

Master of Science in Biology (Botany or Zoology) or Microbiology

The Master of Science (M.S.) degree is designed to give students an advanced understanding of biology and the capability to conduct biological research. This document describes the requirements for the M.S. degrees in the Department of Biological Sciences and provides guidelines for developing a program of study. The Department offers M.S. degrees in Biology and Microbiology. These programs are flexible and can be tailored to satisfy the professional and personal needs of each student.

The general goals of the programs are that students develop skills in asking meaningful research questions, planning and conducting research, and analyzing and interpreting data. Additional goals are to develop the ability to make presentations at scientific meetings and to write and publish scientific articles. The successful M.S. candidate is expected to acquire breadth in the biological sciences and a rigorous understanding of biological concepts and principles.

The M.S. programs require a substantial, original research project that culminates in a thesis, a minimum of 30 credits earned in graduate courses and seminars, and expertise in core conceptual areas of the biological sciences and in research design and statistics. Specific requirements in each of these areas are outlined below.

GENERAL REQUIREMENTS

A minimum of 30 graduate credits is required to complete either M.S. degree program. At least 15 credit hours must be earned at the '600-level'. Specific requirements include:

- BIOS 691 Thesis proposal seminar, 1 credit
- BIOS 692 Topical seminar
- BIOS 650 Thesis, 1 - 6 credits
- BIOS 648 Graduate Problems, 1 - 4 credits
- 6 additional credits of 600-level coursework
- Statistics (see General Requirements)
- Coursework (from undergraduate or graduate studies) in each of the following core areas: Cell biology, Genetics, Ecology, Evolution, Physiology, and Organismal biology.

Students may take an unlimited number of credits of BIOS 650 and BIOS 648, however only 6 credits of BIOS 650 and 4 credits of BIOS 648 may be counted towards the required 30 credits.

ADVISORY COMMITTEE

The Advisory Committee consists of a minimum of three faculty members who are members of the ISU graduate faculty. The student, in consultation with the major advisor, selects at least one additional faculty member from the Department of Biological Sciences. An additional faculty from outside of the Department of Biological Sciences, designated as the Graduate Faculty Representative (GFR), also must serve on the committee. The GFR is appointed by the Dean of Graduate Studies, who is open to recommendations from the major advisor. The GFR need only participate in the thesis defense, but may be involved throughout the student's program. The initial committee meeting should be held in the first semester of the student's graduate program.

WRITTEN PROPOSAL, PROPOSAL SEMINAR, AND PROPOSAL DEFENSE

M.S. students are required to present a seminar on their proposed thesis research in the first year of their program. The purpose of this proposal seminar is to have each student develop and present formal statements of the objectives (hypotheses), design, and importance of their proposed research. Students must submit an abstract to the seminar organizer at least one week prior to their presentation. Students also must write a research proposal and have the proposal approved by their Advisory Committee by the end of the semester in which they present. This proposal should be at least 5 pages in length, with citations appended, should address comments that resulted from the seminar presentation, and will be retained in the student's departmental files.

THESIS, THESIS SEMINAR, AND THESIS DEFENSE

Each M.S. candidate must submit a thesis embodying the results of original and creative research. The thesis must demonstrate the student's ability in scientific investigation. The thesis must include a comprehensive review of literature on the topic, and must demonstrate an organized, coherent development of ideas, with a clear exposition of results and creative discussion of the conclusions. The form and style of the thesis should comply with the format prescribed by the national- or international-level journal in which the student intends to publish the material and must meet the requirements of "Instructions for Preparing Theses, Dissertations, D.A. Papers, and Professional Projects", which is available from the Office of Graduate Studies. Within the framework of these constraints, however, the format of the thesis can vary in the number and arrangement of chapters.

Following completion of the written thesis, the student will present the research findings in a seminar. The thesis presentation will be followed by an oral defense conducted by the Advisory Committee. The student is responsible for scheduling the defense with the Graduate School and advertising the thesis seminar, with notices posted in the Life Sciences Building and in the Department newsletter, at least one week in advance of the seminar date. After the thesis has been approved for format and content by the major professor, and not later than two weeks before the date of the final examination, the student must deliver a copy of the thesis to each member of the Advisory Committee.

Following the final examination and approval of the thesis, four unbound copies (two for the library, one for the advisor, and one for the department) of the thesis in its approved form, together with an abstract of not more than 600 words and a receipt from the Business Office indicating payment of all fees, must be personally delivered to the Office of Graduate Studies for approval by the Dean. The entire thesis will be microfilmed and the abstract published by University Microfilms in Thesis Abstracts. The cost of this service will be assessed to the student.