



Geography and Geographic Information Science

GRADUATE HANDBOOK

Geography Degree Requirements

AUGUST 2013



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OVERVIEW

Graduate Program

“The power and beauty of geography allow us to see, understand, and appreciate the web of relationships between people, places and environments.”

Background Information

The University of Illinois at Urbana-Champaign (UIUC) is among the nation’s most distinguished teaching and research institutions. The campus is the home of the second largest academic library in the United States and the largest map collection among the public universities.

A national leader in the field of computer design and applications, the Urbana-Champaign campus also houses the National Center for Supercomputing Applications and Blue Waters, a sustained-petaflop supercomputer. The campus serves approximately 43,000 students of whom about 10,000 are engaged in graduate work in more than 100 fields of study. An internationally recognized graduate faculty of approximately 3000 members works closely with graduate students in their respective fields.

Research Facilities

The University of Illinois at Urbana-Champaign is consistently at the forefront of user-oriented computer systems in the United States. The department maintains two computer-based laboratories for instruction - a main instructional facility containing 30 computers and a satellite facility containing 11 computers. In addition, a dedicated computer laboratory is available exclusively for graduate-student use. Computers are complemented by an assortment of printers, plotters and state-of-the-art analytical software. Lab users are engaged in a variety of training activities including data base development, multivariate spatial analysis, dynamic cartography, remote sensing analysis, digital photogrammetry, and environmental modeling.

The CyberInfrastructure and Geospatial Information (CIGI) Laboratory researches and develops cutting-edge cyberinfrastructure to advance geospatial sciences and technologies. Current research centers on the following themes:

- Computationally intensive spatial analysis and modeling
- CyberGIS
- Cyberinfrastructure-based geospatial problem-solving environments and applications
- Distributed geospatial systems and their interoperability
- High-performance and collaborative GIS Large- and multi-scale geospatial problem solving
- Parallel and distributed computing

The Regional Economics Applications Laboratory, which is housed in the department, focuses on the development of models of urban and regional economies for impact analysis and economic forecasting. Clients range from state governments and city agencies to private companies. REAL has provided funding for several graduate assistants in recent years.

The Society, Space and Environments program builds upon the foundations of human geography as an integrating social science to examine the interplay of socio-spatial processes involved in the shaping of the

Earth natural and built environments. GIS offers a graduate program leading to both the Master's and Ph.D degrees with specialization in Society, Space and Environments. The program has four emphases: 1) Development Geography; 2) Urban Geography; 3) Politics of the Environment; and 4) Geographies of Conflict.

River, Watershed and Landscape Dynamics program: A wide array of state-of-the-art field and laboratory equipment is available for research in physical geography. Additional facilities and expertise can be accessed through cooperative arrangements with the Illinois State Geological, Water and Natural History Surveys, all of which are housed on campus.

Application Procedure

Applicants must submit a completed application form, three letters of reference, official transcripts from each undergraduate and/or graduate school attended, and an official G.R.E. (Verbal/Quantitative/ Analytical) record. The Graduate Admissions Committee evaluates the student's academic accomplishments and promise as well as the match between the applicant's professional goals and core faculty expertise. Each candidate's statement of purpose is read carefully to determine his or her suitability for the department's graduate program. For information on specific areas of research concentration contact a participating faculty member. Information about the department in general, as well as the professional activities of individual faculty members, may be obtained on the web at: www.geog.illinois.edu. The application procedure may be found on the GIS [Applications](#) page.

Transfer of Credit

The University has specific and stringent requirements concerning the transfer of credit. Please see the Graduate College web site for [Transfer of Credit](#) requirements.

Financial Assistance

The Department of Geography and Geographic Information Science provides a wide range of financial support for graduate students working on Master's and PHD degrees. Please visit the [Financial Support page](#) for details. Further information on admission requirements and deadlines can be found at the GIS [Applications](#) page. Questions may be directed to Susan Etter at etter1@illinois.edu or by mail at:

Graduate Admissions
Department of Geography and Geographic Information Science
University of Illinois at Urbana-Champaign
256 Computing Applications Building
605 Springfield Avenue
Champaign IL 61820

Ph.D. Program

The Ph.D. is a highly individualized degree that emphasizes advanced training and research. Students develop and demonstrate both depth and breadth in geographical inquiry. They gain an understanding of the major epistemological and methodological questions that have shaped the development of geography as a discipline and master a set of research methods that are appropriate to their area of specialization. Students acquire a detailed understanding of a particular sub-field of geography, conduct and disseminate independent research in that sub-field and broaden their backgrounds through study in one or more allied disciplines. The program is intended to lead students into innovative research as demonstrated in research seminars, independent investigations, and the completion of a dissertation. The student's academic performance must be marked by initiative, intellectual integrity, a sense of problem identification, and critical acumen.

Students can enter the Ph.D. program through two routes: 1) [after earning a Master's degree](#), or 2) [after earning a Bachelor's degree](#). The degree requirements for each option are described separately.

Admission to the Ph.D. is limited to those who have achieved distinction in previous undergraduate and graduate work (a 3.2 GPA on a 4-point scale is a generally accepted criterion) and who have demonstrated the determination and initiative required for doctoral success. Strong letters of recommendation are essential. International applicants whose native language is not English must meet [English Proficiency Requirements](#) for admissions for University of Illinois. International students who would like to be considered for teaching assistantships must submit a TOEFL taken within the last two years and meet the requirements for [International Teaching Assistants](#) set by the [Graduate College](#). Graduate College regulations preclude review of any application from a foreign student that does not include a TOEFL score.

An application to the Ph.D. program includes: a completed online application; three letters of reference; official transcripts from all academic institutions attended; official GRE (Verbal, Quantitative, Analytical/Writing) results; plus official TOEFL results from applicants for whom English is a second language.

Students currently in the Geography Master's program at UIUC who wish to apply to the Geography Ph.D. program will need: three letters of recommendation, transcripts from all graduate and undergraduate schools attended; a statement of purpose; plus a [petition](#) signed by your advisor and the Director of Graduate Studies.

1) For Students Entering With A Master's Degree

This option in the Ph.D. program is aimed at highly motivated and academically qualified students who have a strong commitment to earning a doctoral degree and have already earned a Master's degree. The program is designed to take approximately 3-4 years, although the actual time to degree is likely to vary.

Advising

Most students enter the Ph.D. program intending to work with a particular faculty member. These students will meet with their proposed faculty advisor at the time of arrival. Those students entering the program without an intended advisor will consult with the Director of Graduate Studies at the time of arrival. At these meetings the student's career objectives and primary interests within the discipline and cognate fields will be reviewed, as well as any deficiencies and appropriate measures to overcome them. The advisor will assist the student in selecting courses for the first semester.

The advisor may be any member of the graduate faculty in the Department of Geography and Geographic Information Science (GGIS). Under special circumstances, the student may choose a faculty member with an affiliate or adjunct appointment in GGIS to serve as Director of Research; however, in such cases, the advisor must be approved by a majority vote of the faculty in a Committee of the Department meeting. The Chair of the Committee must be a GGIS faculty member. Please see the Graduate College specifications for co-chair and co-research directors. The advisor and student should meet regularly to discuss progress and future plans. Effective communications between student and advisor are critical for Ph.D. success. Either the student or the faculty advisor is free at any time to request a change in advising assignment.

Late in the spring semester of the first year the student and her/his advisor will select two additional faculty members to serve on the student's Departmental Exam Committee. The majority of the committee members must be faculty members of the Department of Geography and Geographic Information Science at UIUC. The student, advisor, and other committee members will meet at the end of this semester and near the end of every semester thereafter (until the student graduates), each time discussing the student's progress with him/her and reporting that progress to the Graduate Committee through the advisor. Changes to the Departmental Exam Committee may be made at any time with approval of both the student and advisor.

Ph.D. Degree Requirements

The Graduate College requires that at least 64 hours of graduate coursework beyond the Master's degree be completed for the Ph.D. degree. Graduate coursework is defined as courses at the 400-level or above.

All graduate students are required to maintain a 3.0 (B) or better G.P.A. Any required course must be passed with an A or B grade. Although the students are informed of their status during their entire graduate program, the primary responsibility for meeting Graduate College and departmental requirements, and for insuring good progress toward degree completion, lies with the student.

Ph.D. Course Requirements

1. GEOG 471 (Introduction to Contemporary Geographic Thought). Doctoral students are strongly recommended to take Geography 471 during their first semester, unless it has already been taken during a Master's program in the department. This course is an examination of recent trends in geographic thought.
2. GEOG 491 (Research Methods in Geography). This course examines geographic research design and methodology. It is designed to provide students with guidance in preparing and completing a research proposal in their area of interest, preferably one that they will then complete as part of their degree program. Students are strongly recommended to take this course in their second semester.
3. Methods Requirement. All Ph.D. students must take at least two graduate-level courses on analytical research methods from the following options:
 - GEOG 439 Health Applications of GIS
 - GEOG 460 Air Photo Interpretation
 - GEOG 467 Dynamic Simulation of Resource Modeling
 - GEOG 473 Map Compilation and Construction
 - GEOG 476 Applied GIS to Environmental Studies
 - GEOG 477 Introduction to Remote Sensing
 - GEOG 478 Techniques of Remote Sensing
 - GEOG 479 Advanced Geog Info Systems
 - GEOG 480 Principles of GIS
 - GEOG 489 Programming for GIS
 - GEOG 556 Regional Science Methods
 - GEOG 570 Spatial Data Analysis
 - GEOG 587 Qualitative Research Methods
 - SOC 583 Qualitative Research Methods

Other graduate-level methods courses offered in Geography also count towards this requirement. Courses from other departments or taken in a Master's degree program may be applied to this requirement with the permission of the student's faculty advisor and the Director of Graduate Studies.

Building upon the methods requirement, doctoral students are required to demonstrate competence in a specific research technique. Techniques may include: a foreign language (to the level of passing the ETS reading examination); quantitative or qualitative methods; GIS; cartography or other alternatives from outside the department. The student's advisor is responsible for defining the appropriate level of competency required.

In addition to these formal requirements, the department holds a strong expectation that graduate students will attend the department and graduate student colloquium series on a regular basis. Such attendance is an important part of the student's professional development and their role in maintaining the department as a vibrant intellectual community.

Each student must also fulfill program requirements specific to his/her specialty area (see relevant program statements for: Society, Space and Environment; Geographic Information Science; or River, Watersheds, and Landscape Dynamics.)

Ph.D. Minor

Each student must complete a minor consisting of at least 16 hours earned outside the department in a field or fields related to the student's interests in geography. If more than one minor field is offered, the candidate must

earn at least 8 hours in each; with his/her advisor's approval the student may offer a topical minor consisting of related courses in several fields, as one half of a split minor.

It is important for students to note that Geography 595 classes may be taken upon approval by filling out the [Credit No Credit form](#) for a letter or Credit/No Credit grade. The department permits students to take a maximum of 8 credit hours of Geography 595 courses for an Credit/No Credit grade. Students are not permitted to take Credit/No Credit grades within their declared program of specialization, nor to use Credit/No Credit grade courses to meet the minimum departmental requirement of two 500-level classes, or to meet stated minimum requirements for a minor.

Doctoral Candidacy and Examinations

Departmental Exam

By the end of his/her third semester in residence, the student will take a written and oral *departmental examination*. It will be both evaluative and diagnostic, and will focus on the program area of interest (e.g., GIScience, physical geography, etc.), as well as the student's specialty area within the program. A student must have approval for taking the exam using the [GGIS Departmental Examination Request Form](#) two weeks prior to exam date. The written examination will consist of at least one question on each of the following topics:

- a. Basic concepts and literature of the program area.
- b. Research methods currently used in the program area.
- c. An area of specialization within the program area.

The advisor is responsible for assembling the questions and administering the written examination. Each question will be evaluated by the person who wrote the question, and the results will be circulated to the entire committee. Following this, an oral examination will be held to further examine the student's abilities and progress. The possible outcomes are:

- a. Pass; no major deficiencies.
- b. Fail; remediable deficiencies. If there are remediable deficiencies, the committee will identify them, specify the nature of the remedial work to be done, specify a deadline for its completion, and specify a set of criteria for its evaluation. Failure to meet these requirements will result in a "fail"; successful completion will result in a "pass."
- c. Fail; major deficiencies. If deficiencies are serious enough that, in the committee's judgment, the probability of the student's success in the Department's Ph.D. program is low, a "fail" will be recommended. In this case, the student may appeal through established procedures.

Upon completion of the written and oral examinations, the advisor is responsible for completing the [GGIS Departmental Examination Results Form](#) and placing a copy of the written questions, written answers, and the committee's decision in the student's file. This requirement must be met for degree completion.

University Preliminary Exam and Dissertation Proposal

Upon completion of a successful departmental exam a student in consultation with their advisor will form a Preliminary Exam Committee consisting of 4 members of the Graduate Faculty, at least 2 of which must be members of the GIS department. By the end of the fourth semester the student will prepare a written dissertation proposal and distribute the proposal among committee members for comment. Since exposure of one's ideas to the critical review of peers and faculty is an important learning experience, each Ph.D. student is required to make a public presentation of his/her dissertation proposal in a graduate or departmental colloquium.

Two weeks in advance of the presentation, the title and abstract of the proposal will be circulated to the GGIS community. A complete written version of the proposal will be given to the committee and a paper copy to the department to be made available for perusal at least one week before the presentation.

As soon as possible after the colloquium presentation, the student will take the oral *University Preliminary Examination*. The preliminary examination will be administered by a committee appointed by the Graduate College upon recommendation by the advisor and student with the concurrence of the Director of Graduate Studies or Department Head. Students must be enrolled for the entire academic term in which the preliminary exam occurs. According to Graduate College regulations, the committee must include at least four voting members, including three members of the graduate faculty and two tenured members of the UIUC faculty. The examination will focus primarily upon a defense of the dissertation proposal but may include questioning and discussion on the student's area of specialty and minor field. The student, committee chair, and at least one additional voting member of the committee must be physically present for all oral components of the entire examination (i.e., presence by video or teleconference is not acceptable). If the committee has more than one chair, all chairs must be physically present; in these cases, no additional voting member is required to be physically present. All voting members of the committee must be present in person or participate via teleconference or other electronic media during the examination, deliberation and results determination of all oral components of the examination. The outcome, determined by majority vote, may be: admission to candidacy; admission to candidacy denied pending the removal of apparent deficiencies and re-examination; or, failure with a request that the student withdraw from the program. Students who are failed may retake the exam one additional time. The committee chair is responsible for convening the committee, conducting the examination, and submitting the Preliminary Exam Result Form to the GGIS Department and to the Academic Services unit of the Graduate College.

A student's failure to schedule the preliminary examination within five semesters of enrollment after entering the Ph.D. program will subject his/her record to review by an evaluation committee. In this evaluation the committee may recommend actions to address deficiencies or withdrawal from the program.

Dissertation

The dissertation is based on original research and must be a substantial contribution to knowledge. The candidate is encouraged to review progress regularly with his/her committee (usually identical to the preliminary examination committee) and especially with his/her advisor. It is the candidate's responsibility to comply with all Graduate College and GGIS requirements concerning the format of the dissertation. Format guidelines are available on the [Graduate College Thesis Requirements](#) web page. The faculty member responsible for checking the format may also be consulted for guidance. Candidates are encouraged to complete their dissertation in residence.

Final Examination and Final Examination Committee

After the dissertation is provisionally accepted by the committee, an oral defense, known as the Final Examination, is mandatory. Students must be enrolled for the entire academic term in which the Final Examination occurs. Outcome of that defense may be: pass the candidate with no revisions required, pass the candidate pending revision of the dissertation, or fail the candidate. Students who are failed may retake the exam one additional time.

The final examination committee is appointed by the Dean of the Graduate College, upon recommendation of the Head or DGS of the GGIS Department. The student's thesis advisor (i.e. Director of Research) need not be the chair of the committee, but this individual must have an affiliate or adjunct appointment in the Department of GGIS and should maintain an active research program. The chair of the final examination committee *must* be

a member of the Graduate Faculty of the Department of Geography and Geographic Information Science. The committee chair is responsible for convening the committee, conducting the examination, and submitting the Final Examination Result Form to the GIS Department and to the Academic Services unit of the Graduate College. The student, committee chair, and at least one additional voting member of the committee must be physically present for all oral components of the entire examination (i.e., presence by video or teleconference is not acceptable). If the committee has more than one chair, all chairs must be physically present; in these cases, no additional voting member is required to be physically present. All voting members of the committee must be present in person or participate via teleconference or other electronic media during the examination, deliberation and results determination of all oral components of the examination.

A copy of the completed dissertation must be submitted to the advisor not less than four weeks prior to the scheduled oral defense of the document. The complete dissertation must also be submitted to the Committee at least two weeks in advance of the defense. In no case will a dissertation be accepted less than four weeks prior to the terminal date for Ph.D. final examinations set by the Graduate College for each semester and summer session. The oral exam should be scheduled with close attention to the Graduate College deadlines. Students should not assume that their committee members will be willing to conduct an exam during the summer sessions or without adequate time to evaluate the dissertation.

Teaching Opportunities

Graduate students who specify college or university teaching as one of their primary career objectives are strongly encouraged to gain teaching experience by serving as a Teaching Assistant and by serving as primary course instructor. Before becoming a teaching assistant, all graduate students must complete the Center for Teaching Excellence Graduate Academy. The department will make every effort to provide a primary teaching opportunity for doctoral students at least once during the student's program. Recommendations for teaching positions will be guided in part by the student's teaching record. Students are encouraged to gain insight into college teaching through the Department's Professionalization Program.

08/12

Summary of Ph.D. Requirements

- ≥ 64 credit hours
- Course requirements
 - GEOG 471
 - GEOG 491
 - 2 methods classes – quantitative or qualitative, see web site for some options
 - Competence in research technique
- Minor
 - ≥ 16 hours outside Geography, in one or at most two fields
- Departmental Exam (3rd semester)
 - Oral and written components
 - Covers basic concepts, research methods, area of specialization
 - Exam committee – 3 faculty members, 2 from Geography
- University Preliminary Exam (4th semester)
 - Prepare dissertation proposal
 - Present proposal at a graduate or departmental colloquium
 - Prelim exam involves a defense of the proposal
 - Committee – at least 4 faculty members, majority from Geography, at least 2 tenured
- Dissertation preparation and defense
 - Original research and a substantial contribution to knowledge
 - Well written and in an acceptable format
 - Oral defense

Ph.D. Time Line for students entering with a Master's degree

(a very ambitious 3-year program)

YEAR 1 (PhD):

Fall:

- Coursework*, including GEOG 471
- Meet regularly with faculty advisor

Spring

- Coursework*, including GEOG 491 [or take GEOG 491 in the spring semester of year 2 if you need more time to develop a dissertation topic]
- Discuss dissertation topics with advisor
- Develop dissertation proposal in GEOG 491
- Meet with faculty advisor to discuss plans and deadlines for departmental exam

YEAR 2 (PhD):

Fall

- Coursework (this can include GEOG 595 and GEOG 599)
- Form departmental exam committee (at least 3 faculty members including advisor, with a majority from Geography)
- Refine dissertation proposal with advisor
- Form dissertation committee (at least 4 faculty members with a majority from Geography and at least 2 tenured faculty)
- Take Departmental Exam

Spring

- Coursework (this can also include GEOG 595 and GEOG 599)
- Present dissertation at a graduate or departmental colloquium
- Take University Preliminary Exam

YEAR 3 (PhD):

Fall

- Course registration (mainly GEOG 595 and GEOG 599)
- Dissertation research and writing
- Meet regularly with advisor and committee
- Start applying for teaching/research positions
- Consider participating in the Department's Professionalization Program

Spring

- Course registration (mainly GEOG 595 and GEOG 599)
- Dissertation writing
- Apply for graduation
- Dissertation: Finish writing dissertation
 - Schedule dissertation defense
 - Dissertation defense and deposit
- Graduate!!

In planning courses, remember that you need:

- at least 64 semester hours
- Two methods classes
- Minor requirement -- ≥ 16 hours in a field(s) outside geography
- Satisfy any specific course requirements for your program area

Professional development is also very important:

- Gain teaching experience, if you want to go into teaching
- Attend conferences
- Present your research at conferences
- Submit papers for publication
- Network with colleagues in your field

2) For Students Entering With A Bachelor's Degree

This option provides an accelerated track to obtain the Ph.D. degree for highly qualified students who do not yet have a Master's degree. The program emphasizes academic, research and professional development tailored for the Ph.D. degree so that students can move quickly into doctoral studies. A Master's degree, earned after completing certain requirements, is less emphasized than the Ph.D. This option is aimed at highly motivated and academically qualified students who have a strong commitment to earning a Ph.D. degree. The program is designed to take approximately 5 years, although the actual time to degree is likely to vary. Alternatively, students with a Bachelor's Degree may wish to consider applying to the Master's program with a view to applying to the Ph.D. program in the second year.

Advising

Most students enter the Ph.D. program intending to work with a particular faculty member. The advisor, who may be any member of the GIS Department graduate faculty, will aid the student in formulating a tentative degree program comprising the most appropriate courses according to the student's background, interests, and career objectives. The advisor and student should meet regularly to discuss progress and future plans. Effective communications between student and advisor are critical for Ph.D. success. Either the student or the faculty advisor is free at any time to request a change in advising assignment.

Late in the spring semester of the first year, the student and his/her advisor will select two additional faculty members to serve on the student's Advisory Committee. The majority of the committee members must be faculty members of the Department of Geography and Geographic Information Science at UIUC. The student, advisor, and other committee members will meet at the end of this semester and near the end of every semester thereafter (until the student earns a Master's degree), each time discussing the student's progress with him/her and reporting that progress to the Graduate Committee through the advisor. Changes to the Advisory Committee may be made at any time with approval of both the student and advisor.

Ph.D. Requirements

General

The Graduate College requires that at least 96 hours of graduate coursework be completed for the Ph.D. degree. Graduate coursework is defined as courses at the 400-level or above.

The program of study for the Ph.D. for students entering the program with a Bachelor's degree has two distinct phases. The first two years are primarily devoted to coursework and completion of a research paper of publishable quality or thesis which is reviewed by the student's Advisory Committee. Based on the research paper or thesis and the student's performance in the program, the committee decides whether or not the student is eligible to continue in the Ph.D. program beyond the second year. At this stage a student may be awarded a Master's Degree without being given permission to continue in the Geography program. The second phase of the program involves completion of Ph.D. requirements including additional course requirements, the departmental exam, University Preliminary Exam and dissertation.

All graduate students are required to maintain a 3.0 (B) or better G.P.A. Any required course must be passed with an A or B grade. Although the students are informed of their status during their entire

graduate program, the primary responsibility for meeting Graduate College and departmental requirements, and for insuring good progress toward degree completion, lies with the student.

Course Requirements

1. GEOG 471 (Introduction to Contemporary Geographic Thought). This course is an examination of recent trends in geographic thought. Students are strongly encouraged to take Geography 471 during their first semester.
2. GEOG 491 (Research Methods in Geography). This course examines geographic research design and methodology. It is designed to provide students with guidance in preparing and completing a research proposal in their area of interest, preferably one that they will then complete as part of their degree program. Students are strongly encouraged to take Geography 491 during their second semester.
3. Advanced (500-level) coursework requirement. Students must complete at least 12 credit hours in 500-level courses, and at least 8 or the 12 hours must be in Geography.
4. Methods Requirement. All Ph.D. students entering the program with a Bachelor's degree must take at least two graduate-level courses on analytical research methods from the options listed below. At least one of these courses must be in geographic information systems (GIS) or related geospatial techniques. Appropriate GIScience courses below are identified with an asterisk (*). Other GIScience courses in and outside Geography may be used to fulfill this requirement with the permission of the student's advisor and the Director of Graduate Studies.
 - GEOG 439 Health Applications of GIS*
 - GEOG 460 Air Photo Interpretation*
 - GEOG 467 Dynamic Simulation of Resource Modeling
 - GEOG 473 Map Compilation and Construction*
 - GEOG 476 Applied GIS to Environmental Studies*
 - GEOG 477 Introduction to Remote Sensing*
 - GEOG 478 Techniques of Remote Sensing
 - GEOG 479 Advanced Geog Info Systems
 - GEOG 480 Principles of GIS*
 - GEOG 489 Programming for GIS
 - GEOG 556 Regional Science Methods
 - GEOG 570 Spatial Data Analysis
 - GEOG 587 Qualitative Research Methods
 - SOC 583 Qualitative Research Methods

Other graduate-level methods courses offered in Geography also count towards the methods requirement. Courses from other departments may be applied to this requirement with the permission of the student's faculty advisor and the Director of Graduate Studies.

Building upon the methods requirement, doctoral students are required to demonstrate competence in a specific research technique. Techniques may include: a foreign language (to the level of passing the ETS reading examination); quantitative or qualitative methods; GIS; cartography or other alternatives from outside the department. The student's advisor is responsible for defining the appropriate level of competency required.

In addition to these formal requirements, the department holds a strong expectation that graduate students will attend the department and graduate student colloquium series on a regular basis. Such

attendance is an important part of the student's professional development and their role in maintaining the department as a vibrant intellectual community.

Each student must also fulfill program requirements specific to his/her specialty area (see relevant program statements for: Society, Space and Environment; Geographic Information Science; or Rivers, Watersheds, and Landscape Dynamics.)

Minor

Each student must complete a minor consisting of at least 16 hours earned outside the department in a field or fields related to the student's interests in geography. If more than one minor field is offered, the candidate must earn at least 8 hours in each; with his/her advisor's approval the student may offer a topical minor consisting of related courses in several fields, as one half of a split minor.

It is important for students to note that Geography 595 classes may be offered for a letter or Credit/No Credit grade. The department permits students to take a maximum of 8 credit hours of Geography 595 courses for an Credit/No Credit grade. Students are not permitted to take Credit/No Credit grades within their declared program of specialization, nor to use Credit/No Credit grade courses to meet the minimum departmental requirement of two 500-level classes, or to meet stated minimum requirements for a minor.

Doctoral Candidacy and Examinations

1. **Research Paper:** During the second year, the student will prepare, under the direction of his/her advisor, a research paper or thesis of publishable quality. The paper will be prepared in the format of a journal article and presented to the student's Advisory Committee for review and approval. The Advisory Committee will review the student's research paper or thesis and decide whether or not the student is eligible to continue in the Ph.D. program. A copy of the research paper and a form signed by committee members describing the outcome of the research paper review will be placed in the student's file.

Students who successfully complete the research paper or thesis and complete at least 32 credit hours of graduate coursework, including course requirements 1-4 above, will be awarded a Master's degree in Geography.

2. **Departmental Exam:** After the successful completion of the research paper or thesis and permission to continue to the Ph.D. program has been granted, the student, in consultation with their advisor, will form a Departmental Exam Committee. The Committee will consist of 3 members of the Graduate Faculty, the majority from GIS. By the end of his/her sixth semester in residence, the student will take a written and oral *departmental examination*. A student must have approval for taking the exam, using the [GGIS Departmental Examination Request Form](#) two weeks prior to exam date. It will be both evaluative and diagnostic, and will focus on the program area of interest (e.g., GIScience, physical geography, etc.), as well as the student's specialty area within the program. The written examination will consist of at least one question on each of the following topics:
 - a. Basic concepts and literature of the program area.
 - b. Research methods currently used in the program area.
 - c. An area of specialization within the program area.

The advisor will be responsible for assembling the questions and administering the written examination. Each question will then be evaluated by the person who wrote the question, and the results will be circulated to the entire committee. Following this, an oral examination will be held to further examine the student's abilities and progress. The possible outcomes are:

- a. Pass; no major deficiencies.
- b. Fail; remediable deficiencies. If there are remediable deficiencies, the committee will identify them, specify the nature of the remedial work to be done, specify a deadline for its completion, and specify a set of criteria for its evaluation. Failure to meet these requirements will result in a "fail"; successful completion will result in a "pass."
- c. Fail; major deficiencies. If deficiencies are serious enough that, in the committee's judgment, the probability of the student's success in the Department's Ph.D. program is low, a "fail" will be recommended. In this case, the student may appeal through established procedures.

Upon completion of the written and oral examinations, the advisor is responsible for completing the [GGIS Departmental Exam Results Form](#) and placing a copy of the written questions, written answers, and the committee's decision in the student's file. This requirement must be met for degree completion.

3. **University Preliminary Exam and Dissertation Proposal:** Upon completion of a successful departmental exam a student in consultation with their advisor will form a Preliminary Exam Committee consisting of 4 members of the Graduate Faculty, at least 2 of which must be members of the GGIS department. In the seventh semester the student will prepare a written dissertation proposal and distribute the proposal among committee members for comment. Since exposure of one's ideas to the critical review of peers and faculty is an important learning experience, each Ph.D. student is required to make a public presentation of his/her dissertation proposal in a graduate or departmental colloquium.

Two weeks in advance of the presentation, the title and abstract of the proposal will be circulated to the GGIS community. A complete written version of the proposal will be given to the committee and a paper copy to the department to be made available for perusal at least one week before the presentation.

As soon as possible after the colloquium presentation, the student will take the oral *University Preliminary Examination*. The preliminary examination will be administered by a committee appointed by the Graduate College upon recommendation by the advisor and student with the concurrence of the Department Head. Students must be enrolled for the entire academic term in which the preliminary exam occurs. According to Graduate College regulations, the committee must include at least four voting members, including three members of the graduate faculty and two tenured members of the UIUC faculty. The examination will focus primarily upon a defense of the dissertation proposal but may include questioning and discussion on the student's area of specialty and minor field. The student, committee chair, and at least one additional voting member of the committee must be physically present for all oral components of the entire examination (i.e., presence by video or teleconference is not acceptable). If the committee has more than one chair, all chairs must be physically present; in these cases, no additional voting member is required to be physically present. The student, the chair of the committee, and one voting member of the committee must be present in person throughout the oral component of the examination. Other members of the committee may participate via teleconference or other electronic media during the examination, deliberation and results determination of all oral components of the examination. The outcome, determined by majority vote, may be: admission to candidacy; admission to candidacy denied pending the removal of apparent deficiencies and re-examination; or, failure with a request that the student withdraw from the program. Students who are

failed may retake the exam one additional time. The committee chair is responsible for convening the committee, conducting the examination, and submitting the Preliminary Exam Result Form to the GGIS Department and to the Academic Services unit of the Graduate College.

A student's failure to schedule the preliminary examination within five semesters of enrollment after entering the Ph.D. program will subject his/her record to review by an evaluation committee.

Dissertation

The dissertation is based on original research and must be a substantial contribution to knowledge. The candidate is encouraged to review progress regularly with his/her committee (usually identical to the preliminary examination committee) and especially with his/her advisor. It is the candidate's responsibility to comply with all Graduate College and GGIS requirements concerning the format of the dissertation. Format guidelines are available on the [Graduate College Thesis Requirements](#) web page. The faculty member responsible for checking the format may also be consulted for guidance. Candidates are encouraged to complete their dissertation in residence.

Final Examination and Final Examination Committee

After the dissertation is provisionally accepted by the committee, an oral defense, known as the Final Examination, is mandatory. Students must be enrolled for the entire academic term in which the Final Examination occurs. Outcome of that defense may be pass the candidate with no revisions required, pass the candidate pending revision of the dissertation, or fail the candidate. Students who are failed may retake the exam one additional time.

The final examination committee is appointed by the dean of the Graduate College, upon recommendation of the Head or DGS of the GGIS Department. The student's thesis advisor (i.e. Director of Research) need not be the chair of the committee, but this individual must have an affiliate or adjunct appointment in the Department of Geography and should maintain an active research program. The chair of the final examination committee must be a member of the Graduate Faculty of the Department of Geography and Geographic Information Science. The committee chair is responsible for convening the committee, conducting the examination, and submitting the Final Examination Result Form to the GGIS Department and to the Academic Services unit of the Graduate College. The student, committee chair, and at least one additional voting member of the committee must be physically present for all oral components of the entire examination (i.e., presence by video or teleconference is not acceptable). If the committee has more than one chair, all chairs must be physically present; in these cases, no additional voting member is required to be physically present. All voting members of the committee must be present in person or participate via teleconference or other electronic media during the examination, deliberation and results determination of all oral components of the examination.

A copy of the completed dissertation must be submitted to the advisor not less than four weeks prior to the scheduled oral defense of the document. The complete dissertation must also be submitted to the Committee at least two weeks in advance of the defense. In no case will a dissertation be accepted less than four weeks prior to the terminal date for Ph.D. final examinations set by the Graduate College for each semester and summer session. The oral exam should be scheduled with close attention to the Graduate College deadlines. Students should not assume that their committee members will be willing to conduct an exam during the summer sessions or without adequate time to evaluate the dissertation.

Teaching Opportunities

Graduate students who specify college or university teaching as one of their primary career objectives are strongly encouraged to gain teaching experience by serving as a Teaching Assistant and by serving as primary course instructor. Before becoming a teaching assistant, all graduate students must complete the Center for Teaching Excellence Graduate Academy. The department will make every effort to provide a primary teaching opportunity for doctoral students at least once during the student's program. Recommendations for teaching positions will be guided in part by the student's teaching record. Students are encouraged to gain insight into college teaching through the Department's Professionalization Program.

Combined MA/Ph.D. degree requirements

- ≥ 96 credit hours
- Course requirements
 - GEOG 471
 - GEOG 491
 - 2 methods classes, including one GIS class – see web site for details
 - ≥ 12 hours at the 500 level, at least 8 of those hours in Geography
 - Competence in research technique
- Minor
 - ≥ 16 hours outside Geography, in one or at most two fields
- Research Paper (4th semester)
 - Research paper of publishable quality
 - Present research paper to advisory committee
 - Advisory committee consists of 3 faculty members, at least 2 from Geography
 - Advisory committee decides if student is eligible to continue for Ph.D.
- Departmental Exam (6th semester)
 - Oral and written components
 - Covers basic concepts, research methods, area of specialization
 - Exam committee – 3 faculty members, 2 from Geography
- University Preliminary Exam (7th semester)
 - Prepare dissertation proposal
 - Present proposal at departmental colloquium
 - Prelim exam involves a defense of the proposal
 - Committee – at least 4 faculty members, majority from Geography, at least 2 tenured
- Dissertation preparation and defense
 - Original research and a substantial contribution to knowledge
 - Well written and in an acceptable format
 - Oral defense

PhD Time Line – Combined Master’s and Ph.D. program (5-year program):

YEAR 1:

Fall:

- Coursework*, including GEOG 471

Spring

- Choose faculty advisor
- Coursework*
- Discuss research paper topics with advisor. Work on research over summer
- Meet with faculty advisor to discuss plans and deadlines for departmental exam
- Form Advisory Committee (at least 3 faculty members including advisor, with a majority from Geography)

YEAR 2:

Fall

- Coursework*
- Conduct research for Research Paper
- Start writing Research Paper

Spring

- Coursework* (this can also include GEOG 595 and GEOG 599)
- Finish Research Paper
- Submit research paper to committee for approval
- Meet with faculty advisor and advisory committee to discuss plans, reading lists and deadlines for departmental exam

YEAR 3:

Fall:

- Coursework*, (this can include GEOG 595 and GEOG 599)
- Discuss dissertation topics with advisor

Spring

- Coursework*, including GEOG 491
- Develop dissertation proposal in GEOG 491
- Take Departmental Exam
- Form dissertation committee (at least 4 faculty members with a majority from Geography and at least 2 tenured faculty)

YEAR 4:

Fall

- Coursework – mainly or only GEOG 595 and GEOG 599
- Complete dissertation proposal
- Present dissertation proposal at a graduate or departmental colloquium
- Take University Preliminary Exam
- Apply for grants and fellowships for dissertation research

Spring

- Registration – mainly or only GEOG 595 and GEOG 599
- Conduct dissertation research

YEAR 5:

Fall

- Registration -- only GEOG 599
- Dissertation research and writing
- Meet regularly with advisor and committee
- Start applying for teaching/research positions
- Consider participating in the Department's Professionalization Program

Spring

- Registration – Only GEOG 599
- Apply for graduation
- Dissertation: Finish writing dissertation
 - Schedule dissertation defense
 - Dissertation defense and deposit
- Graduate!!

*In planning courses, remember that you need:

- at least 96 semester hours
- Two methods classes
- Minor requirement -- ≥ 16 hours in a field(s) outside geography
- Satisfy any specific course requirements for your program area

Professional development is also important:

- Gain teaching experience, if you want to go into teaching
- Attend conferences
- Present your research at conferences
- Submit papers for publication
- Network with colleagues in your field

Master's Program

The Department of Geography and Geographic Information Science awards the Master of Arts or Master of Science degree to those who successfully complete the Department's general M.A./M.S. requirements (this document) and the requirements of one of the Department's programs (Geographic Information Science, Society, Space and Environments, Rivers, Watersheds, and Landscape Dynamics) which are described separately. In exceptional cases a student may obtain a degree outside a normal program through separate agreement with an individual faculty member and approval of the Director of Graduate Studies.

The purpose of the Master's program is to provide a framework by which the candidate may obtain competence in at least one of the systematic branches of geography and support this with mastery of at least one primary research technique and a basic understanding of geographic information systems (GIS). Master's degree work incorporates formal class work, seminars and direct research experience.

Admission to a Master's degree program is restricted to those applicants who have demonstrated high academic ability (a 'B' average is a generally accepted minimum requirement). A complete application requires: a completed online application; three letters of reference, official transcripts from each academic institution attended, and an official G.R.E. (Verbal/Quantitative/Analytical Writing, taken within the last 2 years) record. Applicants are advised that the admitting committee studies the student's statement of intent very carefully.

Students whose native language is not English are required to meet the [English Proficiency Requirements](#) set by the Graduate College for admission. The policy for international teaching assistants can also be found on the Graduate College web site at [English Proficiency Requirement for International Teaching Assistants](#). Graduate College regulations preclude review of any application from a foreign student that does not include a TOEFL score.

Advising

Some students enter the Master's program intending to work with a particular faculty member. The advisor, who may be any member of the Geography Department graduate faculty, will aid the student in formulating a tentative degree program comprising the most appropriate courses according to the student's background, interests, and career objectives. The advisor and student should meet regularly to discuss progress and future plans. Effective communications between student and advisor are critical for Master's success. Either the student or the faculty advisor is free at any time to request a change in advising assignment.

Those students entering the program without an intended advisor will consult with the Director of Graduate Studies at the time of arrival. At these meetings the student's career objectives and primary interests within the discipline and cognate fields will be reviewed, as well as any deficiencies and appropriate measures to overcome them. The advisor will assist the student in selecting courses for the first semester.

Requirements of the Master's Program

The Graduate College requires that at least 32 hours of course work be completed for a Master's degree. 12 of the 32 hours must be in 500 level courses, and at least eight of these twelve must be in Geography. An overlapping requirement is that a total of at least 16 400/500 level hours must be accumulated in Geography.

The University has specific and stringent requirements concerning the transfer of credit. Please see the Graduate College web site for [Transfer of Credit](#) requirements.

Course Requirements:

1. GEOG 471 (Introduction to Contemporary Geographic Thought). GEOG 471 provides students with a review of the geographic methodologies and philosophies that have prevailed in recent decades, as well as those of the present. In addition, this course provides students with exposure to the research methodologies of a variety of departmental faculty members. It is strongly recommended that the student take this course in the first semester of study.
2. GEOG 491 (Research Methods in Geography). GEOG 491 is designed to provide students with appropriate guidance in preparing and completing a research proposal in their area of interest, preferably one that they will then complete as part of their degree program. It is strongly recommended that the student take this course in the second semester of study.
3. GIS Requirement. All Master's students are required to take at least one course on geographic information systems (GIS) and related geospatial techniques. Options include:
 - GEOG 439 Health Applications of GIS
 - GEOG 460 Air Photo Interpretation
 - GEOG 473 Map Compilation and Construction
 - GEOG 476 Applied GIS to Environmental Studies
 - GEOG 477 Introduction to Remote Sensing
 - GEOG 478 Techniques of Remote Sensing
 - GEOG 479 Advanced GEOG Info Systems
 - GEOG 480 Principles of GIS
 - GEOG 489 Programming for GIS

Other graduate-level GIS courses may be applied to this requirement with the permission of the student's faculty advisor and the Director of Graduate Studies.

In addition to these formal requirements, the department holds a strong expectation that graduate students will attend the department and graduate student colloquium series on a regular basis. Such attendance is an important part of the student's professional development and their role in maintaining the department as a vibrant intellectual community.

Each student must also fulfill program requirements specific to his/her specialty area (see program statements for: Geographic Information Science; Rivers, Watersheds, and Landscape Dynamics; Society, Space and Environments). It is important to note that some programs (e.g., Rivers, Watersheds, and Landscape Dynamics) require a student to take the thesis option in completing their degree.

Geography 595 classes may be taken for a letter grade of Credit/No Credit; however, the department restricts the use of Credit/No Credit option as follows:

- a. The department restricts a student to a maximum of 8 Credit hours Credit/No Credit grades, including the thesis if this option is taken.
- b. Students are not permitted to use Credit/No Credit grades to meet the Graduate College's minimum requirement of three 500-level classes.

The department requires all graduate students to maintain a 3.0 (B) average or better. All courses that are required, either by the department or by the student's program of specialization, must be passed with an A or B grade. For elective courses the student's average grade must be 3.0.

Research Paper Requirement:

Students are required to initiate and complete a research paper or projects; completion is understood to mean production of an acceptable written thesis or papers. For students in the Geographic Information Science and Society, Space and Environments programs this requirement may be fulfilled in one of the following ways:

a. Research Paper Option: Two written research papers which address substantive research questions; these papers will be submitted formally to the examining committee prior to the oral examination. Such papers are typically derived from 500-level research seminars, independent study, planned summer field experience, or from an internship.

b. Thesis Option: Successful completion of a Master's thesis. A maximum of 8 semester hours of thesis research (GEOG 599) may be counted towards the Master's degree;

The research papers or thesis must be presented in a style used by one of the major professional journals. The student will be expected to answer questions about the research papers/thesis during the Master's examination.

Final Examination for Master's Degree

The student must have completed or must be enrolled in all courses needed for the degree and must have completed all other requirements before taking the Master's final examination.

The student and his/her advisor will select two additional faculty members to serve on the student's Advisory Committee. The majority of the committee must be faculty members of the Department of Geography and Geographic Information Science at UIUC.

The final examination for students taking the "Research Paper Option" (option a.) will consist of both oral and written segments, but it will be viewed as a single unit for purposes of evaluating the student's performance. The written portion will consist of approximately five questions assembled by the advisor: one on the student's research technique, one on geographic philosophy and methodology, and three on the student's program area. The question on methodology will deal primarily with research approaches being used in the student's area of the discipline as illustrated by recent books and periodicals. Within two weeks after the written portion is completed, the oral portion will be given. The committee will examine the student to assess his/her ability in analytical thinking and general knowledge of the contemporary situation in the declared program area. Students should not assume that their committee members will be willing to conduct an exam during the summer sessions or without adequate time to evaluate the dissertation.

Students who complete a thesis (option b) are not required to undertake a final written examination. However, they are required to undertake an oral defense of their thesis.

As a result of either final examination format the committee will award the student a grade of:

- a. Pass; no major deficiencies. If taking the thesis option the student is then responsible for meeting the Graduate College requirements to deposit the thesis.
- b. Fail; remediable deficiencies. If there are remediable deficiencies the committee will identify them, specify the nature of the remedial work to be done, specify a deadline for its completion, and specify a set of criteria for its evaluation. Failure to meet these requirements will result in a "fail"; successful completion will result in a "pass."
- c. Fail; major deficiencies. If deficiencies are serious enough that, in the committee's judgment, the student does not meet acceptable standards for a Master's degree from this department, a "fail" will result. In

this case, the student may appeal through established procedures to the Department's Faculty Advisory Committee. The appeal will then be rejected or allowed. If allowed, the student will be re-examined orally by a new committee whose recommendation will be final.

NOTE: Whatever the outcome of the student's examination, the advisor is required to deposit in the student's file a written record of the examination result, as well as copies of the examination questions and written answers if the research paper option was followed.

Elective Courses

Selected with consent of advisor. Note the following requirements and restrictions.

- You must complete at least 16 400/5000 level hours in geography. Usually this is met by GEOG 471, GEOG 491, a GIS course, and two 500 level GEOG courses.
- A maximum of 2 elective courses may be taken Credit/No Credit (including a thesis).
- If you write a thesis, only 8 hours of GEOG 599 credit will apply towards the minimum 32 hours needed for the Master's degree. Additional GEOG 599 credit may be earned in the course of completing the thesis, but will not reduce the 400/500 level credit needed to complete the degree requirement below the minimum level of 24 hours.

NOTE: This is an integration of university and departmental requirements and, therefore, represents the minimum requirements. Individual graduate programs in the department must meet these minimum requirements, but may also have additional ones.

Master's degree requirements

- ≥ 32 credit hours
- Course requirements
 - GEOG 471
 - GEOG 491
 - One GIS class
 - ≥ 12 hours at the 500 level, at least 8 of those hours in Geography
- Thesis option
 - Prepare and defend a Master's thesis
 - Independent research in your area
 - Thesis committee – 3 faculty members, 2 from Geography
- Exam option
 - 2 research papers (may be seminar/class papers)
 - Oral and written exams
 - Exam committee – 3 faculty members, 2 from Geography

Master's (MA or MS) Time Line

YEAR 1 (MA/MS):

Fall:

- Coursework*, including GEOG 471
- Choose faculty advisor

Spring

- Coursework*, including GEOG 491
- Meet with faculty advisor to discuss plans and deadlines for Master's thesis or exam
- Thesis option: Identify topic for Master's thesis
- Select thesis committee (at least 3 faculty members including advisor, with a majority from Geography; two must be tenured)

YEAR 2 (MA/MS):

Fall

- Coursework (this can include GEOG 595 and GEOG 599)
- Thesis option:
 - Conduct and complete research for thesis
 - Start writing thesis
 - Discuss deadlines and defense/exam date with faculty advisor
- Exam option:
 - Identify 2 research papers for requirement
 - Identify areas/topics for Master's exam
 - Select exam committee

Spring

- Coursework (this can include GEOG 595 and GEOG 599)
- Apply for graduation
- Thesis option: Finish writing thesis
 - Schedule thesis defense
 - Thesis defense and deposit
- Exam option: Discuss content of exam with faculty advisor and committee
 - Schedule exam
 - Complete exam
- Graduate!!

*In planning courses, remember that you need:

- At least 32 credit hours
- One GIS class
- At least 12 hours at the 500 level, with at least 8 of those hours in Geography (this can include GEOG 595 and GEOG 599)
- Satisfy any specific course requirements for your program area

Geographic Information Science

Program in GIS

The Department of Geography and Geographic Information Science (GGIS) at the University of Illinois offers a graduate program leading to both the Master's and Ph.D. degrees with specialization in Geographic Information Science (GIScience). The program emphasizes how digital geographic information is created, analyzed and used in examining economic, ecological, physical and social phenomena at a variety of spatial scales. Students can specialize in: (1) GIScience methods and theory in areas such as: geographic information systems, dynamic modeling, remote sensing, interregional modeling and spatial analysis; or (2) the application of GIScience methods in economic, health, urban, or environmental geography. For application information, contact:

University of Illinois at Urbana-Champaign
Department of Geography and Geographic Information Science
256 Computing Applications Building
605 Springfield Avenue
Champaign IL 61820
www.geog.illinois.edu

GIS Statement

Revolutionary changes are taking place in how we process, analyze and model geographic information. The Geographic Information Science program examines the nature of digital geographic information, the tools and methods for analyzing and modeling such information, and the value of geographic information for understanding economic, environmental and social transformations at the local, regional, national and global scales. We emphasize methodological training in GIScience as the foundation for using geographic information to understand these changes and for developing innovative new tools to analyze and explore geographic information in the decades to come. Students also gain a critical awareness of the roles of geographic information and GIScience in society and the strengths and limitations of GIScience tools and technologies.

Program Emphases in GIS

GIScience methods and development

- a. dynamic systems modeling
- b. input-output analysis
- c. Cyber GIS
- d. parallel and distributed computing
- e. spatial data analysis

Economic geography and regional science

- a. economic impact analysis
- b. regional economic development
- c. transportation modeling
- d. health and health care
- e. access to services and employment

Environmental applications

- a. dynamic modeling of ecological systems
- b. dynamics of watersheds and fluvial systems remote sensing analysis of land cover disturbance and change

GIS Facilities

The Department of Geography and Geographic Information Science has two state-of-the-art laboratories for teaching and research in GIScience. The teaching laboratory consists of 30- networked workstations equipped with a wide variety of software for GIS, image processing, air photo interpretation, and spatial/statistical analysis. The second computer laboratory is devoted to student and faculty research papers and course projects. This lab contains 14-networked computers connected to the main departmental computer network and equipped with a common suite of GIScience software. In addition to the two laboratories, students have access to an array of input/output devices, including a large-format, color plotter. Campus-wide facilities include the [National Center for Supercomputing Applications](#), a world-class facility for supercomputing.

[CyberInfrastructure and Geospatial Information Laboratory](#) (CIGI), founded by Dr. Shaowen Wang, includes a number of faculty, staff, and students from multiple institutions who have diverse disciplinary expertise such as Computational and Information Sciences, Computer Science, Engineering, Environmental Sciences, Geography, Hydrology, Plant Biology, and Statistics. The CyberInfrastructure and Geospatial Information laboratory develops cyberinfrastructure (CI) capabilities to advance GIScience and geospatial problem solving. Current research focuses on the following themes:

- Computationally intensive spatial analysis and modeling
- Parallel and distributed computing
- High-performance and collaborative GIS
- Large-scale geospatial problem solving
- Grid information systems and interoperability
- Cyberinfrastructure-based geospatial problem-solving environments and applications

[Regional Economics Applications Laboratory](#) (REAL) is a state-of-the-art facility for urban and regional systems analysis. Formed as a joint venture between the Federal Reserve Bank of Chicago and the University of Illinois, the laboratory has developed complex urban and regional analytical models to provide policy-makers with the capability of making informed decisions. A longstanding focus is the development of regional econometric input-output models. Such models have been completed for several Midwestern states and metropolitan areas and for regional economies across the globe, including regions in Indonesia, Austria, Japan, and Brazil. Many graduate students are funded to work on these projects and acquire hands-on experience with urban and regional models and applications.

Program Prerequisites in GIS

Applicants to the GIScience program are expected to have completed: 1) a course in GIS or cartography; 2) an introductory statistics course.

Master's Program in GIS

Students must meet all GGIS requirements for the Master's degree including GEOG 471 (Recent Trends in Geographic Thought), and GEOG 491 (Research in Geography). In addition, students must take GEOG 379 (Principles of Geographic Information Systems) and at least three additional courses from the GIScience core. With permission of the faculty advisor, students may substitute GIScience-related courses offered in other departments. GIScience students are strongly encouraged to pursue the Thesis option for the Master's.

Ph.D. Program in GIS

For admission to the doctoral program in GIScience, a completed Master's degree with thesis is required. Students must meet all Departmental requirements for the Ph.D. degree including GEOG 471 (Recent Trends in Geographic Thought), and GEOG 491 (Research in Geography), or their equivalents. The GIScience program also requires GEOG 479 (Advanced GIS), or GEOG 480 (Principles of GIS), or the equivalent, and additional graduate coursework in one or more specialized areas of GIScience, including at least one 500-level course. Students are encouraged to take GIScience-related courses in fields such as computer science, agricultural economics, econometrics and atmospheric sciences.

Core Courses in GIS

- GEOG 412: GIS and Society
- GEOG 439: Health Applications of GIS
- GEOG 460: Analysis and Interpretation of Aerial Photography
- GEOG 467: Dynamic Simulation of Natural Resource Problems
- GEOG 468: Biological Modeling
- GEOG 473: Map Compilation and Construction
- GEOG 476: Applied GIS to Envir Studies
- GEOG 477: Introduction to Remote Sensing
- GEOG 478: Techniques of Remote Sensing
- GEOG 479: Advanced GIS
- GEOG 480: Principles of Geographic Information Systems
- GEOG 481: Modeling Earth and Environmental Systems
- GEOG 489: Programming for GIS
- GEOG 556: Regional Science Methods
- GEOG 557: Seminar in Regional Science
- GEOG 570: Advanced Spatial Analysis

Participating Faculty

- Julie Cidell
- Jonathan Greenberg
- Geoffrey Hewings
- Mei-Po Kwan
- Sara McLafferty
- Shaowen Wang

Affiliated Faculty

- Marilyn O'Hara

River, Watershed and Landscape Dynamics Program

The Department of Geography and Geographic Information Science at the University of Illinois at Urbana-Champaign offers a graduate program leading to both the M.A. and Ph.D. degrees with a specialization in **River, Watershed and Landscape Dynamics**. The program is designed to provide students with a set of skills they can use to help solve societal problems and to achieve solutions to important scientific problems in physical geography that relate to the dynamics of rivers, watersheds and landscapes.

Program Emphases

Students wishing to enter the program are strongly urged to contact the participating faculty member most closely matching their prospective research interests. The program emphases are closely tied to current research interests of individual faculty members.

Statement

The **River, Watershed and Landscape Dynamics Program** builds upon the foundations of physical geography as an integrating science that examines the origins, contemporary development, and processes of the Earth's natural and human-modified surfaces. All participating faculty place strong emphasis on the theoretical underpinning of their research and teaching. The principal research themes of the program reflect the specialties of the participating faculty. Each of the participating faculty has strong links to other departments and/or programs on campus and a high proportion of the research conducted in the program has a strong interdisciplinary flavor. The Program has strong ties to the [Center for Water as a Complex Environmental System](#) housed in the [School of Earth, Society and Environment](#). It also maintains strong cross-campus connections with other water-related research programs in [Geology](#), [Civil and Environmental Engineering](#) and [Natural Resources and Environmental Sciences](#). Faculty in the program also maintain close working relationships with scientists in the [Illinois State Geological Survey](#), [Illinois State Water Survey](#), [Illinois Natural History Survey](#) and the [Illinois Water Science Center](#) of the U.S. Geological Survey, all of which are located on campus.

Participating Faculty

James Best
Jonathan Greenberg
Bruce Rhoads
Murugesu Sivapalan
Shaowen Wang

Affiliated Faculty (Faculty who have a formal appointment in Geography)

Gary Parker, Civil and Environmental Engineering (CEE) and Geology

Faculty Collaborators on Campus (teach related courses and serve on graduate student committees)

Marcelo Garcia, CEE
Praveen Kumar, CEE
Edwin Herricks, CEE
Ximing Cai, CEE
Mark David, Natural Resources and Environmental Sciences

Program Prerequisites

Students must already have completed, or take immediately upon entry into the program: 1) an introductory college calculus course (a one course minimum is required, but course work through calculus of several variables is recommended); 2) college physics.

MA/MS Program

The Master's program in the **River, Watershed and Landscape Dynamics Program** follows the guidelines of the Graduate School and the Department of Geography. Prospective students should appreciate that an important additional requirement is that the program requires master's candidates to undertake the thesis option. Participating faculty consider the research experience to be an essential ingredient of graduate training in physical geography. Students should also appreciate that the participating faculty will usually supervise graduate research in areas that fall within their expertise.

For a complete description of the M.A. requirements see the Department of Geography's brochure "The M.A./M.S. Program."

Ph.D. Program

The doctoral program in the **River, Watershed and Landscape Dynamics Program** follows the guidelines of the Graduate School and the Department of Geography. Although students in the doctoral program focus upon a specialized topic they are expected to develop a general familiarity with all aspects of contemporary thought related to river, watershed and landscape dynamics. Complementary course work outside the department in the form of a minor (see departmental requirements) is required.

Graduate Courses in the Department

- GEOG 401 Watershed Hydrology
- GEOG 406 Fluvial Geomorphology
- GEOG 408 Watershed Analysis
- GEOG 460 Analysis & Interpretation of Aerial Photography
- GEOG 467 Dynamic Simulation of Natural Resource Problems
- GEOG 468 Biological Modeling
- GEOG 575 Alluvial Boundary Layer Dynamics

Related Graduate Courses in Other Departments

- CEE 432 Stream Ecology
- CEE 450 Surface Hydrology
- CEE 453 Urban Hydrology and Hydraulics
- CEE 551 Open Channel Hydraulics
- CEE 559 Sediment Transport
- NRES 403 Watersheds and Water Quality
- NRES 490 Surface Water System Chemistry
- GEOL 440 Sedimentology and Stratigraphy
- UP 405 Watershed Ecology and Planning

Society, Space & Environments

Program

The Department of Geography and Geographic Information Science (GGIS) at the University of Illinois at Urbana-Champaign offers a graduate program leading to both the M.A. and Ph.D. degrees with specialization in Society, Space and Environments. The program has four emphases:

- 1) Development Geography
- 2) Urban Geography
- 3) Politics of the Environment
- 4) Geographies of Conflict

Statement

The Society, Space and Environments program builds upon the foundations of human geography as an integrating social science to examine the interplay of socio-spatial processes involved in the shaping of the Earth's natural and built environments.

Scholarly work in this track rests on the belief that theory is important to informed human geographical investigation.

Research methods embrace both qualitative techniques (including field observation, interviewing, survey research, archival search, and discourse analysis) and quantitative techniques (including descriptive and inferential statistics, GIS, remote sensing, spatial analysis, social network analysis, and content analysis). Topical emphases include demographic processes, health care inequality, land use change, political ecology, gender, democracy and environmental justice, geography of conflicts, and urban social and political processes.

Program Emphases

1. Development Geography
 - Political ecology
 - African agrarian systems
 - Environment and development
 - Rural-urban interactions
 - Environment and health
2. Urban Geography
 - Spatial mismatch
 - Discourses of growth and redevelopment
 - Urban health inequalities
 - Urban political processes
 - Transportation and infrastructure
 - Urban political ecology
3. Politics and the Environment
 - Environmental policy
 - Resource conflicts
 - Environmental security
 - Social justice and democracy
 - Natural resource control
4. Geographies of Conflict
 - Spatial analysis of war
 - Geopolitics
 - Militarization
 - Just war theory

All four emphases are concerned with geographical change, conflict, and development either in historical or contemporary contexts.

Master's Program

Students must meet all GIS requirements for the Master's program, including Geography 471 (Introduction to Contemporary Geographic Thought), a GIS class, and Geography 491 (Research in Geography), or their equivalent. Students can pursue the Thesis option or the Exam Option for the M.A. Degree. The thesis option may be required for entry into subsequent Ph.D programs.

Ph.D. Program

Students must meet all GIS requirements for the Ph.D in Geography including Geography 471 (Introduction to Contemporary Geographic Thought) and Geography 491 (Research in Geography), or their equivalent. Students must also complete a formal minor (16 credit hours) through course work in one or two related fields. Advanced course work in research methods, including qualitative or quantitative methodologies, is also required. The dissertation must be within the advising competence of the faculty in the program and is expected to be an original contribution to the field and to involve the examination of geographic processes using appropriate research methodology.

Advanced Courses Offered

- GEOG 410: The Geography of Development and Underdevelopment
- GEOG 412: Geospatial Tech and Society
- GEOG 438: Geography of Health Care
- GEOG 439: Health Applications of GIS
- GEOG 446: Sustainable Planning Seminar
- GEOG 455: Geography of Sub-Saharan Africa
- GEOG 465: Transportation and Sustainability
- GEOG 466: Environmental Policy
- GEOG 467: Dynamic Simulation of Natural Resource Problems
- GEOG 481: International Environmental Cooperation
- GEOG 482: Challenges of Sustainability
- GEOG 483: Urban Geography
- GEOG 496: Climate & Social Vulnerability
- GEOG 520: Political Ecology
- GEOG 560: Spatial Epidemiology
- GEOG: 570: Advanced Spatial Analysis
- GEOG 587: Qualitative Research Methods
- GEOG 594: Seminar in Social Geography
- GEOG 595: Advanced Studies in Geography

Participating Faculty

- Thomas Bassett
- Trevor Birkenholtz
- Ashwini Chhatre
- Julie Cidell

- Geoffrey Hewings
- Ezekiel Kalipeni
- Mei-Po Kwan
- Sara McLafferty
- Jesse Ribot
- David Wilson

Affiliated Faculty

- Zsuzsa Gille, Sociology
- Faranak Miraftab, Urban and Regional Planning
- Paul Diehl, Political Science

GEOGRAPHY and GEOGRAPHIC INFORMATION SCIENCE

DEPARTMENTAL EXAMINATION REQUEST FORM

(QUALIFYING)

PART I

(Part 1 to be submitted 2 weeks before the examination.)

Date Form Submitted: _____

Student Name: _____

Degree Sought: _____

Student Address: _____

Phone: _____

Advisor Name: _____ Phone: _____

Date/s of exam: _____ Have you requested a room? _____

Date, time: _____ Day 1

Date, time: _____ Day 2

Date, time: _____ Day 3

GEOG 471 taken _____ semester

GEOG 491 taken _____ semester

How will the test be administered? _____

If you plan to email the questions to the Graduate Contact, please designate one other person to receive the questions.

Is the student allowed to use materials during the examination? Yes No

If yes, what materials are allowed? _____

The following committee of three faculty members, the majority from GGIS, has been nominated by the advisor and student and the student has asked each member to participate:

1. _____ 2. _____ 3. _____

Advisors signature: _____

Director of Graduate Studies signature: _____

Student is responsible for submitting Part I of the Departmental Examination Request Form at least 2 weeks in advance of the examination. Student is responsible for requesting an examination room.

ANNUAL REVIEW

Following the policy of the Graduate College the Geography program will conduct an annual review of all graduate students currently enrolled. The purpose of the review is to evaluate a student's progress and to identify an ongoing pathway to professional success. The philosophy of the program reflects the following quote: "Research suggests that formal annual evaluations tend to increase the numbers of students who complete, and are therefore preferable to sporadic and informal reviews . . . Some form of progress-tracking, annually or each semester, allows the student and supervisor to meet and establish objectives for the year. This ensures that both students and advisors be held accountable for timely progress and for constructive feedback"—Council of Graduate Schools, "Ph.D. Completion and Attrition"

The annual review of Geography program will be conducted in the middle of the Spring semester. The review will begin with a self-assessment using the Annual Progress Report form available online [provide URL]. Once the student has completed the form they will forward it to their advisor who will add comments on the student's progress and the plan for the upcoming academic year. Following Graduate College guidelines, the student and advisor must meet in person (Skype or a similar program is an option) to discuss the advisor's feedback. After this discussion the student and advisor must sign the form and forward it to the Director of Graduate Studies for a second review. If there is disagreement of opinion between the student and the advisor on the performance evaluation, proposed plan of action, or both, the Director of Graduate Studies must be informed explicitly by the advisor. The Department Head or other faculty member will provide the second review if the student's advisor is the DGS. It is stressed that the primary purpose of this review is to provide positive feedback and discussion to assist the student in their progress towards graduation and other career goals. The review will also be used as the basis for appointment and funding decisions. A meeting of the Committee of the Department will be held to discuss the annual reviews of every student.

Professional accomplishments: (conferences attended, workshop participation, grant proposals submitted, grants and awards, etc.)

Have any factors impeded your academic progress during the current year? If so, please discuss.

Briefly describe your academic and professional goals for 2013 – 2014:

Request for Funding – Academic Year 2013-2014:

1. Do you want to be considered for a Teaching Assistantship for 2013-2014? _____

2. Do you expect to have a Research Assistantship for 2013-2014? Yes No

a. If yes, with which professor or agency/department? _____

3. If you expect to have a source of funding other than TA or RA for 2013-2014, please list here.

4. Below, feel free to write any concerns or preferences regarding funding for 2013-2014.

TA or RA service during the past year: TA/RA _____ semester _____ percent
TA/RA _____ semester _____ percent

Fellowships held during the last year: _____

You should include a current CV, which should contain additional information of academic and professional activity and accomplishments previous to the last academic year.

Advisor's Comments

Student's Comments

Student Signature: _____

Date: _____

Advisor Signature: _____

Date: _____

Director of Graduate Studies Signature: _____

Date: _____

E-mail Policy

Following the Graduate College policy, the @illinois.edu email address should be used for all University related correspondence. The Department's support staff and Director of Graduate Studies will send e-mails to your @illinois.edu address only.

Deadlines

Students are responsible for their own registration and for ensuring the accuracy of their schedules. Students can check their registration online and print their schedules as needed. Students who find errors in their schedules should immediately correct these errors. Corrections must be completed before the deadline for adding or dropping a course as posted on the Graduate College web site.

The Graduate College provides announcements concerning academic deadlines, fellowship opportunities, and workshops each week through GradLinks. These email announcements and departmental emails are sent to your University of Illinois email address, @illinois.edu.

All Graduate College policies can be found on The Graduate College Handbook of Policy and Requirements for Students on the Graduate College web site at <http://www.grad.illinois.edu/gradhandbook>.

Academic Integrity

Responsible academic integrity and professional conduct are important for maintaining the high quality of research and education at the University of Illinois at Urbana-Champaign (UIUC). The UIUC official statement can be found on the Academic Human Resources web site at www.ahr.uiuc.edu/ahrhandbook/chap5. In addition, the School of Earth, Society, and Environments requires a Responsible Conduct of Research Training to be completed each year. Graduate students should also be aware of the policies regarding academic integrity and intellectual property on Graduate College Handbook for Students, Faculty and Staff at www.grad.illinois.edu/gradhandbook/chapter1.

It is expected that all graduate students in the Department of Geography and Geographic Information Science will read and adhere to the University of Illinois and Graduate College campus policies.

Web information

Geography and Geographic Information Science Courses, Schedules, and Requirements	http://geog.illinois.edu/
Check your own course schedule and financial responsibly:	http://illinois.edu/resourcesfor/student.html
Fellowship Information	https://uiucgrad.askadmissions.net/vip/
Financial Assistance	http://www.grad.illinois.edu/fellowships
Forms Used for Graduate Students	http://www.grad.illinois.edu/prospective/financial
Graduate Assistantship Clearinghouse	http://www.grad.illinois.edu/forms/
Graduate College	http://www.grad.illinois.edu/clearinghouse/
Graduate College Academic Calendar	http://www.grad.illinois.edu/
Graduate College Handbook	http://www.grad.illinois.edu/general/calendar/current
International Student and Scholar Services (ISSS)	http://www.grad.illinois.edu/gradhandbook
Registration Checklist	http://iss.illinois.edu/
Student Health Insurance	http://registrar.illinois.edu/registration/checklist.html
Student Rights and Responsibilities	http://www.si.uiuc.edu
Tuition and Fee Rates	http://www.admin.uiuc.edu/policy/code/index.html
	http://www.registrar.illinois.edu/financial/tuition.html