



# **Guide to Graduate Studies**

## Programs

M.S. in Geosciences

Ph.D. in Chemistry with Concentration in Geology

Professional Certificate in Geographic Information Science

***2015-2016***

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## I. General Information

Welcome to the Department of Geosciences at Georgia State University! The Department of Geosciences was formed in January 2006 from the Department of Geology and the Geography Program within the former Department of Anthropology and Geography. The department offers degrees at both the undergraduate and graduate levels. Currently, at the graduate level the Department offers an M.S. in Geology, a Ph.D. in Chemistry with a concentration in Geology, and a Professional Certificate in Geographic Information Systems (CGIS). The policies outlined here are additional to those found in the University's *Graduate Catalog* (published online: <http://www.gsu.edu/enrollment/catalogs.html>) and the College of Arts and Sciences (CAS) requirements. It is the student's responsibility to know and meet the requirements of the University, the College, and the Department. Prompt selection of an academic advisor (e.g., thesis adviser) who can guide you through the requirements is highly recommended (see listing of department members at the end of this document).

### A. Admission Process

Application for graduate study in the Department is made through the college Graduate Office. This office handles the application file and checks to ensure the application is complete (see below "Admission Requirements"). The file is then sent to the Department for review. When an initial departmental decision has been made on admission, the file is forwarded to the Associate Dean for final decision.

Graduate Office Web site: <http://www.cas.gsu.edu/grad.html>

Tel.: 404-413-5040

Email: [gascas@langate.gsu.edu](mailto:gascas@langate.gsu.edu)

### 1. Admission Requirements

There are two main categories of admission to the Division of Graduate Studies: Full Graduate Status and Special Graduate Status. A student must achieve Full Graduate Status in order to be eligible for a graduate degree. The category of Special Graduate Status is designed to accommodate, when practical, applicants with promise who may have deficiencies in admission requirements. Once these deficiencies are completed the student can be moved to Full Graduate Status. There is an extensive "Guide for Admission" published by the Graduate Office (available on their Web site) that lists all the necessary requirements and application procedures.

For international students only, TOEFL or GSTEP scores and the Georgia State University financial affidavit form should be submitted.

#### M.S. in Geosciences (Geography concentration)

In addition to the general requirements of the College, the Department has the following admission requirements:

1. Applicants must submit three letters of recommendation from professional sources.
2. A statement of educational/career goals.

### M.S. in Geosciences (Geology concentration)

In addition to the general requirements of the College, the Department has the following admission requirements:

1. Three letters of recommendation from individuals who can evaluate the applicant's potential for graduate work in Geology.
2. A statement of educational or career goals.
3. A bachelor's degree in Geology or other physical science or engineering. Students with a B.S. degree in other fields are also welcome but are expected to take the Foundational courses listed below.
4. Foundation coursework (0-46 hours) These courses are assigned as part of the admission process. They can be exempted if equivalent work has been completed with grades of C or higher. Note: Field Geology requirement may be satisfied by presenting evidence of supervised field work in Geology performed at the upper-division undergraduate level. Graduate students who are required to take the Geology Foundation courses should take them at the graduate level (i.e., 6000 and higher) if available.
  - a. Geology (0-26 hours)
    - Geol 1121K Introductory Geosciences I (4)
    - Geol 1222K Introductory Geosciences II (4)
    - Geol 3002 Introduction to Earth Materials (4)
    - Geol 4006 Sedimentary Environments and Stratigraphy (4)
    - Geol 4013 Structural Geology (4)
    - Geol 4120 Basic Field Geology (3) and
    - Geol 4121 Advanced Field Geology (3)
  - b. Allied Disciplines (0-20 hours)
    - Calculus: Math 2211 (4) and Math 2212 (4)
    - Physics: Phys 1111K (4) or Phys 2211K (4)
    - Chemistry: Chem 1211K (4) and Chem 1212K (4)

A student who has to take one or more foundation courses is considered a Special Status student. The use of Special Status admission is solely the prerogative of the Department. Special Status admission may be given to applicants who show promise but are not able to fulfill all the requirements for admission to Full Status at the time they apply. Students admitted under the Special Status category are informed of expectations or conditions in the letter of admission. Students admitted to Special Status may be dismissed from their programs if their departments feel that they are not making satisfactory progress toward promotion to Full Status. Given the rigid admission requirements for the Geology concentration, nearly every admitted student in that concentration receives the special-status designation.

### Ph.D. in Chemistry with concentration in Geology

Please refer to the requirements that are provided in the *Graduate Catalog*.

### Professional Certificate in Geographic Information Science

Apply online via the College's Graduate Office; the application fee is waived if you are currently a GSU graduate student

## 2. Admission Deadlines

Deadlines for admission to the programs are provided on the Graduate Office Web site. The current deadlines are:

Fall admission (preferred entry semester)	April 15
Spring	November 15

## B. Assistantships

The Department can offer a limited number of graduate assistantships to qualifying students. Assistantships are granted for only graduate students seeking a degree in the Department. A significant benefit of receiving either type of graduate assistantship is full remission of tuition. Priority for assistantships is given to the Masters students taking the thesis option and doctoral graduate students. The faculty makes recommendations for these awards. Factors that are considered include GPA, GRE scores, letters of recommendation for incoming students, progress in the program, teaching effectiveness, and GPA at Georgia State for continuing students. Students whose GPA falls below 3.0 may have graduate assistantships withdrawn.

Although the University requires nine credit hours to count as full-time, it is a College requirement that students receiving an assistantship must be registered for **18** semester hours of credit during the semester in which they receive support. One of those courses may be Geog 8060 (Teaching Practicum). Geog 8060 will not count toward the total credit hours required for the Masters degree.

### 1. Graduate Teaching Assistant (GTA)

The bulk of assistantships awarded are Graduate Teaching Assistants (GTAs), and priority for these assistantships is given to the Masters students taking the thesis option and doctoral graduate students. GTAs teach the lab portions of Geography 1112, Geography 1113, Geology 1121K, and Geology 1122K. In return for a GTA award, M.S. students are expected to teach two laboratory sections of Geography 1112, Geography 1113, Geology 1121K, or Geology 1122K per semester. Ph.D. students receiving a GTA are expected to teach either a lecture section of Introductory Geology or up to three laboratory sections of Introductory Geology. All GTAs are required to take Geography 8060 (Teaching Practicum). Labs are held in the following rooms for the courses in parentheses: 405 Arts and Humanities (Geography 1112), 300 Kell (Geology 1121K and 1122K), and 332 Kell (Geography 1113)

### 2. Graduate Research Assistant (GRA)

Graduate Research Assistantships (GRAs) are almost always only available through a grant on which a faculty member is an investigator. The faculty member determines to whom the GRA will be awarded.

## C. Staff

The department has staff members who are vital to the smooth operation of the department. While their responsibilities are to the whole department, they are always willing to help out with any problems you may have. Undergraduate students are employed to help office staff as needed.

<b>Basirat Lawal</b> Business Manager Phone: 404-413-5762 E-mail: blawal1@gsu.edu Office: 335 Kell
<b>Atieh Tajik</b> Lab Coordinator Phone: 404-413-5790 E-mail: atajik@gsu.edu Office: 323 Kell
<b>Boné Drake</b> Administrative Coordinator Phone: 404-413-5760 E-mail: qdrake1@gsu.edu Office: 340B Kell
<b>John Tougas</b> Technology Manager Phone: 404-413-5160 E-mail: jtougas@gsu.edu Office: 355 Sparks

The information below is a guide on when you should contact a particular staff member:

Basirat = financial-related questions (e.g., assistantships)

Boné = course-registration questions

Atieh = lab-instruction questions

John = computers, software, etc. questions

## D. Faculty

It is necessary to meet and contact Geosciences faculty during your first semester of coursework so that you can select a research topic, research director, and a committee. Please note that lecturers cannot serve as thesis advisers.

Last	First	Rank	Research Interests	Ph.D. Institution	Year	Telephone	E-Mail
Babaie	Hassan	Associate Professor	structural geology, geoinformatics	Northwestern University	1984	404-413-5766	hbabaie@gsu.edu
Dai	Dajun	Assistant Professor	GIS, computational methods, environmental health, spatial epidemiology, urban health, homeland security	Southern Illinois University, Carbondale	2008	404-413-5797	ddai@gsu.edu
Deocampo	Daniel	Associate Professor and Chair	sedimentology, mineralogy, geochemistry	Rutgers, The State University of New Jersey	2001	404-413-5759	deocampo@gsu.edu
Diem	Jeremy	Associate Professor	applied climatology	The University of Arizona	2000	404-413-5770	jdiem@gsu.edu
Elliott	W. Crawford	Associate Professor	clay mineralogy	Case Western Reserve University	1988	404-413-5756	wcelliot@gsu.edu
Hankins	Katherine	Associate Professor	urban geography	University of Georgia	2004	404-413-5775	khankins@gsu.edu
Hidalgo	Paulo	Lecturer	petrology, mineralogy	Michigan State University	2012	404-413-5780	phidalgoodio@gsu.edu
Kabengi	Nadine	Assistant Professor	soil chemistry	University of Florida	2004	404-413-5207	kabengi@gsu.edu
Kiage	Lawrence	Associate Professor	biogeography, remote sensing, environmental change, paleoclimatology, paleotemperature	Louisiana State University	2007	404-413-5777	lkiage@gsu.edu
Meyer	Brian	Lecturer	sedimentology and hydrogeology	Georgia State University	2013	404-413-5768	bmeyer2@gsu.edu
Nogueira	Ricardo	Lecturer	climatology	Louisiana State University	2009	404-413-5791	mogueira@gsu.edu
Palm	Risa	Professor, Senior Vice President for Academic Affairs and Provost	urban geography	University of Minnesota	1972	404-413-2574	risapalm@gsu.edu
Pangle	Luke	Assistant Professor	surface and groundwater hydrology	Oregon State University	2013	404-413-5771	lpangle@gsu.edu
Price	Katie	Assistant Professor	hydrology	University of Georgia	2009	404-413-5789	kprice@gsu.edu
Visaggi	Christy	Lecturer	marine biology, micropaleontology	University of North Carolina, Wilmington	2012	404-413-5755	cvisaggi@gsu.edu

## **E. Professional Societies and Student Organizations**

We encourage students to become members of national professional societies (e.g., American Association of Petroleum Geologists, Association of American Geographers, Geochemical Society, Geological Society of America, and Mineralogical Society of America) as well as regional and local societies (e.g., Atlanta Geological Society, Georgia Geological Society, and Southeastern Division of the Association of American Geographers). Most professional societies offer reduced rates for student memberships and journal subscriptions.

Graduate students are active in the Geosciences Club, the Epsilon Rho chapter of Sigma Gamma Epsilon (SGE), and the Theta Upsilon chapter of Gamma Tau Upsilon (GTU). SGE and GTU are the honor societies for the Earth Sciences and Geography, respectively. The organizations organize monthly meetings, field trips, and various social events to bring faculty and students together.

## **F. Student Offices**

The Department provides office space for each graduate student. GTAs and GRAs have priority for space in the department. The following rooms have graduate-student workspaces: 301A Kell, 304 Kell, 312 Kell, and 392 Kell. There are 24 carrels in 304 Kell, and all new graduate students with assistantships are assigned initially to that room. Each carrel will eventually be equipped with a Zero Client workstation. Some graduate students have their workspaces in research labs in the Department. Finally, the common area for all Geosciences students is 301C Kell (“The Green Room”).

## **G. Laboratory and Computational Facilities**

The department maintains laboratories for X-ray fluorescence, X-ray diffraction, flame and graphite furnace atomic absorption spectrophotometry, ion chromatography, laser ablation ICP-MS, sedimentology, clay mineralogy, fluid-inclusion analysis, cathodoluminescence, high-pressure experimental rock deformation, and binocular and petrographic microscopes with full accessories. These facilities are available to qualified students for thesis and dissertation research. All students operating X-ray generating equipment must first pass the GSU Radiation Safety Course (See Dr. Elliott for further information). Contact Dr. Elliott for X-ray diffraction, Dr. Deocampo for sedimentological equipment, Dr. Deocampo for petrographic microscopes and X-ray fluorescence, and Dr. Rose for atomic absorption spectrophotometry and ion chromatography. Students can use thin sectioning, rock crushing and other sample preparation equipment after first seeing Dr. Babaie, supervisor of the rock preparation facility. The requirements for the rock preparation lab are described in the following section.

Personal safety in all Department laboratories and in the field is the responsibility of each student. The Department Safety Committee oversees all safety-related issues in the Department and it makes recommendations and/or implements University requirements for laboratory safety (e.g. Right to Know) at the Department level.

The Department cooperates with a well-equipped coastal and marine laboratory at the Skidaway Institute of Oceanography in Savannah. Facilities include vehicles, boats and an 80-foot research vessel; systems for high-resolution sub-bottom profiling, sidescan sonar and underwater



closed circuit TV; and survey fathometers, current meters and an electronic repair facility. Contact Dr. Henry to arrange research work at the Marine Laboratory.

The Department is well-equipped with computational equipment for students. Desktop computers are available in graduate offices and faculty laboratories for graduate student use for research and course work. In addition to those spaces, students have access to desktop computers in 364 Sparks (aka “The Fishbowl”) and 369 Sparks, but only when a class is not in session in that room.

## **H. Library Resources**

Mr. Joseph Hurley (jhurley@gsu.edu) is the Pullen Library liaison to the Department of Geosciences and he may be contacted for specific and non-routine questions regarding the Geosciences collections at Pullen Library. You are encouraged to meet with Mr. Hurley so that you may make the most of the library’s resources.

The Web site for the University Library is <http://www.library.gsu.edu/>. You can use Interlibrary Loan (ILL), which is a borrowing service for GSU students, faculty and staff, to request books, articles, and other materials that are not found in Georgia State University collections. The Web site for ILL is <http://library.gsu.edu/78.html>.

## **I. Rock Preparation Laboratory (320 Kell)**

The equipment in the Rock Preparation Lab is available for use by students and faculty. The facilities in this lab are essential for much of the research carried out in the Department of Geology. It is very important that all equipment remain in good working condition and that the lab remain in a clean and orderly state. All equipment must be operated carefully and per instructions. The Department depends on everyone to be reliable and responsible in the following rules listed below.

- Use of the equipment is limited to course-related and research-related activities.
- Continued access to the Rock Preparation Lab is contingent on a record of proper use of the lab. Those who use the equipment properly will be allowed to continue to use it.
- Maintenance of the equipment, cleanliness, and adherence to established procedures are the responsibilities of every person using this lab.

## **J. Other Department Resources**

### **1. Mail**

Graduate students’ mail will be placed in the box labeled Graduate Students in the Geosciences main office. Memos, notes from faculty and official department notices will be placed in this box. Please check it regularly.

### **2. Room Access**

Each graduate student will be assigned keys and/or the combination to cipher locks to his or her office and to any other rooms needed for research or graduate work. Key cards may be obtained from the department business manager. **THESE KEYS ARE TO BE RETURNED UPON COMPLETION OF YOUR PROGRAM.**

### **3. Phones**

Phones with free local access are provided in some graduate offices. The departmental phone in room 338A may be used by graduate students for long distance calls for departmental business only. ALL APPROVED LONG DISTANCE CALLS MUST BE MADE USING GIST PROCEDURES. Please ask faculty and staff for assistance.

### **4. Photocopier**

There is a photocopy machine in the Geosciences main office (340 Kell). Graduate students may use the photocopier for class materials related to teaching responsibilities and for materials related to their research with the permission of a faculty member. The copier also scans documents to pdf files.

### **5. Printers**

There are two printers in the Geosciences main office to which graduate students have access for class materials related to teaching responsibilities and for materials related to their research.

### **6. Fax Machine**

The fax machine may be used for research and instructional activities. The Department fax number is 404-413-5768. Please ask faculty and staff for assistance in sending outgoing faxes.

## **K. Off-Campus Work**

Fieldwork in connection with a thesis, dissertation, or non-thesis project is considered on-campus work when registered for academic credit. If you wish to take a graduate course at another school in partial fulfillment of your program of study, you may do so through cross registration. You must confer with your thesis/dissertation director or the Graduate Director before registering to insure that the course you wish to take is appropriate to your degree program and will fulfill program requirements.

If you work on a thesis or course at the Marine Laboratory at Skidaway Institute of Oceanography you are also considered to be in residence at the university as long as you are registered for academic credit (including GEOG/GEOL/GEOS 8999). While at Skidaway, should you need assistance with processing graduate school forms or special advice regarding your program, contact the Graduate Director or the departmental Office Manager.

## **L. Summer Plans**

Your summer plans should be made with a view to completing your degree program in the shortest possible time. Summer is the time when a graduate student can make great strides in his or her research. You can be free of the day-to-day demands of coursework, Graduate Assistant responsibilities, etc. To do this you must be free of other responsibilities and able to devote all of your time to your research project.

If you plan ahead, you may be able to obtain a grant in support of your summer research from organizations such as the Geological Society of America, the American Association of Petroleum Geologists, Sigma Xi and the Georgia Geological Survey. (See Grants and Assistantships section of the Handbook). Graduate students have been successful in acquiring

grants from the Geological Society of America. Even if you are not able to obtain such a grant you might consider the long-term advantages of borrowing money to cover your expenses.

Students not planning to spend a significant part of the summer on thesis/dissertation-related research should carefully review their plans with their thesis/dissertation directors.

Almost all faculty members in the Department of Geology are on nine-month contracts to the university and are not employed for regular university business during the summer. During the summer semester, they are likely to be away from campus for extended periods for research, teaching field camp, and other professional pursuits. Students should make their summer plans sufficiently in advance to be sure that faculty members are available when necessary.

### **M. Academic Honesty**

Academic honesty refers to the personal acceptance of and responsibility to a strict standard of values for your work and life in the academic world. Written rules and regulations cannot encompass all the ramifications of such a system of ethics and values. Academic honesty includes respect for your own work and the work of others; complete truthfulness in all your interactions with faculty, administrators and fellow students; and care and respect for the academic resources in our libraries and labs. Academic honesty is not completely "academic" as the underlying principles extend to values and ethics you should carry with you to your future business and professional life. Your adherence to a high standard of values in this regard will be a significant factor in our evaluation of your potential as a professional.

### **N. Letters of Recommendation**

Letters of recommendation from the faculty will be needed in most cases if you proceed to further graduate study or seek employment. Bear in mind that these letters will speak to your integrity, character, cooperativeness, accomplishments, etc., as well as to your potential in further professional or academic pursuits. It is a good idea to seek agreement from faculty before listing faculty as references.

### **O. Curatorial Requirement**

At the end of study, the graduate student and faculty director of research or activity project must decide on materials to save for further study and/or reference. The student will draft a list of the saved materials and submit this list to the faculty directing the study. The saved materials will reside in the director's laboratory unless permission is granted to use community departmental space by the Department Chair. The non-curated materials, chemicals, etc. are to be disposed appropriately before the end of the project.

## II. Requirements for the M.S. in Geosciences

### A. Student Advisor and Program Committees

Each new graduate student will select a departmental faculty member to serve as the academic advisor within the first semester after admission to the program. Students may change their advisor and/or committee members at any time with the approval of the Graduate Director and the departmental chair. The advisor will assist the student in selecting courses and approve them for his/her program, and in the selection of faculty members to serve on committees relevant to the student.

A thesis committee comprises two graduate faculty and the thesis director. In addition to the reading committee, outside experts may be part of a Thesis committee with permission of the thesis/dissertation director and approval of the Department Chair. The thesis committee consults in the formulation of the thesis problem, approves the thesis proposal, advises the student during the preparation of the thesis, examines the completed thesis, and approves or disapproves the thesis.

A dissertation reading committee comprises four graduate faculty, including the dissertation director. A thesis reading committee comprises two graduate faculty and the thesis director. In addition to the reading committee, outside experts may be part of a thesis or dissertation Committee with permission of the thesis/dissertation director and approval of the Department Chair.

### B. Coursework

All credits that are to apply toward the M.S. degree should be earned within **seven years** of the date of the degree. Students may initiate a request for extension, subject to the approval of the College of Arts and Sciences Division of Graduate Studies and the Graduate Committee of the Department of Geosciences.

#### 1. M.S. in Geosciences (Geography concentration)

##### Thesis and Non-Thesis Options – 36 hours

- Geog 8001 (Methods of Geographic Research) to be taken the first time offered after the student's admission to the program.
- Techniques training equivalent by completion of one of the following courses: Geog 6518 (Digital Cartography); (Geog 6530 (Introduction to Remote Sensing); Geog 6532 (Introduction to Geographic Information Systems); Geog 6534 (Advanced Geographic Information Systems). This course may count toward the departmental minimum credit hour requirements.
- Geog 6520 (Quantitative Spatial Analysis) or Geog 6515 (Qualitative Methods in Geography). These requirements may be waived if student has equivalent training.
- Nine semester hours of coursework at the 8000 level.
- Remaining hours in student's area of specialization chosen from graduate level courses.
- Six semester hours of Geog 8999 (Thesis Research) for thesis option or three semester hours of Geog 8990 (Research Practicum) for non-thesis option.

- Proficiency in a foreign language or in an approved research skill. Courses taken to fulfill this requirement may not count towards the departmental minimum credit hour requirements.
- Students taking the non-thesis option must take three additional semester hours of graduate level coursework in lieu of Geog 8999, complete a non-thesis research project (Geog 8990 Research Practicum), and pass a written comprehensive examination and pass an oral examination of the research project. Students may attempt to fulfill the practicum requirement twice, but only three semester hours of Geog 8990 can be counted toward their degree requirements.

## **2. M.S. in Geosciences (Geology concentration)**

### **Thesis Option (36 hours)**

- Geog 8001 (Methods of Geographic Research) to be taken the first time offered after the student's admission to the program.
- Techniques training equivalent by completion of one of the following courses: Geog 6518 (Digital Cartography); (Geog 6530 (Introduction to Remote Sensing); Geog 6532 (Introduction to Geographic Information Systems); Geog 6534 (Advanced Geographic Information Systems). This course may count toward the departmental minimum credit hour requirements.
- Geology courses (14-20 hours)
  - Geol 6000 Advanced Topics in Physical and Historical Geology (4)
  - Geol 6003 Aqueous Geochemistry (4)
  - Geol 6005 Geology of Georgia (3)
  - Geol 6006 Sedimentary Environments and Stratigraphy (4)
  - Geol 6007 Hydrogeology (4)
  - Geol 6011 Principles of Paleontology (4)
  - Geol 6013 Structural Geology (4)
  - Geol 6097 Topics in Geological Sciences (1-3)
  - Geol 6120 Basic Field Geology (3)
  - Geol 6121 Advanced Field Geology (3)
  - Geol 8001 Soils, Clays, and Weathering (4)
  - Geol 8003 Radiogenic Isotope Geology (3)
  - Geol 8097 Directed Study in Geology (1-3)
- Seminar (1-2 hours) Geol 6095 Seminar in Geological Sciences
- Extra departmental courses (3-6 hours): An approved list of courses is available from the Department of Geosciences.
- Foreign language: Proficiency in a foreign language or in an approved research skill in computer programming. This requirement can be fulfilled by taking an approved course or by taking an examination.
- Thesis Research (Geol 8999) (9 hours).
- Completion of Thesis and pass oral examination of Thesis.

## **3. M.S. in Geosciences (Water Sciences Concentration)**

### **Thesis Option (36 credit hours)**

Early in their graduate studies, students must select a faculty advisor to direct their programs of study and to appoint their committee. Students should consult with faculty members to align their course of study with desired professional licensure and certification appropriate to their desired career trajectory – for example, either the American Institute of Hydrology’s Professional Hydrologist Certification, or the Association of State Boards of Geology’s Professional Geologist Licensure Examination.

- Department Requirements (13 credit hours):
  - GEOS 8002 Geoscience Research Methods (3)
  - GEOS 6095 Seminar (1)
  - GEOS 8999 Thesis Research (9)
  - Successfully defend thesis in public presentation
- Core Required Water Sciences Courses (8 credit hours):
  - GEOS 6650 Surface Water Hydrology (4)
  - GEOS 6007 Hydrogeology (4)
- Elective Water Sciences Courses (Minimum 8 hours):
  - GEOS 6003 Aqueous Geochemistry (4)
  - GEOS 6642 Advanced Weather and Climate (4)
  - GEOS 6646 Water Resources Management (4)
  - GEOS 8040 Seminar in Hydrology and Geomorphology (4)
  - BIOL 6451 Aquatic Pollution and Toxicology (4)
- Related Geoscience Skills Courses (Minimum 6 hours):
  - GEOS 6520 Quantitative Spatial Analysis (OR APPROVED statistics substitute) (3-4)
  - GEOS 6532 GIS (4)
  - GEOS 6534 Advanced Geographic Information Systems (4)
  - Geos 6xxx GIS Programming (OR APPROVED Comp Sci substitute) (4)
  - GEOS 6123 Geoinformatics (4)
  - GEOS 6042 Environmental Instrumentation (4)
  - PH 7299 Sampling of the Environment (3)
- Other Water Related Elective Courses (Maximum 8 hours toward degree):
  - GEOS 6644 Environmental Conservation (4)
  - GEOS 6640 Geomorphology (4)
  - GEOS 6017 Environmental Geology (4)
  - GEOS 6784 Climatic Change (4)
  - PH 7297 Global Water, Sanitation, & Hygiene (3)

#### Non-Thesis Option (36 hours)

- Geog 8001 (Methods of Geographic Research) to be taken the first time offered after the student's admission to the program.
- Techniques training equivalent by completion of one of the following courses: Geog 6518 (Digital Cartography); (Geog 6530 (Introduction to Remote Sensing); Geog 6532 (Introduction to Geographic Information Systems); Geog 6534 (Advanced Geographic Information Systems). This course may count toward the departmental minimum credit hour requirements.
- Geology courses (14-20 hours)

- Geol 6000 Advanced Topics in Physical and Historical Geology (4)
- Geol 6003 Aqueous Geochemistry (4)
- Geol 6005 Geology of Georgia (3)
- Geol 6006 Sedimentary Environments and Stratigraphy (4)
- Geol 6007 Hydrogeology (4)
- Geol 6011 Principles of Paleontology (4)
- Geol 6013 Structural Geology (4)
- Geol 6097 Topics in Geological Sciences (1-3)
- Geol 6120 Basic Field Geology (3)
- Geol 6121 Advanced Field Geology (3)
- Geol 8001 Soils, Clays, and Weathering (4)
- Geol 8003 Radiogenic Isotope Geology (3)
- Geol 8097 Directed Study in Geology (1-3)
- Seminar (1-2 hours) Geol 6095 Seminar in Geological Sciences
- Extra departmental courses (3-6 hours): An approved list of courses is available from the Department of Geosciences.
- Directed Study (3 hours) Geol 8097 Directed Study in Geology
- Comprehensive Examination: Pass a general written examination taken within the first year of study
- Foreign language: Proficiency in a foreign language or in an approved research skill in computer programming. This requirement can be fulfilled by taking an approved course or by taking an examination.
- Submission and approval of research project paper and pass oral examination of research project.

## C. Thesis Option

The Master's Thesis is the culmination of the degree work and is a demonstration of the student's ability to identify a problem, design a research strategy, and carry a research project to completion. The student in consultation with his/her advisor should formulate the Thesis topic as soon as possible during the program. A Thesis proposal should be submitted for approval during the student's second semester, and first drafts of the Thesis should be prepared no later than the student's third semester.

The Thesis is an original research project that must conform to the rules of form of both the College of Arts and Sciences and the Department. Students may obtain a copy of the Thesis Guide from the Graduate Office to assist in meeting these rules. A Thesis defense will be scheduled after the committee has had an opportunity to examine the document, where the student will formally present the thesis to the committee for approval. The departmental Chair approves the Thesis upon the recommendation of the committee.

### 1. Oral Examination of Masters Thesis

After the reading committee is satisfied with the written thesis, the oral examination of the thesis is scheduled. The oral examination consists of a 45-to 55-minute public presentation of the thesis topic followed by a question-and-answer period. **The presentation should be advertised in the Department at least one week prior to its occurrence, and the room in which the presentation occurs should have a capacity for at least 20 persons.** Following the public

presentation, the Thesis Reading Committee will ask questions in private and deliberate on whether to accept the thesis and agree on passing the student on the oral examination. Students should schedule their exam to take place at least one month prior to the college deadline for receiving final copies of the M.S. thesis. The deadlines for submission of a thesis are listed in the *Graduate Catalog*, and they are available at the Office of Graduate Studies, College of Arts and Sciences. The deadlines are strict, and students are responsible to meet these deadlines.

#### **D. Non-Thesis Option**

In addition to the requirements for the Masters degree non-thesis option (NTO) stated in the *Graduate Catalog*, the student must complete a data collection and synthesis project (NTO Activity Project) and pass a Comprehensive Examination. The data collection/synthesis project culminates in a formal report (NTO Activity Project) and the project is directed by a member of the Graduate Faculty in the Department. The NTO Activity also can be accomplished via Directed Study or Topics in Geology courses and via an internship provided the data collected is not proprietary (i.e., it can be read and viewed by faculty and students). When this activity is completed, the student must write a formal scientific report and submit to the faculty member advising this project. An approved copy of this report is filed with the Graduate Director prior to graduation, which will remain in the student's file.

The student interested in the NTO should choose this option within the first year of full-time study or the first year of part-time study. Students who begin work on the thesis option should recognize that the thesis director has spent time and in some cases external funding or department financial support or both in directing this research. Therefore, it is not ordinarily acceptable to switch to the NTO having started work on the thesis option. Students wishing to convert from the thesis to NTO after having started work on the Masters thesis must receive written permission from the Thesis Director and Thesis Committee. It is Department policy to support all full-time thesis-option degree students. It is not Department policy to support NTO students. Those students switching to the NTO after starting thesis research will have the lowest priority for support or possibly lose financial support. Credits accumulated in GEOG 8999 or GEOL 8999 (Thesis Research) may not be counted toward graduation. Eventual grade for GEOG 8999 or GEOL 8999 may be S or U depending on the quality of work done in thesis research.

A Comprehensive Examination is required for the all NTO students. These should take the Comprehensive Exam during the first year or early in the second year. This is a closed-book written exam is usually held in Room 314 Kell Hall. The duration is three hours. Calculators are permitted, and a Periodic Chart of the Elements is posted.

The questions test students' knowledge of their discipline at the graduate level. The questions are also designed to make the student think, communicate, and elaborate on a topic. The questions are integrative in nature, and they are designed to draw knowledge from more than one course. If the student does not know the "correct" answer to a question, then the student may still pass or earn partial credit for the question by discussing how the correct answer can be derived. To prepare for the Comprehensive Exam, the student should review texts and notes of the classes taken both at the undergraduate and graduate levels. Faculty may be consulted prior to the exam.



All students should consult their Advisor regarding the time to take the Comprehensive Exam. The exams will be administered twice a year, on the third Friday in October and the third Friday in April (or thereabouts – a notice of the exact time, date, and place will be posted two weeks prior to the exam). If the exam is not passed, it may be repeated only once.

## **E. Abbreviated Schedule**

1. Student selects Thesis Director and Thesis Reading Committee – Fall semester of Year 1
2. Student formulates program of study – Fall semester of Year 1
3. Thesis proposal sent to Thesis Director and Thesis Reading Committee – Spring semester of Year 1
4. Comprehensive exam taken for NTO Students – Spring semester of Year 1 (unless admitted Special Status)
5. Thesis research starts – Summer of Year 1.
6. Most courses completed by start of Spring semester of Year 2.
7. Thesis or NTO Activity Project completed and submitted in Year 2. See *Graduate Catalog* for deadlines for submitting a complete, defended thesis. The Graduate Office needs the signed signature sheet of your thesis in order for you to upload a digital copy of the thesis.

Obviously, this schedule is idealized and applies to the full-time student. Part-time (working) students should pace themselves according to the number of courses they can afford to take and still keep their jobs. Remember, however, the seven-year time limit discussed previously.

### **III. Requirements for the Ph.D. in Chemistry with Concentration in Geology**

The Doctor of Philosophy (Ph.D.) degree in Chemistry with a concentration in Geology is offered in collaboration with the Department of Chemistry. This program culminates in a dissertation containing the results of distinctive and original research scholarship carried out by the candidate. The dissertation must be defended publicly and judged to be a significant contribution in the advancement of science. At least 80 hours of graduate credit are required for the Ph.D. degree. All credits for the Ph.D. must be earned within ten years of the degree. Students may initiate a request for extension, subject to the approval of the College of Arts and Sciences Division of Graduate Studies and the Graduate Committee of the Department of Geosciences.

#### **A. Student Advisor and Committees**

Each new Ph.D. student will select a departmental graduate faculty member to serve as the academic advisor within the first semester after admission to the program. The advisor will assist the student in selecting courses and approve them for his/her program, and in the selection of three other faculty members to serve on the general examination and dissertation committees. These committees need not be composed of the same faculty, but both committees are formally appointed and approved by the Graduate Director upon the recommendation of the Advisor of the student. A dissertation reading committee is composed of four graduate faculty including the dissertation director. In addition to the reading committee, outside experts may be part of a Dissertation Committee with permission of the thesis/dissertation director and approval of the Department Chair.

The general examination committee administers the written and oral examinations and evaluates the student's performance. The dissertation committee consults in the formulation of the dissertation problem, approves the dissertation proposal at a formal defense meeting, advises the student during the preparation of the dissertation, examines the completed dissertation, and approves or disapproves the dissertation.

#### **B. Coursework**

All credits for the Ph.D. must be earned within ten years of the degree. Students may initiate a request for extension, subject to the approval of the College of Arts and Sciences Division of Graduate Studies and the Graduate Committee of the Department of Geology. Credit will be given only for those geology courses in which the student receives a grade of B or higher.

##### **1. Core courses in Geology (11 hours)**

- To be selected from Geol 6003, 8001, 8003, 8010, or other approved substitutes;

##### **2. Minor Area Electives (13 hours)**

- To be selected from Geology: Geol 6004, 6006, 6009; Analytical Chemistry: Chem 6850, 6860, 6800, 8900; Biophysical Chemistry: Chem 6000, 6010, 6190, 6110, 6580; Organic Chemistry: Chem 6400, 6410, 6450, 8900; or other approved substitutes

### **3. Interdisciplinary Elective (6 hours)**

To be selected from Chemistry or Biology or approved substitutes;

### **4. Special Topics, Electives, and Seminar (10 hours)**

To be selected from Geol 6008, 6095, 6097, 6640, 6650; Biol 6439, 6458; Chem 6600, 6610, 6490; or other approved substitutes; and

### **5. Research (40 hours)**

To be selected from Geol 8097 or Geol 9999 (a minimum of 20 hours are selected from Geol 9999).

### **6. Foreign Language/Research Skill Requirement**

A reading proficiency in one foreign language is required. An equivalent research skill such as computer language, technical writing, advanced statistics, electronics, etc. may be substituted for the foreign language (departmental approval required). Students with M.S. degrees which had a foreign language requirement satisfy the foreign language requirement. Note: credit hours used to fulfill the language requirement do not count in the 80 hours.

## **C. Qualifying Exam**

Ph.D. students entering the program with a M.S. degree are expected to take the Ph.D. Qualifying Exam shortly after the first year of residence or in the beginning of the second academic year. Ph.D. students entering the program without a Masters degree will take the Qualifying Exam after completing course work. The student's Dissertation Director can provide advisement as to when to take the Qualifying Exam.

The Qualifying Exam has two parts: two written research propositions (research proposals) and an oral presentation of the two propositions. For the research propositions, the doctoral student formulates a research problem that is related to the intended dissertation topic and one research problem that is different from the intended dissertation topic. The propositions should state the problem and the relevant hypothesis (es), identify the methods needed to attack this problem, and state the significance of this problem. As with M.S. thesis and Ph.D. dissertation proposals, these propositions are expected to be thorough research papers including correct bibliographic references per Geology style or other reference style as directed by the Dissertation Director. The propositions will be circulated to the student's Dissertation Reading Committee and Dissertation Director. This committee will read the propositions and judge whether they are suitable propositions. After they are judged as suitable, the propositions are presented orally to the Dissertation Reading Committee and interested Geology Graduate Faculty. Following the oral presentation, the Geology Graduate Faculty will have the opportunity to ask questions about this topic and relevant background information to gauge the student's readiness to conduct the research proposed. The student's Dissertation Reading Committee and Dissertation Director will deliberate privately to decide the outcome (pass, pass with corrective actions, or fail). The corrective actions must be satisfied within one month (or in a time period deemed suitable by the Dissertation Director and Reading Committee). Upon passing the Qualifying Exam, the student is a candidate for the Ph.D. degree. If the Candidate changes his/her dissertation topic, then a new proposal has to be submitted and approved by his/her dissertation committee.

If the Qualifying Exam is failed, then the student cannot continue further study for the Ph.D. degree. The student will have the opportunity to petition to receive a non-thesis M.S. degree from the College of Arts and Sciences after satisfying the Geology Non-thesis option requirements in the *Graduate Catalog*.

## **D. Dissertation**

The dissertation is original work and normally leads to both publications in peer-reviewed journals and presentations in professional societies at the national level.

### **1. Ph.D. Degree Dissertation Proposal**

A formal dissertation proposal is required for Ph.D. students. The proposal follows a similar format to the one described for the M.S. degree proposal, and it is submitted after passing the Ph.D. Qualifying Exam. The Ph.D. proposal is a thorough treatment of the objectives, review of literature, methods, and anticipated contributions to the field of geology. Citation of literature follows the form in Geology unless the student's Dissertation Director requires another format. The dissertation proposal should be submitted within one semester after the Ph.D. Qualifying Exam is passed.

### **2. Dissertation Defense**

The Ph.D. degree culminates in the defense of a dissertation. The dissertation by definition represents an original piece of work that advances a sub-discipline within geology. The defense provides the opportunity for the student to present this original work and answer questions from the public, Graduate Faculty, and the Dissertation Reading Committee. The defense is a public oral presentation that is followed by open questions in public and by questions from the Dissertation Reading Committee in private. The Dissertation Reading Committee meets privately to deliberate whether or not to accept the dissertation.

## **E. Abbreviated Schedule**

1. Student selects Dissertation Director and three members for the Dissertation Reading Committee.
2. Qualifying exam is taken for students with M.S. degree (end Year 1, early Year 2).
3. Dissertation Proposal submitted to Dissertation Director and Reading Committee.
4. Dissertation work starts. Summer Semester, Year 1.
5. Foreign language requirement fulfilled.
6. Most courses completed by End of Year 2. Qualifying Exams is taken for students without M.S. degree, followed by submission of Dissertation Proposal.
7. Dissertation completed and submitted. See *Graduate Catalog* for deadlines for submitting a complete, defended dissertations (Years 3-4).

This schedule is idealized and applies to the full-time student. Part-time (working) students should pace themselves according to how many courses they can afford to take and still keep their jobs. Remember, however, the six-year time limit discussed previously.

## **IV. Requirements for the Professional Certificate in Geographic Information Science**

Geographic Information Science (GIS) is a rapidly growing discipline, with applications in many fields. A strong demand exists for proficient users of geospatial technology. The graduate-level Professional Certificate Program in GIS is designed to facilitate those students working toward graduate degrees in a variety of disciplines, as well as those who use GIS in the workplace and would like to obtain systematic training in the technology without having to complete a graduate degree. The Certificate Program consists of five courses with a total of 20 credit hours, including elective courses from a variety of departments/programs.

### **A. Coursework**

#### **1. Required Courses (20)**

- Geog 6518 Digital Cartography (4)
- Geog 6530 Introduction to Remote Sensing (4)
- Geog 6532 Introduction to Geographic Information Systems (4)
- Geog 6534 Advanced Geographic Information Systems (4)

#### **2. Elective Courses (4)**

- Geog 6520 Quantitative Spatial Analysis (4)
- Geog 6834 Introduction to GIS Applications (4)
- Geog 8001 Methods of Geographic Research (4)
- Geog 8030 Seminar in Cartography (4)
- Geog 8035 Seminar in Geographic Information Systems (4)
- Geol 6123 Geoinformatics (4)

## V. Other Important Information

### A. Graduate Coursework Completed Elsewhere or as Non-degree Status

Up to six semester hours of graduate credit previously earned at GSU or another institution can be applied to graduation requirements at GSU, subject to approval by the Department and the College. To count toward the GSU degree, a course taken at other institutions must have covered substantially the same material as a GSU course and must be in a subject appropriate to the student's program. The student may be required to pass a test to show proficiency in the subject.

Up to 16 semester hours of graduate work in Geology earned as a non-degree student at GSU may be counted toward the M.S. or Ph.D. degree.

Up to 16 semester hours of graduate work in Geography earned as a non-degree student at GSU may be counted toward the M.S. degree or Professional Certificate in GIS.

### B. Foreign Language/Research Skill

It is recommended that M.S. in Geosciences (Geology concentration) students take the following courses to satisfy the foreign language/research skill requirement.

CSc 2301	Introduction to Computer Programming: FORTRAN
CSc 2310	Principles of Computer Programming I
CSc 2311	Principles of Computer Programming II
CSc 3360	Windowing Systems Programming
CIS 3260	Introduction to Programming in C/C++
CIS 3280	Object-Oriented Programming in C++
CIS 3210	End User Applications Programming
CIS 3215	Intermediate Visual Programming
Eng 6110	Technical Writing
Geog 6532	Geographic Information Systems
Math 6544	Biostatistics
Math 6547	Introduction to Statistical Methods
Math 6548	Methods of Regression and Analysis of Variance
Phys 8800	Electronics
Phys 8810	Digital Instrumentation

**Note that coursework taken to satisfy the foreign language requirement does not count toward the 36 hours needed for the M.S. or the eighty hours required for the Ph.D. degree.**

Graduate students whose language of instruction was not English and who wish to use English to fulfill the foreign language requirement for the graduate degree may contact the Department of Applied Linguistics to make arrangements to take the examination. Note that the written examination is given only once each semester. Please have the appropriate form of approval signed by the Graduate Director before making an appointment with Department of Applied Linguistics to take the oral portion of the test.

## **C. Extra-Departmental Requirements**

The Thesis or Dissertation Director must approve the course(s) chosen to count for the Extra-departmental Requirement. The courses should be appropriate to the student's degree objective and must carry graduate credit. Examples of extra-departmental courses at the graduate level for Geology students are given in Appendix I. The Department is very flexible in this area; thus, departmental courses can be used to satisfy this requirement.

## **D. Cross Registration**

Students at GSU may register for courses at Georgia Institute of Technology, Emory University, and University of Georgia to satisfy course requirements for the M.S. and Ph.D degrees. Current graduate students have taken advantage of this opportunity to take course(s) that are not offered at GSU. Regulations for cross registration are available from the Office of Cross Registration, and are listed in the *Graduate Catalog*.

## **E. Graduation Deadlines**

### **1. Application for Graduation**

Every candidate for a degree from Georgia State University must apply for graduation at least two semesters before the one targeted for Commencement. This registration must take place through the Graduation Services Office. No graduation will be approved without prior registration.

### **2. Thesis/Dissertation Preparation**

All theses and dissertations required as part of a degree program will be accepted ONLY in digital .pdf format. All electronic files submitted for partial fulfillment of degree requirements must conform to the university standards before final approval is granted by the Graduate Services Office. This guide ([http://www.cas.gsu.edu/docs/grad/thesis\\_diss\\_guide.pdf](http://www.cas.gsu.edu/docs/grad/thesis_diss_guide.pdf)) explains in detail and gives specific examples of precisely how the format and typeface of the document should appear. See the Graduation Calendar for submission deadlines. The review deadline for a particular semester can be found at [http://www.cas.gsu.edu/graduation\\_requirements.html](http://www.cas.gsu.edu/graduation_requirements.html).

## **F. Continuous Enrollment**

As part of the university's continuous enrollment policy, students in all graduate programs must maintain enrollment totaling 6 hrs (or more) over all consecutive three semester periods (including summers). In other words, the total enrollment of the current term plus the two terms preceding it must add to 6 hours or more at all times.

The status of all students will be checked by the midpoint of each term for compliance with the continuous enrollment requirement. Any student whose enrollment is out of compliance will be placed on inactive status effective at the end of the current term and all pre-registration for subsequent terms will be canceled. Those students will be notified by an e-mail message sent to their official Georgia State University e-mail account.

To resume their programs, inactive students must file for re-entry by the published deadline and must enroll at a level sufficient to satisfy the continuous enrollment criterion. That is, their enrollment in the re-entry term plus the two terms preceding it must total to 6 hours or more. The maximum required enrollment level for the re-entry term is 6 hours. For more information

on the re-entry process, see section 1100 of the *Graduate Catalog* or visit the Reentry to Graduate Studies page.

## **G. Course Load**

Courses numbered 6000 and above are open only to graduate students. Each graduate course will carry three semester hours of academic credit unless otherwise indicated. Twenty-five semester hours is the maximum student load per semester; 18 semester hours is considered to be the normal load for graduate students with graduate assistantships in the College of Arts and Sciences, while nine semester hours is the load for defining a full-residence semester for most financial aid and loans. Students who wish to register for more than twenty-five hours of course work must obtain the approval of the department director of graduate studies. **Students with assistantships must register for at least 18 hours during the Fall and Spring semesters.**

## **H. Academic Evaluation**

Students can check their academic evaluation on-line using either Degree Works or PAWS. Almost every student will need courses moved around in their academic evaluations and requests should be emailed to the director of graduate studies.

## **I. Research Credits**

The Departments offers Geog 8999 and Geol 8999 for which credit from one to a maximum of 15 hours per semester may be earned. These courses generally are acceptable to reach minimal continuous enrollment standards.

## **J. Special Status**

The use of Special Status admission is solely the prerogative of the department to which application has been made. Special Status admission may be given to applicants who show promise but are not able to fulfill all the requirements for admission to Full Status at the time they apply. Students admitted under the Special Status category are informed of expectations or conditions in the letter of admission. Students admitted to Special Status may be dismissed from their programs if their departments feel that they are not making satisfactory progress toward promotion to Full Status.

A student must be in Full Status in order to earn a degree. At least 20 semester hours of graduate coursework must be completed after the student is admitted to full status to qualify for graduation.

## **K. Scholastic Warning**

Graduate students are personally responsible for knowing and maintaining department and College academic standards. A graduate student whose cumulative grade-point average falls below 3.0 at the end of a semester or who fails to maintain the level of academic performance required by the major department will be sent a letter of scholastic warning from the associate dean for Graduate Studies in the College of Arts and Sciences. Some departments have additional requirements for academic performance and progress. In these instances, the departmental graduate director will attempt to warn the student. However, the receipt or non-receipt of academic warning does not exempt the student from stated requirements. Students in



Warning Status must achieve a 3.0 cumulative grade-point average within 18 hours of graded coursework over the next three consecutive terms.

## **L. Scholastic Termination**

A graduate student is subject to scholastic termination from the degree program for the following reasons:

1. Failure to achieve a 3.0 cumulative grade-point average by the end of the next 18 semester hours of enrollment or next three consecutive terms in letter-graded courses after the GPA has fallen below a 3.0;
  2. Failure to maintain the level of academic performance and progress required by the major department;
  3. A second failure on the General Examination in the M.S. or Ph.D. degree programs.
- The student who may be subject to scholastic termination will be notified of termination by the associate dean for Graduate Studies the College of Arts and Sciences.

## Appendix I. Recommended List of Extra-Departmental Graduate Courses for M.S. in Geosciences (Geology concentration)

Biol 6014	Invertebrate biology		
Biol 6015	Vertebrate Biology		
Biol 6430	Microbial diversity and Systematics		
Biol 6438	Applied Microbiology		
Biol 6045	General Ecology		
Biol 8637	Nucleic Acid Structure and Function		
Biol 8675	Molecular Virology		
Biol 6598	Molecular Genetics of Eukaryote		
Biol 6074	Developmental Biology		
Biol 6575	Virology		
Biol 6480	Principles of Toxicology		
Biol 6481	Mycology		
Biol 6284	Bioenergetics		
Biol 6595	Microbial Physiology and Genetics I		
Biol 6696	Laboratory in Molecular Biological Tech.		
Biol 6597	Microbial Physiology and Genetics 11		
Biol 6053	Field Ecology		
Biol 6458	Microbial Ecology and Metabolism		
Biol 6500	Human Genetics		
Biol 6065	Vertebrate Morphogenesis		
Biol 6500	Human Genetics		
Biol 6451	Aquatic Pollution and Toxicology		
Biol 6248	Cell Physiology		
Chem 6000	Fundamentals of Chemical Analysis		
Chem 6010	Instrumental Methods I: Chromatography		
Chem 6190	Instrumental Methods III: Spectroscopy		
Chem 6050	Introduction to Fourier-Transform NMR		
Chem 6100	Chemical Literature		
Chem 6110	Physical Chemistry I		
Chem 6120	Physical Chemistry II		
Chem 6150	Introduction to Biophysical Chemistry		
Chem 6210	Inorganic Chemistry		
Chem 6330	Advanced Synthesis		
Chem 6370	Polymer Chemistry		
Chem 6400	Advanced Organic Chemistry I		
Chem 6410	Advanced Organic Chemistry, II		
Chem 6450	Molecular Modeling Methods		
Chem 6600	Biochemistry I		
Chem 6610	Biochemistry II		
Chem 6620	Biochemistry Laboratory I		
Chem 6800	Advanced Analytical Chemistry		
Chem 6820	Analytical Laboratory		
Chem 6840	Bioenergetics (Bio 684)		
Chem 6850	Bioanalytical Chemistry, I		
Chem 6860	Bioanalytical Chemistry II		
Chem 8360	Protein Structure and Function		
Chem 8370	Nucleic Acid Structure and Function (Bio 837)		
Chem 8500	Interaction of Electromagnetic Radiation with Matter		
Econ 8320	Principles of Environmental Policy		
Econ 8321	Environmental Cost of Economic Development		
Chem 8510	Biophysical Chemistry		
Engl 6110	Technical Writing.		
Math	Any math course at a 6000 or 8000 level		
Phys 6510	Mathematics of Physics I		
Phys 6520	Mathematics of Physics 11		
Phys 6810	Introduction to Quantum Mechanics		
Phys 8010	Advanced Classical Mechanics		
Phys 8100	Electromagnetic Theory I		
Phys 8110	Electromagnetic Theory II		
Phys 8120	Plasma Physics		
Phys 8210	Quantum Mechanics I		
Phys 8220	Quantum Mechanics II		
Phys 8310	Statistical Mechanics		
Phys 8410	Atomic Physics		
Phys 8420	Molecular Physics		
Phys 6910	Solid State Physics		
Phys 8610	Nuclear Physics		
Phys 8650	Fundamentals of Particles and Interactions		
CSc level	Any Computer Science course at a 6000 or 8000 level		
CIS	Any CIS course at 6000 or 8000 level.		
Geog 6520	Quantitative Spatial Analysis		
Geog 6522	Thematic Cartography		
Geog 6530	Introduction to Remote Sensing		
Geog 6532	Geographic Information Systems		
Geog 6534	Advanced Geographic Information Systems		
Geog 6640	Geomorphology		
Geog 6644	Environmental Conservation		
Geog 6646	Water Resource Management		
Geog 6642	Weather and Climate		
Geog 6528	Mapping Fundamentals for GIS		
Geog 6648	Biogeography		
Geog 6650	Applied Hydrology		
Geog 8040	Seminar in Geomorphology and Hydrology		
Geog 8050	Seminar in Environmental Issues		
Geog 6644	Environmental Conservation		

**Appendix II. Format of Masters Degree Thesis Proposal Cover Sheet.**

TITLE OF PROPOSAL

By

NAME

Approved:

\_\_\_\_\_  
Thesis Director

Date: \_\_\_\_\_

\_\_\_\_\_  
Reading Committee

Date: \_\_\_\_\_

\_\_\_\_\_  
Reading Committee

Date: \_\_\_\_\_

\_\_\_\_\_  
Graduate Director

Date: \_\_\_\_\_

**Appendix III: Format of Thesis Signature Page**

***THESIS TITLE***

A Thesis  
Presented in Partial Fulfillment of Requirements for the Degree of Master of Science in the  
College of Arts and Sciences  
Georgia State University

20\_\_\_\_

by

***Student Name***

Committee:

\_\_\_\_\_  
, Chair

\_\_\_\_\_  
, Member

\_\_\_\_\_  
, Member

\_\_\_\_\_  
Date

\_\_\_\_\_  
***Jane Doe***  
Department Chair

**Appendix IV: Format of Non-Thesis Project Signature Page**

THE TITLE OF YOUR PROJECT OR PAPER GOES HERE, CENTERED, ALL CAPS

AND DOUBLE-SPACED

by

YOUR NAME HERE

Approved By:

\_\_\_\_\_  
Major Advisor

Date Approved:

\_\_\_\_\_  
Date

Graduation Date:

\_\_\_\_\_  
Semester/Year

**Appendix V: Graduate Courses in Geosciences (copied from the *Graduate Catalog*)**

**Appendices VI through XIII below are forms students will need to submit as graduate students depending on their course of study**

DEPARTMENT OF GEOSCIENCES  
College of Arts and Sciences

Mailing Address  
P.O. Box 3965  
Atlanta GA 30302-3965

Phone 404-413-5750  
Fax 404-413-5768



**TO: CAS Graduate Office**

**FROM: Larry Kiage  
Graduate Director**

**RE: Thesis Advisor**

I would like to designate the following individual to serve as my Advisor for the degree of Master of Arts in Geography

\_\_\_\_\_  
Advisor's Printed Name

\_\_\_\_\_  
Advisor Signature and Date

\_\_\_\_\_  
Student Printed

\_\_\_\_\_  
Name Panther #

\_\_\_\_\_  
Student Signature and Date

Larry Kiage  
Graduate Director

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

DEPARTMENT OF GEOSCIENCES  
College of Arts and Sciences

Mailing Address  
P.O. Box 3965  
Atlanta GA 30302-3965

Phone 404-413-5750  
Fax 404-413-5768



**TO: CAS Graduate Office**

**FROM: Larry Kiage  
Graduate Director**

**RE: Thesis Advisor**

**I would like to designate the following individual to serve as my Advisor for the degree of Master of Science (Geography)**

\_\_\_\_\_  
**Advisor's Printed Name**

\_\_\_\_\_  
**Advisor Signature and Date**

\_\_\_\_\_  
**Student Printed**

\_\_\_\_\_  
**Name Panther #**

\_\_\_\_\_  
**Student Signature and Date**

**Larry Kiage  
Graduate Director**

\_\_\_\_\_  
**Signature**

\_\_\_\_\_  
**Date**



DEPARTMENT OF GEOSCIENCES  
College of Arts and Sciences

Mailing Address  
P.O. Box 3965  
Atlanta GA 30302-3965

Phone 404-413-5750  
Fax 404-413-5768



**TO: CAS Graduate Office**

**FROM: Larry Kiage  
Graduate Director**

**RE: Thesis Advisor**

**I would like to designate the following individual to serve as my Advisor for the degree of Master of Science (Geology)**

\_\_\_\_\_  
**Advisor's Printed Name**

\_\_\_\_\_  
**Advisor Signature and Date**

\_\_\_\_\_  
**Student Printed Name**

\_\_\_\_\_  
**Panther #**

\_\_\_\_\_  
**Student Signature and Date**

**Larry Kiage  
Graduate Director**

\_\_\_\_\_  
**Signature**

\_\_\_\_\_  
**Date**

DEPARTMENT OF GEOSCIENCES  
College of Arts and Sciences

Mailing Address  
P.O. Box 3965  
Atlanta GA 30302-3965

Phone 404-413-5750  
Fax 404-413-5768



**TO:** CAS Graduate Office  
**FROM:** Larry Kiage  
Graduate Director  
**RE:** Thesis Advisor

I would like to designate the following individual to serve as my Advisor for the degree of Master of Science (Water Sciences)

\_\_\_\_\_  
Advisor's Printed Name

\_\_\_\_\_  
Advisor Signature and Date

\_\_\_\_\_  
Student Printed Name

\_\_\_\_\_  
Panther #

\_\_\_\_\_  
Student Signature and Date

Larry Kiage  
Graduate Director

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

DEPARTMENT OF GEOSCIENCES  
College of Arts and Sciences

Mailing Address  
P.O. Box 3965  
Atlanta GA 30302-3965

Phone 404-413-5750  
Fax 404-413-5768



**TO:** CAS Graduate Office  
**FROM:** Larry Kiage  
Graduate Director  
**RE:** Thesis Committee

I would like to designate the following individuals to serve on my thesis committee for the degree of Master of Arts in Geosciences (Geography)

1. \_\_\_\_\_  
Printed Name Signature and Date

2. \_\_\_\_\_  
Printed Name Signature and Date

\_\_\_\_\_  
Advisor's Printed Name Advisor Signature and Date

\_\_\_\_\_  
Student Printed Name Panther # Student Signature and Date

Larry Kiage  
Graduate Director \_\_\_\_\_  
Signature Date

DEPARTMENT OF GEOSCIENCES  
College of Arts and Sciences

Mailing Address  
P.O. Box 3965  
Atlanta GA 30302-3965

Phone 404-413-5750  
Fax 404-413-5768



**TO:** CAS Graduate Office  
**FROM:** Larry Kiage  
Graduate Director  
**RE:** Thesis Committee

I would like to designate the following individuals to serve on my thesis committee for the degree of Master of Science in Geosciences (Geography)

1. \_\_\_\_\_  
Printed Name Signature and Date

2. \_\_\_\_\_  
Printed Name Signature and Date

\_\_\_\_\_  
Advisor's Printed Name Advisor Signature and Date

\_\_\_\_\_  
Student Printed Name Panther # Student Signature and Date

Larry Kiage  
Graduate Director \_\_\_\_\_  
Signature Date

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**TO:** CAS Graduate Office  
**FROM:** Larry Kiage  
Graduate Director  
**RE:** Thesis Committee

I would like to designate the following individuals to serve on my thesis committee for the degree of Master of Science in Geosciences (Geology)

1. \_\_\_\_\_  
Printed Name Signature and Date

2. \_\_\_\_\_  
Printed Name Signature and Date

\_\_\_\_\_  
Advisor's Printed Name Advisor Signature and Date

\_\_\_\_\_  
Student Printed Name Panther # Student Signature and Date

Larry Kiage  
Graduate Director \_\_\_\_\_  
Signature Date

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**TO: Graduate Office**

**FROM: Larry Kiage  
Graduate Director**

**RE: Thesis Committee**

**I would like to designate the following individuals to serve in my thesis committee for the degree of Master of Science in Geosciences (Water Sciences)**

1. \_\_\_\_\_  
Printed Name Signature and Date

2. \_\_\_\_\_  
Printed Name Signature and Date

\_\_\_\_\_  
Advisor's Printed Name Advisor Signature and Date

\_\_\_\_\_  
Student Printed Name Panther # Student Signature and Date

**Larry Kiage**  
Graduate Director \_\_\_\_\_  
Signature Date