Master of Science in Biology

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The Master of Science in Biology program serves those interested in advanced training in applied or basic biological research and teaching. The program also provides a basis for further graduate or professional studies. The M.S. in Biology is broadly based, allowing students to tailor their courses to suit their interests. Laboratory skills are integral to many Biology careers, thus students are encouraged to include lab courses in their program of study. Faculty in the M.S. in Biology program have expertise in a range of sub-disciplines including ecology, organismal, cell, and molecular biology. All newly admitted students matriculate in the Fall semester.

Program Goals

Upon completion of the M.S. in Biology program students will have:

1. A strong understanding of disciplines across the breadth of Biology and a deep understanding of select Biology sub-disciplines.
2. Developed the knowledge base necessary to critically evaluate research methods, data, and results, either produced by them or published in the primary literature.
3. Developed strong written and oral presentation skills.
4. Developed the analytical skills necessary to synthesize information in an area of research based on existing and new data.
5. Developed strong research design and laboratory/field research skills.

Graduates completing the Non-Thesis or Library Thesis options for the M.S. in Biology will meet goals 1-4. Graduates completing the Research Thesis option will meet all 5 goals.

Admission Requirements

Note: Although applications for admission to the M.S. in Biology program are accepted throughout the year, all new students will start coursework (matriculate) in the Fall semester and are required to take BIO-405 during their first semester in the program. The application deadline for admission in the upcoming academic year is June 15.

Application forms for admission to the program may be obtained from, and must be submitted to, the College of Graduate Studies and Research (CGSR) Admissions Office. All students must fulfill the general requirements for admission to the CGSR. In addition, all students must meet the following requirements for admission to the M.S. in Biology program:

1. A Bachelor’s degree in Biology or the course equivalent. The undergraduate course work must include both the Biology and related science courses (Chemistry, Physics and Math) that are standard components of the Biology major: two semesters each of General Biology, General Chemistry and Physics, and one semester each of Cell Biology, Ecology, Genetics, Organic Chemistry and Precalculus Mathematics or Statistics. General Education courses cannot be used to satisfy the Biology or cognate area requirements. Note: Undergraduate students who have not yet completed the Bachelor’s degree are welcome to apply. Acceptance will be contingent on completion of the undergraduate degree and submission of official transcripts to the College of Graduate Studies and Research indicating that the degree was conferred.

2. An overall undergraduate GPA of 2.75, with a GPA of 3.0 in the undergraduate biology courses, is required for full admission to the program.

3. A typed, 1-2 page statement of Goals and Objectives. This statement must be written by the applicant to demonstrate their writing skills. It should specify as clearly as possible the applicant’s academic and professional goals and the reasons for selecting the Biology M.S. program.

4. Two letters of recommendation from academic references (such as former or current professors) or work-related supervisors who are able to assess the applicant’s potential for advanced graduate study.

5. GRE (Graduate Record Examination) scores are not required for admission, but they may be submitted to supplement an application.

Provisional Admission may be granted in exceptional circumstances. For more information, please refer to the section of the university catalog for the College of Graduate Studies & Research. Decisions regarding provisional admission are made on a case-by-case basis.

Degree Requirements

The M.S. in Biology allows students to tailor their program of study to meet their individual needs. Students may attend full-time or part-time and have up to 6 years to finish the M.S. degree requirements. Graduate courses are offered during the late afternoon and evening hours and sometimes on Saturday mornings. Courses that are lecture only meet one evening per week and courses that include a laboratory/field component meet two evenings per week (Fall & Spring semesters). For summer classes the meeting times are similar but the number of meetings per week may increase. All graduate
students are required to take BIO-405 and at least one course that includes a laboratory or field component. For students pursuing the Research Thesis Option, the research thesis fulfills the latter requirement.

Each student in the M.S. in Biology program will be required to assemble a portfolio of work that they complete during their tenure in the program. The portfolios will serve to:

1. document the progress of each student toward the degree, and the skills and knowledge base that they have achieved by the end of their tenure.
2. provide students with materials that will help them reach their professional goals.
3. provide the department with information that will allow us to assess the effectiveness of the program at achieving the goals and learning outcomes that we have established for the graduate curriculum.

Portfolios will be assembled on an ongoing basis, and will include examples of scholarly work from courses completed by the student in the NEIU graduate program and work produced specifically for the portfolio. Work produced specifically for the portfolio will be produced independently and will be for the purpose of achieving candidacy in the program (see below) or for being awarded the M.S. degree at the end of a student’s tenure.

Specific requirements for the portfolio will be provided by the department, but all portfolios will include:

1. Personal statements, reports of academic progress and/or self-assessments written at different stages of completion of the degree requirements.
2. Curriculum vitae or resumés written at several stages of degree completion.
3. Representative samples from student’s coursework (e.g., annotated bibliographies, summary/critiques of papers from the primary literature, poster presentations, supporting documentation for oral presentations, research proposals, review papers or research papers, and other examples of critical or synthetic writing).

For students who choose to complete the Research Thesis or Library Thesis Option, the portfolio will include (in addition to the items in categories a, b, and c above) their approved thesis proposal and a copy of the final thesis manuscript.

4. Literature-based writing assignments in which students demonstrate their ability to read, interpret, and synthesize information at a level expected of a graduate student in biology.
5. Short pieces of writing that demonstrates a student’s ability to communicate their skills or expertise to both professional and lay audiences.

**Candidacy in the Biology Program**

Students need to apply for candidacy within the Biology program after they have completed at least 12 and no more than 18 credit hours of course work, including BIO-405. Candidacy also requires a GPA in courses that count towards the M.S. in Biology degree of at least 3.0. Students admitted on a provisional basis must satisfy all prerequisite deficiencies before they can receive candidacy. Evaluation of the portfolio will be included in decisions regarding advancement to candidacy. Students must satisfy their candidacy requirements and be declared candidates for the degree before they can register for either Library or Research Thesis credits. Candidacy application forms can be obtained through the Graduate Advisor or the Biology Department Office.

**Degree Tracks**

**Research Thesis Option**

This option is recommended for individuals who are interested in a career in biological research, are working in applied fields of Biology or are interested in further graduate or professional studies. Students interested in this option should arrange appointments with faculty in their area of interest and the graduate program advisor early in their program, to discuss potential thesis topics. Students completing the Research Thesis option will meet all 5 program goals listed above.

Students pursuing the Research Thesis Option must complete a minimum of 33 credit hours of graduate course work, including BIO-405 and Research Thesis Hours. Up to two (2) credits of Independent Investigations (BIO 4821-3) can replace an equal number of the Research Thesis Hours credits. Students must have advanced to candidacy (see below), identified a thesis advisor, and formed a thesis committee before they can submit the research proposal. The research proposal must be approved by the Biology Department before the student can register for Research Thesis credits. Exit requirement for the Research Thesis Option is successful completion of the research project and the public, oral defense of the Research Thesis. Students who register for the research thesis and subsequently decide not to complete the thesis may apply the credits they do complete for research thesis towards the requirements of the other options.

**Library Thesis Option**

This option is recommended for students who are interested in exploring a particular topic through literature research. The student will choose a library thesis advisor who will guide the student in identifying an appropriate question, preparing a thesis proposal, and writing the thesis. The goals of the library thesis are to explore a specific topic through the current literature with the aim of determining whether a specific question or questions can be
answer through existing knowledge or whether additional experimentation/research are required to address the question. Students completing the Library Thesis Option will meet program goals 1-4 listed above.

Students pursuing the Library Thesis track must complete a minimum of 34 credit hours of graduate course work, including BIO-405, at least one course that includes a laboratory or field component, and Library Thesis Hours. The student must have advanced to candidacy (see above), have identified a thesis advisor and two readers, and obtained department approval of the thesis project before registering for Library Thesis Hours credits. Exit requirement for the Library Thesis Option is successful public, oral presentation and defense of the Library Thesis.

**Non-Thesis Option**

This option is recommended for students who desire a more flexible approach to graduate training in Biology, and who are not interested in research. It is a popular track for those in teaching or using the M.S. to become more competitive for admission to professional/health programs. Students completing the Non-Thesis Option will meet program goals 1-4 listed above.

Students must complete a minimum of 36 credit hours of graduate course work, including BIO-405, at least one course that includes a laboratory or field component, and the professional/academic portfolio. For students in the Non-Thesis Option, the portfolio will be evaluated at least 3 times during their tenure and the final portfolio must be submitted to their advisor no later than week 8 of their final semester in the program. Exit requirement for the Non-Thesis track is acceptance of the portfolio by the Biology Graduate Advisory Committee.

**Thesis Proposals**

Students interested in pursuing either the Library or Research Thesis options need to submit a thesis proposal for review and consideration by the department before they will be permitted to register for thesis credits. Potential topics are first discussed with a prospective thesis advisor to determine a project focus. The student drafts a proposal for review by the faculty advisor, which presents the background and scope of the project, hypothesis/hypotheses to be tested (question(s) to be addressed in the case of a library thesis), methodology (for research theses only), anticipated timetable, and literature review. At the same time, in consultation with the research advisor, the student must form his/her thesis committee (thesis advisor + 2 additional Biology faculty members for the Research Thesis or thesis advisor + 2 additional readers for the Library Thesis). Once approved by the committee, the proposal is then submitted to the Biology faculty for review and consideration. Faculty members are typically given a minimum of one week to provide comments and recommendations about the proposal. Students are required to have their proposal circulated to the department at least three weeks before the first semester in which they want/plan to register for thesis credits. The deadline for registering for thesis credits is the end of the first week of classes during a given semester. Check the current schedule of classes for specific dates.

**Graduate Degree Time-Limit**

Students in all Options have a maximum of 6 yrs to complete their degree. Students requiring an extension of an additional semester or more to complete their degree should petition the College of Graduate Study & Research and the Biology Graduate Advisory Committee before the 6-yr deadline is reached. Students taking more than 6 yrs may lose credits earned early in the program and may be required by the CGSR to complete additional course work. Students not taking courses regularly (every year) may be dropped from the program.

**Courses**

Only 400-level and a limited number of select 300-level courses (i.e. the 300* courses), can be applied toward the credit requirements for the graduate degree. The College of Graduate Study & Research limits the number of 300* credits that can count towards the M.S. degree to 10 credits.

Transfer credits: A maximum of 9 hours of transfer graduate credit can be applied to the requirements for the M.S. degree. The transfer credits must be approved by both the College of Graduate Study & Research (CGSR) and the Biology Department. Students interested in transferring credits need to submit official transcripts, a complete/detailed syllabus from the course(s), and rationale for transfer to the CGSR representative in Enrollment Management Services. The petition form for transferring credits is available on the College of Graduate Study and Research web page. Following matriculation, students wishing to take classes at another institution and transfer the credits to NEIU must have the courses preapproved by the Biology Graduate Advisor.

Courses from other NEIU departments: Students may have up to 9 cr. hours of graduate level course work taken in other departments counted toward their Biology degree. The Biology Graduate Advisor must pre-approve all course work from other NEIU departments. Students interested in taking graduate courses outside the Biology Department should first contact the Biology Graduate Advisor to verify that the course credits can count towards the M.S. in Biology degree; the student then needs to contact the Department offering the course to request permission to enroll in the course. Lastly, to be considered as part of the student’s degree requirements, the student must submit a written rationale for the course, as well as a copy of the course syllabus. This should be done no later than the first week of classes during the semester the course is taken.