, WWRS
113 Marshall Hall, 470-6990
(Environmental Policy, Government and Water Resources)

GEORGIOS E. MOUNTRAKIS – ECLP
419 Baker Lab, 470-4824
(Geographic Information Modeling, Spatial Analysis, Remote Sensing)

TSUTOMU NAKATSUGAWA – ESRM
110 Illick Hall, 470-6942
(Toxicology, Toxic Health Hazards)

BRENDA J. NORDENSTAM – ESRM, EPDP, ENRP
108A Marshall Hall, 470-6573
(Risk Perception and Analysis)

RUDOLPH M. SCHUSTER – ECLP
310B Bray Hall, 470-4863
(Ecological and Recreational Planning)

SUSAN L. SENECAH – ECPP, EPDP, ENRP
109 Marshall Hall, 470-6570
(Environmental Communication and Policy)

S. SCOTT SHANNON – ECLP
313 Marshall Hall, 470-6537
(Community Design and Planning; Rural, Traditional, and Neo-Traditional
Community Form; Historic Landscape Preservation; Computer Applications and Design
Simulation)

RICHARD C. SMARDON – WWRS, EPDP, ENRP
211B Marshall Hall, 470-6576
(Wetland Assessment, Public Participation, Decision Making)

DAVID A. SONNENFELD – ENRP, EPDP
106 Marshall Hall, 470-4931
(Environmental Sociology, Sustainable Development, East/Southeast Asia)

JOHN C. STELLA – WWRS
334 Illick/207 Marshall Hall, 470-4902
(Watershed Ecology and Management, Stream and Riparian Ecology)

MARK A. TEECE – ESRM
415 Jahn Lab, 470-4736
(Coral Reefs, Stable Isotope Biogeochemistry)

TIMOTHY A. VOLK – ESRM
346 Illick Hall, 470-6774
(Renewable Energy)

BENETTE A. WHITMORE - ECPP
105 Moon Library, 470-6722
(Environmental Communication)

APPENDIX B.1

DOCTOR OF PHILOSOPHY (Ph.D.) DEGREE

ENVIRONMENTAL COMMUNICATION AND PARTICIPATORY PROCESSES STUDY AREA

Advising Guide

The following is provided as a **guide** to the types of courses available for Ph.D. study. You should consider your individual research program and consult with your major professor to build a cohesive, balanced program of study.

General Requirements. A minimum of 60 course credit hours are required for the Ph.D. degree, including any credits transferred from a masters program of study or courses taken at another institution. Your program of study should reflect a balance among the following categories, build mastery in your area/s of interest, and be planned in consultation with your Major Professor. The following courses are offered as a guide to the kinds of appropriate courses available in each category. Be aware that other course opportunities will be available throughout your residency at ESF.

Environmental Science Seminar. You are required to take an environmental science seminar each semester you are in residence. You may take ENS 797 Environmental Science Seminar , which is usually offered only as an audit, or other appropriate seminars offered through other departments at ESF (for credit or audit) or Syracuse University (for credit only).

Applied Social Science.

ANT 683 Social Movement Theory
EST 550 Environmental Impact: Analysis, Principles and Strategy
EST 608 Environmental Advocacy Campaigns and Conflict Resolution
EST 612 Environmental Policy and Governance
EST 626 Concepts and Principles of Sustainable Development
EST 635 Public Participation and Decision Making
EST 640 Environmental Thought and Ethics
EST 650 Environmental Perception and Human Behavior
FOR 665 Natural Resources and Environmental Policy
IST 552 Information Systems Analysis Concepts and Practices
IST 607 Government and Information
IST 642 Electronic Commerce
IST 643 U.S. Federal Information Law
LAW 716 Environmental Law
PPA 709 Public Organizations and Management
PPA 730 Problems in Public Administration
PPA 753 Executive Leadership and Policy

Research Methods.

PPA 722 Quantitative Analysis
SOC 614 Introduction to Qualitative Research

Area of Study.

EST 608 Environmental Advocacy Campaigns and Conflict Resolution
EST 612 Environmental Policy and Governance
EST 626 Concepts and Principles of Sustainable Development
EST 635 Public Participation and Decision Making
EST 645 Mass Media and Environmental Affairs
EST 650 Environmental Perception and Human Behavior
FOR 690 Seminar and Workshop on Natural Resources Policy and Management
EFB 617 Perspectives on Interpretive Design
MIS 545 Decision Support Systems
MIS 745 Decision Support Systems
MAR 741 Marketing Community and Public Service Agencies
SHR 703 Interpersonal and Group Skills for Managers
ANT/LIN/SOC 571 Topics in Sociolinguistics
ANT 652 Anthropology Public Policy
ANT/674 Culture and Folklore
ANT 675 Culture and Disputing

Doctoral Thesis Research. Students typically take from 6-12 credits of ENS 999 Doctoral Thesis Research although no required number is set. These credits reflect progress made in thesis research. They can be used to support the development of the thesis proposal (e.g., literature review, directed readings) as well as the actual research and writing of the thesis. These credits are awarded in consultation with your major professor.

Other Requirements. In addition to course and credit hour requirements, you are required to:

1. Form a Steering Committee of your Major Professor and two additional faculty members by the end of the second semester of full-time study. Form 2A is available in Marshall 107.
2. File a Form 3B (Academic Plan), attaching a program Plan Sheet, with the Office of Instruction and Graduate Studies (227 Bray) by the end of the second semester of full-time study. Form 3B is available in Marshall 107.
3. Offer a Capstone Seminar, reporting either on planned or completed Thesis activity.
4. Successfully complete a written comprehensive exam.
5. Successfully complete Thesis defense.

APPENDIX B.2

DOCTOR OF PHILOSOPHY (Ph.D.) DEGREE

ENVIRONMENTAL AND COMMUNITY LAND PLANNING STUDY AREA

Advising Guide

The following is provided as a **guide** to the types of courses available for Ph.D. study. You should consider your individual research program and consult with your major professor to build a cohesive, balanced program of study.

General Requirements. A minimum of 60 course credit hours are required for the Ph.D. degree, including any credits transferred from a masters program of study or courses taken at another institution. Your program of study should reflect a balance among the following categories, build mastery in your area/s of interest, and be planned in consultation with your Major Professor. The following courses are offered as a guide to the kinds of appropriate courses available in each category. Be aware that other course opportunities will be available throughout your residency at ESF.

Environmental Science Seminar. You are required to take an environmental science seminar each semester you are in residence. You may take ENS 797 Environmental Science Seminar , which is usually offered only as an audit, or other appropriate seminars offered through other departments at ESF (for credit or audit) or Syracuse University (for credit only).

Applied Social Science.

EST 608 Environmental Advocacy Campaigns and Conflict Resolution
EST 612 Environmental Policy and Governance
EST 626 Concepts and Principles of Sustainable Development
EST 635 Public Participation and Decision Making
EST 640 Environmental Thought and Ethics
EST 650 Environmental Perception and Human Behavior
LSA 652 Community Development and Planning Processes

Research Methods.

LSA 640 Research Methodology
APM 635 Multivariate Statistical Methods
PPA 722 Quantitative Analysis
PSC 602 Public Policy Analysis Theory and Practices

Study Area Coursework.

LSA 611 Natural Factors Analysis
LSA 651 Comprehensive Land Planning
LSA 652 Community Development and Planning Process
EST 550 Environmental Impact Analysis: Principles and Strategies
FOR 540 Watershed Hydrology
FOR 642 Watershed Ecology and Management
FOR 676 Tourism Planning
FOR 678 Wilderness/River Recreation Management
FOR 680 Urban Forestry
GEO 558 Sustainable Development
GEO 605 Theories of Development
GEO 781 Seminar: Cartography
PPA 730 Problems in Public Administration
CIE 541 Transportation Engineering
IST 552 Information Systems Analysis Concepts and Practices

Doctoral Thesis Research. Students typically take from 6-12 credits of ENS 999 Doctoral Thesis Research although no required number is set. These credits reflect progress made in thesis research. They can be used to support the development of the thesis proposal (e.g., literature review, directed readings) as well as the actual research and writing of the thesis. These credits are awarded in consultation with your major professor.

Other Requirements. In addition to course and credit hour requirements, you are required to:

1. Form a Steering Committee of your Major Professor and two additional faculty members by the end of the second semester of full-time study. Form 2A is available in Marshall 107.
2. File a Form 3B (Academic Plan), attaching a program Plan Sheet, with the Office of Instruction and Graduate Studies (227 Bray) by the end of the second semester of full-time study. Form 3B is available in Marshall 107.
3. Offer a Capstone Seminar, reporting either on planned or completed Thesis activity.
4. Successfully complete a written comprehensive exam.
5. Successfully complete Thesis defense.

APPENDIX B.3

DOCTOR OF PHILOSOPHY (Ph.D.) DEGREE

ENVIRONMENTAL SYSTEMS AND RISK MANAGEMENT STUDY AREA

Advising Guide

The following is provided as a **guide** to the types of courses available for Ph.D. study. You should consider your individual research program and consult with your major professor to build a cohesive, balanced program of study.

General Requirements. A minimum of 60 course credit hours are required for the Ph.D. degree, including any credits transferred from a masters program of study or courses taken at another institution. Your program of study should reflect a balance among the following categories, build mastery in your area/s of interest, and be planned in consultation with your Major Professor. The following courses are offered as a guide to the kinds of appropriate courses available in each category. Be aware that other course opportunities will be available throughout your residency at ESF.

Environmental Science Seminar. You are required to take an environmental science seminar each semester you are in residence. You may take ENS 797 Environmental Science Seminar , which is usually offered only as an audit, or other appropriate seminars offered through other departments at ESF (for credit or audit) or Syracuse University (for credit only).

Applied Social Science.

EST 608 Environmental Advocacy Campaigns and Conflict Resolution
EST 612 Environmental Policy and Governance
EST 626 Concepts and Principles of Sustainable Development
EST 635 Public Participation and Decision Making
EST 640 Environmental Thought and Ethics
EST 650 Environmental Perception and Human Behavior

Research Methods.

APM 620 Analysis of Variance
APM 625 Introduction to Sampling
APM 635 Multivariate Statistical Methods
GEO 686 Adv Quantitative Geo Analysis

Area of Study.

CEN 573 Principles and Design in Air Pollution Control
CIE 529 Risk Analysis in Civil Engineering

CIE 554 Principles of Environmental Toxicology
CIE 653 Applied Aquatic Chemistry
CIS 671 Environmental Chemistry and Analysis
EFB 516 Ecosystems
EFB 518 Systems Ecology
EFB 600 Toxic Health Hazards
EFB 610 Ecological Biogeochemistry
EFB 611 Topics in Environmental Toxicology
EFB 796 Special Topics: Ecology of the Economic Process
ERE 643 Water Pollution Engineering
ESC 525 Energy Systems
ESC 535 Renewable Energy Systems
ESC 622 Energy Markets and Regulation
FCH 510 Environmental Chemistry I
FCH 511 Environmental Chemistry II
FCH 515 Methods of Environmental Chemistry Analysis
FOR 557 Practical Vector GIS
FOR 642 Watershed Ecology and Management
FOR 796 Special Topics: Forest Resource Management

Doctoral Thesis Research. Students typically take from 6-12 credits of ENS 999 Doctoral Thesis Research although no required number is set. These credits reflect progress made in thesis research. They can be used to support the development of the thesis proposal (e.g., literature review, directed readings) as well as the actual research and writing of the thesis. These credits are awarded in consultation with your major professor.

Other Requirements. In addition to course and credit hour requirements, you are required to:

1. Form a Steering Committee of your Major Professor and two additional faculty members by the end of the second semester of full-time study. Form 2A is available in Marshall 107.
2. File a Form 3B (Academic Plan), attaching a program Plan Sheet, with the Office of Instruction and Graduate Studies (227 Bray) by the end of the second semester of full-time study. Form 3B is available in Marshall 107.
3. Offer a Capstone Seminar, reporting either on planned or completed Thesis activity.
4. Successfully complete a written comprehensive exam.
5. Successfully complete Thesis defense.

APPENDIX B.4

DOCTOR OF PHILOSOPHY (Ph.D.) DEGREE

WATER AND WETLAND RESOURCES STUDY AREA

Advising Guide

The following is provided as a **guide** to the types of courses available for Ph.D. study. You should consider your individual research program and consult with your major professor to build a cohesive, balanced program of study.

General Requirements. A minimum of 60 course credit hours are required for the Ph.D. degree, including any credits transferred from a masters program of study or courses taken at another institution. Your program of study should reflect a balance among the following categories, build mastery in your area/s of interest, and be planned in consultation with your Major Professor. The following courses are offered as a guide to the kinds of appropriate courses available in each category. Be aware that other course opportunities will be available throughout your residency at ESF.

Environmental Science Seminar. You are required to take an environmental science seminar each semester you are in residence. You may take ENS 797 Environmental Science Seminar , which is usually offered only as an audit, or other appropriate seminars offered through other departments at ESF (for credit or audit) or Syracuse University (for credit only).

Applied Social Science.

ENS 601* Water Resources Management
EST 550 Environmental Impact Analysis: Principles and Strategies
EST 608 Environmental Advocacy Campaigns and Conflict Resolution
EST 612 Environmental Policy and Governance
EST 626 Concepts and Principles of Sustainable Development
EST 635 Public Participation and Decision Making
EST 640 Environmental Thought and Ethics
EST 650 Environmental Perception and Human Behavior
FOR 665 Natural Resources and Environmental Policy
LAW 716 Environmental Law
PPA 709 Public Organizational and Management
PPA 730 Problems in Public Administration
PSC 705 Science and Public Policy
IST 552 Information Systems Analysis Concepts and Practices
IST 607 Governments and Information
IST 642 Electronic Commerce
IST 643 U. S. Federal Information Policy

Research Methods.

APM 510 Statistical Analysis
APM 620 Analysis of Variance
APM 625 Introduction to Sampling Techniques
APM 635 Multivariate Statistical Methods
GEO 583 Environmental GIS
GEO 686 Adv Quantitative Geo Analysis
LSA 640 Research Methodology
PPA 722 Quantitative Analysis
PSC 602 Public Policy Analysis
SOC 614 Introduction to Quantitative Research

Area of Study.

CIE 525 Environmental Fluid Mechanics
CIE 570 Water and Wastewater Treatment Plant Design
CIE 652 Biological Waste Treatment
CIE 653 Applied Aquatic Chemistry
CIE 659 Advanced Hydrogeology
CIE 671 Environmental Chemistry and Analysis
EFB 516 Ecosystems
EFB 518 Systems Ecology
EFB 522 Ecology, Resources, and Development
EFB 524 Limnology
EFB 525 Limnology Lab
EFB 797 Seminar: Advanced Aquatic Ecology
EST 696 Special Topics: Great Lakes Policy
ERE 643 Water Pollution Engineering
FCH 515 Methods of Environmental Chemistry Analysis
FOR 540 Watershed Hydrology
FOR 557 Practical Vector GIS
FOR 558 Advanced Vector GIS
FOR 642 Watershed Ecology and Management
GOL 541 Hydrogeology

* Indicates water resources policy courses

Doctoral Thesis Research. Students typically take from 6-12 credits of ENS 999 Doctoral Thesis Research although no required number is set. These credits reflect progress made in thesis research. They can be used to support the development of the thesis proposal (e.g., literature review, directed readings) as well as the actual research and writing of the thesis. These credits are awarded in consultation with your major professor.

Other Requirements. In addition to course and credit hour requirements, you are required to:

1. Form a Steering Committee of your Major Professor and two additional faculty members by the end of the second semester of full-time study. Form 2A is available in Marshall 107.
2. File a Form 3B (Academic Plan), attaching a program Plan Sheet, with the Office of Instruction and Graduate Studies (227 Bray) by the end of the second semester of full-time study. Form 3B is available in Marshall 107.
3. Offer a Capstone Seminar, reporting either on planned or completed Thesis activity.
4. Successfully complete a written comprehensive exam.
5. Successfully complete Thesis defense.