What is Systems/Behavioral Neuroscience?

Systems/Behavioral Neuroscience studies how neurons work together in networks to understand the mechanisms that underlie behavior. Systems/Behavioral neuroscientists tend to study how the nervous system is related to psychiatric and neurological disorders, how groups of neurons form systems that are related to specified functions (e.g. motor control, learning & memory), and what happens when such systems dysfunction.

I. PROFESSIONAL SURVEY

- **Neuro 1100H** Neuroscience Honors Survey
  1hr  |  Au, Sp  |  (Pre-req: Full or Pre-Majors Only)

II. CORE REQUIREMENTS

Take all 4 of the courses below

Pre-major students must complete Neuro 1100H, Psych 3313 and Neuro 3000 with grades of ‘B’ or higher in both classes and earn a minimum 3.0 cumulative GPA

- **Psych 3313** Introduction to Behavioral Neuroscience
  3hrs  |  Au, Sp, Su  |  (Pre-req: Psych 1100)

- **Neuro 3000** Introduction to Molecular/Cellular Neuroscience
  3hrs  |  Au, Sp  |  (Pre-req: Bio 1113 and Pre-Major)

- **Psych 3513** Introduction to Cognitive Neuroscience
  3hrs  |  Au, Sp  |  (Pre-req: Psych 1100)

- **Neuro 3050** Structure & Function of the Nervous System
  3hrs  |  Au, Sp  |  (Pre-req: Bio 1113 & Neuro 3000)

V. DATA ANALYSIS REQUIREMENT

Take 1 of the 4 courses below

- **Psych 2220** Introduction to Data Analysis in Psychology
  3hrs  |  Au, Sp, Su  |  (Pre-req: Psych 1100 & Math 1148)

- **Stats 2480** Statistics for Life Sciences
  3hrs  |  Sp  |  (Pre-req: Math 1151)

- **Stats 2450** Introduction to Statistical Analysis
  3hrs  |  Au, Sp  |  (Pre-req: Math 1151)

- **MolGen 5650** Analysis & Interpretation of Biological Data I
  3hrs  |  Au  |  (Pre-req: Math 1150 & 10hrs Bio)

III. SPECIALIZATION REQUIREMENTS

Choose at least 5 specialization courses from the options below

- **Neuro 4550** Autism Spectrum Disorder & Neurodev Disorders
  3hrs  |  Au  |  (Pre-req: Neuro 3000)

- **Psych 4501** Advanced Behavioral Neuroscience
  3hrs  |  Au, Sp  |  (Pre-req: Psych 3313 & Neuro 3000)

- **Neuro 4100** Basic & Clinical Foundations of Neuro Disease
  3hrs  |  Au  |  (Pre-req: Neuro 3000)

- **Psych 4644** Hormones & Behavior
  3hrs  |  Au Sp  |  (Pre-req: Psych 3313 & Neuro 3000)

- **Psych 5613(H)** Biological Psychiatry
  3hrs  |  Sp  |  (Pre-req: Psych 3313 & Neuro 3000)

- **Psych 5602** Behavioral Genetics
  3hrs  |  Sp  |  (Pre-req: Psych 3313 & Neuro 3000)

- **Psych 5603** Stem Cells and the Brain
  3hrs  |  Au  |  (Pre-req: Psych 3313 & Neuro 3000)

- **Psych 5604** Sex Differences in the Brain and Behavior
  3hrs  |  Au  |  (Pre-req: Psych 3313 & Neuro 3000)

- **Psych 5622** The Development of Brain and Behavior
  3hrs  |  Au  |  (Pre-req: Psych 3313 & Neuro 3000)

- **Psych 5898** Seminar in Behavioral Neuroscience
  3hrs  |  Sp  |  (Pre-req: Psych 4501)

- **Neuro 4623** Biological Clocks & Rhythms
  3hrs  |  Sp  |  (Pre-req: Neuro 3000)

- **EEOB 4550** Neurobiology of Behavior
  3hrs  |  Au  |  (Pre-req: 2 courses in Bio)

- **Psych 4305** Intro To Psychopharmacology
  3hrs  |  Sp  |  (Pre-req: Permission of Instructor)

- **Biophrm 5824** Pharmacology of the Nervous System
  3hrs  |  Au, Sp  |  (Pre-req: Permission of Instructor)

- **Biochem 4511** Intro to Biological Chemistry
  4hrs  |  Au, Sp, Su  |  (Pre-req: Chem 2510 & Bio 1113)

- **MolGen 5000** General Genetics
  3hrs  |  Au, Sp, Su  |  (Pre-req: Bio 1113 & 3+ hrs Bio)
IV. BREADTH REQUIREMENT

Choose at least 2 additional courses from the list below:

- **Neuro 3025** History of Neuroscience
  3hrs | Sp  | (Pre-req: Psych 3313 & Neuro 3000)

- **Neuro 4850** Contemporary Topics in Neuroscience
  3hrs | Sp  | (Pre-req: Psych 3313 & Neuro 3000)

- **Neuro 3010** Neurophysiology
  3hrs | Au  | (Pre-req: Neuro 3000 or Neuro 3050)

- **Neuro 3305** Neuropsychopharmacology
  3hrs | Sp  | (Pre-req: Neuro 3000)

- **Neuro 4050H** Neurogenetics
  3hrs | Au  | (Pre-req: Neuro 3000)

- **Neuro 4640** Neuronal Signal Transduction
  3hrs | Sp  | (Pre-req: Neuro 3000)

- **Neuro 5790H** Developmental Neurobiology
  3hrs | Sp  | (Pre-req: Neuro 3000 & 3050 & Jr. or Sr.)

- **Chem 5230** Neurotransmitter Chemistry
  3hrs | Sp  | (Pre-req: Chem 2540 & 2520)

- **Ling 3701** Language and the Mind
  3hrs | Au, Sp, Su | (Pre-req: Psych 1100)

- **Psych/CSE/Ling/Philos 5612** Introduction to Cognitive Science
  3hrs | Au  | (Pre-req: 12hr in Psych/CSE/Ling/Philos)

- **Psych 5089** Cognitive Aging, Neurodegeren, & Neuroplasticity
  3hrs | Sp  | (Pre-req: Psych 3313 & Neuro 3000)

- **Psych 5614** Cognitive Neuroscience
  3hrs | Sp  | (Pre-req: Psych 3313 & 3000)

- **Psych 5618** Intro to Computational Cognitive Neuroscience
  3hrs | Sp  | (Pre-req: Psych 3313 & Neuro 3000)

- **Psych 5628** Developmental Cognitive Neuroscience
  3hrs | Au  | (Pre-req: Psych 3313 & 3000)

- **SHS 5760** Neurology of Speech and Hearing Mechanisms
  3hrs | Au, Sp  | (Pre-req: Psych 3313 & 3000)

- **Psych 3321** Quantitative and Statistical Methods in Psychology
  3hrs | Au, Sp  | (Pre-req: B or higher in 2220)

- **Math 4350** Quantitative Neuroscience
  3hrs | Sp  | (Pre-req: Math 1152)

- **Psych 5608** Intro to Mathematical Psychology
  3hrs | Au  | (Pre-req: Psych 3321, 3313 & Neuro 3000)

- **CSE 5052** Survey of Artificial Intelligence for Non-Majors
  3hrs | Au  | (Pre-req: CSE Programming & Neuro 3000)

- **CSE 5526** Introduction to Neural Networks
  3hrs | Au  | (Pre-req: CSE 3521)

- **Econ 5870** Neuroeconomics and Decision Neuroscience
  3hrs | Sp  | (Pre-req: Psych 3313 & 3000).

- **ECE 5070** Neuroengineering and Neuroprosthetics
  3hrs | Au  | (Pre-req: Programing)
  Not Open to Students With Credit For Neuro 5070

- **Neuro 4998/3193** Undergraduate Research & Individual Studies
  Pre-approval required.
  Up to 3 credit hours of any combination of Undergraduate Research (4998) and Individual Studies (3193) can be applied to the breadth requirement.

**Honors Requirements**

All Honors students must take at least one graduate-level course to fulfill their Honors requirement. Honors students must speak with their advisor to select a course. The chosen course to fulfill the requirement can count as EITHER one Breadth course or one Specialization course. The approved graduate-level courses can be found below:

**College of Arts and Sciences**
- Psych 5603 Stem Cells and the Brain
- Psych 5606 High Level Vision
- Psych 5898 Seminar in Behavioral Neuroscience
- Psych 5618 Intro to Computational Cog Neuroscience
- Psych 6810 Statistical Methods in Psychology I
- Psych 6811 Statistical Methods in Psychology II

**College of Medicine**
- Neurosc 6050H Neuro Genetics
- Neurosc 5790H Developmental Neuroscience
- Neuro 7050 Neurobiology of Disease
- Neuro 7500 Neuroimmunology
- Neuro 7001 Foundations of Neuroscience I

**College of Engineering**
- CSE 5194.03 Neuroengineering & Neuroprosthetics
- CSE 5526 Introduction to Neural Networks