

Requirements and Expectations for the M.S. and M.A. Biology and Urban Ecology Degrees



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Table of Contents

Topic	Page Number
Department Mission	3
1. Overview of M.S. and M.A. degrees in Biology and Urban Ecology	4
2. Admission Requirements	4
3. The Biology and Urban Ecology M.S. Degree	5
i) Program Requirements	5
ii) Thesis Research for M.S. degrees	5
iii) Graduate Thesis Committees	5
iv) Committee Meetings	7
v) Thesis Grades and Administrative Actions Prior to Graduation	7
vi) The Thesis and Thesis Defense	8
4. The M.A. Biology Degree	10
i) Program Requirements	10
ii) Cumulative Exam	10
iii) M.A. Essay	10
5. Graduate Course Credit and GPA requirement	11
i) 200-Level Courses	11
ii) 2000-Level Courses	11
iii) Field Courses	11
iv) Internships	11
v) Graduate Credit From Outside Biology	11
vi) GPA Requirement and Probation	12
6. Monetary Opportunities	13
i) Hofstra University Scholarships	13
ii) Teaching Opportunities Within Department	13
iii) Money for Travel to Academic Conferences and Meetings	13
iv) Summer Research Fellowships	13

Mission statement for the Department of Biology

The Department of Biology is committed to scholarship in diverse areas of life science, from molecular biology to ecology. Our mission is to provide a comprehensive, high-quality education that fosters independence in the application of the scientific knowledge and the scientific method. Through exploration of biological principles and organismal diversity our students develop the critical-thinking skills needed to assimilate, interpret and impart knowledge. The Department provides students with the knowledge base and practical skills needed to be highly competitive for the best opportunities available following graduation.

1. Overview of M.S. and M.A. degrees in Biology and Urban Ecology

Our biology graduate programs recognize that today's biology requires an approach that draws on studies from molecules to ecosystems, and therefore that our students need a broad range of experience and breadth of knowledge. Through course work and seminars, students learn how to integrate information from the various biology subdisciplines (molecular genetics to evolution) and levels (sub-cellular to biospheric) in order to understand and ask fundamental questions about cells, organisms, species, and ecology. Graduates with master's degrees continue graduate work at the doctoral level, and find employment as marine, wildlife, and ecology specialists and educators for governmental and nongovernmental organizations and as lab technicians for hospitals and in industry, and pursue professional degrees in the health and veterinary sciences.

2. Admission Requirements

A baccalaureate degree (or equivalent) in biology or closely related discipline is required. We expect that incoming students will have completed courses in molecular and cellular biology, genetics, ecology, evolution, anatomy and physiology, as well as one year of mathematics, one year of physics and two years of chemistry. Any undergraduate deficiencies in the above must be rectified before enrolling in graduate courses where these courses are particularly relevant. Exceptions may be made with permission of the graduate director.

- A minimum GPA of 3.0.
- GRE General Test scores or Medical College Admission Test (MCAT) scores.
- A written personal statement demonstrating rationale for pursuing graduate studies.
- Two letters of reference addressing the applicant's potential for graduate studies.

The department understands that any single criterion may not reliably predict a student's potential for success in the program. Students may consider applying even if they fail to meet one of the criteria but feel that other aspects of their experience may compensate.

Students not meeting requirements are allowed to take courses as nonmatriculated graduate students. No more than 12 credits may be accumulated as a nonmatriculated student

3. The Biology and Urban Ecology M.S. Degree

i) Program Requirements - Semester Hours: 30

Graduate students are expected to maintain an overall GPA of B or better. All students should meet with the graduate program director at least once each semester. Candidates must complete 30 semester hours of graduate work including a thesis (BIO 301-302). At least 24 credits must be in biology courses numbered 200 or higher including taking 305 (Graduate Seminar) twice; up to 9 s.h. of electives outside of BIO courses may be count towards the 24 credits chosen with the permission of the graduate program director.

Culminating degree requirement

The state mandates that all Master programs have a culminating requirement. For MS degrees, this requirement is met by the thesis.

ii) Thesis Research for M.S. degrees

- Students in the MS in Biology or Urban Ecology programs must complete a thesis. Students in the MS in Biology program who would like to complete an exam- or essay-based M.A. must complete a M.A. Graduate Change of Program form (available in the Biology Office, 130 Gittleson or from the graduate director) and change to the MA program.
- The master's represents original research and thought. It is intended as a training exercise in the research process and thus includes first-hand opportunities to participate in planning a project, carry out research procedures, analyze original data, develop a thesis or core theme, and prepare a high-quality written document.
- M.S. degrees generally take more time than M.A. degrees. Students should usually figure at least 1-2 years of full time lab work or field work in order to complete the thesis research. Students receive 6 credits total over two semesters for thesis research, Bio 301 (3 credits) and 302 (3 credits) although the work typically takes longer than these two semesters
- A student should begin his or her thesis research project as early as possible after beginning the graduate program. All incoming students are encouraged to identify a faculty mentor sometime in the first semester of study at Hofstra.
- A student does not need to have a research plan in mind before speaking to a prospective advisor about working in his/her lab.

Thesis I (Bio 301) & and Thesis II (Bio 302) Registration

- Students should sign up for thesis credits (Bio 301 or 302) after discussing the plans with their prospective advisor and gaining his/her permission. In general, 301 is taken once the student has a general idea of their research project. 302 can be taken as late as the semester that the student plans to defend.
- Registration for thesis courses is always "closed". You will need an override from the graduate director to register. If any any given semester a section of 301 or 302 does not appear on the Portal for the faculty member, please notify the graduate director or departmental secretary and a section will be created. Plan ahead!
- Thesis research can be done either on site in a lab at Hofstra or, with the permission of a Hofstra Biology advisor, at another institution. The off-site project director must have a

terminal degree (Ph.D., M.D., etc.) and usually serves as a committee member (see below).

iii) Graduate Thesis Committees

The Graduate Advisory Committee, their responsibilities, and the responsibilities of the student

The graduate student in consultation with the thesis advisor should identify 2-3 individuals to serve on the student's advisory committee. At least two members of the committee need to be full-time members of the Department of Biology faculty. This committee will evaluate the thesis and the oral defense. The role of the committee members is as follows:

Major advisor or committee chair

Clearly, the choice of advisor is a critical one and perhaps the most important choice each student will make. Students must choose an advisor by the end of their second semester of study, preferably sooner. The arrangement is by the mutual consent of the student and the advisor. This thesis advisor is usually a full time faculty member in the Department of Biology. Occasionally, adjunct faculty may serve as major advisor, with the knowledge and permission of the Chair of the Department of Biology. The advisor serves as committee chair and will usually be the person in whose lab the research is being done or who has the most expertise (within the department) in the major subject of the research. Some students, because of the subject matter of their research, may have two faculty members as co-chairs.

The thesis advisor will:

- Guide the student's selection of a thesis project, considering its feasibility, originality, and appropriateness for the field. The major advisor typically will require that the student prepare a thesis proposal, which is critiqued by the advisor.
- Establish regular communication of research between the student and advisor (minimum of once / month, preferably more often)
- Guide and supervise the student's research, including training or helping the student find training for techniques and analyses required for their work.
- Assist with project experimental design
- Assist with project data analysis and data interpretation
- Assist with literature research (accessing HU Library / journal resources through the Portal / ILL).
- Review and edit of all drafts of the thesis, including drafts of individual sections. Do not assume students can write the entire thesis without assistance and numerous drafts.
- Assist students in course choices appropriate for their field of study and career goals
- Facilitate the student's professional growth:
 - Encourage / Facilitate attendance at scientific conferences and meetings,
 - Encourage / Facilitate (in form of identifying opportunities, reviewing drafts, writing recommendations) proposals for external funding
- Recommend additional committee meetings if major changes occur to the proposed study, or if major hurdles are encountered.
- Submit grades for Bio 301 and Bio 302 (these grades are submitted as PR at the end of the semester they are taken, and switched to CR once the student has successfully defended and submitted their thesis. The department secretary provides faculty with the change of grade forms when the time comes)

If concerns arise either with regards to the pursuit of the proposed study, these will be resolved by the Graduate Director and Chair of the Department.

It is a good idea for each student to discuss the format and content of his or her committee meeting (see below) with the thesis committee chair well in advance of the first committee meeting.

Committee members or readers

These individuals have varying amounts of input into the research. At least one must be a full time faculty member in the Department of Biology. If a student is involved in a research project in a lab located off the Hofstra campus, the project director for that laboratory is usually one of the committee members, and usually reads and comments on the initial drafts of the thesis. All members must have a terminal degree in an appropriate field (Ph.D., M.D., etc.). Committee members often bring additional expertise to the committee.

Committee members will:

- Attend committee meetings
- Contribute expertise as needed to experimental plan and analyses
- Read the thesis, critique the thesis prior to the defense and attend defense

iv) Committee Meetings

Every thesis and essay student must have at least one committee meeting well in advance of the oral defense, generally once a research plan is proposed. **For thesis students, at least one meeting is required by the end of the semester in which the student enrolls in Bio 301 and before the student enrolls in Bio 302.** A Committee Report form (found in the main office and at /facbio/policy/commeet.doc) must be filled out and signed by all members of the committee and the student, which is then placed in the graduate student's folder. The report will contain the committee's evaluation of the student's progress to that point. The student is expected to prepare a 10-15 minute outline of his or her project, results-to-date and progress. Data and other relevant information should be brought to the meeting. Members of the committee will ask questions and provide advice. Most committee meetings take about an hour.

Faculty and students are encouraged to call additional committee meetings if the student encounters difficulties with their research or makes significant changes to their proposed project. Typically students will have a minimum of two formal committee meetings, one when the proposed research is presented, and one nearing the completion of the research. Committee members can offer invaluable advice to the student, so students are encouraged to seek their input when needed.

v) Thesis Grades and Administrative Actions Prior to Graduation

Students should:

- **File for graduation.** Be realistic about the semester in which you plan to turn in your completed, edited, corrected thesis (which is often the semester after you defend, depending....). That is the semester in which you'll graduate. While there is typically a 1-2 week grace period after the official end of a semester before the registrar "closes the books" on that semester, students should not rely on this period and aim to get everything at the

official end of the semester date. You must defend before the official end of the semester and complete all degree requirements by that date.

- **Be registered for the semester in which you submit everything** (in other words, at least file to maintain matriculation and pay your matriculation fee if you are not taking any classes). The university allows a max of 1 week after the end of the semester to get everything in and this is non-negotiable.
- Make sure your thesis is submitted electronically to ProQuest (instructions for this are on the web site in the thesis FAQ section as well as detailed in Final Thesis Submission below). You must present this receipt to the secretary for your completion form.

Advisors should:

- **Issue thesis research grades** (Thesis research grades , Bio 301, 302). Students do not receive letter grades for thesis I (Bio 301), thesis II (Bio 302). At the completion of the semester in which the student is registered, the advisor should submit a grade of "PR" for progress toward the degree. Please do not assign a letter grade or incomplete grade.
- At completion of the defense, and *only after final edits are made and accepted by the advisor*, the advisor should **complete change of grade forms** for Bio 301 and Bio 302, changing the grade from "PR" to "CR" (credit). The departmental secretary will have these forms ready once the student schedules their defense.
- Obtain a **"Certificate of Completion" form** from the departmental secretary. This form will require the signatures of all members of the committee involved in the thesis defense as well as the graduate director. This is separate from the cover page of the thesis itself. The preferable method for doing this is to have everyone sign the form at the completion of a successful defense, and then **hold the paperwork until corrections to the thesis are completed**.
- After all corrections are made and with unanimous agreement of the committee, **submit the grade change forms and Certificate of Completion** to Stavros Valenti, Senior Associate Dean of Student Academic Affairs, HCLAS.
- In the case of an unsuccessful defense, the advisor should work with the committee and student to develop a plan for a second and final attempt at a thesis defense.

vi) The Thesis and Thesis Defense

Upon the approval of the major advisor, copies of the "almost final" thesis should be distributed to the committee members ***no less than two weeks*** prior to the anticipated oral defense. The oral defense should be scheduled no later than two weeks before the end of the semester in which the student plans to graduate. The major advisor may suggest or require that a committee meeting be held before or during the final stages of thesis or essay writing (and therefore before the oral defense). The oral defense will be public with notices posted one week in advance. It is the student's responsibility (with the advice and consent of the major advisor) to schedule the defense and be sure that the appropriate notices are posted.

To schedule the defense, the student should:

1. Make sure your committee has your draft at least two weeks in advance of the defense date.
2. Find an acceptable time / date for all committee members and the graduate director;
3. Contact Dr. St. Angelo or the secretaries and ask for a room assignment;
4. Notify the secretaries of the title (written out neatly so all the spelling is correct), room, and time of the defense.

Students are responsible for making sure that the necessary computer and presentation software and technologies are available in the room in which they present. Most classrooms have Sympodiums with integrated projection hardware, PC computers, and laptop connections but require additional connections for Mac computers.

The thesis defense typically includes a **30-40minute presentation**. The oral defense is open to questions from the audience, after which the audience will leave and the committee will continue the examination. The examination will cover not only the thesis or essay but also related areas, and may include questions about basic biological processes to determine that the student is competent in their field of biology or urban ecology. After the committee's questions, they will meet privately to evaluate the thesis or essay and the oral defense. The committee's decision to accept the work and pass the student must be unanimous. If the student does not pass the oral exam the first time, he/she may have a second, final opportunity.

In the case of an unsuccessful defense, the advisor should work with the committee and student to develop a plan for a second and final attempt at a thesis defense. On rare occasions, usually when the research is acceptable but the basic biological background of the student is in question, the student may be given a comprehensive assignment to demonstrate their competency in the field. On other occasions, where the research thesis is found lacking, the student can be asked to make substantial revisions to their thesis, including additional research. In that situation, the decision as to whether the student must do a second public presentation of their work is left to the discretion of the advisor and advisory committee.

Final thesis submission

The thesis will not be finalized until after the defense, thus allowing for incorporation of suggestions presented during the oral defense. Following successful completion of the defense, the student must incorporate a signed cover page (signed by advisor, committee, and the graduate director) into an electronic copy of the thesis (pdf). This electronic version must be submitted to the Hofstra University Library. The Library maintains a secure, digital copy of all theses and dissertations using the services of UMI, a national repository used by most Universities in the United States. The goal is to have a complete record of this research being done at Hofstra. Graduate students in the Department of Biology must submit their thesis or essay to this database. Additional printed and bound hard copies of the thesis or essay (for the student, parents, etc.) are optional, and an option is provided for this on submission through the Hofstra Library Proquest website. No graduate student will graduate until the final, corrected thesis or essay has been approved. The student needs to provide the Department with proof of ProQuest submission (electronic receipt is acceptable)

The process for submitting theses & dissertation is available on the Biology graduate website as well as format suggestions.

4. The M.A. Biology Degree

i) Program Requirements - Total Semester Hours: 33

Graduate students are expected to maintain an overall GPA of B or better. All students should meet with the graduate program director at least once each semester. Candidates must complete 33 semester hours of graduate work. These should be in biology courses numbered 200 or higher including taking 305 (Graduate Seminar) twice; however up to 9 s.h. of electives outside of BIO courses may be count towards the 33 credits chosen with the permission of the graduate program director. After completion of course work, students must pass a comprehensive exam which may either be written, oral, or a combination of both. The exam will be based on a selection of questions from each graduate course taken at Hofstra. Questions will be created and graded by the faculty instructor of the relevant course.

Culminating degree requirement

The state mandates that all Master programs have a culminating requirement. For M.A degrees, this requirement is met by the comprehensive exam, or in special cases, the essay (Bio 303).

ii) Cumulative exam

After completion of course work, students must pass ($\geq 80\%$) a comprehensive exam. The exam will be based on a selection of questions from each graduate course taken at Hofstra. Questions will be created and graded by the faculty instructor of the relevant course. The exam will be scheduled by the graduate director in consultation with the relevant faculty. The format of the exam is typically oral, however a written format is allowed should situations deem it necessary.

iii) MA essay

In some cases, the culminating requirement can be met by completion of an essay. In such cases, the student would register for Bio 303 with a faculty member who agrees to serve as primary advisor for the essay (typically this faculty member has expertise in the field on which the essay will cover). Bio 303 grades are similar to that of Bio 301, 302 for MS students as detailed above: they are either "PR" (in progress) or "CR" (credit)

- Each essay also has an outside committee made up of at least two faculty in addition to the primary advisor. This committee must sign off on the final product.
- The essay typically consists of an extensive review of a topic using peer reviewed literature along with a future direction or testable hypothesis not yet explored in the field. Students should consult their committee for details and expectations.
- Upon completion, the grade for Bio 303 should change from a PR to CR using a change of grade form should completion occur in a semester after Bio 303 is completed.
- Make sure your thesis is submitted electronically to ProQuest (instructions for this are on the web site in the thesis FAQ section as well as detailed in Final Essay Submission below). You must present this receipt to the secretary for your completion form.

Final Essay Submission

Students must incorporate a signed cover page (signed by advisor and committee) into an electronic copy of the thesis (pdf). This electronic version must be submitted to the Hofstra University Library. The Library maintains a secure, digital copy of all essays using the services of UMI, a national repository used by most Universities in the United States. The goal to have a complete record of this research (i.e. literature review) being done at Hofstra. Graduate students in the Department of Biology must submit their essay to this database.

5. Graduate Course Credit and GPA requirement

i) 200-Level Courses

For the current listing of biology and urban ecology regular graduate courses, please see the Hofstra Bulletin as well as the semester schedule which is accessible through the Hofstra Portal. The graduate director typically sends graduate students course offerings and descriptions prior to registration each semester.

ii) 2000-Level Courses

2000-level graduate classes are upper-level undergraduate classes that have additional work, readings, etc. assigned for graduate students. Students can only take them if they did NOT have the course or its equivalent as an undergraduate. They are meant to fill in gaps in student's undergraduate education in areas that they or their advisor thinks are relevant to the student's current interests and career goals and to provide them with skills in areas not covered in their undergraduate education. Two 2000-level courses are allowed to count toward the graduate degree.

iii) Field Courses

In addition to our general lab courses that offer field opportunities, we offer two courses with an extensive immersive field experience.

- Field ecology – Galapagos Islands and the Amazonian rain forest
- Tropical Marine Biology – Belize

iv) Internships

The Internship provides an opportunity for the student to explore real-world work with a host institution. The student must complete the following requirements for the Internship:

1. A Work Plan. The Work Plan should include a review of the work to be completed at the host institution. The student's advisor is responsible for ensuring that the Internship has appropriate rigor and duration for the academic credit hours assigned (minimum of 20-30 hours off campus per credit hour). It is expected that the Work Plan will include a statement as to the significance of the Internship to the student's chosen field of study. It should include a literature review.
2. Internship Report. Like the thesis, the Internship Report is submitted to advisor for evaluation.

v) Graduate Credit From Outside Biology

In consultation with their advisor or the graduate director, students can take graduate courses outside of the Biology department with permission of the graduate director. For example, students with an interest in public health are encouraged to view course offerings from Hofstra's MPH program. The most common Hofstra departments which students have taken graduate courses in are Public Health, and Geology and Sustainability. In addition, courses outside of Hofstra are possible that may be appropriate for Biology students. Transfer permission is required for non-Hofstra courses. No more than 9 credits can be earned outside of the Biology department (including courses taken outside of Hofstra).

vi) GPA Requirement and Probation

Hofstra as a whole requires all graduate students to maintain a 3.0 GPA. If a student's overall GPA falls below that in any semester, they are put on probation. Probation means the student has one semester to get the GPA above a 3.0. Should the student not be able to do so, they are dismissed from the program by the biology department. The process of dismissal follows that outlined by the Provost Office. Students are informed of their dismissal; at which they have 15 calendar days to appeal the dismissal. The biology department will then form an ad hoc committee of which the department chair and graduate director must be a part. The committee will either determine terms by which the student must adhere to or uphold the dismissal. Typically, a large component of the decision is determined by the past performance and behavior as well as possibility of graduating with a 3.0 with the remaining credits as Hofstra will not grant a graduate degree to students with <3.0 overall GPA. If the student decides to appeal the decision made by the department, the student had 15 days to inform the Dean and the Dean's office will follow a similar procedure of appeal. If the student decides to appeal the decision of the Dean's office, they have 15 days to ask for an appeal at the Provost Office level. The Provost Office will carry out a similar appeal procedure. There are no more appeal possibilities after the Provost level decision.

6. Monetary Opportunities

i) Hofstra University Scholarships

The University makes available to the Department a small allocation of scholarship monies each semester for specific graduate programs. Most students receive offers of initial scholarship monies with their acceptance. In subsequent semesters, students interested in receiving continued support should respond promptly by email to applications and information requests from the graduate director. Students must be in good academic standing (GPA > 3.0) to receive scholarship support.

ii) Teaching Opportunities Within Department

Incoming graduate students may serve as teaching assistants (TAs) for introductory biology courses, particularly Bio 12: Animal Form and Function, and Bio 11: Introductory Cell Biology and Genetics. TAs assist the lab instructor with lab set up and clean up and assist students during the lab. Labs are one session of three hours per week, and there are approximately 12 labs over the course of the semester depending on the course. TAs do not grade or run discussion groups. The pay is \$400/semester/section.

Students who have served one or two semesters as TA and are deemed prepared by the faculty may be hired as adjunct instructors to teach laboratory sections of Bio 12 or one of four non-major courses, depending on the needs of the department. Lab instructors are responsible for attending all lab meetings, being prepared to teach the lab section each week, and for all grading associated with the lab section. Adjunct instructors are expected to work closely with the faculty coordinator of the course who will outline exactly what material is to be taught and who provides grading rubrics for all assignments. Payment for laboratory instructors is set by the university. Please contact our Biology Laboratory Director, Dr. Carol St. Angelo, regarding TA positions.

iii) Money for Travel to Academic Conferences and Meetings

Students are encouraged to submit their research for presentation at appropriate meetings. Students should discuss possible travel with the advisor. If a poster is accepted, then the student must complete a travel and advance form before leaving for the meeting. This form is signed by the department chair and submitted to the Dean's office. Upon returning, Hofstra reimburses expenses for graduate students up to \$400 per trip. Travel expense reports can be obtained from the Biology Laboratory Director and must be completed promptly after your return. Note that original receipts are required.

iv) Summer Research Fellowships

The Biology Department sponsors a Summer Graduate Research Fellowship program each year. The exact number and amount of scholarships varies year to year depending on availability of funds and whether we have corporate sponsors, but typically 1 – 3 scholarships are available for between \$3500-\$5000. Applications are made available in March or early April and require a letter of recommendation from the faculty mentor and a research proposal. A faculty committee evaluate proposals for the student's academic record, the merit and feasibility of the research proposal, and the importance of the award in facilitating the student's personal and career goals. Awards are typically announced by May 1st.