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.

Facilities for Graduate Research
The Department of Biology occupies 58,000 sq. ft. in Starcher Hall. This structure houses classrooms, museums, offices, and research laboratories. There are three large rooftop greenhouses with an adjacent preparation area. The animal care facility includes rooms for aquatic organisms, aquatic bird rooms, observation rooms for behavioral study, and a number of rooms for holding small vertebrates. Other departmental research facilities include an herbarium, controlled environmental chambers, vertebrate and invertebrate research museums, plant and animal tissue culture rooms, data analysis facilities, and molecular biology laboratories. Notable recent departmental additions as part of a core Molecular Biology Facility include ultra- and high-speed centrifuges, Microm HM550 cryostat, Bio-Rad Experian microfluidics station, ABI and Bio-Rad real-time PCR systems, Bio-Rad Tetrad multi-block PCR thermocycler, automated DNA sequencer, UVP Autochemi gel documentation system, Nanodrop spectrophotometer, Fluoview Confocal Microscope, and Microbrightfield Instruments design-based stereology system. Highly specialized instruments not presently available in Biology have been made available to our graduate students by other nearby facilities such as the Department of Chemistry, the Medical School, the USDA Human Nutrition Laboratory, and the UND Energy Technology Center.

The Department operates two field stations for research and class use. The Forest River Biology Area is 40 miles from campus and includes 160 acres consisting of spring brook, swamp, moist and dry woods and a section of the Forest River. The Oakville Prairie Field Station consists of approximately 1000 acres of virgin upland and lowland prairie located 12 miles from campus. Oakville Prairie offers rare native tall-grass prairie and saline seeps. Glacial Lake Agassiz receded from the site approximately 9,300 years ago, leaving a series of beach ridges. These ridges have mostly disappeared, but two of the Ojata Beach Ridges remain on the Oakville site along with 8 Saline Seeps (another geological feature not common elsewhere).

The Biology Department has a history of cooperative research involving the management of sport and commercial fisheries and wildlife with state (North Dakota Game and Fish Department, Minnesota Department of Natural Resources) and federal (US Fish and Wildlife Service) agencies.

Admission Requirements
1. Must meet current minimum general requirements as published by the School of Graduate Studies.
2. May enter the program with a Master’s degree or directly with a Bachelor’s degree.
3. All applicants seeking admission to the biology graduate program must provide GRE General test scores. Strength of scores will be considered regarding admission and awarding of departmental support.
4. Minimum GPA of 3.0 for the Master’s degree work. If applying with only an undergraduate degree, must have a minimum GPA of 2.75 for all undergraduate work or 3.0 for junior - senior credits.
5. Satisfy the School of Graduate Studies’ English Language Proficiency requirements as published in the graduate catalog.

Financial Assistance
Financial aid in the form of teaching assistantships, research assistantships, fellowships and internships are available on a competitive basis. Students seeking teaching assistantships should complete their applications by February 15, since most offers for appointments are made beginning in early March. Teaching assistantships are renewable if progress toward the degree and instructional service are satisfactory. Research assistantships may be offered by faculty members for work on specific research projects for nine or twelve month periods.

Degree Requirements
Students seeking the Doctor of Philosophy 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 Ph.D. degree program requires the completion of a program of study of at least 90 semester credits beyond the baccalaureate degree. The program of study, prepared with the approval of a five-member faculty advisory committee, includes the following:

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Deadlines apply. See our website for more details.
1. A major area of a minimum 90 credits including coursework, research and dissertation structured at the committee’s discretion but with a minimum of 18 semester credits of course work. Work completed in a master’s program may be incorporated into the doctoral program if approved by the student’s advisory committee.

2. A minor is not required, but each student is expected to show competence in related areas as determined by the student’s faculty advisory committee.

3. A minimum of five (5) credits on BIOL 503 Seminar (included in 1. above).

4. 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). Two credits can be waived at the discretion of the student’s advisory committee for students with a well-written Master’s thesis and at least one first-authored publication in press.

5. 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.

6. Two scholarly tools. The nature of the scholarly tools shall be determined based upon their importance to the student’s field of research as determined by the student’s advisory committee.

7. Satisfactory completion of an acceptable dissertation proposal (written proposal, proposal presentation and proposal defense) evaluated by the student’s advisory committee.

8. Satisfactory completion of a comprehensive examination administered by the student’s advisory committee.


Faculty and Areas of Expertise

- Jay Boulanger, 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 Ovtchinnikov, 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. Schlosser, 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

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