Biology
Master of Science

The Department of Biology offers graduate studies leading to the Master of Science (thesis and non-thesis options) and Doctor of Philosophy degrees. These programs are designed to prepare students for academic teaching and research, research in government service, research and developmental opportunities in industry, and functioning as a professional biologist.

The Department offers graduate work in the following areas: Cell Biology; Conservation Biology; Developmental Biology; Ecology; Entomology; Fisheries Biology; Genetics and Genomics; Molecular Biology; Neurobiology; Parasitology; Physiology; Plant Biology; Systematics; and Wildlife Management.

Admission Requirements
1. Must meet current minimum general requirements as published by the School of Graduate Studies.
2. Must provide GRE General test scores. Strength of scores will be considered regarding admission and awarding of departmental support.
3. Minimum GPA of at least 2.75 for all undergraduate work or 3.0 for the junior - senior credits.
4. Students must indicate thesis vs. non-thesis option upon application. M.S. (thesis) students may request a change to M.S. (non-thesis) only within the first two semesters (not including summer) of enrollment. Such requests will be evaluated by the Graduate Director and the student’s advisory committee.
5. Satisfy the School of Graduate Studies’ English Language Proficiency requirements as published in the graduate catalog.

Students admitted to the M.S. program may, after one calendar year, and upon the recommendation of his/her advisory committee, request to bypass the masters degree and work directly toward the Ph.D. degree. The same GRE and GPA requirements apply for bypass as for students applying for the doctoral program through normal application procedures, i.e., a GPA no lower than 3.0 for work completed while in the M.S. program. The recommendation of the advisory committee shall be brought to a vote in a faculty meeting. A minimum of one week before such a meeting, the faculty shall be notified that the student’s updated file consisting of the materials used for application to the M.S. program, a transcript of all academic work completed at UND, and any additional materials the student wishes to have considered is available for review.

Students seeking summer or fall admission should complete their applications by February 15. Students seeking spring admission should complete their applications by October 15. Master’s degree applicants should specify interest in either the thesis or non-thesis option. Inquiries should be directed to the Director of Graduate Studies, Biology Department.

Degree Requirements
Students seeking the Master of Science degree at the University of North Dakota must satisfy all general requirements set forth by the School of Graduate Studies as well as particular requirements set forth by the Biology Department. The Master of Science degree program is designed to produce broadly trained biologists for job opportunities or continued graduate study.

Thesis Option
The M.S. degree program with thesis requires the completion of a program of study of at least 30 semester credits beyond the baccalaureate degree. The program of study, prepared with the approval of a three-member faculty advisor committee, includes the following:
1. A minimum of 30 credits including coursework, research and thesis with research and thesis accounting for no more than 50% of credits.
2. A minimum of three (3) credits of BIOL 503 Seminar (credits included in 1. above).
3. A minimum of four (4) credits of BIOL 509 Scientific Writing, (credits included in 1. above). Two credits should be taken while the student is writing their thesis proposal (see below).
4. Either:
   a. BIOL 470 Biometry (3 credits) and one of BIOL 572 Design of Biological Experiments (1 credit) or BIOL 534 Quantitative Ecology (3 credits) (all credits included in 1. above); or
   b. prior graduate credit in statistical analysis and experimental design if approved by the student’s advisory committee.
5. Satisfactory completion of an acceptable thesis proposal (written proposal, proposal presentation and proposal defense) evaluated by the student’s advisory committee.
6. Satisfactory completion of a comprehensive examination administered by the student’s advisory committee; and
7. Satisfactory completion of an acceptable thesis (written thesis, thesis seminar and thesis defense) evaluated by the student’s advisory committee.

Non-Thesis Option
This degree program is designed for students who wish to obtain broad training in graduate biology without research emphasis. The M.S. non-thesis degree program requires the completion of a program of study of at least 32 semester credits beyond the baccalaureate degree. The program of study prepared with the approval of a faculty supervisor, includes the following:
1. At minimum of 32 credits of coursework.
2. A minimum of three (3) credits of BIOL 503 Seminar (credits includes in 1. above).
3. A minimum of 23 credits in the major (credits included in 1. above).
4. BIOL 599 Research and BIOL 998 Thesis credits will not count toward the 32 credits.
5. Satisfactory completion of a comprehensive examination administered by the student’s advisor and two other faculty members selected by the student with the concurrence of the advisor, the faculty members involved and the department chairperson.
6. Satisfactory completion of an acceptable Independent Study. The Independent Study should be substantial and rigorous and involve a written report and a formal oral presentation to the Department.

Faculty and Areas of Expertise
- Jay Boulander, Ph.D., Large mammal ecology, wildlife disease, and human dimensions of wildlife biology
- Jeffrey Carmichael, Ph.D., Reproductive processes in higher plants
- Brian Darby, Ph.D., Ecological genomics, soil ecology, integrative biology
- Diane Darland, Ph.D., Developmental biology, cell-cell interactions in the central nervous system, and molecular regulation of neural and vascular development
- Tristan Darland, Ph.D., Developmental neurobiology
- Susan Ellis-Felege, Ph.D., Vertebrate wildlife ecology
- Brett J. Goodwin, Ph.D., Landscape and spatial ecology, animal movement, simulation modeling
- Steven Kelsch, Ph.D., Ecology, physiological ecology, systematics, management of fishes
- Manu, Ph.D., Systems biology
- Peter J. Meberg, Ph.D., Neural plasticity, regulation of actin dynamics during neural development
- Robert A. Newman, Ph.D., Life history evolution, population ecology and genetics, conservation biology, amphibian ecology
- Igor Ovchinnikov, Ph.D., Forensic Science and Human Genetics
- Sally J. Pyle, Ph.D., Developmental neurobiology, neurotoxicology, interactions of the cytoskeleton
- Stephen G. Ralph, Ph.D., Genomics, plant-animal interactions
- Turk Rhen, Ph.D., Evolution of gender differences, comparative genomics, identification of evolutionarily conserved and unique genes involved in sex determination in vertebrates
- Isaac J. Slosser, Ph.D., Aquatic ecology, fish population and community ecology, ecology of natural resources, conservation biology
- William F. Sheridan, Ph.D., Genetics, developmental biology, the role of genes in maize development, mutational analysis of maize meiosis
- Rebecca Simmons, Ph.D., Morphological and molecular systematics of lepidoptera, evolution of mimicry and courtship behaviors in insects
- Vasyl Tkach, Ph.D., Parasite evolution, systematics, ecology and ultrastructure
- Jefferson A. Vaughan, Ph.D., Various insects and ticks that transmit disease organisms to humans, livestock and wildlife
- Kathryn Yurkonis, Ph.D., Grassland Ecology

Contact Information
Dr Robert Newman, Graduate Program Director
Department of Biology, Stop 9019
University of North Dakota
Grand Forks, ND 58202
P: 701-777-4290
E: robert.newman@email.und.edu

Apply online: http://graduateschool.und.edu
Deadlines apply. See our website for more details.

Last Updated: 9/25/2014
Email: questions@gradschool.und.edu