BACHELOR OF SCIENCE
DEGREE REQUIREMENTS

WRITING (4 credits)

_____ WRA 101 (4) Writing, Rhetoric, and American Cultures  or  _____ WRA 195H
_____ WRA 110—150 (4) Writing, Rhetoric, and American Cultures (Prior to Fall 2016)

INTEGRATIVE STUDIES***

_____ IAH 201—210 (4) Arts and Humanities
_____ IAH 211—241 (4) Arts and Humanities
_____ ISS 200 level (4) Social Science
_____ ISS 300 level (4) Social Science

GENERAL NEUROSCIENCE DEGREE REQUIREMENTS

ONE (1) of the following pairs of courses (5 or 6 credits):

1. CEM 141: General Chemistry (4)
   CEM 161: Chemistry Laboratory I (1)
2. CEM 151: General and Descriptive Chemistry (4)
   CEM 161: Chemistry Laboratory I (1)
   • CEM 181H: Honors Chemistry I (4)
   CEM 185H: Honors Chemistry Laboratory (2)
   • LB 171: Principles of Chemistry I (4)
   LB 171L: Introductory Chemistry Laboratory I (1)

ONE (1) of the following pairs of courses (6 or 8 credits):

1. PHY 231: Introductory Physics I (3)
   PHY 232: Introductory Physics II (3)
   PHY 241: Physics for Cellular and Molecular Biologists I (4)
   PHY 242: Physics for Cellular and Molecular Biologists II (4)
2. PHY 183: Physics for Scientists and Engineers I (4)
   PHY 184: Physics for Scientists and Engineers II (4)
   • PHY 193H: Honors Physics I – Mechanics (4)
   PHY 294H: Honors Physics II – Electromagnetism (4)
   • LB 273: Physics I (4)
   LB 274: Physics II (4)

ONE (1) of the following courses (3 or 4 credits):

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

ONE (1) of the following groups of courses (8 credits):

1. BS 161: Cell and Molecular Biology (3)
   BS 162: Organismal and Population Biology (3)
   BS 171: Cell and Molecular Biology Laboratory (2)
   • BS 181H: Honors Cell and Molecular Biology (3)
   BS 182H: Honors Organismal and Population Biology (3)
   BS 191H: Honors Cell and Molecular Biology Laboratory (2)
   • LB 144: Biology I – Organismal Biology (4)
   LB145: Biology II – Cellular and Molecular Biology (5)

ONE (1) of the following pairs of courses (6 credits):

1. CEM 251: Organic Chemistry I (3)
   CEM 252: Organic Chemistry II (3)
2. CEM 351: Organic Chemistry I (3)
   CEM 352: Organic Chemistry II (3)

ONE (1) of the following courses (3 or 4 credits):

1. MTH 124: Survey of Calculus I (3)
2. MTH 132: Calculus I (3)
   • MTH 152H: Honors Calculus I (3)
   • LB 118: Calculus I (4)

BOTH of the following courses (8 credits):

1. BMB 401: Comprehensive Biochemistry (4)
2. PSY 101: Introductory Psychology (4)

ONE (1) of the following (4 or 8 credits):

1. PSL 310: Physiology for Pre-Health Professionals (4)
2. PSL 431: Human Physiology I (4), and
   PSL 432: Human Physiology II (4)

ONE (1) course from EACH of the following groups of courses (6 credits):

1. PHM 350: Introductory Human Pharmacology (3)
   PHM 431: Pharmacology of Drug Addiction (3)
   PHM 480: Special Problems (3)*
   *Prior Approval from Neuroscience Academic Advisor is REQUIRED!
2. MMG 409: Eukaryotic Cell Biology (3)
   IBIO 341: Fundamental Genetics (4)

ONE (1) of the following courses (4 or 8 credits):

1. PSY 101: Introductory Psychology (4)
2. PSY 231: Psychological Statistics (4)

ONE (1) course from EACH of the following groups of courses (6 credits):

1. BMB 401: Comprehensive Biochemistry (4)
2. PSY 101: Introductory Psychology (4)
3. PSY 231: Psychological Statistics (4)

Note:

Bullet Points = Course Options for Honors College and Lyman Briggs College Students.

Pre-professional Students: Additional admissions requirements may be necessary if you are a pre-professional student. Please consult your pre-professional advisor for more information.

***Students MUST include at least one National (N) course and one International / Multicultural (I) course in their Integrative Studies programs. A National / International / Multicultural (D) course may meet either an (N) or (I) requirement, but not both. See course descriptions for details.

Undergraduate
https://neuroscience.natsci.msu.edu/academics/undergraduate/
<table>
<thead>
<tr>
<th>NEUROSCIENCE CORE COURSES – REQUIRED FOR ALL CONCENTRATIONS</th>
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<tbody>
<tr>
<td>ALL of the following courses (8 credits):</td>
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<tr>
<td>______ NEU 301: Introduction to Neuroscience I (3)</td>
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<td>______ NEU 302: Introduction to Neuroscience II (3)</td>
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<td>______ NEU 311L: Neuroscience Laboratory (W) (2)</td>
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<th>NEUROSCIENCE CORE – CONCENTRATIONS</th>
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<td>15 credits in courses from <strong>ONE</strong> (1) of the following concentrations:</td>
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### Cellular and Developmental Neuroscience
- PLB 400: Introduction to Bioinformatics (3)
- IBIO 341: Fundamental Genetics (4)
- IBIO 343: Genetics Laboratory (3)
- IBIO 425: Cells and Development (W) (4)
- MMG 404: Human Genetics (3)
- MMG 409: Eukaryotic Cell Biology (3)
- NEU 416: Development of the Nervous System Across the Lifespan (3)
- NEU 417: Instrumental Methods of Analysis in Neuroscience (3)
- NEU 420: Neurobiology of Disease (3)
- NEU 425: Computational Modeling in Neuroscience (3)
- NEU 430: Genomics of Brain and Behavior (3)
- NEU 435: Ion Channels of Excitable Membranes (3)
- NEU 440: Synaptic Transmission (3)
- PHM 422: Fundamentals of Neuropharmacology (2-3)
- PHM 431: Pharmacology of Drug Addiction (3)
- PHM 480: Special Problems (3)*
- NEU 490: Special Problems in Neuroscience*
- NEU 492: Special Topics in Neuroscience*

*Prior Approval from Neuroscience Academic Advisor is **REQUIRED**!

**NOTE:** MMG 409 and IBIO 341 may **NOT** be used for both the General Neuroscience Degree requirement and this concentration.

**NOTE:** PHM 431 and PHM 480 may **NOT** be used for both the General Neuroscience Degree requirement and this concentration.

### Behavioral and Systems Neuroscience
- IBIO 313: Animal Behavior (3)
- IBIO 403: Integrative Neurobiology (3)
- IBIO 405: Neural Basis of Animal Behavior (3)
- NEU 310: Psychobiology of Human Sexuality (3)
- NEU 416: Development of the Nervous System Across the Lifespan (3)
- NEU 417: Instrumental Methods of Analysis in Neuroscience (3)
- NEU 420: Neurobiology of Disease (3)
- NEU 425: Computational Modeling in Neuroscience (3)
- NEU 430: Genomics of Brain and Behavior (3)
- PHM 422: Fundamentals of Neuropharmacology (2-3)
- PHM 431: Pharmacology of Drug Addiction (3)
- PHM 480: Special Problems (1–3)*
- PSY 209: Brain and Behavior (3)
- PSY 333: Neurobiology of Food Intake (3)
- PSY 402: Sensation and Perception (W) (3)
- PSY 409: Psychology of Behavioral Development (W) (3)
- PSY 410: Neurobiology of Learning and Memory (W) (3)
- PSY 411: Hormones and Behavior (W) (3)
- PSY 413: Laboratory in Behavioral Neuroscience (W) (4)
- PSY 493: Issues in Psychology (W) (3)*
- NEU 490: Special Problems in Neuroscience*
- NEU 492: Special Topics in Neuroscience*

*Prior Approval from Neuroscience Academic Advisor is **REQUIRED**!

**NOTE:** PHM 431 and PHM 480 may **NOT** be used for both the General Neuroscience Degree requirement and this concentration.

### Cognitive and Computational Neuroscience
- LIN 455: Neurolinguistics (3)
- LIN 463: Introduction to Cognitive Science (3)
- NEU 417: Instrumental Methods of Analysis in Neuroscience (3)
- NEU 425: Computational Modeling in Neuroscience (3)
- NEU 430: Genomics of Brain and Behavior (3)
- NEU 445: Analysis of Functional Neuroscience Data (3)
- PHL 200: Introduction to Philosophy (3)
- PHL 462: Philosophy of Mind (3)
- PSL 429: Biomedical Imaging Methods (3)
- PSY 200: Cognitive Psychology (3)
- PSY 209: Brain and Behavior (3)
- PSY 301: Cognitive Neuroscience (3)
- PSY 401: Expertise and Skill (W) (3)
- PSY 402: Sensation and Perception (W) (3)
- PSY 410: Neurobiology of Learning and Memory (W) (3)
- PSY 493: Issues in Psychology (W) (3)*
- NEU 490: Special Problems in Neuroscience*
- NEU 492: Special Topics in Neuroscience*

*Prior Approval from Neuroscience Academic Advisor is **REQUIRED**!