

**University at Buffalo**  
**College of Arts and Sciences**  
**Department of Geology**

***Graduate Student  
Handbook***

*Department of Geology*

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**Graduate School Website for  
Forms & Resources:**

[Graduate School](#)

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## **PREFACE**

Some of the rules for graduate degrees in Geological Sciences are established by the Graduate School; others are Geology Department rules. Only selected requirements of the Graduate School are reproduced below. One should become familiar with appropriate sections of the Graduate School Policies and Procedures website: [Graduate School Policy Library](#)

The Department of Geology Graduate Handbook provides a summary of the various rules and policies that define our graduate programs. All rules are subject to revision by the Graduate School or by the Department.

Please carefully read the Graduate School's policies on leaves of absence, registering for classes, how to maintain full-time status required by some agencies and for international students, paying tuition and fees, and deadlines for milestones related to the conferral of degrees.

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# **GEOLOGY DEPARTMENT OVERVIEW**

## **INTRODUCTION**

The Department of Geology at UB offers a comprehensive graduate program for those with either academic or professional aspirations. We present a robust sequence of courses specifically designed to play on the strengths of our department, and to ensure that graduate students leave with an integrated understanding of geology. The combination of this curriculum and our faculty of internationally active researchers make ours an outstanding graduate program.

## **GRADUATE STUDENT HANDBOOK**

This handbook contains geology departmental policies, procedures, and requirements you need to know in order to successfully complete your graduate degree at the University at Buffalo. Please periodically check this handbook to ensure you are on track with your academic requirements and ahead on deadlines. It is ultimately your responsibility to keep track of your academic career in order to successfully graduate in a timely manner. If you have any questions or recommendations to improve this handbook, do not hesitate to contact us at [glyadmin@buffalo.edu](mailto:glyadmin@buffalo.edu).

## **DEGREES**

The Department of Geology offers M.S Non-Thesis, M.S., and Ph.D. degrees. In addition, the Department participates in special interdisciplinary programs; faculty will steer qualified students toward these as is appropriate.

## **CERTIFICATES**

The Department of Geology offers an advanced certificate in Professional Science Management. The Professional Science Management (PSM) certificate allows students to pursue advanced training in science without a Ph.D., while simultaneously developing highly valued business skills without an MBA. The PSM is best suited for students who seek science careers in business, government or non-profit organizations.

## **APPROPRIATE BACKGROUND**

Students entering our graduate degree programs are expected to have a solid background in geology, and to have successfully completed courses in mathematics, physics, and chemistry. However, students with training in other natural science disciplines and engineering are encouraged to apply; in most cases deficiencies in their knowledge of geology can be overcome with additional study.

Upon entering our graduate program, M.S. and Ph.D. students select a primary faculty advisor and an advisory committee to guide them in the selection of a balanced program that may include supporting coursework in other departments. Members of the faculty are prepared to supervise theoretical, experimental, and field research.

## CAREER POSSIBILITIES

Most employers favor advanced degrees in geology, and our graduates find positions in environmental, natural resource, engineering, or energy-related corporations, as well as federal and state governmental agencies. A degree in geology also combines well with specializations in law, business, and teaching.

## RESEARCH AREAS

**Water and the Environment:** Recent research includes: studies which seek to understand ground-water flow and contaminant transport at multiple scales, surface water-groundwater coupling, environmental site characterization, environmental risk assessment, fate and transport of toxic metals, trace metal chemistry of hydrocarbon source rocks, near-surface characterization (such as monitoring environmental remediation processes and characterizing shallow aquifers) using geophysical techniques.

To learn more: [Water and the Environment](#)

**Geohazards, Volcanoes and Geodynamics:** Recent research includes: explosive volcanism, volcanic plumes, lava flows, pyroclastic flows, pyroclastic deposits, mechanisms of volcanic explosions, planetary geology, volcanic plumbing, and volcanic hazards. We address all of these problems using theoretical, field, and experimental approaches. Members of the volcanology group work in the USA, Central and South America, Europe, and on the sea floor. To learn more:

[Geohazards, Volcanoes and Geodynamics](#)

**Climate Change:** Recent research includes: monitoring Greenland and Antarctic ice sheet mass balance and investigating ice dynamics by using remote sensing and photogrammetry; studying subglacial topography and geology by remote sensing and airborne geophysics; Participating in NASA's ICESat and planned ICESat-II cryospheric satellite altimetry missions; Mapping lineaments from remote sensing for CO<sub>2</sub> sequestration; monitoring permafrost and soils in Alaska; reconstructing Greenland ice stream changes using cosmogenic exposure dating and lake sediment coring; reconstructing Arctic climate change using lake sediments on Greenland and Baffin Island; Chironomid- and Varve-based temperature reconstructions; dating Holocene glacier changes in Alaska and Baffin Island; dating glacier change and jökulhlaup occurrence in the Colorado Rockies.

To learn more: [Climate Change](#)

**Ecosystems and Adaptation:** The subject matter of Evolution, Ecology, and Behavior is broad- ranging and encompasses those aspects of the life and environmental sciences that characterize how organisms interact with each other and their environment and how those interactions change over time. They are essential to the study of applied and basic topics such as studies of human origins (paleoanthropology), biodiversity over space (community ecology) and time (paleobiology), the function and evolution of body plans and life histories (evolutionary ecology), the origins of social systems (socioecology), the effects of climate change and biotic invasions on ecosystems, conservation, bioremediation, and epidemiology.

To learn more:

[Ecosystems and Adaptation](#)

# **GENERAL INFORMATION**

## **ACADEMIC CALENDER**

Please see: [University at Buffalo Academic Calendar](#)

## **THE DEPARTMENT WHO'S WHO:**

**Geology Department Chair:** The Chair is the department's chief executive and administrative officer. The Chair guides the department's teaching, research and services; conducts its administrative operations; represents the department to the University; and reports and recommends actions regarding the department's programs, activities, and faculty.

**Director of Graduate Studies (DGS):** The DGS supervises the department's graduate program. The DGS is responsible for directing the recruitment of graduate students, orienting new graduate students and assigning them a faculty advisor, maintaining and developing the graduate curriculum, monitoring graduate student progress towards the completion of program requirements, and representing the department at meetings which involve the graduate program. The approval and signature of the DGS is required for most graduate school forms.

**Faculty Advisor. (Also known as the Thesis or Dissertation Advisor):** The Faculty Advisor is a faculty member in the Department of Geology who will provide primary supervision and guidance to the M.S. or Ph.D. graduate student in his/her program of study.

**Master's Thesis Committee or Doctoral Dissertation Committee. (Also known as the Advisory Committee):** The minimum and usual number of members in the Committee is three. At least one member must be a full-time assistant, associate or full professor from the Department of Geology. The additional members are not required to be from the Department of Geology, but they must be assistant, associate, full, emeritus or adjunct professors at UB that are members of the Graduate School. The Committee will advise the student regarding a course of study and, upon successful completion of the defense of the thesis or dissertation, the Committee will certify in writing to the Chairman that the student has fulfilled their degree requirements. The Committee may change the faculty representatives on the committee as the student re-defines interests or research, or as faculty members take sabbatical leave. Either the committee or the student may initiate such changes, but the pre-existing Advisory Committee must approve the change in the composition of a new Committee.

**Technical Defense Examining Committee:** Required for Ph.D. students only, the Technical Defense Examining Committee is composed of the dissertation committee, and it is strongly encouraged that there be an outside reader (please refer to the Ph.D. Program section of the handbook for more information on the outside reader). If the research incorporates significant subject matter that is outside the expertise of the dissertation committee, the examination committee should include another faculty from the Geology Department, or if necessary another department, who can evaluate this component of the candidate's project.

**Graduate Program Administrator:** The Administrator coordinates all paperwork and logistics for the graduate program. For any program administrative questions or concerns, please contact the administrator at [glyadmin@buffalo.edu](mailto:glyadmin@buffalo.edu).

## DEPARTMENTAL INFORMATION AND REGULATIONS

**Computer Accounts:** When a graduate student first registers for classes, University at Buffalo Information Technology (UBIT) supplies a UBIT account that will allow you to use several University computer facilities, and services such as MyUB, HUB, Email, and internet access. For more information and for instructions on how to connect your mobile devices visit UBIT's website: [UB Information Technology](#)

**SENS (Science and Engineering Node Services):** This computer account is needed for access to the departmental workstations used in classes and labs. Submit a SENS Account Request Form online at [SENS](#)

**Computer Help:** Most computer problems can be addressed by sending an e-mail to [senshelp@buffalo.edu](mailto:senshelp@buffalo.edu). For problems regarding your account, send an email to [cit-helpdesk@buffalo.edu](mailto:cit-helpdesk@buffalo.edu).

**Conference Room Reservations:** Conference rooms 126, 434 and 435 in Cooke Hall can be reserved by graduate students to conduct committee meetings, club meetings, thesis defenses, etc. Please check the calendar on the Geology Department website for availability: [Geology Room Calendar](#). To request a reservation send an email to [glyadmin@buffalo.edu](mailto:glyadmin@buffalo.edu).

**Email:** The University supplies faculty and staff with student email addresses. Students are required to check this account daily or set a forwarding address to an account that is checked daily. The instructions to set up a forwarding address can be found at: [UB Information Technology](#).

**Home Address and Phone Number:** As a student at UB, you need to maintain accurate address information on file with the University. Students with a UBITName and password should make any address change in their HUB Student Center (via MyUB).

### **Keys:**

1. Distribution of keys
  - a. Keys will be issued to faculty and staff for rooms over which they have been assigned authority.
  - b. Keys will be issued to graduate (or, by exception, undergraduate) students only at the written request of faculty and only for rooms over which faculty have authority. Other exceptions may be made by the Department Chair at the request of faculty or staff.
  - c. To authorize a student to have a key, student must complete a Key Request Form located on the Geology website and return to 126 Cooke Hall for processing. Faculty must sign the form or can send an e-mail message to [glyadmin@buffalo.edu](mailto:glyadmin@buffalo.edu) for approval, listing the student and the room to which keys are to be issued. Only written requests will be honored.
2. Key responsibility
  - a. Each person to whom a key is issued is responsible for maintaining control over the key at all times. Keys may not be loaned, stashed over the door, hidden behind a fire extinguisher, etc. Anyone who violates this policy will be held fiscally accountable for any loss of equipment or personal effects that can be reasonably inferred to have resulted from this violation of department policy.



**Department Copies of Thesis:** You are allowed to borrow the department's copy of a thesis or dissertation for a period of thirty (30) days. You must sign the thesis out in the office and return it to the office within 30 days. To view recent dissertations and thesis: [ProQuest Website](#)

**Facilities:** The Department maintains facilities for advanced study in the geological sciences, including laboratories for geophysical, geochemical, sedimentation, petrographic, hydrologic, photogrammetric, volcanology, remote sensing, and morphometric analysis. The Department has a computer laboratory for image processing and data analysis. Active sponsored research grants include those from NASA, the National Science Foundation, the U.S. Department of Energy, U.S. Environmental Protection Agency, the American Chemical Society, New York State Research and Development Authority, and local industries.

**Geology Library Collections:** The Science and Engineering Library includes the Geology Collection of approximately 20,000 volumes and a Map Collection of 100,000 sheet maps. The Map Collection includes large-scale topographic maps of the United States, Canada, and other areas of the world. Selected thematic maps of geology, hydrology, gravity, seismology, nautical, and aeronautical charts are also available. Also located in this library are geological journals, books, and monographs. Indices and bibliographies are also housed there, as well as reserve materials requested by the department faculty. Bibliographic instruction is available from the Geology and Map Librarian on the use of the collection and on the method of searching for information in the geological sciences. The map collection is located in 316 Capen Hall of the Oscar A. Silverman Library. A librarian familiar with the geological sciences and available library resources can assist you in finding materials.

**Geological Collections:** The geological collections are maintained by our instructional support technicians to support faculty and student research. The collections include of suites of rocks and thin sections from localities worldwide, the Church Mineralogical Collection, and special collections, which include geological structures, meteorites, and other phenomena. Several economic suites are available and others are currently under development.

**Mailboxes:** Most graduate students, faculty, and staff are assigned a mailbox in the department office. The mailboxes are accessible when the department office is open. Please check daily. Graduate student mailboxes are based on availability each semester.

**Printing:** All UB students, faculty, & staff receive a page allocation to print for each fall and spring semester: UBIT Printing Services

**Safety Training Seminar:** All students participating in laboratory research in our department are required attend a safety-training seminar annually that lasts approximately 1 1/2 hours. This training is be coordinated by one of our Instructional Support Technicians. Safety concerns can be addressed by an Instructional Support Technician and or UB Environment, Health & Safety (EH&S): [Environment and Safety](#)

## **GEOLOGY GRADUATE STUDENT ASSOCIATION (G.G.S.A.)**

The Geology Graduate Student Association, comprised of and governed by graduate students in the department, is affiliated with the university-wide Graduate Student Association (G.S.A.). In addition to keeping students posted on departmental and university policies, procedures, and events, the organization assists in planning the guest lectures and film series as well as social activities in the department. All graduate students are welcome and urged to participate in the group. Meetings are usually held monthly. Meeting announcements are made through the email listserv. For more information see: [UB Geology Club](#)

## **PEGRUM LECTURE SERIES**

In an effort to familiarize students and faculty with current research by specialists in the varied fields of geology, the Department has frequently scheduled lectures presented by visiting scientists as well as members of this Department. Upcoming lectures are announced via email and posted on the department website.

Attendance and participation in discussion is expected of all graduate students. These lectures are considered a valuable part of the graduate-level educational and professional training in UB geology. With a graduate degree in geology from UB, it is assumed that students have played an active role within the department; attending every lecture is part of learning a broad spectrum of geoscience research topics.

## **FINANCIAL SUPPORT**

**Department Assistantships:** A limited number of assistantships are available to aid the Department with teaching (TAs) or research duties (RAs). See the *Teaching and Research Assistantships* section of this handbook for additional information on TAs and RAs.

**Other Resources: Awards & Scholarships:** Geology graduate students are also eligible for the prestigious UB Presidential Fellowship and Arthur A. Schomberg Fellowship which offer both stipends and tuition scholarships.

Information regarding financial aid programs: [1Capen](#)

**Mark Diamond Research Fund (MDRF):** Gives grants to graduate students for research expenses related to their thesis or dissertation. The MDRF grant is only for University at Buffalo graduate students in programs participating in the Graduate Student Association and who have not waived the student activity fee. Information and application instructions are available from the UB Graduate Student Association website: [Graduate Student Association](#)

**Dr. Duane Champion Summer Travel Award:** The Champion Summer Travel Award Fund provides partial financial support to students in the UB Department of Geology for the purpose of research-related work in the lab or field, and can include costs for travel, research supplies, and analyses. Awards will be made based on the availability of funds in any given semester.

**Reginald H. Pegrum Professional Development Award:** The Professional Development Award provides partial support for Geology graduate and undergraduate students to present posters, give talks at professional meetings, or attend professional workshops or short courses. This fund does not support travel/fieldwork associated with student research or coursework. Awards are based on availability of funds in any given year.

# THE GRADUATE SCHOOL

Additional policies, procedures and forms are determined by the UB Graduate School. This includes important information relating to admissions, registration, grading, transfer credits, student records, degree requirements, and academic integrity.

## **Informational Links:**

[Graduate Policy Library](#)

[Graduate School Forms](#)

[Graduation Requirements and Deadlines](#)

[Graduate Professional Development](#)

# **TEACHING AND RESEARCH ASSISTANTSHIPS**

## **ELIGIBILITY**

**Teaching Assistantship (TAs):** TA positions are awarded by the Graduate Studies Committee on a competitive basis based on transcripts, letters of recommendation, and departmental teaching needs. For continuing TAs, previous performance is also considered. TA appointments generally commence in the fall semester and are made for the academic year, but occasionally TAs become available in the spring semester. To be considered for a TA, international students must achieve a score of 55 or greater on the standardized Test of Spoken English (SPEAK). Students in the MS Non-Thesis program are not eligible for TA's.

**Research Assistantships (RA):** Research assistantships are available through sponsored grants of individual faculty members, sometimes include summer research support, and may carry the eligibility of a tuition scholarship. Applicants for graduate study are automatically considered for these assistantship positions. However, research assistantship awards generally require the student to establish a satisfactory research relationship with the particular faculty member whose grant will provide the funding.

## **TUITION SCHOLARSHIPS**

Tuition scholarships are granted separately from stipends. Students with stipend support (e.g. teaching assistants, research assistants) are eligible for tuition waivers as outlined in their tuition scholarship offer letter. The following guidelines apply to all tuition scholarships:

1. Tuition scholarship funds may be applied only to academic year tuition costs; any graduate fees or summer tuition costs are not covered by this scholarship.
2. Students receiving a graduate/teaching assistantship are required to register for 9 credit hours per semester in order to maintain full-time student status. Advanced graduate students at the candidacy stage may be able to reduce this requirement by filing the Certification for Full-Time Status form to be considered full time at less than 9 credit hours.
3. The tuition scholarship may be renewed for a maximum of four (4) semesters or the minimum credit hours required for the Master's degree, whichever is less; or eight (8) semesters or the minimum credit hours required for the Ph.D. degree, whichever is less. Transfer credits are counted in the minimum credit hours toward the degree. Tuition scholarships awarded at the Master's level are included in the Ph.D. scholarship totals. Students may petition the Dean of the Graduate School for extensions to these time limits, but they should be aware that, if approved, the tuition scholarship extension is only for up to one (1) credit hour of tuition.
4. Students are required to pay all college fees. Nonpayment of these fees at the required time will result in the assessment of late fees.
5. Domestic students must apply for New York State Residency. This process should begin immediately when moving to Buffalo. If you do not comply with this requirement to establish New York State residency, you are personally responsible for the difference between the in-state and the out-of-state tuition charges. For the most accurate information on the process of establishing residency in this state, contact the Office of Student Accounts.
6. Although students receiving teaching or research stipends are customarily granted a tuition waiver, they are not guaranteed.

## **ASSISTANTSHIP REQUIREMENTS**

A limited number of assistantships are available for students to aid the Department with teaching (TAs) or research duties (RAs). The Graduate Committee expects students who are supported through the Department to perform their duties diligently and effectively and to maintain a grade average of B or higher. Renewal of assistantships is not automatic and an assistantship may be terminated during the semester if a student does not satisfactorily meet expected criteria. The Graduate Committee, working with the Teaching Assistant Coordinator, reviews the performance of all teaching assistants during and at the end of each semester. The Graduate Committee will make renewal awards on the basis of academic and past performance. Continuation of a Research Assistantship is at the discretion of the faculty member who provides the funding for a particular position.

The State of New York expects all students holding a normal full-time appointment to devote twenty (20) hours per week to their assistantship duties. Work assignments are variable and may consist of teaching laboratory sections or assisting in lectures (e.g., preparing and grading exams, preparing materials, and other duties assigned by the instructor or their representative). Departmental work assignments may include drafting, map room, or curatorial duties, etc. Some assistants may be assigned to a particular professor to aid them in various phases of their course preparation, etc. Any one or a combination of such duties may be assigned.

TA or RA positions are considered as a regular job, which normally requires keeping track of time and tasks, and reporting your work to a supervisor. Any absences (e.g., for field work or conference attendances), except personal illness or family emergencies, must be coordinated ahead of time with the appropriate supervisor. The positions are not equivalent to fellowships or scholarships, which simply fund you to conduct your education and research; rather, there are real expectations for your time and effort.

### **Paychecks**

Paychecks are distributed in the department office. University regulations require that unclaimed checks be returned to University Payroll. TA's receive checks every other Wednesday, RA's receive direct deposits every other Friday, and Student Assistants are paid every other Thursday. Direct deposit forms: <http://www.buffalo.edu/administrative-services/forms-catalog.html>. If you have questions about your paycheck, contact UB Human Resources (645-7777).

### **Timesheets for TA/RA**

Teaching Assistants (TA) will be given a timesheet to complete and sign on the 1<sup>st</sup> of each month. Completed timesheets are to be returned to the TA Coordinator's mailbox.

Research Assistants will be required to fill out an on-line timesheet using the E-Time Reporting system.

### **Health Insurance Orientation**

Graduate student TA/RA/GA's who elect to enroll in the Student Employee Health Insurance Program (SEHP) or The Research Foundation Graduate Student Employee Health Plan are required to attend a health insurance orientation session conducted by the Human Resources Department. For information and to register for an orientation session please visit: [Human Resources](#)

## **Graduate Student Employees Union (GSEU)**

The GSEU is the collective bargaining unit for Teaching Assistants and Graduate Assistants employed by SUNY and paid by the State of New York. All TAs and GAs employed by SUNY are part of the GSEU bargaining unit and pay the union a percentage of their income. However, to obtain full union benefits one must fill out a yellow membership form and return it to a union officer (your department rep, Chief Steward, or Business Agent) or mail it to the address on the form. These forms are distributed at health orientations, GSEU meetings, and general orientation activities. For more information: [Graduate Student Employees Union](#)

## **GROUNDS FOR SUSPENSION**

1. A grade point average below C (2.0) for one semester. A cumulative grade point average below B (3.0) for more than one semester. A student will be put on probation after one semester with a grade point average of less than 3.0. Subsequent semesters below 3.0 may result in termination.
2. TA/RA's are expected to devote 100% of their time to their studies and TA/RA duties. Having a full or part-time job outside the department is grounds for immediate termination.
3. Unsatisfactory performance in the completion of assistantship duties. The following considerations will be among those used for the evaluation of a TA's performance: promptness in grading, punctual attendance in labs, written evaluation of teaching by students in class or lab taught by the TA, and response to duties other than teaching, such as proctoring, grading, and other departmental work assignments. RAs will be evaluated by their faculty sponsor.

## **SUSPENSION PROCEDURE (On grounds other than academic performance)**

The first approach to addressing problems should always be one-on-one communication between the student and the relevant supervisor (TA Coordinator, faculty sponsor). If such communication does not result in a resolution of a problem, the following procedure should be followed.

1. All complaints concerning the TA/RA must be written and given to the Director of Graduate Studies and a copy given to the Department Chair.
2. The TA/RA in question should be notified in writing that a complaint has been filed.
3. The TA/RA should talk to their supervisor or advisor and the Director of Graduate Studies immediately if they believe the complaint is unjust and/or to determine whether the problem can be rectified.
4. If the problem remains unresolved, it must be referred to the Graduate Committee. Both parties must be given the opportunity to state their cases.
5. Suspension must be made by a majority vote of the Graduate Committee and the Department Chairman.
6. The Department Chair must send notice of suspension to the TA/RA in writing.

## **TA TRAINING WORKSHOP**

The UB Center for the Integration of Research, Teaching and Learning (CIRTL) offers a day-long skills workshop, prior to the beginning of classes in the fall semester, to assist graduate students in the development and enrichment of their teaching and learning skills. Registrar through CIRTL@UB: [Conference for Graduate Teaching Assistants](#)

## **TA ADDITIONAL WORK POLICY**

To accommodate the additional workload that occasionally arises, especially in large enrollment courses, TA/GAs with less demanding work schedules may be asked to provide additional help and are placed on a list by the Director of Graduate Studies. This list forms the "pool" from which additional help is drawn when needed.

To ensure a fair distribution when this additional work occurs, the department's policy is as follows:

1. If the student is assigned to a specific course, all requests for work not connected to that course, including proctoring of exams outside that course, will be cleared through the Director of Graduate Studies or the Teaching Assistant Coordinator in conjunction with your supervisor. This will help to insure that undue extra duty does not occur.
2. Whenever possible the student will be informed of the required additional work at least one week in advance. Depending on the circumstances, however, this may not always be possible.
3. The student's exams and research will be taken into consideration, but exemption from extra duties for these reasons must be supported by your supervisor.

## **TA EVALUATION FOR RENEWAL**

To determine whether stipend support should continue, there is a semi-annual review of the Assistantships by the Graduate Committee. This evaluation is based on grades, performance and written student evaluations of teaching performance.

# **GRADUATE PROGRAM DESCRIPTIONS**

Matriculated students are admitted to a specific degree program. It is possible to change degree programs once you begin, but, in the case of MS and PhD students, any changes must be approved by the Advisory Committee and should be carefully considered with advice from your Faculty Advisor. MS non-thesis students should discuss any potential changes with the Director of Graduate Studies. The following degree programs are available:

## **MS Non-Thesis Program**

A degree that is defined by advanced coursework and development of an eportfolio. The objective of the eportfolio is to provide evidence of the student's competence across several areas within his/her discipline (see below) as well as the student's written communication skills. The eportfolio is intended to be a tool that the student can use in developing the next stage of their career, be it entering the workforce or continuing with graduate studies. The non-thesis student is supervised by the Director of Graduate Studies or an assigned academic advisor. A typical non-thesis program is expected to take 1-2 years to complete.

## **MS Thesis Program**

A Master's level degree program, requiring both advanced coursework and the completion and public defense of a hypothesis-driven research thesis. The thesis student is closely supervised by a faculty member who is the Thesis Advisor, and by a Thesis Committee. A typical thesis program is expected to take 2 years to complete.

## **PhD Program**

A doctoral level program is intended for students who desire a career in academia or other careers that require advanced training of research methods. Students may enter the program with a BS or MS degree, but BS students are expected to take a longer time to complete the program. A typical PhD program is expected to take 4 years for students entering with a BS, and 3 years for students entering with a MS degree.

# **PROFESSIONAL SCIENCE MANAGEMENT**

## **ADVANCED CERTIFICATE**

The Professional Science Management (PSM) certificate is designed to allow students to pursue advanced training in science without a Ph.D., while simultaneously developing highly-valued business skills without an MBA. The PSM is obtained in conjunction with the pursuit of a MS or MS non-thesis degree. The PSM is best suited for students who seek science careers in business, government, or non-profit organizations. Developed by university faculty and administrators working with scientists and managers in industry, the Professional Science Masters (PSM) educates students in their chosen field of study while providing them with exposure and training in business (i.e.: internship placements), communications and ethics. The Geology Department offers tracks in GIS & Environmental Analysis, Geologic Hazards & Risks and Hydrogeology. Students will receive two credentials when they graduate, a graduate degree in Geological Sciences and a Certificate of Advanced Study in Professional Science Management.

### **ADMISSION**

Students in their first semester should indicate their intent to pursue a PSM Advanced Certificate on their Degree Progress Form so that a course plan can be designed to meet the PSM requirements. At the time an Application to Candidacy form is being completed for the Master's degree, typically at the end of the second semester, a PSM candidacy form (a sample is included at the end of this section) is also submitted. An approval signature from the Geology Director of Graduate Studies is required. There is no application fee to apply to the certificate program if you are a current graduate level student at the University at Buffalo or if you have applied to a graduate program at the University at Buffalo. Both U.S. and international students are eligible to participate in this Advanced Certificate program.

### **COURSEWORK**

The PSM program requires the completion of five courses. The professional courses are in management skills evaluation (MGG 503), graduate research ethics (PHI 640 or LAI 674), and Analysis of Geological Data (GLY 529). One course is dependent on the chosen track (see the example candidacy form). The final course requirement is to complete an internship (GLY 526, 2 credits) related to the chosen track. In some instances, a project (GLY 633, 2 credits) may be substituted for the internship.

### **PSM EPORTFOLIO REQUIREMENTS**

Science Master's students are required to compile a set of materials that summarizes and displays their knowledge, skills, and problem-solving capabilities in the field of their home department. The eportfolio emphasizes the student's broad competencies. In addition, the eportfolio highlights the student's ability to design, manage, operate, and report on a project or projects, as both technical and project management skills are typically required for science managers. The eportfolio should also maintain a research component because the student will develop research projects and write research papers in selected courses. This work will provide the student with the necessary research experience and allow the student to develop a balanced intellectual growth both in practical skills and in critical thinking. The portfolio can also be part of a student's application package when they seek professional employment.

The eportfolio **must contain** the following items, along with any other related documents:

- A statement of education and professional goals achieved and perceived (2 pages);
- A resume (2 pages); and,
- A primary research paper (10-15 pages or more) pertaining to the internship/project/lab experience. The paper should include the basic elements of a research paper such as introduction, literature review, analysis, results and discussion, and conclusions.

Examples of other documents to include in your portfolio are:

- Grant proposals;
- Class projects/papers;
- Internship report; and
- Conference papers

### **Rules Governing Eportfolio Creation:**

The materials in the eportfolio must be assembled in a manner that achieves a professional appearance. All elements within each required item must be organized cohesively and be self-explanatory. Although the paper and application study may be initially developed in courses, it is anticipated that further revisions will usually be required in order to ensure the quality of the eportfolio at a level satisfactory for graduation. A digital copy must be submitted to your advisor (with a copy to the Geology Office).

The academic advisor is responsible for helping you select courses appropriate for the completion of your eportfolio. This should be part of the planning in the advisement period prior to the first semester of class work. Upon completion of the portfolio the student's advisor and a second reader must evaluate the work, and if it is satisfactory, they will approve the portfolio and submit an M-form to the Graduate School granting permission for the student to graduate.

## **INTERNSHIPS**

A semester-long internship is required for the certificate program. It is the students' responsibility to secure his/her internship. Students may complete internships during the fall, spring or summer and must work a minimum of 125 hours to meet the program requirements. The start date and end date of your internship is flexible and can be adjusted to meet individual schedules. Work times and rates of pay, if any, are negotiated between the student and employer.

**Developing an internship:** The first step in obtaining an internship is to discuss placement options with your Advisor to decide the type of organization with which you would like to work. UB's Office of Career Planning and Placement keeps a list of organizations that accept interns and will provide you with leads. You should consider your placement carefully, making sure you have the skills that the organization requires and that the organization will provide you with opportunities that coincide with your career goals. You will need to contact the organization to arrange for an interview and negotiate a contract with the company representative.

Before attending the interview, pick up a contract form from the Geology Department Office. You and the organization supervisor should fill out the contract at the time of the interview. During the interview, you and your supervisor should agree on what your duties will be. You must return the completed contract to the Geology Department Office and

Register for the internship. You must work a minimum of 120 hours during the semester in order to receive the full two credits required for this course.

Upon completion of your internship, your supervisor must fill out an employer internship evaluation form regarding the work you performed, and you must write a 10-15 page research paper pertaining to your internship experience. The paper should include basic elements of a research paper, including an introduction, literature review, analysis, results and discussion, and conclusions. Your paper must include information about some of your completed projects and accomplishments. You should also evaluate the internship experience as a whole and state whether you would recommend this organization to other students.

It is your responsibility to make sure that your paper and the evaluation from your supervisor are received by the Geology Department Office by the deadline on your contract.

**[Geology PSM Application](#)**

# **MASTER'S OF SCIENCE NON-THESIS PROGRAM**

## **ADMISSION**

Students entering the MS non-thesis program are expected to hold a BA or BS in Geology, including courses in mathematics, physics, and chemistry. Students applying with other science or engineering degrees must have 12 credits in geology beyond the introductory level, or must complete these credits during their Master's program. The advisor may require additional prerequisites depending upon the course of study.

## **ADVISEMENT**

You will be assigned a Faculty Advisor to assist you in selecting your courses. Your Faculty Advisor must approve this program of study. Any change to this program must be approved in writing by your Faculty Advisor. The advisor will advise you regarding a course of study and certify in writing to the Chair that you have fulfilled your degree requirements. It is the student's responsibility to ensure that all degree requirements are met in a timely fashion. In particular, the Graduate School has several stringent requirements regarding the time of submission of the Application to Candidacy and M-Form. These deadlines are strictly enforced and failure to meet them will result in a delay of your graduation by one whole semester with the cost of continued registration.

## **DEGREE PROGRESS FORM**

During each semester you must arrange a progress review meeting with your advisor prior to October 30<sup>th</sup> for the fall semester and April 1<sup>st</sup> for the spring semester. At this meeting the Degree Progress Form will be completed and signed. The form can be obtained from the Geology office upon request. This form keeps a record of your advisement, intended and completed coursework. The completed form is returned to the Geology office to be filed in your folder as confirmation of your progress toward your degree objective and must be updated each semester.

Failure to follow the above requirement will result in a hold being placed on your university record in the HUB preventing further course registration. The hold will not be removed until the progress form is completed and turned in to the office. This procedure will be strictly enforced.

## **PEGRUM LECTURE SERIES**

In an effort to familiarize students and faculty with current research by specialists in the varied fields of geology, the Department schedules lectures presented by visiting scientists as well as members of this Department. **It is expected that you attend lectures and participate in discussions.**

## **FORMAL COURSE WORK**

Formal course work is defined as 'actual classes' taken. This does not include seminars or courses numbered GLY 526, 599, 633, or 700. A list of all courses you will be taking must be approved by your Faculty Advisor (and Advisory Committee for M.S. and Ph.D. students) and included on your Degree Progress Form. This list will be your program of study.

## MS Non-Thesis Climate Track

<b>Track: Climate</b>			
Suggested Core Geology Courses:			
Subject Code & Number	Course title:	Credits:	Semester:
GLY 531	Volcanology	3	Fall
GLY 545 or GLY 547	Glacial Geology or Glaciology	3	Fall
GLY 514	Hydrogeology	3	Fall
GLY 501	Elements of Geologic Research	3	Fall
Required Specialization Courses (Choose a minimum of 12 Credits):			
GLY 517	Forensic Stable Isotopes	3	Spring
GEO 503	Fundamentals of Climate Science	3	Fall
GLY 553	Quaternary Dating/Paleoclimate	3	Spring
GLY 547	Glaciology	3	Fall
GLY 527	Statistics and Modeling of Geologic Data	4	Fall
GLY 565	Environmental Remote Sensing	3	Spring
GLY 579	Climate Change and Sustainability	3	Spring
Geology Elective Courses:			
GLY 519	Environmental Geophysics	3	Fall
GLY 529	Analysis of Geologic Data	3	Spring
GLY 548	Quaternary Geology Seminar	1	Fall/Spring
GLY 562	Aqueous Geochemistry	3	Spring
GEO 506	Geographical Information Systems	4	Fall/Spring
GEO 599	GIS for Environmental Modeling	4	Spring
Internship/Project/Lab/Independent Study (In support of the e-portfolio)			
GLY 633	Graduate Research	1 to 3	Fall/Spring
<b>Total Credit Hours for Graduation:</b>		<b>30</b>	

MS Non-Thesis Geohazards, Volcanology, and Geodynamics

<b>Track: Geohazards, Volcanology, and Geodynamics</b>			
Suggested Core Geology Courses:			
<b>Subject Code &amp; Number</b>	<b>Course title:</b>	<b>Credits:</b>	<b>Semester:</b>
GLY 531	Volcanology	3	Fall
GLY 545 or GLY 547	Glacial Geology or Glaciology	3	Fall
GLY 514	Hydrogeology	3	Fall
GLY 501	Elements of Geologic Research	3	Fall
Required Specialization Courses (Choose a minimum of 12 Credits):			
GLY 524	Extraterrestrial Volcanism	3	
GLY 528	Geologic Hazards and Risk	3	Fall
GLY 533	Volcanic Rocks	3	
GLY 550	Advanced Physics of the Earth	3	Spring
GLY 554	Planetary Geosciences	3	Spring
GLY 570	Advanced Geofluids and Geomechanics	3	Spring
GLY 573	Geophysical Data Analysis and Inverse Met	3	
GLY 577	Advanced Physical Volcanology	3	
GLY 578	Advanced Field Methods	3	Spring
Geology Elective Courses:			
GLY 519	Environmental Geophysics	3	Fall
GLY 529	Analysis of Geologic Data	3	Spring
GLY 527	Statistics and Modeling of Geologic Data	4	Fall
GLY 565	Environmental Remote Sensing	3	Spring
GEO 506	Geographical Information Systems	4	Fall/Spring
GEO 599	GIS for Environmental Modeling	4	Spring
GLY 597	Volcanology Seminar	1	Fall/Spring
Internship/Project/Lab/Independent Study (In support of the e-portfolio)			
GLY 633	Graduate Research	1 to 3	Fall/Spring
<b>Total Credit Hours for Graduation:</b>		<b>30</b>	

## MS Non-Thesis Water and Environment

<b>Track: Water and Environment</b>			
Suggested Core Geology Courses:			
Subject Code & Num	Course title:	Credits:	Semester:
GLY 531	Volcanology	3	Fall
GLY 545 or GLY 547	Glacial Geology or Glaciology	3	Fall
GLY 514	Hydrogeology	3	Fall
GLY 501	Elements of Geologic Research	3	Fall
Required Specialization Courses (Choose a minimum of 12 Credits):			
GLY 517	Forensic Stable Isotopes	3	Spring
GLY 519	Environmental Geophysics	3	Fall
GLY 520	Environmental Geophysics Lab	1	Fall
GLY 527	Statistics and Modeling of Geologic Data	4	Fall
GLY 530	Groundwater Flow Modeling	3	Spring
GLY 562	Aqueous Geochemistry	3	Spring
GLY 563	Field Methods in Hydrogeology	3	Spring
GLY 568	Environmental Organic Geochemistry	3	Spring
GLY 573	Geophysical Data Analysis and Inverse Met	3	
Geology Elective Courses:			
GLY 529	Analysis of Geologic Data	3	Spring
GLY 565	Environmental Remote Sensing	3	Spring
GLY 595	Hydrogeology Seminar	1	Fall/Spring
GEO 506	Geographical Information Systems	4	Fall/Spring
GEO 599	GIS for Environmental Modeling	4	Spring
Internship/Project/Lab/Independent Study (In support of the e-portfolio)			
GLY 633	Graduate Research	1 to 3	Fall/Spring
<b>Total Credit Hours for Graduation:</b>		<b>30</b>	

## MS NON-THESIS DEGREE REQUIREMENTS

1. Continuous registration including the semester in which all degree requirements are completed, whether the student is on campus or not.
2. Completion of a minimum of thirty (30) credit hours of graduate level credit beyond the Bachelor's degree with a grade point average of 3.0 (B).

### COURSE REQUIREMENTS:

- a. Three (3) credit hours minimum from three of the following geologic categories: Climate, Environmental, Geohazards Volcanology and Geodynamics (inclusive of any courses offered by the Department) and GLY 501-Elements of Geological Research for a total of twelve (12) credits.
  - b. Twelve (12) credit hours of formal course work to be selected to support career objectives with the advice and approval of the advisor. These credits may include courses from other departments with permission from your advisor before registration.
  - c. Geology electives.
  - d. At least two credits of GLY 633 (graduate research) with the Faculty Advisor, to be used to complete the required capstone work.
  - e. Additional credits from GLY 633 or seminar can be used to reach the required thirty (30) total credit hours once the above credit requirements are filled. Note, no more than 3 credit hours of seminar can be accepted.
3. Minimum residence as a full-time student of one year. A student may be a part-time student and still accumulate residence credit (24 semester hours).
  4. Submission of Application to Candidacy to the Graduate School prior to deadlines listed below:

For degree conferral on:	February 1	June 1	September 1
Application to Candidacy Due:	October 1	March 1	July 1

[Graduate School Application to Candidacy and Deadlines](#)

[Application to Candidacy Form](#)

5. Completion of a capstone work approved by the student's Faculty Advisor.
6. Compliance with Graduate School regulations regarding degree conferral. The Graduate School Policies and Procedures Manual should be consulted for further information regarding course work, examinations, and other requirements. Graduate School Policy Library: [Graduate School Policy Library](#)

## Project

MS Non-Thesis students will build a project that includes course-related papers, major “practicals” or projects that are required in their courses, and short Powerpoint slides summarizing what they learned in courses that do not otherwise require written products. A project will include a written synthesis of the learning outcomes from the student’s overall career at UB. Projects will be due 20 working days prior to the end of the final semester of each student’s program. Each project will be reviewed by a faculty member in the student’s focus area. The reviews will ensure that the student completed the portfolio, which they can then use in their career development, and offer brief suggestions for sharpening its presentation.

## COURSE LOAD

Incoming students should be full time students to be prepared for admission to candidacy for the degree as soon as possible.

<b>Student Type</b>	<b>Full-Time</b>	<b>Part-Time*</b>
Majority of students	12 credit hours min/19 credits max	11 hours or less
TA, RA, GA	9 credit min/9* credits max	Not allowed

\*\*Although part-time study is available, the time limit imposed by the graduate school is still enforced

Students who need full time status but are registered for less than the minimum credit hours are required to submit the Certification of Full Time Status form. [Graduate School Forms](#)

Registration for additional credit hours (“override”) requires the written permission from your Faculty Advisor and approval from the Graduate Dean’s office.

- You must maintain continuous residency by registering for at least one (1) credit hour each semester until your degree is conferred.

## **MAXIMUM TIME ALLOWANCE**

The Graduate School sets a maximum of four (4) years allowed for completion of the Master's degree from the date of initial registration into the geology program. Request for extensions of time limit must be justified using a Graduate Petition Form, which must be approved by the chair, the dean's office and the Graduate School.

## **ACADEMIC GRADE REQUIREMENTS**

A graduate student must maintain a B (3.0) average in graduate courses. A grade of C or better must be received in all graduate courses. Should the cumulative grade point average at any time fall below a B (3.0), or/and if a grade of C- or lower is received on any individual graduate course, the student will be placed on probation. If the grade average falls below a B the second successive semester, the student will be dropped from the degree program.

## **SATISFACTORY PROGRESS**

Satisfactory progress in the MS Non-Thesis degree program consists of completing the program of study on the expected schedule for graduation in two years while also meeting or exceeding the required grades.

The lack of satisfactory progress will be noted on the Degree Progress Form. After two consecutive semesters of unsatisfactory progress, a hearing will be held to determine if the student should be terminated from the Geology Department. The Director of Graduate Studies will chair this hearing, (unless the student's advisor is the Director of Graduate Studies, in which case the second most senior member of the graduate committee will be chair). The hearing will include written comments made by the student and the student advisor, and a written record of the proceedings will be made and placed in the student's file.

## **MS NON-THESIS PROGRAM CHECKLIST**

### **First Semester:**

- Progress review meeting
- Degree Progress Form
- Approved Program of study
- GPA 3.0 or greater
- Course registration

### **Second Semester:**

- Progress review meeting
- Degree Progress Form
- GPA 3.0 or greater
- Course registration

### **Third Semester:**

- Progress review meeting
- Degree Progress Form
- Application to Candidacy
- GPA 3.0 or greater
- Course registration

### **Fourth Semester:**

- Progress Review Meeting
- Degree Progress Form
- Capstone project
- GPA 3.0 or greater

## **Graduation Check List**

- An approved Application to Candidacy
- A completed M-Form
- Compliance with the Graduate School regulations regarding degree conferral

# **MASTER'S OF SCIENCE THESIS PROGRAM**

## **ADMISSION**

Students entering the MS program are expected to hold a BS or equivalent in Geology, including courses in mathematics, physics, and chemistry. Students applying with other science or engineering degrees must have 12 credits in geology beyond the introductory level and a geological field course or must complete these courses during their Master's program. The MS Faculty Advisor may require additional prerequisites depending upon the course of study.

## **ADVISEMENT**

Prior to the start of the first semester you will be assigned a **Faculty Advisor** to assist you in selecting an initial program of study. This advisor will help you select a permanent Master's **Thesis Committee** that will recommend and approve a program of study.

It is the student's responsibility to ensure that all degree requirements are met in a timely fashion. In particular, the Graduate School has several stringent requirements regarding time of submission of the Application to Candidacy and M-Form. These deadlines are strictly enforced and failure to meet them will result in a delay of your graduation and the costs of continued registration.

## **DEGREE PROGRESS FORM**

During each semester the Student must arrange a progress review meeting of your Thesis Committee prior to October 30th for the fall semester and April 1st for the spring semester. At this meeting the Degree Progress Form will be completed and signed. The form can be obtained from the Geology Office upon request. This form provides a record of advisement, intended and completed coursework, thesis proposal and the proposed date of the thesis defense. The completed form is to be returned to the Geology Office and be filed in the Student's folder as confirmation of the student's progress toward the degree objective and must be updated by the committee every semester.

Failure to follow the above requirement will result in a hold being placed on your university record in the HUB preventing further course registration. The hold will not be removed until the progress form is completed and turned in to the office. This procedure will be strictly enforced.

## **PEGRUM LECTURE SERIES**

In an effort to familiarize students and faculty with current research by specialists in the varied fields of geology, the Department schedules lectures presented by visiting scientists as well as members of this Department. **It is expected that you attend lectures and participate in discussions.**

## **FORMAL COURSE WORK**

Formal course work is defined as 'actual classes' taken. This does not include seminars or

courses numbered GLY 526, 599, 633, or 700. A list of all courses you will be taking must be approved by your Faculty Advisor (and Advisory Committee for M.S. and Ph.D. students) and included on your Degree Progress Form. This list will be your program of study.

## MS DEGREE REQUIREMENTS

1. Continuous registration including the semester in which all degree requirements are completed, whether the student is on campus or not. This includes fall and spring semesters, but does not include summer or winter sessions.
2. For non BA or BS Geology degree holders, 12 credits in geology beyond the introductory level and a Geological Field Course. The MS advisor may require additional prerequisites depending upon the course of study.
3. A minimum of thirty (30) semester credits of graduate level work beyond the Bachelor's degree with a grade point average of 3.0 (B). These credits may include courses from other departments with permission from your Thesis Committee before registration. At least twenty-four (24) of the thirty (30) credits must be based on **formal course work**; not including courses numbered Geology 526, 599, 633, or 700. Upon approval of the Thesis Committee, up to 3 credits of seminar may be substituted for formal course work.
4. Minimum residence as a full-time student of **one** year. A student may be a part-time student and still accumulate residence credit (24 credits).
5. Submission of a thesis proposal approved by your Master's Thesis Committee, and circulated to the entire faculty within the department, prior to the end of the second semester of study. After faculty comments have been considered, a copy endorsed by your committee will be placed in your department file.
6. Submission of Application to Candidacy (ATC) to the Graduate School prior to deadlines listed below:

For degree conferral on:	February 1	June 1	September 1
Application to Candidacy Due:	October 1	March 1	July 1

[Graduate School Application to Candidacy and Deadlines](#)

[Application to Candidacy Form](#)

7. Completion of a thesis approved by the student's Advisory Committee.
8. Successful completion of an oral presentation and defense of thesis. This will consist of questions directly pertinent to the student's research and other questions aimed at assessing the candidate's general knowledge of basic geology.
9. Compliance with the **Graduate School regulations** regarding degree conferral. Note: The Graduate School Policy Library should be consulted for further information regarding course work, examinations, and other requirements.  
[Graduate School Policy Library](#)

## COURSE LOAD

Incoming students should be full time students to be prepared for admission to candidacy for the degree as soon as possible and to allow for registration for thesis research during later semesters. You are encouraged to become involved in your thesis research topic as soon as possible after enrollment.

<b>Student Type</b>	<b>Full-Time</b>	<b>Part-Time*</b>
Majority of students	12 credit hours min/19 credits max	11 hours or less
TA, RA, GA	9 credit min/9* credits max	Not allowed

\*The tuition scholarships cover up to 9 credit hours, you may be held responsible for payment of tuition if you register for more than 9 credit hours.

\*\*Although part-time study is available, the time limit imposed by the graduate school is still enforced

Students who need full time status but are registered for less than the minimum credit hours are required to submit the Certification of Full Time Status form. [Forms for Students](#)

- Registration for additional credit hours (“override”) requires the written permission from your Faculty Advisor and approval from the Graduate Dean’s office.
- When **performing** actual research for the thesis or dissertation, register under Geology 633 (Graduate Research). When **writing** the thesis, after research is completed, register under Geology 700 (Thesis Guidance). Unsatisfactory progress on thesis research will result in a grade of U. Unsatisfactory progress in thesis research may be grounds for dismissal from the degree program. There is no minimum number of credit hours required for GLY 633 or 700.
- Once thirty (30) credit hours have been successfully completed, registration of one hour is all that is required to maintain continuous registration. For those students who have reached this stage of their degree program, certification of full time status may be requested from the Graduate School by submitting a Certification of Full Time Status form and meeting the requirements on the form.

## MAXIMUM TIME ALLOWANCE

The Graduate School sets a maximum of four (4) years allowed for completion of the Master's degree from the date of initial registration into the geology program. Requests for extensions of time limit must be justified using a Graduate Petition Form, which must be approved by the Chair, the Dean’s Office, and the Graduate School.

## ACADEMIC GRADE REQUIREMENTS

A graduate student must maintain a minimum of a B (3.0) average in graduate courses. A grade of C or better must be received in all graduate courses. Should the cumulative grade point average at any time fall below a B (3.0), or/and if a grade of C- or lower is received

on any individual graduate course, the student will be placed on probation. If the grade point average falls below a B the second successive semester, the student will be dropped from the degree program.

There is also an option of electing to take a limited number of courses on a **Satisfactory/Unsatisfactory** basis (S/U). This is permissible only for advanced courses taken **outside** the department. (Consult Graduate School Bulletin for latest guidelines.) A large number of S/U grades can result in evaluation problems when applying for jobs or for admission to other graduate schools.

## **SATISFACTORY PROGRESS**

The lack of satisfactory progress in either coursework or research will be noted on the Degree Progress Form. After two consecutive semesters of unsatisfactory progress, a hearing will be held to determine if the student should be terminated from the Geology Department. The Director of Graduate Studies will chair this hearing (unless the student's advisor is the Director of Graduate Studies, in which case the second most senior member of the Thesis Committee will be chair). The hearing will include written comments made by the student and the student advisor, and a written record of the proceedings will be made and placed in the student's file.

## **THE THESIS**

**The thesis serves several related educational functions:**

- It is beneficial for acquiring competence in the analytical techniques of the geological sciences;
- It provides the student with practice in application of the scientific method;
- It gives practice in making accurate descriptions of observations, and in giving clear, concise expression of ideas in writing.

The thesis topic is selected by mutual agreement of the faculty advisor and the student. The most effective topic is one which interests both the student and advisor and integrates with other ongoing research in the department. Students are advised to talk to several faculty members upon arrival in the department, even if they already tentatively decided on an advisor and thesis topic. The student is not obligated to accept a thesis topic that the advisor recommends, but neither is the advisor obligated to approve any topic that the student recommends. If advisor and student cannot agree upon a topic, the student is free to work with another faculty member if that faculty member is willing. Students should be aware, however, that Research Assistantships are often directly linked to a student's thesis topic, and that choosing another thesis topic may result in a loss of RA support.

If a student expects to complete the program in the usual two years, enough background should be acquired during the first year to intelligently pursue a research project during the summer between the first and second years. If the field of specialization is not decided upon, or is changed, and added background for research is required, the student may receive less financial support or no support at all for the additional time needed to complete the degree due to a two-year limit on support for Master's candidates.

## THE PROPOSAL

Every student is required to submit to the department a formal thesis proposal during the second semester of the first academic year in the program (i.e., Spring semester for students who enter during Fall semester). The proposal assures that both the student and the department know what is expected from the thesis project. This written proposal should include the following:

- An abstract of no more than 300 words.
- A description of the anticipated research in no more than 7 pages (single spaced, 12 point font and 1 inch margins) including figures and tables, but not including references. In it the student will present the problem (hypothesis or question) and discuss the plan, objective, approach, and scope of the proposed thesis.

In considering the proposal, the faculty will weigh whether the student appears adequately prepared for the proposed research. Revisions may also be advised at this time. Examples of proposals are on file in the main office.

The proposal must be approved by the end of the second semester.

Do not start writing the proposal until your Faculty Advisor has approved the topic!

### **Steps for proposal submittal:**

1. Write a Proposal according to the guidelines discussed above.
2. Submit the written proposal to your Faculty Advisor for approval.
3. Once approved by your Faculty Advisor, submit it to the remaining members of your Thesis Committee for approval. They may suggest changes before they grant their approval.
4. Upon approval of your Faculty Advisor, email your proposal to the graduate secretary ([glyadmin@buffalo.edu](mailto:glyadmin@buffalo.edu)) and request that it be forwarded to the faculty. In addition, Faculty have two weeks to provide feedback to you and/or your advisor. If you receive no feedback from a professor, you should assume that that professor accepts your proposal "as-is."
5. After you have received faculty comments and made suggested changes, provide the office with a complete paper copy of your proposal with the signatures of your Thesis Committee members on the cover page. The Thesis Committee signatures signify their approval of the thesis proposal. This copy will be available for reviewing by interested parties.

## THESIS, ORAL PRESENTATION, AND DEFENSE

The Master's Thesis must be defended orally before the Thesis Committee. Other faculty and students are invited but not required to attend. The student is responsible for arranging the date and time of the Defense which must be at least one month prior to the Graduate School's Deadline for all materials to be submitted. There is no set time limit for the defense, but a two-hour time slot is usually scheduled. Note that a Thesis Defense is rarely held in the

summer and that faculty members are under no obligation to agree to such a meeting outside of the official academic year. The process leading up to the Defense generally is as follows:

- Once a draft of the thesis has been approved by the Faculty Advisor (typically after several revisions), the student provides the remaining Thesis Committee members each with a copy at least two weeks before the scheduled oral thesis defense. The Thesis Committee can make written comments which can be given to the student either before or at the end of the oral defense.
- With agreement from the Thesis Advisor and Committee, the oral thesis defense may be scheduled. The date, time and place of the defense is arranged between the student and the Thesis Committee. It is advised that the student arrange a tentative defense date at least 1 month in advance. To ensure the student has time to make the necessary revision after the defense, the defense should be held at least one month prior to Graduate School's deadline for submitting materials.
- When a date is selected and a room reservation request made at the Department Office at [glyadmin@buffalo.edu](mailto:glyadmin@buffalo.edu), you will complete a **Public Defense Information Form**, sent and returned via email to [glyadmin@buffalo.edu](mailto:glyadmin@buffalo.edu). This will allow a memo to be prepared by the department office staff, detailing information about the defense, which is to be posted and circulated to all faculty members a minimum of two weeks before the defense is to be held.
- A copy of the draft thesis must be placed in the department office at least two weeks before the defense to allow examination by interested faculty.

**Note:** the time required for the oral defense (1 day), the period of time required before the Graduate School deadline (1 month), the Thesis Committee review (2 weeks), and the display period in the office (5 days), is a minimum of seven (7) weeks prior to the Graduate School deadline. Therefore it is strongly recommended that the student submit a draft copy of the thesis during the semester prior to the semester of degree conferral. **The Thesis review and Defense will not be accelerated if the draft Thesis is not completed in time.**

## THE DEFENSE

The successful oral defense of the thesis, combined with the approved written thesis, completes the requirements in all programs where a thesis is presented for a Master's degree. The defense is open to all members of the UB academic community. The exam, chaired by a member of the Thesis Committee other than the Faculty Advisor, ordinarily lasts about one to three hours, commencing with a presentation not exceeding thirty minutes by the candidate. This presentation should include a statement of the problem, methods used, results obtained, and conclusions reached. Visual aids (maps, slides, and sketches) should be used to clarify presentation, and two copies of the thesis are to be available for perusal by the examiners during the oral defense. This presentation should be given as though it were a formal paper being presented at a scientific meeting.

Upon completion of the summary, attendees outside of the Committee will be given an opportunity to ask questions. Afterward, the Committee will offer an opportunity for others to leave, and will ask questions. After the Committee has completed its questions, all others (including the student) will be asked to leave while the Committee and other interested faculty deliberate the outcome of the defense.

When the examination is completed, the Thesis Committee and other department faculty who are present will determine, in the absence of the student and others that had attended, if the oral defense was passed successfully. In the event of failure, the student will be permitted a second oral exam which is to be scheduled in consultation with his committee.

**Upon successful defense of the Thesis:** the student makes such changes to the thesis as suggested by the Thesis Committee during the defense. It is the Faculty Advisor's responsibility to assure that the suggestions of the other Committee Members have been incorporated into the final Thesis (i.e. it is not necessary for the other Committee Members to see the final version unless requested).

Also:

1. Check with the office that an M-form, which certifies that the defense was satisfactorily completed and that **all** requirements have been satisfied.
2. Comply with the Graduate School regulations pertaining to the publication and the electronic submission of the thesis/dissertation to their office.

[Electronic Thesis & Dissertation Guidelines](#)

[Graduation Requirements & Deadlines](#)

## ORGANIZATION OF THESIS

The Student is responsible for obtaining up-to-date information on the accepted form and organization of the thesis, including headings, references, and scientific writing in general.

**The Graduate School requires uniformity of thesis format:** See the Graduate School Requirements for the Thesis.

Obtaining a writing style manual is recommended. Some additional recommendations are:

***Suggestions to Authors of the Reports of the United States Geological Survey, 7<sup>th</sup> ed.*** available at our library or at [http://www.nwrc.usgs.gov/lib/lib\\_sta.htm](http://www.nwrc.usgs.gov/lib/lib_sta.htm).

***Geowriting: A Guide to Writing, Editing and Printing in Earth Science, 5<sup>th</sup> ed.***, available for a small fee from the [American Geological Institute](http://store.americangeosciences.org/) at [store.americangeosciences.org/](http://store.americangeosciences.org/)

# **MS THESIS PROGRAM CHECKLIST**

## **First Semester:**

- Advisor meeting
- Degree Progress Form
- GPA greater than 3.0
- Course Registration

## **Second Semester:**

- Committee meeting
- Degree Progress Form
- Study program approval
- Thesis proposal approval
- GPA 3.0 or greater
- Course Registration

## **Third Semester:**

- Committee meeting
- Degree Progress Form
- Application to Candidacy
- GPA 3.0 or greater
- Course Registration

## **Fourth Semester:**

- Committee Meeting
- Degree Progress Form
- GPA 3.0 or greater
- Thesis Defense

## **Graduation Check List**

- An approved Application to Candidacy
- A completed M-Form
- Electronic submission of the thesis to the Graduate School
- Compliance with the Graduate School regulations regarding degree conferral

# PH.D. PROGRAM

## **ADMISSION**

Students entering the Ph.D. program are expected to hold a BS in Geology (M.S. Recommended). Students applying with other science or engineering degrees must have 12 credits in geology beyond the introductory level and a Geological Field Course or must complete these courses during their graduate program. The Faculty Advisor may require additional prerequisites depending upon the course of study.

## **PROGRAM EXPECTATIONS**

The Ph.D. student must advance successfully through a Qualifying Exam, and then a Technical Defense, and a Public Dissertation Defense. As part of the Qualifying Exam, the student must prepare two proposals, one of which normally becomes the Dissertation Proposal. It is critical that the student chooses a Faculty Advisor and tentative research project during the **first semester in residence**, as the Qualifying Exam is conducted during the second semester in residence (if the student enters with a Master's Degree) or the third semester (if the student enters without a Master's Degree).

## **ADVISEMENT**

The Faculty Advisor, in consultation with the student, will appoint a Doctoral **Dissertation Committee**. **Outside readers** are not required, but the choice is left to the discretion of the Dissertation Committee (see section on the Outside Reader). Once the program has been approved, the student may not deviate from the courses to be taken unless given approval **in writing** from your committee. You may neither add nor drop a course, for example, without specific approval in writing of the entire Dissertation Committee. If you encounter any difficulties with the program (e.g., failing a course and wishing to drop it, or feel the course load is too heavy), you must arrange a meeting of your committee to consider the matter.

## **Ph.D. DEGREE PROGRESS FORM**

During each semester the Student must arrange a progress review meeting of the Dissertation Committee prior to October 30th for the fall semester and April 1st for the spring semester. At this meeting the Ph.D. Degree Progress Form will be completed and signed. The form can be obtained from the Geology Office upon request. This form provides a record of advisement, intended and completed coursework, proposal topics and defenses, and the proposed date of the technical review. The completed form is to be returned to the Geology Office and be filed in the student's folder as confirmation of the student's progress toward the degree objective and must be updated by the committee every semester.

Failure to follow the above requirement will result in a hold being placed on the student's university record in the HUB preventing further course registration. The hold will not be removed until the progress form is completed and turned in to the office. This procedure will be strictly enforced.

## PEGRUM LECTURE SERIES

In an effort to familiarize students and faculty with current research by specialists in the varied fields of geology, the Department schedules lectures presented by visiting scientists as well as members of this Department. **It is expected that you attend lectures and participate in discussions.**

## FORMAL COURSE WORK

Formal course work is defined as 'actual classes' taken. This does not include seminars or courses numbered GLY 526, 599, 633, or 700. A list of all courses you will be taking must be approved by your Faculty Advisor (and Advisory Committee for M.S. and Ph.D. students) and included on your Degree Progress Form. This list will be your program of study.

## DEGREE REQUIREMENTS

The Doctor of Philosophy is a research degree and is awarded as a result of the successful completion of a scientifically significant and unique research project, presented in the form of a Ph.D. dissertation. In essence, a Ph.D. means that one has demonstrated the ability to formulate an original hypothesis or hypotheses, design a plan to test the hypothesis, execute the plan, interpret the results, and document and disseminate the work; all of which should add up to an original contribution to the particular research field. A successful student will be able to give a concise description of their original contribution to the field when they defend their dissertation.

It is the student's responsibility to ensure that all degree requirements are met in a timely fashion. In particular, the Graduate School has several stringent requirements regarding time. These deadlines are strictly enforced and failure to meet them will result in a delay of your graduation by one whole semester with the cost of continued registration. The requirements involve the following:

- 1. Continuous registration** including the semester in which all degree requirements are completed, whether the student is on campus or not.
2. Completion of undergraduate courses in geology and supporting sciences equivalent to those specified in the Division of Undergraduate Studies Bulletin for graduation with a Bachelor of Arts degree in geology. Summer **field training** in geologic mapping must be included. Exceptions or substitutions of graduate courses for these undergraduate course requirements may be made by petitioning your Dissertation Committee and documenting any such exception in the Degree Progress Form. If your undergraduate major is in a science other than geology you may develop a modified course program **with the approval your committee.**
- 3.** Completion of a course of study in geology and related sciences of formal course work and seminars beyond the Bachelor's degree with an overall GPA of at least 3.0 (B), with no individual graduate course grades below C. The department reserves the right to modify the number of credit hours, contingent upon your background and area of proposed study. The University requirement is completion of seventy-two (72) credit hours of graduate study. In any case, up to thirty-six (36) credit hours of these seventy-two (72) may be awarded by the Dissertation Committee for previous graduate-level study at this or other institutions. Normally this will include only formal graduate courses. Twenty-four (24) of the seventy-two (72) credits must be based on formal course work; not including courses

numbered Geology 526, 599, 633, or 700. Upon approval of the Dissertation Committee up to three (3) credits of seminar may be substituted for formal course work.

4. Minimum **residence** requirement of one year (24 semester hours). This shall include two semesters of continuous full-time residence taken under the auspices of this institution and not already applied to the residence requirements for the Master's degree.
5. Maintenance of at least a B average (3.0) in all coursework taken for graduate credit.
6. Preparation of two (2) research **proposals** for the Ph.D. Qualifying Exam. Both, after written approval, will be defended before faculty (See Requirements for Research Proposals).
7. **Technical defense** of doctoral research, which should take place during the semester prior to the semester in which you expect to complete your dissertation and must occur **no less than four months** prior to the deadline date for your intended graduation.
8. Completion of a **dissertation** acceptable to your Dissertation Committee and the Graduate School, with an oral presentation and defense of dissertation. The dissertation must be original and make a substantial contribution to knowledge in the geological sciences.
9. Submission of Application to Candidacy form to the Graduate School prior to deadlines listed below:

For degree conferral on:	February 1	June 1	September 1
Application to Candidacy Due:	October 1	March 1	July 1

[Graduate School Application to Candidacy and Deadlines](#)

[Application to Candidacy Form](#)

10. Compliance with the Graduate School regulations regarding degree conferral. The Graduate School Policies and Procedures Manual should be consulted for further information and particulars regarding course work, examinations, and other requirements. Graduate School Library Policy:  
<http://grad.buffalo.edu/succeed/current-students/policy-library.html>

## COURSE LOAD

Incoming students should be full-time students in order to prepare for admission to candidacy for the degree as soon as possible and to allow for registration for thesis research during later semesters. The student is encouraged to become involved in the thesis research topic as soon as possible after enrollment.

<b>Student Type</b>	<b>Full-Time</b>	<b>Part-Time*</b>
Majority of students	12 credit hours min/19 credits max	11 hours or less
TA, RA, GA	9 credit min/9* credits max	Not allowed

\*The tuition scholarships cover up to 9 credit hours, you may be held responsible for payment of tuition if you register for more than 9 credit hours.

\*\*Although part-time study is available, the time limit imposed by the graduate school is still enforced

- Students who need full time status but are registered for less than the minimum credit hours are required to submit the Certification of Full Time Status form. Graduate School forms: [grad.buffalo.edu/succeed/current-students/forms.html](http://grad.buffalo.edu/succeed/current-students/forms.html)
- Registration for additional credit hours (“override”) requires the written permission from your graduate advisor and approval from the Graduate Dean’s office.
- When **performing** actual research for the dissertation, register under Geology 633 (Graduate Research). When **writing** the dissertation, after research is completed, register under Geology 700 (Thesis Guidance). Unsatisfactory progress on dissertation research will result in a grade of U. Unsatisfactory progress in dissertation research may be grounds for dismissal from the degree programs. (There is no minimum number of credit hours required for GLY 633 or 700.)
- If you leave the university before receiving a degree, you must maintain continuous residency by registering for at least one (1) credit hour of either GLY 633 (Research Guidance) or GLY 700 (Thesis Guidance) each semester until your degree is conferred.

## MAXIMUM TIME ALLOWANCE

The Graduate School sets a maximum of seven (7) years for a Ph.D. degree from the date of initial registration into the geology program. Request for extensions of time limit must be justified using a Graduate Petition Form, which must be approved by the chair, the Dean’s office and the Graduate School.

Three years is the expected time for a student with a Master's degree to complete a Ph.D., four years if the student has not received a Master's prior to admission to the program. Students in the Ph.D. program who have not completed the requirements for the degree at the end of five years will be sent a warning letter pointing out the University's seven-year deadline for the degree, and noting that unless the student finishes at the end of ten semesters, he/she will have failed to maintain the expected rate of progress. At the end of six years essentially the same letter will be sent. During the 12th semester formal review by an *ad hoc* committee (the Faculty Advisor is not a member of the committee but is the presenter of the case). A schedule for completion of the remaining major requirements prior to the end of the 14th semester is communicated to the student. Near the end of the 14th semester the committee hears reasons, if any, not to expel the student at the end of the semester. A decision is required. This procedure is to be repeated every semester thereafter.

## ACADEMIC GRADE REQUIREMENTS

A graduate student must maintain a minimum of a B (3.0) average in graduate courses. A grade of C or better must be received in all graduate courses. Should the cumulative grade point average at any time fall below a B (3.0), or/and if a grade of C- or lower is received on any individual graduate course, the student will be placed on probation. If the grade average falls below a B the second successive semester, the student will be dropped from the program.

There is also an option of electing to take a limited number of courses on a **Satisfactory/Unsatisfactory** basis (S/U). This is permissible only for advanced courses taken outside the department. (Consult Graduate School Bulletin for latest guidelines.) A large number of S/U grades can result in evaluation problems when applying for jobs or for admission to other graduate schools.

## **SATISFACTORY PROGRESS**

The lack of satisfactory progress in either coursework or research will be noted on the Ph.D. Program Progress Monitor Form. After two consecutive semesters of unsatisfactory progress, a hearing will be held to determine if the student should be terminated from the Geology Department. The Director of Graduate Studies will chair this hearing, (unless the student's advisor is the Director of Graduate Studies, in which case, the second most senior member of the Advisory Committee will be chair). The hearing will include comments made by the student and the student's advisor.

## **REQUIREMENTS FOR THE QUALIFYING EXAM (Research Proposal Defense)**

The goal of the Qualifying Exam is to determine whether a student is prepared for, and capable of, conducting advanced research that is the centerpiece of a Ph.D. degree. The exam has four parts: (1) The Proposal 1 defense will consist of the student delivering a presentation on the proposal. (2) The dissertation committee and other faculty present ask questions that pertain to any subject touched upon in the proposal and presentation, as well as any broader questions pertinent to the student's scientific background. (3) A shorter presentation of Proposal 2, followed by (4) questioning pertaining to that proposal. Depending upon the outcome of parts 1 and 2, the presentation and/or questioning about the secondary proposal (parts 3, 4) may be waived during the exam. The actual time limits for the presentations should be agreed upon by the dissertation committee before the defense. Presentations in the past have been generally 20-30 minutes (Proposal 1) and 10- 15 minutes (Proposal 2), and the questioning period has lasted from 30 minutes to over 2 hours. The meeting room for the Qualifying Exam should be reserved by the student for three hours.

It is advisable to reach agreement on the topic of the research proposals early in the program in order to have sufficient time to do the focused background study needed before the proposals can be written.

If you entered the program with no previous graduate study (i.e., with a Bachelor's degree), you must have your proposal topics approved by your Dissertation Committee before the end of the third semester of residence. The proposal must be submitted at least two weeks before the defense is scheduled. **The defense must take place before the end of the fourth semester.**

If you entered the program at a more advanced level (e.g., with a Master's degree) you must have your proposal topics approved by your Dissertation Committee before the end of the second semester of residence. The proposal must be submitted at least two weeks before the defense is scheduled. **The defense must take place before the end of the third semester.**

## **Proposal #1:**

A well thought out and detailed proposal which must be 10-15 pages (single-spaced, 1 inch margins, 12 point font) including figures. The bibliography is in addition to this. The proposal should provide background, a hypothesis(es), a description of how the hypothesis(es) will be tested (including research methods), a work plan, and expected outcomes, and the significance of the work.

After your written proposal is approved for posting by the Dissertation Committee (augmented as appropriate) email your proposal to the graduate secretary ([glyadmin@buffalo.edu](mailto:glyadmin@buffalo.edu)) and request that it be forwarded to the faculty. The graduate secretary will also print a paper copy of the proposal and place it in a binder for other interested members of the department to read. Faculty have two weeks to provide feedback to you and/or your advisor. After this two-week feedback period, the proposal will be defended before the faculty including (but not limited to) the Dissertation Committee, which may be augmented as is deemed appropriate in each particular case. In any case, **all geology faculty must be advised by written notice of the nature and time of defense**. The faculty present may question the student on any aspect of science germane to the research topic. The decision of the **Examining Committee** (i.e. all faculty present during the defense) will be HIGH PASS, PASS, CONDITIONAL PASS (with the conditions being specified and summarized in writing, including a timetable for completion of the conditions if deemed appropriate), FAIL/RE-TAKE (with advice given to inform the student as to what the major deficiencies were and a timetable for re-examination), and FAIL (dismissal from the program).

## **Proposal #2:**

This proposal has similar format requirements to Proposal #1 but is limited to 5-10 pages for text and figures. **Its purpose is to determine your ability to think independently and with the necessary imagination to function as an independent researcher in the future**. The subject should be distinctly different from Proposal #1 and must be approved by the Dissertation Committee before the student embarks on the preparation of the proposal. The proposal and the idea for the research should be original, i.e., not reflecting consultation with faculty and not a direct outgrowth of a previous Master's thesis or recent major term paper or the like. It need not be constrained to research that can be executed at U.B., i.e., limited by the equipment, facilities, and monetary support of research available here. This proposal must be provided to the graduate secretary for dissemination to faculty and posting in the Department Office at the same time as the primary proposal (see above). The proposal will be defended before faculty including (but not limited to) the Dissertation Committee augmented as appropriate in each particular case, with questioning to emphasize the area of the proposal, but not necessarily tightly constrained to it. The Examining Committee will judge the proposal and its defense HIGH PASS, PASS, CONDITIONAL PASS, FAIL/RE-TAKE, as for Proposal #1 (Note: FAIL [= dismissal] is not determined by this examination). This proposal topic should be approved and the written proposal prepared, submitted, and defended at the same time as Proposal #1.

## THE DISSERTATION

### The dissertation serves several related educational functions:

- It is beneficial for acquiring competence in certain of the analytical techniques of the geological sciences;
- It provides you with practice in application of the scientific method;
- It gives practice in making accurate descriptions of observations, and in giving clear, concise expression of ideas in writing.
- It communicates your original scientific contribution to the research community. Although many/most dissertations are submitted in some for (e.g., as three manuscripts) for publication in peer-review journals, it is important for the student and committee to view the dissertation itself as a citable publication in its own right.

The department encourages students to take the initiative in selecting a dissertation subject and in designing their research methods. The suitability and practicality of the selected subject is to be discussed with, and approved by, the Faculty Advisor before the dissertation proposal (ordinarily Proposal #1) is submitted to the department for consideration.

## THE DISSERTATION PROPOSAL

Each student applying for candidacy in the Ph.D. program is to submit to the department in writing a formal dissertation proposal. It will be your responsibility to circulate this proposal to the Chairman of the Department, the Director of Graduate Studies, and to all other members of the Graduate Faculty in residence at the time of submission. Normally Research Proposal #1 will serve as the dissertation proposal. In the rare situation where this is not the case, the dissertation proposal should be of the kind described for Proposal #1 and approved by the Graduate Faculty in residence at the time of submission.

**A proposal must be approved by the third semester in accordance with the PhD Degree Progress Form.**

### **Steps for dissertation proposal submittal:**

6. Write the Dissertation Proposal according to the guidelines discussed above.
7. Submit the written proposal to your advisor for approval.
8. Once approved by your advisor, submit it to the remaining members of your Dissertation Committee for approval. They may suggest changes before they grant their approval.
9. Upon approval from the Doctoral Dissertation Committee, email your proposal to the graduate secretary ([glyadmin@buffalo.edu](mailto:glyadmin@buffalo.edu)) and request that it be forwarded to the faculty. Faculty have two weeks to provide feedback to you and/or your advisor.
10. After you have received faculty comments, and made suggested changes, provide the office with a complete paper copy of your proposal **with the signatures of your Faculty Advisor and Doctoral Dissertation Committee members and the date of approval on the cover page**. This copy will be available for reviewing by interested parties.

## THE OUTSIDE READER

In addition to the required three members of the Doctoral Dissertation Committee, an outside reader may be advisable for examination of the doctoral dissertation, at the discretion of the Dissertation Committee, in consultation with the student. The outside reader provides an independent evaluation of the student's research. Normally, the duties of the outside reader are limited to an examination of the final draft of the dissertation, but additional tasks may be assigned to the outside reader, as agreed upon by all parties involved. The added task commonly consists of, but may not be limited to, participating in the oral defense of the thesis.

An outside reader is a qualified individual appointed outside the student's department who normally holds the highest degree in his or her respective field. The outside reader should be carefully chosen to avoid potential conflicts of interest.

If the outside reader finds the thesis unacceptable, the Dissertation Committee must confer with the student and the outside reader to find an acceptable resolution to the problems. The Dissertation Committee has the ultimate authority in remediating the difficulties.

## THE TECHNICAL DEFENSE

### Definition & Objectives:

The Technical Defense, as defined here, is a special meeting of the candidate's **Technical Defense Examining Committee** at which the student presents the research results for detailed scrutiny. The principal goal of the technical examination is to evaluate whether the candidate has conducted research and obtained results that, when completed, are likely to be reliable, of substantial scientific importance, and will satisfy the requirements for the degree. This committee meeting should take place **at least four months prior** to the date by which you intend to undertake the public defense of the dissertation. The active involvement of the Technical Defense Examining Committee in the evaluation of the candidate's research at this stage accomplishes two important goals: (1) it enables the committee to provide guidance about the scope of the project; (2) it enables the candidate to make substantial changes, if needed, without seriously disrupting your graduation schedule. Finally, you must provide, as preparation for the technical examination, a written summary of the dissertation and a timetable for its completion and a **detailed outline of the dissertation to all committee members**. These documents not only focus the examination, but also encourage the student to construct an organized and realistic plan for bringing the doctoral research to a close.

### Timing & Qualifications:

The candidate must have an approved dissertation proposal on file in the department office. At the time of the examination, the candidate should have completed the acquisition of data. The majority of the analyses or interpretations should also be complete or be sufficiently near completion that the outcome is clear. Normally the candidate will have presented some of the results at scientific meetings and in one or more articles written for scientific journals by this time. However, the dissertation should not be completely written by the time of the technical examination.

## **Content & Duration:**

- A. Written Documentation - Two weeks prior to the technical examination, you must circulate to all the Department faculty and the entire technical defense examining committee, a proposed table of contents for the dissertation, a detailed abstract (5-10 pages) of its major contents and conclusions, and a specific timetable for completion of the remaining work (see below). At the examination this documentation, supplemented by whatever visual aids the candidate believes are appropriate, will form the basis for the presentation and discussion. The examination will also incorporate written questions about these documents from faculty not on the examining committee.
  
- B. Presentation - The candidate should be prepared to present the following at the technical defense:
  - 1. Background and goals of the project.
  - 2. Methods of data collection and some representative data.
  - 3. Methods of analysis and major results for work completed and projected.
  - 4. Discussion of outstanding tasks and problems.
  - 5. Summarize anticipated conclusions.
  
- C. Duration - This presentation should take 45 to 60 minutes. The examining committee will question the candidate about all aspects of the research, as they see fit. In total, the technical examination should occupy no more than two hours.

## **Evaluation & Recommendations:**

The Technical Defense Examining Committee, by consensus, will grade the examination as a pass, conditional pass, or fail. These outcomes and their consequences are defined as follows:

Pass - The technical examination of the thesis indicates that the candidate possesses a mastery of your subject. The research is of high merit and has progressed far enough to assure its successful completion prior to the candidate's intended date for submission of the dissertation.

Conditional Pass - The degree of technical mastery is for Pass but significant portions of the work need modest revision or reconsideration. The work completed does not assure a successful completion prior to the candidate's intended date for submission of the dissertation, but this outcome is likely if the candidate carries out the needed revisions. The committee will suggest remedies for the deficiencies (if possible), and set a specific timetable for their completion. This work may cause a delay in graduation. Either the Faculty Advisor or the Dissertation Committee will monitor the process of revision, as the technical defense examination committee deems appropriate. A repeat of the technical examination is unnecessary.

Fail - You did not display a sufficient mastery of your field; major problems exist with the research that requires extensive revision and reconsideration. These deficiencies indicate that it is almost certain the work will not be or could not be successfully completed before your intended date of graduation. The Technical Defense Examining Committee may permit you to repeat the technical examination or may recommend to the Dissertation Committee that you be dismissed from the doctoral program. If permitted to repeat the examination, the committee will fully advise you of the needed changes and will set a specific timetable for execution of the work. You must repeat the technical examination within one year of the failed attempt. If you do not receive a pass or conditional pass on the second attempt, the Technical Defense Examining Committee again may give directions for revision or may recommend that you be dismissed from the program.

## THE PUBLIC DEFENSE

**At least two weeks** is required for review of the complete dissertation draft by the Faculty Advisor and thereafter the other Dissertation Committee members. When the Dissertation Committee has approved the preliminary draft, the Faculty Advisor, in consultation with the student and other committee members, is to arrange a place, date, and time for the defense. **The date and time of the Defense must be at least one month prior to the Graduate School's Deadline for all materials to be submitted.** A memo prepared by the department office staff detailing this information is to be posted and circulated to all faculty members a minimum of five (5) working days before the defense is to be held. **A copy of the thesis must be placed in the department office at least five (5) working days before the defense for faculty perusal.**

Iteration of the written dissertation between the student, Faculty Advisor, and Dissertation Committee can be time consuming, and students are encouraged to provide as much lead time as possible. The quality of the final product will not be compromised for the sake of meeting a time deadline.

Oral defenses may be undertaken at any time of the during the normal academic year (Fall and Spring semesters), in order to ensure full participation by faculty and students in the Department. Graduate School requirements with regard to continuous registration and time limits for degree completion are of particular importance to students leaving the university before all requirements have been completed.

The defense is open to all members of the UB academic community and to the public. It is an exam, chaired by a member of the Dissertation Committee other than the Faculty Advisor, ordinarily lasts about three hours, commencing with a presentation not exceeding fifty minutes by the candidate. Upon completion of the presentation, attendees outside of the Committee will be given an opportunity to ask questions. Afterward, the audience, except for the Committee and any interested graduate faculty members, will be dismissed. The Committee and remaining faculty will then ask further detailed questions of the candidate. After the Committee has completed its questions, the student will be asked to leave while the Committee and other interested graduate faculty members deliberate the outcome of the defense and whether the public defense was passed successfully. In the event of failure, the student may be permitted a second exam which is to be scheduled in consultation with his committee.

**Note** that the time required for the Public Defense (1 day), the period of time required before the Graduate School deadline (1 month), the Dissertation Committee review (2 weeks), and the display period in the office (5 days), is a minimum of seven (7) weeks. Therefore is strongly recommended the student submit a draft copy of the thesis during the semester prior to the semester of degree conferral. The Dissertation review and Defense will not be accelerated if the draft Dissertation is not completed in time.

**Upon successful completion of the oral defense, you must:**

1. Check with the Office Staff that an M-Form, which certifies that the defense was satisfactorily completed and that **all** requirements have been satisfied. This must be done by deadline dates. The Department will file the M-Form with the Graduate School.
2. Confirm Academic Deadlines with the Graduate School: [\\_ grad.buffalo.edu/succeed/graduate/phd-checklist.html](http://grad.buffalo.edu/succeed/graduate/phd-checklist.html)
3. Comply with the Graduate School regulations pertaining to the publication and the electronic submission of the Dissertation to their office: [\\_ grad.buffalo.edu/succeed/graduate/electronic-submission.html](http://grad.buffalo.edu/succeed/graduate/electronic-submission.html)

**Note:** the time required for the oral defense (1 day), the period of time required before the Graduate School deadline (1 month), the Committee review (2 weeks), and the display period in the office (5 days), is a minimum of seven (7) weeks. Therefore is strongly recommended the student submit a draft copy of the dissertation during the semester prior to the semester of degree conferral. The review and Defense will not be accelerated if the draft thesis is not completed in time.

## **ORGANIZATION OF DISSERTATION**

You are responsible for obtaining up-to-date information on the accepted form and organization of the dissertation, including headings, references, and scientific writing in general. The Faculty Advisor will require a well-organized format before examining the thesis for content.

**The Graduate School requires uniformity of Dissertation format:** See the Graduate School Requirements for the Dissertations: [grad.buffalo.edu/succeed/graduate/electronic-submission.html](http://grad.buffalo.edu/succeed/graduate/electronic-submission.html)

Obtaining a writing style manual is recommended. Some additional recommendations are:

***Suggestions to Authors of the Reports of the United States Geological Survey, 7<sup>th</sup> ed.*** available at our library.

***Geowriting: A Guide to Writing, Editing and Printing in Earth Science, 5<sup>th</sup> ed.***, available for a small fee from the [American Geological Institute](http://store.americangeosciences.org/) at [store.americangeosciences.org/](http://store.americangeosciences.org/)

# PHD PROGRAM CHECKLIST

## **First Semester:**

- Advisor meeting (BS)
- Committee meeting (MS)
- GPA 3.0 or greater
- Proposal Topic Approval (MS)
- Course registration

## **Second Semester:**

- Committee meeting (BS)
- Qualifying Exam (MS)
- GPA 3.0 or greater
- Proposal subjects approval (BS)
- Course registration

## **Third Semester:**

- Qualifying Exam (BS)
- Committee meeting (MS)
- GPA 3.0 or greater
- Course registration

## **Fourth Semester:**

- Committee Meeting
- GPA 3.0 or greater
- Course registration

## **Fifth Semester:**

- Committee meeting
- GPA 3.0 or greater
- Course registration

## **Sixth Semester:**

- Committee Meeting
- GPA 3.0 or greater
- Course registration

## **Seventh Semester:**

- Committee Meeting
- Application to Candidacy
- GPA 3.0 or greater
- Dissertation Outline
- Outside Reader Selected
- Technical Defense
- Course registration

## **Eighth Semester:**

- GPA 3.0 or greater
- Outside Reader's Approval
- Public Defense

## **Graduation Check List**

- Application to Candidacy
- Written approval from the outside reader
- Completed M-Form
- Electronic submission of the dissertation to the Graduate School
- Compliance with the Graduate School regulations regarding degree conferral and completion of Doctoral Degree Recipient surveys
- Survey of Earned Doctorates
- UMI Dissertation Agreement Form