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Curriculum for Doctor of Philosophy in Neuroscience (PhD)

The PhD Degree Program in Neuroscience provides students with an opportunity to earn a doctoral degree in the fast-growing and opportunity-rich area of biology. While DSU provides students with a comfortable, familiar and nurturing environment in which they can pursue their Ph.D. in Neuroscience, the program also has linkages with faculty researchers at the University of Delaware and the A.I. duPont Children's Hospital that provide opportunities for DSU students to access a broad range of research training with high-profile investigators working at the cutting edge of neuroscience research.

Our Ph.D. program brings together students and faculty throughout the state making it a truly inter-institutional program. As students of the only biology-based neuroscience degree program in the state, DSU students will be recruited by neuroscience researchers at all institutions, while our specialized neuroscience graduate courses and seminars will be attractive to students in UD's biology and psychology graduate programs who are interested in neuroscience. In addition to providing opportunities to students, DSU's neuroscience Ph.D. program will contribute to scientific workforce development in Delaware by offering new educational and research training opportunities to state residents.

Neuroscience Research at DSU

Currently, DSU has fourteen faculty conducting neuroscience research in three departments; faculty at DSU are supported by grants from the National Institute of Health (NIH), National Science Foundation (NSF), other governmental agencies, and private foundations.

Degree Requirements of the Neuroscience PhD Program

Coursework
The program will require at least 60 credit hours, with 40 from coursework.

Qualifying examination
Students are required to take a two-part qualifying examination in which part I consists of a written examination covering material related to the coursework taken within the first two years. In part II, the students must write and defend a research proposal choosing from a list of topics generated by the faculty. For those not successfully completing the examinations, some of these courses can be applied to one of our master's degrees, if the student so chooses.

Teaching Requirement

Each student, upon achieving candidacy, is required to complete the teaching strategies course and to teach the equivalent of 4 credit hours, or one lecture course, before completion of the degree program.

Research Dissertation
A research dissertation must be presented and successfully defended as part of the requirements for graduation.

Financial support
Students in the PhD program typically will be supported with tuition scholarships, research and/or teaching assistantships so that they may focus full-time on their studies and research.

Core courses:

Course #	Course Name	Graduate Course Credits
BIOL-503	Introduction to Neuroscience	3
BIOL-505	Experimental Design and Biostatistics	3
BIOL-612	Neurochemistry	3
BIOL-622	The Physiology of Excitable Cells	3
BIOL-610	Functional Anatomy From Neuron to Brain	3
BIOL-535	Current Techniques in Biology	2

Foundation courses (must take two of these three (3) choices):

Course #	Course Name	Graduate Course Credits
BIOL-520	Cell Biology	3
BIOL-521	Molecular Biology	3
Select one from below:		
BIOL-650 *or* CHEM-521 *or* CHEM-621	Biological Mechanisms - 3 credits Advanced Biochemistry - 3 credits Bioorganic Chemistry - 3 credits	3

Seminar courses (required):

Course #	Course Name	Graduate Course Credits
BIOL-590	Professional Development I	2
BIOL-591	Professional Development II	1

BIOL-700	Current Topics I	1
BIOL-701	Current Topics II	1
BIOL-603	Strategies for Effective Teaching in Biology	1
BIOL-604	Scientific Integrity	1

Electives:

Course #	Course Name	Graduate Course Credits
BIOL-xxx	Electives (at least three (3), with advisor's approval)	9

Research:

Course #	Course Name	Graduate Course Credits
BIOL-690, 691, 692	Thesis Research	3 (each)
BIOL-800	Dissertation Research	8 (at least)

Total credit hours for graduation: **60**

Suggested Electives for Neuroscience doctoral program (3 credits each)*:

Course #	Course Name	Course #	Course Name
BIOL-511	Pharmacology	BIOL-605	Cell Morphogenesis
BIOL-515	Behavior	BIOL-625	Immunology
BIOL-575	Molecular Genetics & Genomics	BIOL-651	Proteins: Structure and Function

BIOL-600

Molecular Endocrinology BIOL-653 Nervous System Disorders

or, the third Foundation course

**In addition to the electives listed above, other courses at DSU or UD may count towards elective credits pending prior approval by the dissertation advisor and departmental graduate programs committee or Chair of the Department of Biological Sciences at DSU*
