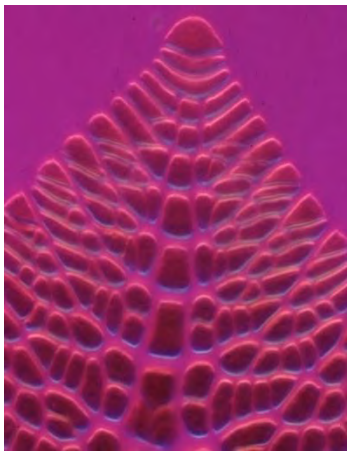

GRADUATE STUDENT HANDBOOK

2020-2021

Department of Biological Sciences
Harpur College of Arts and Sciences
Binghamton University
State University of New York
Binghamton, New York 13902-6000

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WELCOME

We are happy to welcome you to the Biological Sciences Department of the Harpur College of Arts and Sciences at Binghamton University! It is our pleasure to be your school of choice to pursue your graduate studies, and we extend our heartfelt wishes for you to achieve great success and fulfill your goals during your studies at Binghamton.

The purpose of this Graduate Student Handbook (Handbook) is to aid you in your transition to through conclusion of your graduate studies. It is expected that all Biological Sciences students have read and are familiar with its contents. This Handbook is intended to supplement the Graduate School Manual, which provides information for all University graduate students.

We are pleased you have joined our team of dedicated faculty and staff. We hope you take advantage of the numerous opportunities and resources available to you in the Department, the Harpur College and the University. If you cannot find the answers or guidance you need in this Handbook, please communicate with your advisor, any of our faculty, the Graduate Secretary or either of us. Our goal is your success!

Dr. Karin Sauer
Chair and Professor

Dr. Weixing Zhu
Graduate Director and Professor

To view a list of all faculty and staff, refer to our faculty and staff web pages.

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GETTING STARTED

Graduate School New Student Information
Once you have paid your deposit, the Graduate School provides a list of steps you must take as you prepare to begin your graduate studies at Binghamton. Click here to access this necessary information (i.e. student ID card, your school email account, mandatory health forms) and ensure you are prepared.

Department Orientation
After you have been offered admission to one of our programs and have paid your deposit (which will be applied toward your tuition costs), you will be contacted to attend, as a group, our department orientation (fall semester entrants only). Students entering in spring will be invited to an individual orientation with the Graduate Secretary. While incoming university students typically do not register for courses until after attending orientation, the Graduate Secretary can assist with earlier registration needs if desired.

Graduate School Orientation
All incoming graduate students are expected to attend this orientation (fall semester only). In addition, incoming Teaching/Graduate Assistants have a separate orientation to attend.

International Student and Scholar Services (ISSS) Orientation
If you are an international student, your attendance is required at this orientation (both fall and spring semesters) for new international students.

Department Kick-Off
Within the first month after the fall semester begins, we usually hold an informal gathering where all faculty, staff and graduate students can mingle and enjoy getting to know each other. We hope you will attend this event with us.

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GRADUATE STUDENT RESPONSIBILITIES

University Academic Policies and Procedures / Student Honesty Code
You are expected to be knowledgeable of the policies and requirements of your graduate program, Graduate School, and University and you should commit to meeting these requirements, including your teaching responsibilities. You need to comply with the University's Academic Policies and Procedures, to include the *Student Academic Honesty Code*, institutional safety laboratory practices and research policies, human resources rules and regulations, and all other policies and procedures related to the graduate student program.

Enrollment and Registration
Students are responsible to understand policy concerning enrollment and registration. It is strongly encouraged that you read the entire section of The Graduate School Manual on enrollment and registration. If after consulting the manual you have further questions, please see your advisor, the Graduate Director or the Graduate Secretary for assistance.

Academic Policies: Master's Degree
Students enrolled in a master's program are responsible to understand policy regarding all aspects of their program. It is strongly encouraged that you read the entire section of The Graduate School Manual on Academic Policies: Master's Degree.

Academic Policies: Doctoral Degree
Students enrolled in a doctoral program are responsible to understand policy regarding all aspects of their program. It is strongly encouraged that you read the entire section of The Graduate School Manual on Academic Policies: Doctoral Degree.

Speaking and Writing English
The University has a successful English Language Institute Program or ELI (English as a second language) available to students. Its mission is to provide classes and academic English language support designed to increase non-native English speaking students' English language proficiency and facilitate their academic success at Binghamton University and beyond. If English is your second language, you are strongly encouraged to take advantage of all of the resources offered by the Program. It will build your confidence with the English language and will serve you well in both your academic and personal lives. All incoming international students are required to take an exam upon arrival to the University. Depending upon your score on this exam, you may be required to take an ESI course(s). Graduate students may earn credit hours (1-4) towards your full-time student status.

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KEYS TO SUCCESS IN GRADUATE STUDIES

Recent evaluation of graduate education in the sciences and technology in the United States has resulted in the recommendation of a 2+2+X year model for the doctoral degree. The first two years are spent developing an advanced foundation and beginning the research project. Then, the next two years are spent doing the research project and defending the dissertation. The X years are spent as a postdoctoral associate or in your first job, becoming more of a specialist.

In order to finish a doctoral degree in four years, it is unlikely that you will be able to obtain a degree unless you are willing to work at least 50 hours per week. People work who are in positions of considerable responsibility in academia, industry and government, including most science faculty, work at least that amount per week. Furthermore, graduate school is not an extension of college; semester breaks are not "vacation time". Semester breaks and summer are periods that faculty and graduate students use to get major portions of their research completed.

A doctoral degree should give you the ability to identify important questions, identify reasonable ways to answer the questions using a variety of sophisticated techniques and approaches, continually absorb and integrate new information, work well with others to obtain group goals, and communicate effectively in writing and in public speaking. Such a person is quite marketable in both academia and non-academic institutions. But how long it takes you to get there will be a function of your dedication to your studies, your identification and fulfillment of critical priorities, and your ability to budget your time efficiently to acquire the knowledge and skills you need.

If you are in the MS or PhD program, your primary objective is to develop and conduct a research project. You have probably already started the process by affiliating with an advisor. You may have

already discussed a general problem or perhaps a specific problem with your advisor. You will be making a big commitment to the project. Here are some things to keep in mind:

Can you enthusiastically pursue this problem or project?
Can you sustain that interest during your time in the graduate program?
Is the problem solvable?
Is the project worthwhile?
Will the project lead to other problems that are interesting and worthwhile?
Is the project manageable in size?
What is the potential for making significant or original contributions?
Are you, or can you become, competent to solve the problem?
Will you have demonstrated independent skills in your discipline?
Will this research program prepare you to meet your career aspirations?

Career Development

You are in charge of your career development; think about what you want to accomplish and how to go about that. Your advisor is here to assist you in the process of developing your plans. Talk with your advisor often about your plans. Set goals for yourself and then review with your advisor what you have accomplished. Below are some topics that you may wish to discuss with your advisor:

1. My current career aspirations are ….. and this is why I want to do research….
2. My proudest research accomplishment this year was …… and the reason I feel that way is ……
3. My biggest research stumbling block this year was ….. and what I have resolved about that is……
4. My research strengths are ….. and I want to capitalize on those by ……
5. My research weaknesses are ….. and I want to eliminate them by ….. or work around them by……
6. The major thing that I need help with is …….
7. My research plan for the next year is ….. (e.g., research schedule, schedule of supervising committee meetings, graduate exams, first drafts of research papers or dissertation chapters, submitting papers for publication or presentation at meetings, etc.)
8. I plan to finish by …….and here is my plan for how to do that …..
9. I need postdoctoral experience and here is my plan for that….
10. I need more, or a different kind of, teaching experience and here is my plan for that …..

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YOUR ADVISOR

In most cases, your advisor was identified prior to your offer of admission. For our MA program, we have a dedicated faculty member that will serve as your advisor. For our MS and PhD programs, we rely on your admissions application advisor preferences, your research areas of interest, your background, and the needs and funding availability of our faculty to determine the appropriate advisor/applicant match. Applicants are encouraged to contact the faculty members they are interested in working with to facilitate the admissions process.

If you do not have an advisor assigned to you, refer to our faculty listing web page containing their research areas of interest to help you determine an advisor. Other resources would be our senior graduate students and the Graduate Director.

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DEPARTMENT HOURS AND FACULTY AVAILABILITY

The Biological Sciences main office is open Monday-Friday from 8:00 a.m. to 4:00 p.m. Contact faculty directly (email is recommended) or stop in to the main office (Science 3, Room 210) to request faculty availability information. Faculty office hours are also available on our Office Hours web page.

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BIOLOGY GRADUATE STUDENT ORGANIZATION (BGSO)

The Biology Graduate Students Organization (BGSO) is the collective voice of the graduate students in the Biology Department, who are also affiliated with the GSO, the graduate student organization of the University. The BGSO serves as a source of information for departmental programs, helps in sponsoring and entertaining seminar speakers, and organizes some social events for the department. BGSO is administered by several elected graduate officers.

The BGSO and GSO are funded through activity fees that graduate students pay at the beginning of the fall semester. These fees allow for financial support to activities such as our annual departmental symposium.

All Biology graduate students are strongly encouraged to participate actively in this organization. Part of your professional training should include "service" and "leadership" activities. For instance, faculty members serve on a wide variety of university committees (e.g., faculty search committees, policy development committees, multidisciplinary research groups) and have to chair or administrate various tasks. Consequently, employers look for prospects who have had "service" and "leadership" experiences.

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OFFICE SPACE / KEYS

As a Teaching Assistant, you will be assigned to an office, provided with a key(s) (if applicable) and given a building pass (to allow you permission to be in the Science III building after hours). The Graduate Secretary will work with the Building Administrator (Jamie Silverio) to determine your space and provide you with the forms. Jamie will provide the requested keys.

As a Research Assistant, you will probably be provided space in your advisor's laboratory. See the Graduate Secretary if you need a Building Pass to Science III.

The BGSO has space in Science III, Room 350 that is meant for graduate students to use for purposes such as reading, individual work, etc.

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RESPONSIBLE CONDUCT OF RESEARCH

All persons in the department engaged in research are expected to carry out their activities with the highest possible ethical standards. Any serious deviation from the practices commonly accepted within the scientific community for proposing, conducting, or reporting research and creative scholarly

activity are considered misconduct. Scientific misconduct is defined as interference, fabrication, plagiarism, deception or other deviations from accepted research practices. Scientific misconduct by anyone in the Department will be handled according to the policies and procedures of the University as outlined in the University Bulletin under Academic Policies and Procedures for All Students.

Authorship

Authorship requires a significant intellectual or practical contribution. Most professional societies and other scientific organizations have a "code of ethics", which includes guidelines for authorship. Here is a summary to help guide you.

Based on the Ecological Society of America's code of ethics (found at: https://www.esa.org/esa/about/governance/esa-code-of-ethics/), authorship is justified if a person has made a substantial contribution, such as:

- conceived the ideas and design of the experiments
- participated in the execution of the study
- analyzed and interpreted the data
- wrote the manuscript
- or some combination of these.

Also, authorship may be justified by obtaining resources for the project, when resources were requested by outlining the general or specific research program, and by long-term guidance and development of the project.

Persons should not be included as authors if, for example, they only provided use of instrumentation, services for a fee, routine paid technical work, or advice in a narrow context. If you are unsure about who should be an author or the order of authorship, you should discuss the issue directly with those involved.

Data Collection

Gathering data and retaining accurate records are of the utmost importance in research. Furthermore, increasingly federal funding agencies are requiring that accurate and well-documented records of data collected for grants be archived and made available to anyone with a reasonable request.

Based on the report "Responsible Science: Ensuring the Integrity of the Research Process" [1], here are some guidelines:

> Custody of all original data should be retained by the unit in which they are generated. This applies to graduate students whose research is funded by grants to the university (and/or to faculty). When graduate students leave the program, they may take copies of their data records, but the original data books and sheets, summaries, spreadsheets, etc., should remain archived in the research unit with clear documentation. An exception would be data gathered by a graduate student who was completely self-supporting and sole author on the resulting publications. Whatever you do, make sure that you work the details out with your advisor.

It is recommended that data be kept in an orderly fashion so that the data are accessible and easily reviewed by the researchers involved. The records should name the experiment, researchers, date, basic protocols, etc. Statistical analyses should be documented with printouts that include notation of the experimental design, results of tests of statistical assumptions, inclusion or exclusion of data, and

conclusions drawn from the statistical results. There should be sufficient notation to allow someone else to reconstruct the experiments and/or analyses. Laboratory books or binders are recommended; these can easily be cataloged and stored.

References:

1. Committee on Science, Engineering and Public Policy (1993) Responsible Science: Ensuring the Integrity of the Research Process, Vol. I & II. National Academy Press, Washington, DC

Laboratory Safety Training

You are required to fulfill Laboratory Safety and Hazardous Waste training sponsored through the Environmental Health & Safety Department each year (late August/early September). If applicable, some may also be required to fulfill Bio Hazards Safety Training. The dates and times will be provided to you. It is also your responsibility to make sure that undergraduates working with you know the proper safety procedures for the work they are doing.

Research with Animals

All research with animals is expected to conform to current standards of care. For research that involves vertebrates, the University's Institutional Animal Care and Use Committee (IACUC) **must** be consulted and the protocol must be approved by IACUC prior to the initiation of any research. This includes both laboratory and field work. Consultation should be done well in advance of the proposed research.

All faculty, staff and students who use vertebrate animals are required by federal regulations to complete a training session before working with animals. Please refer to Laboratory Animals Resources web page for information regarding the use of vertebrate animals on campus.

Human Subjects

The University requires that researchers (faculty and students) who conduct research with human subjects must submit a "human subjects protocol" for review and approval by the University's Human Subjects Research Review Board well before the proposed project is to begin. Please refer to this web page on Human Subjects.

Additional Information

Further information about the University's research compliance policies can be found on the Research Compliance web page.

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MASTER OF ARTS (NON-THESIS) PROGRAM

The Master of Arts (non-thesis) degree is designed for students who want to expand their knowledge of the biological sciences primarily through coursework. The degree is designed to be completed in one year. Entering students may choose either:

Track A: affiliation with an individual faculty advisor, or
Track B: completion of the capstone course (affiliation with program advisor)

Both A and B tracks require the completion of a special project as defined by the advisor.

The steps to lead you through the program are below. Click on the individual links for further explanation of the activity and/or forms required to be completed.

1. Complete your special project as defined by your advisor.

2. Complete the required course credits.

3. Declare your intent to graduate (submit the Graduate Application for Degree) at the beginning of the semester in which you intend to graduate. Please consider carefully the due dates for all required items on the Graduate School's website. You are responsible to ensure they are completed on time. Note: Incomplete or missing grades, account holds (financial or otherwise) or a cumulative GPA of less than 3.0 will prevent you from graduating.

Degree Requirements

The State of New York (SUNY) requirements for a Master's degree state the following:

Master's degree programs shall normally include:

1. *A minimum of one academic year of full-time graduate level study, or its equivalent in part-time study*

2. *An accumulation of not less than 30 credit hours*

   A minimum of 30 credit hours beyond the bachelor's degree is required for completion of the Master of Arts degree. A cumulative grade-point average of 3.0 or above is required. These credit hours are to be fulfilled as follows:
   - **28 credit hours of courses** numbered BIOL 500 or above (including 2-credit BIOL seminar courses and excluding BIOL 591, 595, 599, 680X and all MAT/MSEd courses). In addition, the options below may be used in part to fulfill the 28 credit requirement
     1. Up to two courses (maximum of 8 credit hours) from courses outside Biological Sciences (with advisor approval)
     2. Up to eight credit hours of BIOL 597. BIOL 597 is for independent study arranged with a particular faculty member. Up to two 400-level undergraduate courses (maximum of 8 credits) may be taken as BIOL 597 with permission from the instructor, your advisor and approval from the Graduate School. This requires that extra work be identified and completed to justify graduate credit.

- **2 credit hours of BIOL 680X (Departmental Seminar)** (one credit each semester), additional credits of 680X will not be applied toward the degree

3. *Research or a comparable occupational or professional experience*

   The professional experience would be fulfilled by the Departmental Seminar Series (BIOL 680X for two semesters for 2 credits total). Other experiences (i.e., 597 or 585) could be approved by the student's advisor if conflicts prevent the student from attending the seminar series.

4. *Completing an appropriate special project.*

   The project may be completed either through a course, through affiliation with a faculty mentor (by permission of advisor) or through the BIOL 680M capstone course (by permission of instructor). The project may be a paper submitted in fulfilling the requirement of a course.

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MASTER OF SCIENCE (THESIS) PROGRAM

The purpose of our Master of Sciences Degree is to provide research experience with a short-term project (about two years). The project will necessitate careful planning, literature review, learning laboratory and/or field techniques, preliminary data collection and analysis, revised planning, final data collection and analysis, a written report complete with graphics and appropriate statistical analysis, oral presentation to the department, and an oral defense to the Supervisory Committee. Consequently, entering students are expected to affiliate with an advisor and begin research in the first semester. Usually, the advisor suggests a research project, which allows the student to begin immediately developing the key skills needed for this degree. A Supervisory Committee guides the progress of the student. Coursework is secondary, in that it expands the foundation of the student, and so it is not the primary focus of the degree program.

The steps to lead you through the program are below. Click on the individual links for further explanation of the activity and/or forms required to be completed. Department forms are currently available from the Graduate Secretary in hard copy format or electronic format on the department Forms web page.

1. Attend an Advisory Meeting with your advisor the first week of the first semester.

2. Identify your Supervisory Committee by the end of the first semester.

3. Attend your first Research Meeting within six months after entry into the program.

4. If you are a domestic student and your residence is outside New York State, take steps to establish New York State residency and qualify for in-state tuition rates beyond your first year. Begin this process now. Guidance is available on the Student Records web page.

5. Attend your second Research Meeting during the third or fourth semester.

6. Declare your intent to graduate (submit the Graduate Application for Degree) at the beginning of the semester in which you intend to graduate. Please consider carefully the due dates for all required items on the Graduate School's website. You are responsible to ensure they are completed on time. Note: Incomplete or missing grades, account holds (financial or otherwise) or a cumulative GPA of less than 3.0 will prevent you from graduating.

7. Defend your thesis, to include a seminar that is open to the department and an oral examination by your committee.

8. Submit your final thesis (electronic format) to the Graduate School per their guidelines and due date. While the Graduate School no longer provides services to assist you with acquiring bound copies of your paper, they will provide guidance on how to order and pay for bound copies through outside sources. The Biological Sciences Department does not require a bound copy.

Degree Requirements

1. *A minimum of one academic year of full-time graduate level study, or its equivalent in part-time study*

2. *An accumulation of not less than 30 credit hours*

   A minimum of 30 credit hours beyond the bachelor's degree is required for completion of the Master of Science degree. A cumulative grade-point average of 3.0 or above is required. These credit hours are to be fulfilled as follows:

   a. **20 credit hours of courses** numbered BIOL 500 or above (exclusive of BIOL 591, 595, 599 and all MAT/MSEd courses). In addition to BIOL courses, the options below may be used in part to fulfill the 20 credit requirement
      i. Up to eight credit hours from courses outside Biological Sciences (with approval of your supervisory committee).
      ii. Up to 12 credit hours of BIOL 597. BIOL 597 is for independent study arranged with a particular faculty member. A 400-level undergraduate course (for up to 4 credits) may also be taken as BIOL 597 with permission from the instructor, your advisor and approval from the Graduate School. This requires that extra work be identified and completed to justify graduate credit.
      iii. Up to two credit hours of BIOL 680X.
      iv. Additional credits of BIOL two-credit seminar courses beyond the 4-credit requirement stated below. There is no limit above the 4-credit requirement.
   b. **4 credits of BIOL seminar courses**. These are two-credit hour courses.
      i. You may substitute two BIOL 601/602 one-credit courses to satisfy two credits of the BIOL seminar requirement and/or
      ii. You may substitute two BIOL 680X one-credit courses to satisfy two credits of the BIOL seminar requirement.
   c. **6 credits of BIOL 599 (Master's Thesis)**

3. *Research or a comparable occupational or professional experience*

   Your research is fulfilled by registering for BIOL 597 (providing an applicable title to be included on your final transcript) and BIOL 599 (Master's Thesis).

4. *Completing an appropriate special project.*

   Your committee's approval of your thesis defense in both oral and written formats will satisfy this requirement.

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4+1 BACHELOR'S-MASTER'S PROGRAM

What is the 4+1 Bachelor's-Master's program?

The program is designed for exceptional Binghamton University students who want to combine bachelor's and master's degrees in five years. Students in the program receive a bachelor's and a master's at the end of the program. The requirements for completion of the combined degree program are identical to those for completion of the two separate degrees. But because 6 hours of course work taken for the Master's degree (500-600 level) also count for the undergraduate degree, students are able to complete the course requirements for the bachelor's in four years and the course requirements for the combined degree in five years. By completing the bachelor's requirements during the first four years, students are assured of the bachelor's degree if, for any reason, they do not complete the fifth year.

The program is appropriate for students who want to:

- Determine whether they want to pursue a Ph.D. An additional year of research and coursework will help ascertain whether a research career is desired.
- Prepare for a career in industry. Employers are looking for people who have excellent training in science, and team-work and communication skills, which an extra year in a research environment can provide. Salaries for people with master's degrees are about $10,000 higher than for those with bachelor's degrees.
- Prepare for a career in teaching. Science teachers are in high demand, but master's degrees are often expected within a few years of employment (e.g., 3-5 years in New York). A master's degree also can lead to administrative positions in schools and educational organizations.

Steps for Entrance into the 4+1 Program

To apply for this program, you will need to have successfully completed at least one semester of BIOL497 (Independent Study) and have a 3.2 overall GPA. You should also contact potential faculty members in the department who will serve as your future advisor (see MS Program requirements above for details).

Contacts

- Weixing Zhu, Graduate Director (wxzhu@binghamton.edu)
- Graduate Secretary (biolgrad@binghamton.edu)

Deadlines (for both Biology Department and Graduate School applications):

- When applying for admission in Fall, deadline is March 15.
- When applying for admission in Spring, deadline is October 15.

What to Submit to the Biology Department (in your junior year):

Submit the below to Graduate Secretary, Science 3/Room 210 or electronically at biolgrad@binghamton.edu.

- Personal Statement (~500 words, include full name, B#, and Bmail address)
  Your statement could contain your reasons for pursuing graduate study, personal background, academic history, work and internship experience, future plans, or other information that may be of special interest and importance in contributing toward an admission decision.

- Unofficial transcript
  Log into BU Brain, choose the *Your Records* tab, click *Online Academic Transcript* to print an unofficial transcript. If you have an account hold, you will need to clear that first.

- Two faculty letters of recommendation (from those with knowledge of your undergraduate level work)

- A Statement of Commitment from the Biology Department faculty member who will be your future advisor supervising your MS thesis (this individual can also submit a letter of recommendation if applicable)

Admission into the Program:
- Students are provisionally accepted into the program in their junior year. Admission into the program is based on academic performance and sponsorship by a faculty member, who will be the student's research advisor for the Master of Science degree.

GPA Requirement:
- After admission into the program, the student must maintain a 3.2 GPA or better in biology courses during the remainder of the bachelor's degree work.

Register for graduate level courses as an undergraduate student:
- Contact the Graduate Secretary for assistance in registering for your graduate level courses.
  - Students take up to 6 credits of BIOL 500-600 courses, excluding BIOL 591, 595 and 599. Candidates should begin their research project and can receive credit by registering for BIOL 597. In the fourth summer, they take BIOL 597/599, which means they work on their research project during the summer.
  - Refer to the *Register for Graduate Level Courses* section below to understand why taking 6 credits of graduate study as an undergraduate may not be for everyone, especially those that need to maintain full-time status due to financial aid.

Apply to the Graduate School:
- Apply by the semester deadline
- The GRE examination will not be required for entrance into the program.
- There may be a limited number of graduate application fee waivers that you could be eligible for (contact the department Graduate Secretary for information).
- 4+1 graduate degree programs are designed to begin the semester following graduation with an undergraduate degree. If a 4+1 degree student wishes to begin studies at a later semester, the student should contact his/her graduate program to request a deferral of admission for up to one year. If the graduate program approves the student's deferral, the program submits an admission deferral request to The Graduate School. The Graduate School will review the request and either approve or deny it. 4+1 degree students who wish to defer for more than one year or who do not have prior Graduate School approval to defer must reapply for admission to a non-accelerated/4+1 graduate program. It is not possible to reapply to an accelerated/4+1 program. Readmitted students lose the ability to apply courses taken during their undergraduate degree toward their graduate degree and must meet the 24 credit residency requirement.

Completion of Your Bachelor's Degree:
- Complete all requirements for your BA degree as outlined in the University Bulletin and apply to graduate.

Admittance into Graduate School:

- Your admission application is reviewed and a decision rendered.

Conferral of your Bachelor's Degree:

- Your undergraduate degree is conferred by the registrar's office. This gives you the ability to register as a graduate student.

Register for Graduate Level Courses:

- As you are now considered a new/incoming graduate student, your ability to register for courses is included with all new/incoming students, typically a week prior to classes starting. If you prefer, you may work with the Graduate Secretary to be registered earlier once your undergraduate degree has been conferred and your record switched over to graduate level.
- Students enrolled in 4+1 master's degree programs (as defined by the Graduate School) have a reduced residence requirement, where a minimum of 18 credit hours must be completed at the graduate level in order to satisfy the residence requirement. Students are advised to carefully review their plans and consult with their advisors before confirming their course schedule each semester. Taking less than 12 credits per semester during the graduate level year of study may adversely impact financial aid, immigration status and graduation requirements.

Course Requirements – MS Degree:

- Candidates must meet the degree requirements as outlined in the Master of Science (thesis) Program section of this handbook.

Eligibility for Funding:

- Excerpt from The Graduate School Manual, Appointment of GA/TA Positions: "Fast-track/4+1/accelerated degree students may not receive University-funded tuition scholarships as part of their appointment."

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DOCTOR OF PHILOSOPHY PROGRAM

The PhD is a research degree. Entering graduate students must affiliate with an advisor before the first semester begins, establish a Supervisory Committee by the end of the first semester, and establish a research program in the first year. The student's progress is monitored by the Supervisory Committee.

The steps to lead you through the program are below. Click on the individual links for further explanation of the activity and/or forms required to be completed. Department forms are currently available from the Graduate Secretary in hard copy format or electronic format on the department Forms web page.

1. Attend an Advisory Meeting with your advisor the first week of the first semester.

2. Identify your Supervisory Committee by the end of the first semester.

3. Attend your first Research Meeting in the beginning of your second semester.

4. If you are a domestic student and your residence is outside New York State, take steps to establish New York State residency and qualify for in-state tuition rates beyond your first year. Begin this process now. Guidance is available on the Student Records web page.

5. Attend annual Research Meetings.

6. Complete your Concentration Exams: Fall enrollees: due before the beginning of fourth semester (the second January) or Spring enrollees: due before the beginning of the fourth semester (the second August).

7. Take the Grant Writing BIOL 680G course (by the third semester) (this is a recommendation, not a requirement).

8. Complete your Research Proposal Exam, including an approved Dissertation Prospectus, by the end of the third year. Provide the Research Meeting form documenting the exam to the Graduate Secretary.

9. Beginning with your **third** year, give one presentation, at the department level or higher, every year. Provide completion details to the Graduate Secretary.

10. Complete your course requirements and be eligible for recommendation for admission to candidacy for doctoral degree ("all but dissertation" or ABD status) (recommended by end of third year). *NOTE: The Graduate School Manual indicates that doctoral students achieve ABD status within five years.* ***The Biological Sciences Department's expectation is that doctoral students achieve ABD status within three years.*** *If a student goes beyond five years, a petition form will need to be submitted to the Graduate School to remain in the program. Once ABD, a doctoral student is expected to complete the program and receive a degree within five years. If a student goes beyond five years, a petition form will need to be submitted to the Graduate School to remain in the program. Petitions granted are usually for one semester and not more than two semesters in length.*

11. Declare your intent to graduate (submit the Graduate Application for Degree) at the beginning of the semester in which you intend to graduate. Please consider carefully the due dates for all

required items on the Graduate School's website. You are responsible to ensure they are completed on time. Note: Incomplete or missing grades, account holds (financial or otherwise) or a cumulative GPA of less than 3.0 will prevent you from graduating.

12. Request approval for your Outside Examiner; consult with the Graduate Secretary.

13. Prepare and defend your dissertation to include a seminar that is open to the department and an oral examination by your committee.

14. Submit your final dissertation (electronic format) to the Graduate School per their requirements and deadlines. NOTE: While the Graduate School no longer provides services to assist you with acquiring bound copies of your paper, they will provide guidance on how to order and pay for bound copies through outside sources. The Biological Sciences Department does not require a bound copy.

Degree Requirements

1. *A minimum of one academic year of full-time graduate level study, or its equivalent in part-time study*

2. *An accumulation of not less than 30 credit hours*
   A minimum of 30 credit hours beyond the bachelor's degree is required for completion of the doctoral degree. A cumulative grade-point average of 3.0 or above is required. These credit hours are to be fulfilled as follows:

   a. **20 credit hours of courses** numbered BIOL 500 or above (exclusive of BIOL 591, 595, 599 and all MAT/MSEd courses). In addition to BIOL courses, the options below may be used in part to fulfill the 20 credit requirement:
      i. Up to eight credit hours from courses outside Biological Sciences (with approval of your supervisory committee)
      ii. Up to 12 credit hours of BIOL 597. BIOL 597 is for independent study arranged with a particular faculty member. A 400-level undergraduate course (for up to 4 credits) may also be taken as BIOL 597 with permission from the instructor, your advisor and approval from the Graduate School. This requires that extra work be identified and completed to justify graduate credit.
      iii. Additional credits of BIOL two-credit seminar courses beyond the 4-credit requirement stated below. There is no limit above the 4-credit requirement.

   b. **2 credits of BIOL 680X (Departmental Seminar)** to be taken in the first two semesters. This is a one-credit course. Additional credits of 680X will not be applied toward the degree.

   c. **4 credits of BIOL seminar courses.** These are two-credit hour courses
      i. You may substitute two BIOL 601/602 one-credit courses to satisfy two credits of the BIOL seminar requirement.
      ii. It is recommended that you take Grant Writing (BIOL 680G).

   d. **4 credits of BIOL 696 (Research in Biology),** used while working on the research proposal exam/dissertation prospectus, and/or **BIOL 699 (Dissertation),** used while working on the dissertation.

3. *Research or a comparable occupational or professional experience*

   Your research is fulfilled by registering for BIOL 597 (you may provide an applicable title to be included on your final transcript) and BIOL 696 (Research in Biology).

4. *Completing an appropriate special project.*

   Your committee's approval of your dissertation defense in both oral and written formats will satisfy this requirement.

NOTE: For students entering with a bachelor's degree, 12 credits per semester in the first year are necessary to maintain full-time registration and satisfy residency requirements (24 credits). Students entering with a MS degree are only required to register for 9 credits (vs. 12) to maintain full-time registration until they satisfy residency requirements (24 credits), though most choose to take 24 credits in their first two semesters. All students should work closely with their advisor and the Graduate Secretary to ensure that registration is appropriate. Refer to the Registration section for more information.

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Sample Registration/Path to Course Complete – PhD Student

While not mandatory, becoming course complete by the end of the third semester does financially benefit both you and the department by reduction in tuition funding and fees. This saves you money and allows the department to continue to offer a stable level of funding to future incoming students.

The below is only a sample; work with your advisor and the Graduate Secretary to fulfill your individual needs.

First Semester (12 credits)	**Second Semester (12 credits)**
500-level course 4 credits 500-level course 4 credits Department Seminar (680X) 1 credit Independent Study (597) 3 credits (or IS-2 credits and 602Q EEB Seminar-1 credit)	500-level course 4 credits 580 seminar course 2 credits Department Seminar (680X) 1 credit Independent Study (597) 5 credits (or IS-4 credits and 602Q EEB Seminar-1 credit)
Third Semester (9 credits) 580 seminar course (if needed) 2 credits or Independent Study (These 2 credits bring you to course complete or 26 credits. At this point 7 non-billable credits would be added to the registration for those requiring full-time status such as funded or international. Those requiring full-time registration due to loan status must provide a Full-Time Certification form to the Graduate Secretary.)	**Fourth Semester (9 credits)** Research in Biology (696) 1 credit (in this sample student is course complete, 8 non-billable credits would be added for those requiring full-time status such as funded or international. Those requiring full-time registration due to loan status must provide a Full-Time Certification form to the Graduate Secretary.)
Fifth Semester (9 credits) Research in Biology (696) 1 credit Or Dissertation (699) (ABD achieved) 1 credit (addition of 8 non-billable credits for those requiring full-time status)	**Six Semester (9 credits)** Dissertation (699) (ABD achieved) 1 credit (addition of 8 non-billable credits for those requiring full-time status) It is expected you will achieve ABD status no later than by the beginning of your seventh semester.

NOTE: Always refer to the "Degree Requirements" section in this handbook to fulfill requirements without exceeding credit limits. Funded students are responsible to pay for any credits taken over the amount funded per semester.

CERTIFICATE IN COLLEGE TEACHING

Colleges and universities frequently want new faculty to have a demonstrated proficiency in teaching as well as research. The Graduate School provides two types of teaching certification for students willing to complete a set of activities and coursework related to mastery of teaching skills. One certificate concerns teaching at the college/university level, and the other focuses on community college level teaching. For specific requirements, see:

- https://www.binghamton.edu/grad-school/academic-programs/certificates/teaching-college-university-certificate.html
- https://www.binghamton.edu/grad-school/academic-programs/certificates/teaching-community-college-certificate.html

For both types of certificates, a $100 Certificate Processing Fee must be paid to the Graduate School to receive the certificate after providing documentation that requirements for the certificate have been met.

COSTS AND FUNDING

Binghamton University — a public university subsidized by New York state — makes an excellent education economically possible. Click here to find out more!

Aside from maintaining reasonable tuition rates, Binghamton University offers numerous funding options. From loans and fellowships to student employment and travel funding, Binghamton University can help you find the sources you need to enhance your career and make your education attainable. Explore as many avenues as you can, click here to learn more.

In addition, you can explore travel funding opportunities through the Graduate Student Organization. Work with our BGSO to understand what funds may be available to you.

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TEACHING/GRADUATE ASSISTANTSHIPS

Teaching assistantships are managed and funded by the Harpur Dean's Office. Each academic year, a limited number of TA lines are allocated to the Biology Department based on the teaching needs for that year. Competitive stipends (determined by the Graduate School) and/or tuition scholarships are provided in exchange for 10 to 20 hours of work per week during the semester. TAs provide classroom support, either by teaching, leading discussion sections, grading work and/or preparing classroom materials.

Graduate assistantships are managed and funded by the Harpur Dean's Office. Presently there are few graduate assistantships available for Biology students; some examples are positions associated with the Freshman Research Immersion program, Evolutionary Studies Program (EvoS) and organized research centers. Competitive stipends (determined by the Graduate School) and/or tuition scholarships are provided in exchange for 10 to 20 hours of work per week during the semester. GAs perform research and/or provide administrative aid within their graduate discipline or for a department or program. To locate GA opportunities outside of the Biology Department, access the Graduate School's Assistantships, Fellowships and Scholarships web page.

Consult the Graduate School's terms and conditions for employment (stipend) and/or tuition scholarship to be knowledgeable of:

- Registration and performance requirements (satisfactory progress)
- Additional (dual) employment
- Renewal limitations (maximum amount of funding)
- Human Resources forms and health insurance benefits
- New York State residency (lower tuition costs)

Selection

All eligible (current and incoming) graduate students are considered for assistantships with priority given to doctoral students and needs of the department. Master's students can be considered if the supply of eligible doctoral students is depleted. Students that accept a teaching assistantship funding offer will be given the opportunity to choose which course they would prefer to support; likewise, instructors will be given the opportunity to choose which teaching assistants they feel are the best match to support their course.

Orientation for Teaching Assistants

The Graduate Schools hosts a mandatory orientation for new teaching assistants, held just prior to the start of the fall semester. Refer to their web page for details and recommended reading.

For a complete overview of the Graduate School's funding policies and guidelines, consult their Manual.

Recommended Reading

As recommended by the Graduate School, new TAs should read the following books, available at the University Bookstore, from StylusPub or in the University Libraries:

1. Teaching Your First College Class: A Practical Guide for New Faculty and Graduate Student Instructors (Lieberg, Carolyn S., 2008)
2. Developing Quality Dissertations: A Graduate Student's Guide to Achieving Excellence (Lovitts, Barbara E., and Wert, Ellen L., 2009)
    a. Note: There are several versions – Sciences, Social Sciences or Humanities – depending upon your area of study.

RESEARCH PROJECT ASSISTANTS

Research project assistants (RPAs) are supported through grant funding. RPAs are normally provided with academic-year (10-month) stipends ranging from $7,000 to $30,000 and may also receive tuition scholarships. RPAs work approximately 15 to 20 hours per week on research. They are offered health and other benefits as SUNY Research Foundation employees. Research assistants are individually selected based upon the research needs and resources of the department faculty who administer grants.

AWARDS

This list is not all inclusive, students should independently seek out opportunities for awards and/or recognition.

Graduate School Awards
Visit their Awards Processes and Deadlines web page for various options. Note that in some cases, you have to be nominated by faculty. Contact the Graduate School or the department Graduate Secretary with questions.

Department Awards

Szymanski Travel Award
This departmental award provides a few hundred dollars for a graduate student or two to present research at a scientific meeting and announcements will be made via the graduate student listserv during both fall and spring semesters.

Lazaroff Award
The annual Lazaroff award provides funding for students broadly studying microbiology and announcements will be made via the graduate student listserv during spring semester.

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REGISTRATION

University Bulletin / Course Descriptions
The University Bulletin provides information on curricula, courses and requirements for degrees and majors as well as academic policies and procedures. Students should become familiar with this resource as it provides information on all aspects of your continuing educational experience at Binghamton University.

Independent Study Course Descriptions
585 Internship involving work that specifically requires a strong biological background but not involving laboratory or fieldwork, usually off campus, that is not independent research.
597 Special training in subjects not offered in courses or a graduate student taking an approved 400-level course
599 Independent work and preparation of Master's thesis on approved problem.
696 Original laboratory or field research leading to preparation of dissertation prospectus, taken only by PhD-track students prior to admission to candidacy for doctor of philosophy degree. In most cases this course is to be taken for only one or two semesters.
699 Independent work and preparation of PhD dissertation on approved problem and taken after admission to PhD candidacy.
Independent study registration requires a paper form and advisor approval. See the Graduate Secretary for the form and assistance.

Registration

New Students:
New students can register for courses immediately following the department's orientation session (typically held a few days prior to the first day of the semester). It is recommended that you view the course selections on BU Brain prior to attending orientation. You may also arrange a time to meet or have a discussion with your advisor regarding your registration needs. When necessary and upon request, the Graduate Secretary can register a new student prior to the orientation session.

Continuing Students:
Students continuing to the next semester are able to pre-register for courses, approximately three months prior to the start of the semester (for example, spring pre-registration opens late October). This pre-registration period will close after 5-6 weeks, but will re-open near the beginning of the semester. It is highly recommended that all continuing students register during the pre-registration period.

Confirmation of Enrollment
All graduate students are required to complete confirmation of enrollment for the semesters in which they are enrolled (fall, winter, spring and/or summer). Confirming your enrollment acknowledges that you have been presented with and reviewed financial aid, billing and refund policies as required by federal and state agencies, SUNY and Binghamton University. The ability to confirm can be found in BU Brain.

If confirmation of enrollment is not completed by the deadline posted (usually 5 days after the semester begins), all courses will be dropped whether or not the semester bill is paid in full. If courses are dropped because you failed to confirm, you must re-enroll in your courses and confirm.

You do not need to wait to be fully registered for the semester before confirming your enrollment; changes to your registration can take place after confirming and you only need to do this once each semester. Refer to the Confirmation of Enrollment web page for further information.

Graduate Students Taking Undergraduate Course
Biology MS and PhD graduate students may take one 400 level course (up to 4 credits) for graduate credit with permission from the instructor, your advisor and approval from the Graduate School. MA graduate students may take two 400 level courses (up to 8 credits). In general, approval of graduate credit for advanced undergraduate courses is limited to unique program circumstances usually involving interdisciplinary work. Refer to the Graduate School Manual for further information and the Graduate Secretary for the necessary registration form.

Add/Drop/Change/Withdraw Dates
It is a student's responsibility to be aware of registration deadlines (add, drop, grade change, withdrawal). Refer to the Student Records web page for details. For independent study (including thesis, research and dissertation) course deadlines, consult the Graduate Secretary.

Residence Requirement (Graduate School)
Regardless of any previous graduate experience, the minimum university residence requirement for any graduate degree (with the exception of the 4+1 degree) is 24 credit hours. Refer to the Graduate School Manual for further information on registration and the residence requirement.

New York State Residence Requirement
The colleges and universities that comprise the State University of New York system were established to provide a quality education at a reduced rate for the benefit of qualified residents of New York State. Students who are defined as New York state residents are those who, prior to the beginning of the semester, have established a permanent domicile in New York State. One does not acquire a new domicile merely by attending an institution of higher education in New York State.

To understand the requirements and access the form to establish New York State residency, refer to this Student Accounts web page.

NOTE: Domestic, out-of-state funded students (i.e. teaching assistants) will receive out-of-state rate tuition scholarships for the first year only. After the first year, the tuition scholarship rate will be at the in-state level and if you are not yet a New York State resident, you will need to make up the difference in tuition costs. All domestic, out-of-state students are encouraged to establish New York State residency after their first two semesters are completed. This does not apply to international students.

Transfer Credits
Students matriculated in advanced degree programs may petition to have graduate credits from other institutions transferred toward their Binghamton master's degree. Transfer credits are not normally considered for doctoral degrees. Once enrolled, it is the student's responsibility to initiate the petition process. Determination of transfer credits is not made prior to a student's enrollment. Refer to the Graduate School Manual for complete guidance.

Full-Time Registration
Refer to the Graduate School Manual to verify the number of credits you need to register for to be full-time.

Full-Time Certification (Full-Time Working Toward Degree)
Students in the final stages of degree work may be certified as full time for loan or visa purposes if the student's advisor and graduate director certifies that the student is making a full-time investment in work toward their degree. This typically begins in the fifth and/or sixth semesters for a PhD student after completing the course requirements, finishing the Research Proposal Exam and achieving candidacy for the doctoral degree. A master's student would typically be in their last semester and be course complete. Refer to the Graduate School Manual for further explanation and the form.

The department does not require a form if you are a funded or international student as those situations automatically warrant full-time certification. If you have other needs (i.e. loan deferral), the form will be required to register you properly.

Once approved, your registration record will be adjusted to include non-billable credits.

Leave of Absence / Continuous Registration
If you have to be absent from your studies for a short period of time, you may be able to receive an approved Leave of Absence or maintain enrollment through Continuous Registration. Refer to the Graduate School Manual for details and restrictions.

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DETERMINATION OF ACADEMIC STANDING

A cumulative grade point average (GPA) of at least 3.0 is required for a graduate degree. To maintain satisfactory academic progress, students are required to earn a minimum GPA of 3.0 in all courses that the Graduate School counts toward a degree. Students that have not achieved satisfactory academic progress can be placed on Probation or Jeopardy status. The Graduate School may sever a student, when in the estimation of the dean of the Graduate School (or the dean's designee), the student is not maintaining a satisfactory GPA, as required for graduation. Graduate students may also be severed from the Graduate

School for not meeting other academic requirements, such as not passing required exams or not meeting required program deadlines.

Refer to the Graduate School Manual for additional information regarding academic standing and probation/jeopardy status. Students receiving a probation or jeopardy academic status should work closely with their advisor to develop a plan to return to good academic standing.

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DEGREE PROGRAM LEVEL CHANGE

If you are considering a change in your graduate program level (MA/MS to PhD, e.g.), initiate discussions with your faculty supervisor and supervisory committee (if applicable). Once approved, the faculty supervisor should send an email to the Graduate Director detailing the request and justification for the change, and provide all necessary supporting information. The Graduate Director, if necessary, will consult with the Graduate Committee and respond to the request. Upon approval, the Graduate Secretary shall work with the Graduate School to have the degree program changed in the student's record.

Other considerations: It is the student's responsibility to understand any changes in degree requirements when changing their degree program, refer to the Graduate Student Handbook for details. If you are a funded student, a program level change may impact your ability to continue to be funded and/or stipend amount. If you are an international student, contact the ISSS department for guidance.

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COMMENCEMENT

Binghamton University holds one commencement ceremony per year at the end of the spring semester. Whatever semester you officially graduate in, you are still welcome and encouraged to participate in the spring ceremony. Visit the Commencement web pages for details and contacts.

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HOW DO I ….?

change my home address with Binghamton University and/or Human Resources? ***To change in Binghamton University's directory, sign in to BUBrain and click on "Update Addresses and Phones". To change my payroll address as a TA/GA, complete the Address Change Form (https://www.binghamton.edu/human-resources/forms/) and take it to Human Resources (2nd floor) in the Couper Administration Building. If you are a TA/GA, you will need to do both.***

change a grade mode (i.e. from letter grade to S/U)? ***Complete the Graduate School form entitled Request for Late Add/withdraw/Delete/Change (grade) and provide to the Graduate Secretary to process. The Graduate School recommends that no more than 2 satisfactory/unsatisfactory classes be taken and used toward final degree requirements.***

access theses and dissertations from Binghamton University alumni? ***Through Binghamton University Libraries, you can access dissertations and theses from BU authors, global lists, by subject matter, etc. Go to their Find Databases web page here to search. Some databases are BU-ONLY and will require your PODS login if accessing from off-campus.***

take more than 16 credits in one semester? ***Complete the Graduate School form entitled Request for Course Overload (funded students) or (non-funded students) and provide to the Graduate Secretary to process. Before submission, have a discussion with your advisor regarding the increased load of course work.***

request an extension to the five-year limit to ABD status? ***Complete the Graduate School form entitled Petition for Extension of Five-Year Limit and provide to the Graduate Secretary to process.***

know when I am eligible to become ABD (admission to candidacy for doctoral degree)? ***Have discussions with your advisor and the Graduate Secretary to verify all requirements have been fulfilled. Your status cannot be changed in the middle of a major semester. The Graduate School requires all candidacy forms be submitted prior to the add/drop date (two weeks beyond the semester start date) to be considered for that semester.***

request to have my tuition fees waived since I will not be on campus for an entire semester or more? ***Complete a Fee Waiver Request form which can be found here. See the Graduate Secretary for assistance.***

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DEGREE PROGRAM FORMS AND REQUIREMENTS

Advisory Meeting Checklist
The department requires new students to have an advisory meeting with their advisor during their first week of classes. The purpose of the meeting is to have a friendly determination of your strengths and weaknesses and to discuss your career goals. If able, bring copies of your transcripts to the meeting. You and your advisor should complete the checklist and provide a copy to the Graduate Secretary. Forms are available online or in the Graduate Secretary's office.

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Formation of Supervisory Committee
Form your Supervisory Committee by the end of the first semester. Discuss the formation of your committee with your advisor. Three members (advisor and two Biological Sciences Department faculty with formal rank of assistant, associate or full professor-including faculty with joint appointments with a fourth from another university department may be added) are required for the master's student and four members (advisor and three faculty with formal rank of assistant, associate or full professor, all from the university with at least three from the Biological Sciences Department-including faculty with joint appointments) are required for the doctoral student. Exceptions to the committee formation may be considered by the department's Graduate Committee and in some cases, the Graduate School. Consult your chosen faculty members and receive confirmation that they are willing to participate on your committee. Once your committee is determined, complete the Formation of Supervisory Committee form, including a paragraph describing the general nature of your proposed

research, and provide it to the Graduate Secretary. The department's Graduate Committee will review your form at their next meeting and let you know the decision (approval or disapproval). Forms are available online or in the Graduate Secretary's office.

Change the Formation of Your Supervisory Committee
Any change to your supervisory committee (including a change of advisor) must be agreed to by your committee members and approved by the Graduate Committee. If you wish to change your committee, submit a signed Formation of Supervisory Committee form to the Graduate Secretary, briefly describing the change in committee members and why the change is needed. You will be notified if your request was/was not approved.

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Research Meeting – MS Degree
The Supervisory Committee and in particular the advisor (chairperson) are responsible for the progress of the student. Soon after it is established, the committee should meet with the student and agree on the scope and nature of the research project. The first research meeting should occur within six months after entry into the program. To set up a meeting, contact your committee members at least two weeks ahead of time to determine a day and time all can attend. Once established, reserve a room (S3-204 or S3-214) with a secretary in the department office (S3-210) and send your committee members an email with the day, time and place. For research meetings, you should reserve the room for at least an hour. Written material to be distributed should be approved by your advisor and provided to the committee members at least one week in advance of the meeting. Bring a Research Meeting Form to the meeting to be completed, signed and provided to the Graduate Secretary. Forms are available online or in the Graduate Secretary's office.

For the research meeting in the first academic year, the student should provide a research proposal to the Supervisory Committee at least one week before the meeting. The proposal should be about five pages in length. The student should submit a draft, about a month before the meeting, to the advisor for approval for distribution. The proposal should provide: a statement of the general problem or question, framed by the current literature; then more specific objectives or hypotheses; a brief description of the system, a brief description of the methods, if appropriate, preliminary data (including tables and figures); potential results; and references. Work with your advisor to determine an acceptable format/method of delivery for your proposal.

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Research Meeting – PhD Degree
The Supervisory Committee and in particular the advisor (chairperson) are responsible for the progress of the student. Soon after it is established, the committee should meet with the student and agree on the scope and nature of the research project. The first research meeting should occur within six months after entry into the program. To set up a meeting, contact your committee members at least two weeks ahead of time to determine a day and time all can attend. Once established, reserve a room (S3-204 or S3-214) with a secretary in the department office (S3-210) and send your committee members an email with the day, time and place. For research meetings, you should reserve the room for at least an hour. Written material to be distributed should be approved by your advisor and provided to the committee members at least one week in advance of the meeting. Bring a Research Meeting Form to the meeting to be completed, signed and provided to the Graduate Secretary. Forms are available online or in the

Graduate Secretary's office. After the first year you should have at least one research meeting per year.

For the research meeting in the first academic year, the student should provide a research proposal to the Supervisory Committee at least one week before the meeting. The student should submit a draft, about a month before the meeting, to the advisor for approval for distribution. The proposal should provide: a statement of the general problem or question, framed by the current literature; then more specific objectives or hypotheses; a brief description of the system, a brief description of the methods, if appropriate, preliminary data (including tables and figures); potential results; and references. Work with your advisor to determine an acceptable format/method and scope.

The purpose of the research meetings is:

- to assess the potential and suitability of the student to pursue the doctoral program,
- to determine, at an early stage, the appropriateness, feasibility, and degree of challenge of the research proposal, and
- to evaluate the academic strengths and weaknesses in areas of biology appropriate for the student, with an emphasis on the background needed for the research project. The committee may identify courses and outside readings to strengthen the student in her/his research area.

At the end of the meeting, the committee will discuss, in the absence of the student, the student's performance and future direction. The Supervisory Committee should decide what courses the student should take and the specialty sections for the Concentration Exam, if not already determined. The Supervisory Committee must also decide whether the student's progress and performance are satisfactory. All of this information should be recorded on the Research Meeting Form and provided to the Graduate Secretary.

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Concentration Exams

Concentration exams evaluate if a doctoral student has gained basic graduate-level expertise in his or her field. The concentration exam is a written and/or oral exam consisting of specialty sections which are administered across several days. Three specialty sections, described below, need to be passed to fulfill this requirement.

Specialty Sections/When Offered:

The specialty sections to be taken will be determined by the student and the Supervisory Committee. The exam sections will be prepared and graded by committees representing sub-units of the Department.

Several specialty exam sections are offered once per year, typically per the below schedule:

May:	Animal Behavior, Ecology, Evolution
August:	Cell Biology, Genomics and Proteomics, Microbiology, Molecular Biology, Neurobiology

If you plan to take a specialty section exam that is not scheduled every year, contact the Graduate Secretary by the middle of your second semester to indicate your need and have a date established for the exam. Some examples are Wetlands, Biochemistry, Endocrinology, Evolutionary Genetics, Plant Physiology and Animal Physiology.

When Are They Due?:
Fall enrollees: due before the beginning of the fourth semester (the second January)
Spring enrollees: due before the beginning of the fourth semester (the second August)
The student, advisor and the student's Supervisory Committee cannot deviate from this schedule. If all three exams have not been taken by the end of the semester following when they are due, the student will either be moved to the MS program or if already holding an MS in Biology, the student will be removed from the graduate program.

For exceptional circumstances beyond the student's control (lengthy hospitalization), a student may petition the department's Graduate Committee for an extension. That it has become difficult to schedule the exam is not a valid excuse; it is only difficult to schedule if you do not plan ahead. It is recommended that you consult with your Supervisory Committee and plan for this exam well in advance of due dates.

Preparation:
For study, the Supervisory Committee or a committee representing a sub-unit of the department will provide the student with a reference list, reference material and sample questions (some which are available with the Graduate Secretary). In addition, advice will have been given at the Advisory Meeting held early in the first semester (typically the first week).

Exam Results/Re-Takes:
Two or more votes (out of a possible three votes) against the student would constitute failure of a specialty section. The student must pass three specialty sections to fulfill the requirement.

The results of the concentration exams are given to the Graduate Program Administrator for tracking purposes. The student will be informed of the results by the exam administrator or the Graduate Committee.

If the student fails the first attempt of the concentration exam, the student must re-take the exam within 12 months or sooner. A second failure means that the student is out of the doctoral track. With the Supervisory Committee and Graduate Committee's permission, the student may switch to the masters' track if originally entered with a bachelor's degree.

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Annual Presentation at Department Level or Higher
Beginning in the third year, all doctoral students are required to give a presentation on their research annually. A variety of venues are acceptable, including a talk at 1) the meeting of a professional society (includes posters), 2) the regular Friday afternoon departmental seminar, 3) the annual departmental research symposium held in January (includes posters), or 4) any ongoing research discussion group within the department, such as the EEB Friday lunch group. To document fulfillment of this annual requirement, complete the Annual Presentation Requirement Details form and provide it to the Graduate Secretary. Forms are available online or in the Graduate Secretary's office.

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Research Proposal Exam

The Formal Research Proposal Exam should be completed by the end of the third year. The student, advisor and Supervisory Committee cannot deviate from this schedule. For exceptional circumstances beyond a student's control, the student may petition the Graduate Committee for an extension. Only the Graduate Committee can grant an extension, and an extension will only be granted for exceptional circumstances (e.g., lengthy hospitalization). Having difficulty scheduling the exam is not a valid excuse; it is only difficult to schedule if you do not plan ahead. Consult with your Supervisory Committee and plan for this exam well in advance.

The proposal should be in the style of a standard grant proposal to NSF, NIH, USDA or another federal funding agency with similar proposal requirements, including similar length. It must have: (a) a general statement of the research problem or question; (b) a background of previous research on the problem (i.e., thorough literature review and preliminary data); (c) a section on the methods, including equipment, techniques, experimental design, protocols, controls and statistical analysis necessary to do the research; (d) prediction(s) and interpretations of expected data; (e) tables and/or figures if appropriate but confined to the page limits set by NSF and NIH, (f) literature cited, (g) 2-page curriculum vitae (CV), and (h) budget justification. A typical proposal would have 15 pages of single-spaced text, plus a reference section, CV and budget pages. Follow the format of the funding agency. You can find instructions on the formats for standard research proposals at the below web sites:

National Science Foundation
National Institutes of Health

The Formal Research Proposal must have preliminary data and a research plan for the remainder of the research degree. Therefore, it is recommended that you begin your research in the first academic year. The Formal Research Proposal should also include a timeline indicating when various tasks will be completed for the degree, see your advisor for assistance. To assist with learning the art of writing a grant proposal, students may take BIOL 680G Grant Writing.

The exam consists of the student submitting a formal research proposal at least two weeks prior to the scheduled defense meeting with the Supervisory Committee. The development of the proposal should be completed by the student. The advisor may assist by reading drafts and then posing questions and making editorial comments, but it must be clear that the majority of the development of the proposal is done by the student. In some instances, the advisor and/or Supervisory Committee may require a different but related topic to ensure that the student is not relying on the grant proposals of the advisor and instead learns how to write a grant proposal on his/her own.

Note that there are both written and oral components to this exam. The Supervisory Committee will probe the breadth and depth of the student's understanding of the research topic. The committee will pose questions directed at the rationale, significance, originality of and approaches to the proposed research. At the end of the exam, the committee will discuss, in the absence of the student, the acceptability of the research proposal and its evaluation of the general performance. Two or more votes against the student would constitute failure.

Upon passing the exam, the student will complete the below within the following two months:

1. revise the proposal to address any significant issues raised in the Research Proposal Exam,
2. obtain Supervisory Committee approval of the revised proposal, and

3. submit a completed Research Meeting with Committee form and the Research Proposal as the Dissertation Prospectus to the Graduate Secretary.

At this time the Graduate Secretary will process the Recommendation for Admission to Candidacy for Doctoral Degree (ABD or all but dissertation). ABD status will be in effect by the next major semester.

If the student fails the Formal Research Proposal Exam, the student has five months to retake and pass the exam or, with the Supervisory Committee's permission, switch to the Master's degree program (in which case the student would be expected to complete the Master's degree by the end of the sixth semester).

If a student does not successfully complete the exams by the deadlines indicated above, the student will be placed in the Master's degree program. Not successfully completing the exams on time signals that the student is not ready for the PhD degree program and should pursue a Master's degree first. If the student already has a MA/MS in biological sciences, the student will be withdrawn from the graduate program.

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Master's Thesis Preparation and Defense

The advisor shall review and give approval before the thesis is provided to the other members of the Supervisory Committee to review. Because it may take months of editing and revising prior to receiving the advisor's approval, it is recommended to have a first draft of your thesis completed as early as possible in the semester that you plan to schedule your defense and graduate. Also note that the Supervisory Committee must have at least two weeks to review the thesis prior to the oral exam.

Formatting Requirements:

The thesis is to comply with the formatting and filing requirements set forth in the Graduate School's Thesis/Dissertation Formatting Guide and formatting tip samples found on their Submitting Thesis/Dissertation web page. If you wish to view paper theses written by recent department graduates, the Graduate Secretary can assist you with this. You can also review dissertations electronically by accessing the university library's dissertation database search web page.

Scheduling the Defense:

Work with your Supervisory Committee to establish a date, time (3-4 hours) and place to hold your defense. Allow yourself time beforehand to set up the room and get ready. The Graduate Secretary can assist with securing a room for you. Ensure all committee members are aware of the meeting; refer to the Graduate School Manual for guidance regarding the need for remote participation if you have a committee member unable to attend in person. This is an exception to the expectation of having full, in-person participation at your defense.

You or your advisor shall provide the Graduate Secretary with the defense meeting details, along with the abstract of your thesis, to be disseminated to all department members and graduate students for their attendance. A posting will also be displayed.

The Defense:

You are welcome to invite your family and friends to your defense. The first part of the defense is the seminar requirement based on your research. The second part is an oral examination covering the details and implications of the research. Once completed, your Supervisory Committee will excuse

you and all attendees to allow the committee to discuss and reach a decision. To pass, the candidate must receive a majority vote of the Supervisory Committee.

If at the final examination the examiners generally approve of the thesis but require significant changes and are not yet prepared to sign the Recommendation for Award of Master's Degree form, the chair of the committee will coordinate with other members of the committee to compile all required changes and will inform the student of the scope and substance of those changes. The committee will establish how the changes will be reviewed and approved.

Approval/Disapproval of the Defense:
Following the oral exam and approval of the thesis, the department chair or director of graduate studies submits to the Graduate School the signed Recommendation for Award of Master's Degree form, indicating that the student has now fulfilled all academic requirements for the Master's degree and has successfully defended the thesis.

The Dean of the Graduate School may void any thesis defense that is not carried out in accordance with the policies and procedures of the Graduate School.

Submit Your Thesis:
Submit your final thesis (electronic format) to the Graduate School per their requirements and deadlines.

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PhD Outside Examiner
The outside examiner reads the dissertation and participates fully as a dissertation-examining committee member during the dissertation defense. The outside examiner's function on the examination committee is to render an independent judgment and to assure that the dissertation satisfies Graduate School standards. An outside examiner is intended to serve the Graduate School and, therefore, must have substantial experience evaluating the scholarship/research of doctoral students (e.g., by being part of a graduate program, unit or departmental graduate committee). It is imperative that the nominee has supervised graduate research as faculty advisor, served on a number of doctoral committees, and served on at least several doctoral defenses prior to appointment as an outside examiner for Binghamton University's Graduate School. It is also important that the person is tenured, which increases the likelihood that if there is an issue with the defense, then that person will be able to fulfill his/her responsibility to the Graduate School. There must not be any conflict-of-interest between the outside examiner and the student or faculty. Refer to the Graduate School Manual for additional information and criteria.

Outside examiners can be chosen from within the university or external to the university. There is a pre-approved list of university outside examiners found in the Graduate School Manual. Consult with the Graduate Secretary for assistance in getting your outside examiner approved by the Graduate School. The nomination should be submitted to the Graduate School no later than one month before the defense.

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PhD Dissertation Preparation and Defense

The advisor shall review and give approval before the dissertation is provided to the other members of the Supervisory Committee to review. Because it may take months of editing and revising prior to receiving the advisor's approval, it is recommended to have a first draft of your dissertation completed as early as possible in the semester that you plan to schedule your defense and graduate. Also note that the Supervisory Committee and the Outside Examiner must have at least two weeks to review the dissertation prior to the oral exam.

Formatting Requirements:

The dissertation is to comply with the formatting and filing requirements set forth in the Graduate School's Thesis/Dissertation Formatting Guide and formatting tip samples found on their Submitting Thesis/Dissertation web page. If you wish to view bound dissertations written by recent department graduates, the Graduate Secretary can assist you with this. You can also review dissertations electronically by accessing the university library's dissertation database search web page.

Scheduling the Defense:

Your Supervisory Committee and the approved Outside Examiner make up your Examining Committee. Work with your Examining Committee to establish a date, time (3-4 hours) and place to hold your defense. Allow yourself time beforehand to set up the room and get ready. The Graduate Secretary can assist with securing a room for you. Ensure all committee members are aware of the meeting; refer to the Graduate School Manual for guidance regarding the need for remote participation if you have a committee member/outside examiner unable to attend in person. This is an exception to the expectation of having full, in-person participation at your defense.

You or your advisor shall provide (at least two weeks in advance) the Graduate Secretary with the defense meeting details, along with the abstract of your dissertation, to be disseminated to all department members and graduate students for their attendance. A posting will also be displayed.

The Defense:

You are welcome to invite your family and friends to your defense. The first part of the defense is the seminar requirement based on your research. The second part is an oral examination covering the details and implications of the research. Once completed, your Examining Committee will excuse you and all attendees to allow the committee to discuss and reach a decision. To pass, the candidate must receive the unanimous vote of the Examining Committee. If the outside examiner does not signify approval, he or she should give the reason for dissent by submitting a separate memorandum to the Dean of the Graduate School within three business days of the examination.

If at the final examination the examiners generally approve of the dissertation but require significant changes and are not yet prepared to sign the Recommendation for Award of Doctoral Degree form, the chair of the examination committee will coordinate with other members of the committee to compile all required changes and will inform the student of the scope and substance of those changes. The committee will establish how the changes will be reviewed and approved.

Approval/Disapproval of the Defense:

Following the oral exam and approval of the dissertation, the department chair or director of graduate studies submits to the Graduate School the signed Recommendation for Award of Doctoral Degree form, indicating that the student has now fulfilled all academic requirements for the doctoral degree and has successfully defended the dissertation.

The Dean of the Graduate School may void any dissertation defense that is not carried out in accordance with the policies and procedures of the Graduate School. In addition, upon recommendation of the Dean's appointed outside examiner, the Dean may declare a dissertation defense null and void.

Submit Your Dissertation:
Submit your final dissertation (electronic format) to the Graduate School per their requirements and deadlines.

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