The Graduate School

Web Site: http://www.odu.edu/graduateschool (http://www.odu.edu/graduateschool/)

Robert Wojtowicz, Dean
Bryan Porter, Associate Dean
Missy Barber, Associate Director for Administration & Academic Services
Liz Smith, Interdisciplinary Initiatives Administrator

2102 Monarch Hall
757-683-4885

Overview - Interdisciplinary Graduate Programs

The Graduate School supports excellence and diversity in graduate education and scholarship. As a part of that support, the Graduate School houses the University's graduate interdisciplinary programs, the Ph.D. in Biomedical Sciences program, the M.S. in Cyber Security program, and the Graduate Certificate in Conservation Leadership. By managing these interdisciplinary programs centrally, the Graduate School will be able to coordinate efforts across departments and colleges.

Doctor of Philosophy - Biomedical Sciences

Barbara Hargrave, Graduate Program Director

In this interdisciplinary program, students will master a broad range of basic biomedical science topics. Integration of the basic courses is reinforced by a rotation of laboratory experiences and by special seminars that highlight disciplinary interrelationships and approaches to biomedical research. The student progresses from a core of basic courses to in-depth study of specific biomedical problems. This includes advanced doctoral courses and the doctoral research project. Under the guidance of the graduate faculty, the student will integrate knowledge from the broad spectrum of biomedical disciplines into his or her focus on an area of specialization.

The program graduate will be a scientist with a broad biomedical education and a demonstrated ability to carry out original and creative research, cognizant of disciplinary interfaces and implications and capable of pursuing and/or recommending continuing lines of study. He/she will be prepared to bridge the gap between practice and discovery in the art of medicine and the practice of science. The graduate is capable of serving in an industrial, governmental, or academic teaching or research setting, either independently or as a member of a team.

Admission

The requirements for admission to the biomedical sciences Ph.D. program are as follows:

1. A bachelor’s degree from an accredited college or university with a B (3.00) average. Students with advanced degrees are encouraged to apply.
2. In addition to the University's English Language Proficiency Requirements, applicants must have either a score of 84 on the TOEFL, with a score of 26 on the speaking portion, or an IELTS overall score of 8.
3. Prior training in biology (two years), calculus and/or statistics, and organic chemistry (one year). Additional courses in biology, chemistry, and physics are recommended.

Application Procedures

The completed application for the biomedical sciences Ph.D. program will include the following items:

1. Transcripts of coursework only from institutions awarding a bachelor’s or master’s degree.
2. A statement of personal goals and academic objectives.
3. Writing sample on a science related topic (from a course or from your research experience).
4. Resume listing all degrees earned and work experience.
5. Three letters of recommendation on letterhead, preferably from faculty members at colleges attended who are familiar with the applicant's academic and research capabilities.
6. A completed application form.
7. Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) test scores, sent directly from ETS to the ODU International Graduate Admissions Office. Test scores must accompany applications for non-native English speaking candidates with a degree issued outside of the United States.

Applications can be completed online at http://www.odu.edu/admission/graduate (http://www.odu.edu/admission/graduate/). The applicant is responsible for ensuring all application materials are received and the application is complete in all respects.

Students holding a bachelor's degree in another, related field, such as computer science, mathematics, or physics may need to take leveling courses in biological and chemical sciences or pursue master's level work in those fields. The Biological Sciences department and the Chemistry & Biochemistry department both offer master's degrees.

Financial Support

Sources of financial aid available to biomedical sciences Ph.D. students include:

1. Research and teaching assistantships
2. Students on research or teaching assistantships may be eligible for a tuition waiver.
3. Financial Aid

Curriculum and Requirements

To accomplish the objectives of the program, the student:

1. Enrolls in the basic biomedical sciences courses to develop a broad foundation for more advanced course work and dissertation research;
2. Selects a concentration and completes the required advanced courses. Students choose the concentration with the selection of the mentor, which varies based on how they entered the program;
3. Completes at least 78 credit hours beyond the bachelor’s degree or 48 credit hours beyond the master’s degree;
4. Presents two seminars;
5. Candidacy Exam and Prospectus: Develops a written interdisciplinary research NIH style proposal based on preliminary and proposed research that is accepted by the student's committee. Successfully presents and passes an oral exam on the grant proposal and on coursework. The proposal must provide evidence of original and independent thinking. Students choose the concentration with the selection of the mentor, which varies based on how they entered the program;
6. Develops an interdisciplinary research proposal in NSF or NIH format that is accepted by the guidance committee;
7. Performs publishable research to demonstrate the ability to complete original and creative research projects; and
8. Prepares and successfully defends a dissertation.

Core Courses

| BiC50 | Advanced Cell Biology          |
| BiC847 | Responsible Conduct of Research |
| BiC587 | Biometry                     |
| BiC899 | Dissertation Research       |
| ChEM865 | Advanced Biochemistry       |
| HLSc873 | Planning Proposals and Developing Grants in Health Research |
| MDT580 | Molecular Genetics, Gene Function and Genomics |

Required Research Credits

| BiC899 | Doctoral Research |

Concentrations

Select one of the following:

Bioelectrical Science

1 The Graduate School
### Electives **

| Total Hours | 49 |

* Two graded seminar courses required.
** Optional elective courses require permission of dissertation committee.
*** Three credit hours of Doctoral Research will be required.

### Continuance

Students must maintain a 3.0 GPA and receive no more than one course grade of B- or lower to continue in the Ph.D. program. Students are also required to complete Responsible Conduct of Research training within their first 12 completed credit hours in the program.

### Teaching

Students are required to successfully complete the GTAI Institute and teach at least one semester. International students or students where English is not their first language are required to either pass the SPEAK test or demonstrate they have received a score of 26 or better on the speaking portion of their iBT TOEFL exam.

### Exit Requirements

Students must complete the following in order to graduate:

1. Academic requirements - All core and concentration course requirements
2. Publication Research
3. Exit Survey

### Graduate Certificate in Conservation Leadership

This interdisciplinary certificate in Conservation Leadership was developed, and is implement by Old Dominion University, in collaboration with the U.S. Fish and Wildlife Service (USFWS) as a part of a long-term, sustainable program of conservation-related service-learning, internships, and leadership programs. The certificate will facilitate the development of the next generation of professionals who can address the challenges for conservation posed by a changing climate and sea level rise.

### Degree Requirements

The certificate requires four core courses (3 credit hours each) and one elective (3 credit hours). One of the core courses is a mentored internship, preferably at a USFWS or related facility. A unique aspect of this certificate is the requirement to take one course (3 credit hours) that is designated as a service-learning course in which the student will be engaged in a project at a USFWS (or related) facility.

#### Required Courses

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>BIOL/566</td>
<td>Introduction to Mitigation and Adaptation</td>
</tr>
<tr>
<td>BIOL/567</td>
<td>Sustainability Leadership</td>
</tr>
<tr>
<td>OEAS 658</td>
<td>Participatory and Agent-Based Modeling, Simulation, and Visualization</td>
</tr>
<tr>
<td>CL 668</td>
<td>Internship in Conservation Leadership</td>
</tr>
</tbody>
</table>

#### Electives

| Total Hours | 3 - 5 |

Select one of the following:

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>BIOL 504</td>
<td>Conservation Biology</td>
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<tr>
<td>BIOL 545</td>
<td>Community Ecology</td>
</tr>
<tr>
<td>BIOL 732</td>
<td>GIS in the Life Sciences</td>
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<tr>
<td>COMM 600</td>
<td>Intercultural Communication: History, Theory and Application</td>
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<tr>
<td>HLSC 778</td>
<td>Global Environmental Health</td>
</tr>
<tr>
<td>POLS 555</td>
<td>The Politics of Climate Change</td>
</tr>
<tr>
<td>PHIL 542</td>
<td>Studies in Applied Ethics</td>
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#### Total Hours

| Total Hours | 15-17 |

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