CATALOG DESCRIPTION

Graduate Certificate Program

Graduate Certificate in Neuroscience

General Information

Neuroscience constitutes a truly interdisciplinary area of scientific study and research that incorporates physiology, molecular and cellular biology, pharmacology, development, psychology and cognitive sciences, computer sciences and network modeling, biochemistry and behavior. FAU offers a graduate Certificate Program in Neuroscience that has been designed to provide incoming Masters and PhD students with an integrated background in the Neurosciences. This is a 14-credit graduate certificate program that provides students with an understanding of the essential principles of neuroscience and elective concentrated study in Theoretical and Dynamical, Molecular and Cellular, Cognitive, and Behavioral Neuroscience. While administered through the Dean's Office of the Charles E. Schmidt College of Science, the program consists of a multi-departmental curriculum comprised of selected courses from Departments within the Charles E. Schmidt College of Biomedical Science, the Charles E. Schmidt College of Science, and the College of Engineering and Computer Science.

Admission Requirements

Admission to, and completion of this program is organized by the Dean's Office of the Charles E. Schmidt College of Science. For admission, the applicant must satisfy the following criteria:

1. Acceptance into a Masters or Ph.D. training program in any of the following departments or programs –

Biological Sciences	Biomedical Sciences
Chemistry and Biochemistry	Complex Systems and Brain Sciences
Electrical Engineering	Integrative Biology
Mathematical Sciences	Physics
Psychology	

2. Obtain approval from the Certificate Program Coordinator prior to taking courses to satisfy the 14-credit Certificate requirement.

Program Curriculum and Requirements

The certificate courses are taught by faculty from three Colleges within Florida Atlantic University, and represent a select subset of all graduate neuroscience-related courses offered. These courses cover introductory neuroscience, essential cellular and molecular principles and their relationship to brain diseases and disorders, systems-level analysis of sensory and motor systems, higher cognitive function, theoretical and computational approaches, neurophysiology, neuropharmacology, behavior, and methods of neuroscience research.

1. Certificate requirements are the successful completion (at least a B+ average) of four 3-credit courses (two of which are PSB 6345 and PSB 6346 – Neuroscience 1 and 2, respectively),, plus satisfactory achievement in two semesters of the 1-credit Neuroscience Colloquium for a total of 14 credits. Course details are found below.

2. All students in the Neuroscience Graduate Certificate program are also expected to participate in the FAU Neuroscience Research Day held each spring semester.

Required Courses:

1. **Neuroscience I (PSB 6345, 3 credits)** and **Neuroscience II (PSB 6346, 3 credits)** in Year one.

2. At least **one** 3-credit course from any **two** of the following four concentrations: Theoretical and Dynamical, Molecular and Cellular, Cognitive, and Behavioral (listed below). **Note that one of the elective courses is required to be from outside the student's "home" program area.** For example, a PhD student in the Integrative Biology program would select from a course in any of the areas other than Molecular and Cellular Neuroscience. This requirement ensures that the student gains an interdisciplinary exposure to the Neurosciences.

   Theoretical and Dynamical Neuroscience
   Introduction to Neural Networks (CAP5615)
   Computational Neuroscience I (ISC 6460)
   Self-Organization of Brain and Behavior (ISC 6441)
   Methods in Complex Systems (ISC 6450)
   Bioinformatics (BSC 6458) or Bioinformatics: Engineering Perspectives (BME 6762)

   Cognitive Neuroscience
   Cognitive Neuroscience (ISC 5465)
   Cognition and Complex Systems (ISC 6452) or Seminar in Cognition (EXP 6609)
   Attention (ISC 6932)
   Biological Vision (PSB 5117) or Human Perception (EXP 6208)
   Biopsychology of Language (PSB 6809)

   Molecular and Cellular Neuroscience
   Advanced Cell Physiology (PCB 6207)
   Developmental Neurobiology (PSB 6515)
   Brain Diseases: Mechanisms and Therapy (BMS 6736)
   Cellular Neuroscience and Disease (BSC 6936)
   Molecular Neuropsychopharmacology (PCB 6933)

   Behavioral Neuroscience
   Seminar in Behavioral Neuroscience (PSB 6058)
   Developmental Neuropsychology (PSB 6516)
   Sensory Processes (PSB 6609)
   Methods in Psychobiology (PSB 6118)
   Contemporary Topics in Behavioral Neuroscience (PSB 6930)

3. **Neuroscience Colloquium (ISC-6930, 1 credit/semester, required to enroll two times)**. The Neuroscience program sponsors a public seminar series with distinguished speakers from outside and inside of FAU. Students will also present their own research in the form of a seminar talk given to the other students in the program and interested faculty. Each student in the Certificate Program will be required to give at least one seminar during the two semesters that they are enrolled. Attendance is mandatory for all students. The Neuroscience Colloquium serves several purposes: it gives the students in the program exposure to established neuroscientists and their research, it exposes the students to the on-going projects of their fellow program peers, and it gives all students an opportunity to present their own research in a low stress venue before a friendly audience of their peers.

Participating Departments and Centers:

Department of Basic Science (Charles E. Schmidt College of Biomedical Science)
Department of Biological Sciences (Charles E. Schmidt College of Science)
Department of Chemistry and Biochemistry (Charles E. Schmidt College of Science)
Department of Computer Sciences (College of Engineering and Computer Science)
Department of Electrical Engineering (College of Engineering and Computer Science)
Department of Mathematical Sciences (Charles E. Schmidt College of Science)
Department of Physics (Charles E. Schmidt College of Science)
Department of Psychology (Charles E. Schmidt College of Science)
Center for Complex Systems and Brain Sciences
Center for Molecular Biology and Biotechnology