Master of Science

Biology with a Concentration in One Health (MS)

Piotr Kraj, Graduate Program Director

The Department of Biological Sciences provides a broad selection of course offerings. The degree program in biology allows for the selection of elective subjects most suited to the individual's vocational interests.

The curriculum for the Master of Science program is developed around one's interests such as:

- botany,
- ecology,
- immunology,
- infectious diseases,
- marine biology,
- microbiology,
- physiology,
- biomechanics,
- environmental pollution,
- marine benthic ecology,
- systematic biology, and
- zoology.

In addition, there are specially designed concentration areas in:

- Microbiology and Immunology
- One Health

Facilities and Equipment in the Department of Biological Sciences include:

- microscopy: electron, fluorescence and confocal,
- animal care facilities: terrestrial and aquatic,
- spectroscopy,
- cell culture,
- DNA sequencing: Sanger and Next-Generation,
- GIS (Geographic Information System),
- digital imaging,
- a greenhouse,
- herbarium,
- zoological museum, and
- field science wet laboratories.

In addition, excellent opportunities exist for research and instruction off-campus at field research sites including:

- Blackwater Ecological Preserve,
- Virginia Coast Reserve-Long Term Ecological Research Site,
- Virginia Institute of Marine Sciences Eastern Shore Marine Laboratory, and
- other regional agencies and facilities.

The One Health concentration is for students in the MS program that have a specific interest in aspects of the interdisciplinary One Health paradigm, a strategy for expanding interdisciplinary collaborations and communications in aspects of health for humans, animals and the environment. The concentration will introduce students to the concepts of One Health and their application. Students will be admitted to the concentration after selection of their guidance committee and approval of their program of study.

Admission Information

Students who wish to enter this program should apply to the Master of Science in biology program and indicate their proposed field of study in the Statement of Interest, a required component of the application. Applications for admission can be obtained via the Internet at http://www.odu.edu/admission/graduate (http://www.odu.edu/admission/graduate/) or from:

Office of Graduate Admissions
Old Dominion University
Norfolk, VA 23529-0050
(757) 683-3685

Requirements for regular admission to the master's program in biology are:

1. a bachelor's degree in biology or a related field from an accredited college or university;
2. a grade point average of at least 3.00 on a 4.00 scale;
3. two letters of recommendation;
4. an essay describing the area of biology of interest for graduate study, professional goals and motivation for graduate study in biology; and
5. written acknowledgment from a Department of Biological Sciences faculty member agreeing to serve as the student's major advisor, if the student is accepted.

The Test of English as a Foreign Language (TOEFL) is required of all applicants whose native language is not English: minimum scores are 550 for the paper-based test, 213 for the computer-based or 79 on internet-based test.

Deadlines for application to the program are:

- February 1 for summer admission, early fall admission and consideration for a graduate teaching assistantship;
- June 1 for fall semester admission; and
- October 1 for spring semester admission.

Curriculum Requirements

Two degree options are available — thesis and non-thesis. A minimum of 31 semester hours of graduate credit is required; three-fifths of these credits must be at the 600-level or above and 20 credits must be Biology department coursework. Students must pass a course with a grade of C (2.0) or better for the course to count towards the 31 degree required hours.. Research (BIOL 698) is required of all students. All students must deliver a scientific presentation in an appropriate public forum; for thesis students, the presentation should be at a scientific meeting. Coursework will include 5 core courses; the remaining credits are selected according to the interest of the student, with the guidance and approval of the student's faculty advisory committee. A substantial research project and a defense of the written thesis (BIOL 699) are required of students selecting the thesis option. Thesis students will complete a thesis defense (final oral exam) covering the research and appropriate coursework. Non-thesis students will complete a comprehensive written and/or oral examination on the program of study.

One Health Concentration

All students in the MS in Biology – One Health concentration will complete at least 31 credits, consisting of the set of five core courses, two required courses, and an additional 6 credits of coursework chosen from the concentration courses listed below.

RCR Course		
BIOL 747	Responsible Conduct of Research	2
Statistics Course		
BIOL 757	Biometry	4
Fundamentals Course		
BIOL 523	Cellular and Molecular Biology	3
Data Analysis Course		
Select one of the following:		3
BIOL 701	Practical Computing for Biology	

BIOL 772	Modeling and Simulation in the Life Sciences	
BIOL 732	GIS in the Life Sciences	
Research Course *		
BIOL 698	Research in Biology	3
Concentration Courses - Required		
BIOL 536	Infectious Disease Epidemiology	3
BIOL 537	One Health: People, Animals and the Environment	3
Concentration Electives		
Select two of the following:		6
BIOL 540	Methods in Immunological Research	
BIOL 557	General Virology	
BIOL 570	Diseases that Changed our World	
BIOL 730	Emerging Infectious Diseases	
BIOL 740	Advanced Vaccinology	
BIOL 771	Vector-Borne Diseases	
ECON 535	Health Economics: A Global Perspective	
ENVH 520	Communicable Diseases	
ENVH 523	Vector-Borne Diseases and Their Control	
HLSC 776	Global Health	
Elective Courses **		
Select four credits of electives		4
Total Credit Hours		**31**

* No more than three credits of BIOL 698 can be applied to the total number of credits required.

** Remaining credits are elective, based on student interests, with guidance and approval of the student's faculty advisory committee. Students choosing the thesis option will need to take BIOL 699. Additional core courses, beyond the five required, can be used as elective credits.