

# B.S. NEUROSCIENCE

DEGREE REQUIREMENTS  
COLLEGE OF NATURAL SCIENCE  
MICHIGAN STATE UNIVERSITY

[physiology.natsci.msu.edu/academics/undergraduate/  
bachelor-of-science-in-neuroscience/](http://physiology.natsci.msu.edu/academics/undergraduate/bachelor-of-science-in-neuroscience/)



DEPARTMENT OF  
PHYSIOLOGY

## UNIVERSITY REQUIREMENTS

### WRITING: One of the Following Courses

1. WRA 101 (4) - Writing as Inquiry
2. WRA 195H (4) - Writing as Inquiry Honors

**NOTE:** ISB & ISP requirements are fulfilled by the required Biology and Chemistry courses as part of the Alternative Track to completion of the Integrated Science University Requirements.

**Honors College:** Honors College students must take 2 Arts & Humanities (AH) substitutions and 2 Social Science (SS) Substitutions. IAH and ISS courses must be Honors sections to count towards subs.

**University Diversity Distribution:** For IAH and ISS courses, students must take at least one course focused on a National (N) topic and one course focused on an International (I) or Multicultural (D) topic.

### INTEGRATIVE STUDIES: IAH and ISS - All of the Following

1. IAH 201-210 (4) Arts & Humanities
2. IAH 211-241 (4) Arts & Humanities
3. ISS 200-level (4) Social Science
4. ISS 300-level (4) Social Science

## BASIC SCIENCE & SOCIAL SCIENCE REQUIREMENTS

*Courses denoted with the (\*) are recommended from the list of options*

### CALCULUS: One of the following

1. **\*MTH 124 (3) - Survey of Calculus**
2. MTH 132 (3) - Calculus I
3. MTH 152H (3) - Honors Calculus I

### GENERAL CHEMISTRY: One of the following pairs

1. **\*CEM 141 (4) & CEM 161 (1)**
  - a. General Chemistry & General Chemistry Lab I
2. CEM 151 (4) & CEM 161 (1) -
  - a. General and Descriptive Chemistry & General Chemistry Lab I
3. CEM 181H (4) & CEM 185H (2)
  - a. Honors Chemistry & Honors Chemistry Lab

### PHYSICS: One of the following pairs

1. **\*PHY 221 (4) & PHY 222 (4)**
  - a. Studio Physics for Life Scientists I & II
2. **\*PHY 231/C (3) & PHY 232/C (3)**
  - a. Introductory Physics I & II
3. PHY 183/B (4) & PHY 184/B (4)
  - a. Physics for Scientists and Engineers I & II
4. PHY 193H (4) & PHY 294H (4)
  - a. Honors Physics I-Mechanics & Honors Physics II-Electromagnetism
5. PHY 241 (4) & PHY 242 (4)
  - a. Physics for Cellular & Molecular Biologists I & II

### STATISTICS: One of the following

1. STT 201 (4) - Statistical Methods
2. **\*STT 231 (3) - Statistics for Scientists**
3. STT 421 (3) - Statistics I

### BIOLOGY: One of the following sets

1. BS 161 (3), BS 171 (2), & BS 162 (3)
  - a. Cell and Molecular Biology, Cell and Molecular Biology Lab, & Organismal and Population Biology
2. BS 181H (3), BS 191H (2), BS 182H (3)
  - a. Honors Cell and Molecular Biology, Honors Cell and Molecular Biology Lab, & Honors Organismal and Population Biology

### ORGANIC CHEMISTRY: One of the following pairs

1. **\*CEM 251 (3) & CEM 252 (3)**
  - a. Organic Chemistry I & II
2. CEM 351 (3) & CEM 352 (3)
  - a. Organic Chemistry I & II

### INTRODUCTORY PSYCHOLOGY

1. PSY 101 (4) - Introductory Psychology

# UPPER DIVISION SCIENCE COURSES

*Courses denoted with the (\*) are recommended from the list of options*

**NEUROSCIENCE CORE COURSES:** All of the following

1. NEU 301 (3) - Introduction to Neuroscience I
2. NEU 302 (3) - Introduction to Neuroscience II
3. NEU 311L (2) - Neuroscience Laboratory (W)

**PHYSIOLOGY:** One of the following pairs

1. **\*PSL 310 (4)** - Physiology for Pre-Health Professionals
2. PSL 431 (4) & PSL 432 (4)
  - a. Human Physiology I & II

**BIOCHEMISTRY**

1. BMB 401 (4) - Comprehensive Biochemistry

**PHARMACOLOGY:** One of the following

1. PHM 350 (3) - Fundamentals of Human Pharmacology
2. PHM 431 (3) - Pharmacology of Drug Abuse
3. ^PHM 480 003 (3) - Special Problems (Spring ONLY)

*^Prior Approval from Neuroscience Academic Advisor is REQUIRED*

**FUNDAMENTAL GENETICS OR EUKARYOTIC CELL**

**BIOLOGY:** One of the following

1. IBIO 341 (4) - Fundamental Genetics
2. MMG 409 (3) - Eukaryotic Cell Biology

## NEUROSCIENCE CONCENTRATION COURSES

*Complete 15 credits in ONE of the three concentrations (continued on the next page)*

### CELLULAR AND DEVELOPMENTAL

- IBIO 341 (4) - Fundamental Genetics
- IBIO 425 (4) - Cells & Development (W)
- MMG 404 (3) - Human Genetics
- MMG 409 (3) - Eukaryotic Cell Biology
- NEU 416 (3) - Development of the Nervous System
- NEU 417 (3) - Instrumental Methods of Analysis in Neuroscience
- NEU 420 (3) - Neurobiology of Disease
- NEU 440 (3) - Synaptic Transmission
- NEU 450 (3) - Autonomic Nervous System
- NEU 460 (3) - Current Approaches in Cellular & Molecular Neuroscience
- ^NEU 490 (3) - Special Problems in Neuroscience (Independent Study/Research in Neuroscience)
- ^NEU 492 (3) - Special Topics in Neuroscience
- ^NEU 499 (2-3) - Neuroscience Senior Research Thesis
- PHM 422 (2) - Fundamentals of Neuropharmacology
- PHM 431 (3) - Pharmacology of Drug Abuse
- ^PHM 480 003 (3) - Special Problems (Spring ONLY)

*^Prior Approval from Neuroscience Academic Advisor is REQUIRED*

*^NEU 492 has multiple sections and requires an override to enroll: <https://overrides.natsci.msu.edu>*

**NOTE:** MMG 409 and IBIO 341 cannot double count towards the concentration & the general genetics/eukaryotic cell biology requirement

**NOTE:** PHM 431 and PHM 480 003 cannot double count towards the concentration & the general PHM requirement

### COGNITIVE & COMPUTATIONAL

- LIN 455 (3) - Neurolinguistics
- LIN 463 (3) - Introduction to Cognitive Science
- NEU 417 (3) - Instrumental Methods of Analysis in Neuroscience
- ^NEU 490 (3) - Special Problems in Neuroscience (Independent Study/Research in Neuroscience)
- ^NEU 492 (3) - Special Topics in Neuroscience
- ^NEU 499 (2-3) - Neuroscience Senior Research Thesis
- PHL 101 (3) - Introduction to Philosophy
- PHL 462 (3) - Philosophy of the Mind
- PSY 200 (3) - Cognitive Psychology
- PSY 209 (3) - Brain and Behavior
- PSY 301 (3) - Cognitive Neuroscience
- PSY 302 (3) - Sensation and Perception
- PSY 401 (3) - Expertise and Skill (W)
- PSY 410 (3) - Neurobiology of Learning and Memory (W)

*^Prior Approval from Neuroscience Academic Advisor is REQUIRED*

*^NEU 492 has multiple sections and requires an override to enroll: <https://overrides.natsci.msu.edu>*

**NOTE:** Effective Fall 2021, PSY 302 is no longer a Tier II Writing Course (W)

**NOTE:** Effective Fall 2023, we are no longer accepting PSY 493 towards the concentration

*Connect with your Neuroscience Academic Advisor to further discuss computational course options*

# NEUROSCIENCE CONCENTRATION COURSES (CON'T)

## BEHAVIORAL AND SYSTEMS

IBIO 313 (3) - Animal Behavior  
IBIO 405 (3) - Neural Basis of Animal Behavior  
NEU 310 (3) - Psychology & Biology of Human Sexuality  
NEU 416 (3) - Development of the Nervous System  
NEU 417 (3) - Instrumental Methods of Analysis in Neuroscience  
NEU 420 (3) - Neurobiology of Disease  
NEU 440 (3) - Synaptic Transmission  
NEU 450 (3) - Autonomic Nervous System  
NEU 460 (3) - Current Approaches in Cellular & Molecular Neuroscience  
^NEU 490 (3) - Special Problems in Neuroscience (Independent Study/Research in Neuroscience)  
^NEU 492 (3) - Special Topics in Neuroscience  
^NEU 499 (2-3) - Neuroscience Senior Research Thesis  
PHM 422 (2) - Fundamentals of Neuropharmacology  
PHM 431 (3) - Pharmacology of Drug Abuse  
^PHM 480 003 (3) - Special Problems (Spring ONLY)  
PSY 209 (3) - Brain and Behavior  
PSY 302 (3) - Sensation and Perception  
PSY 333 (3) - Neurobiology of Food Intake and Overeating  
PSY 409 (3) - Psychology of Behavioral Development (W)  
PSY 410 (3) - Neurobiology of Learning and Memory (W)  
PSY 411 (3) - Hormones and Behavior (W)  
PSY 413 (4) - Laboratory in Behavioral Neuroscience (W)

*^Prior Approval from Neuroscience Academic Advisor is REQUIRED*

*^NEU 492 has multiple sections and requires an override to enroll: <https://overrides.natsci.msu.edu>*

**NOTE:** Effective Fall 2021, PSY 302 is no longer a Tier II Writing Course (W)

**NOTE:** PHM 431 and PHM 480 003 cannot double count towards the concentration & the general PHM requirement

**NOTE:** Effective Fall 2023, we are no longer accepting PSY 493 towards the concentration

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## ADDITIONAL GRADUATION REQUIREMENTS

### *In addition to completing all degree requirements*

- Complete a minimum of 120 credits
- Earn a minimum cumulative GPA of 2.0 or better
- Earn a minimum major GPA of 2.0 or better
- Complete a minimum of 30 credits at MSU with a minimum of 27 credits on the East Lansing campus after reaching junior standing (56+ credits)
- No more than 10 of the last 30 credits may be transferred from another 4-year or 2-year institution. PRIOR APPROVAL IS REQUIRED.
- No more than 60 credits from a community college will be allowed
- Courses used to satisfy specific degree requirements cannot be taken as C/NC

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## WE'RE HERE TO SERVE YOU! CONTACT US

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