



<https://neuroscience.natsci.msu.edu/academics/undergraduate/>

BACHELOR OF SCIENCE DEGREE REQUIREMENTS

WRITING (4 credits)

ONE (1) of the following courses:

1. WRA 101 (4) Writing, Rhetoric, and American Cultures (**Prior to Fall 2016:** WRA 110–150 (4) Writing, Rhetoric, and American Cultures)
2. WRA 195H (4)

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

*****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.

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 Requirements.

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)
3. CEM 181H: Honors Chemistry I (4)
CEM 185H: Honors Chemistry Laboratory (2)
4. 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)
2. PHY 241: Physics for Cellular and Molecular Biologists I (4)
PHY 242: Physics for Cellular and Molecular Biologists II (4)
3. PHY 183: Physics for Scientists and Engineers I (4)
PHY 184: Physics for Scientists and Engineers II (4)
4. PHY 193H: Honors Physics I – Mechanics (4)
PHY 294H: Honors Physics II – Electromagnetism (4)
5. 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 or 9 credits):

1. BS 161: Cell and Molecular Biology (3)
BS 162: Organismal and Population Biology (3)
BS 171: Cell and Molecular Biology Laboratory (2)
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)
3. 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)
3. MTH 152H: Honors Calculus I (3)
4. 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 or 7 credits):

1. PHM 350: Introductory Human Pharmacology (3)
PHM 431: Pharmacology of Drug Addiction (3)
PHM 480: Special Problems (3)*
2. MMG 409: Eukaryotic Cell Biology (3)
IBIO 341: Fundamental Genetics (4)

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

NEUROSCIENCE CORE COURSES – REQUIRED FOR ALL CONCENTRATIONS

ALL of the following courses (8 credits):

_____ NEU 301: Introduction to Neuroscience I (3)

_____ NEU 302: Introduction to Neuroscience II (3)

_____ NEU 311L: Neuroscience Laboratory (W) (2)

NEUROSCIENCE CORE – CONCENTRATIONS

15 credits in courses from ONE (1) of the following concentrations:

Cellular and Developmental Neuroscience

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 415: Neuroinformatics and Quantitative Reasoning (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)
NEU 445: Analysis of Functional Neuroscience Data (3)
NEU 490: Special Problems in Neuroscience*
NEU 492: Special Topics in Neuroscience*
PHM 422: Fundamentals of Neuropharmacology (2-3)
PHM 431: Pharmacology of Drug Addiction (3)
PHM 480: Special Problems (3)*
PLB 400: Introduction to Bioinformatics (3)

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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.

Cognitive and Computational Neuroscience

LIN 455: Neurolinguistics (3)
LIN 463: Introduction to Cognitive Science (3)
NEU 415: Neuroinformatics and Quantitative Reasoning (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 101/200: 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*

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NOTE: No more than 3 credits each of NEU 490 and NEU 492 may count towards the Neuroscience degree concentration requirements.

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 415: Neuroinformatics and Quantitative Reasoning (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 445: Analysis of Functional Neuroscience Data (3)
NEU 490: Special Problems in Neuroscience*
NEU 492: Special Topics in Neuroscience*
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)*

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

We're Here to Serve You!

Laura Symonds, Ph.D.

Undergraduate Neuroscience Program Director
293 Farm Lane; Room 108A
East Lansing, MI 48824
Email: symonds@msu.edu

Kanchan Pavangadkar, Ph.D.

Academic Advisor
293 Farm Lane; Room 204
East Lansing, MI 48824
Email: kanchan@msu.edu
PH: (517) 432-4301

Eleri Thomas, BA

Undergraduate Neuroscience Secretary
293 Farm Lane; Room 108
East Lansing, MI 48824
Email: thom1625@msu.edu
PH: (517) 432-1117