

NEUROBIOLOGY, B.S.

Neuroscience is the scientific study of the central (brain and spinal cord) and peripheral (nerves in body) nervous system. The neurobiology major at UW–Madison will provide a rigorous education in neuroscience principles that will prepare students for health-related careers (physician, physician assistant, veterinarian, dentist, neuroimaging technician, speech-language pathologist, neuropsychologist, drug rehabilitation counselor, physical therapists), academic careers (college and university faculty, research scientists, lab technician, K-12 teachers), and careers in pharmaceutical and biotech industries, venture capital and scientific consulting firms, medical and scientific journals, intellectual property law, neuroscience-related nonprofit organizations and foundations, and government agencies. UW–Madison is one of the leading universities in the world with more than 90 faculty engaged in neuroscience research and undergraduates will have access to this research faculty in formal classroom environments and through undergraduate research opportunities. Please see the Neurobiology Major (<https://neuromajor.wisc.edu>) website for more information.

ABOUT THE CURRICULUM

The curriculum is designed to give students a solid foundation in basic biology, chemistry, physics, and mathematics before going on to study neuroscience at the molecular, cellular, systems, and cognitive levels. It is strongly encouraged that students engage in independent research in a neuroscience laboratory on campus. The Neurobiology Major Program Committee is committed to increasing opportunities for all students with interests in neuroscience and helping students accomplish their academic goals at UW–Madison. This major is tailored to attract students from a diverse array of backgrounds. Please see the Neurobiology Major website (<https://neuromajor.wisc.edu>) for more information.

HOW TO GET IN

The advisors for the Neurobiology Major (<https://neuromajor.wisc.edu/>) are committed to providing students with first-rate guidance through the major to graduation and beyond. Most students are ready to declare a major by the end of the 3rd or 4th semester. **If you are interested in declaring the Neurobiology Major, you must first make an appointment to meet with an advisor.**

See our website (<https://neuromajor.wisc.edu/advising/>) to schedule an appointment.

REQUIREMENTS

UNIVERSITY GENERAL EDUCATION REQUIREMENTS

All undergraduate students at the University of Wisconsin–Madison are required to fulfill a minimum set of common university general education requirements to ensure that every graduate acquires the essential core of an undergraduate education. This core establishes a foundation for living a productive life, being a citizen of the world, appreciating aesthetic values, and engaging in lifelong learning in a continually changing world. Various schools and colleges will have requirements in addition to the requirements listed below. Consult your advisor for assistance, as

needed. For additional information, see the university Undergraduate General Education Requirements (<http://guide.wisc.edu/undergraduate/#requirementsforundergraduatetext>) section of the *Guide*.

General Education

- Breadth–Humanities/Literature/Arts: 6 credits
- Breadth–Natural Science: 4 to 6 credits, consisting of one 4- or 5-credit course with a laboratory component; or two courses providing a total of 6 credits
- Breadth–Social Studies: 3 credits
- Communication Part A & Part B *
- Ethnic Studies *
- Quantitative Reasoning Part A & Part B *

* The mortarboard symbol appears before the title of any course that fulfills one of the Communication Part A or Part B, Ethnic Studies, or Quantitative Reasoning Part A or Part B requirements.

COLLEGE OF LETTERS & SCIENCE DEGREE REQUIREMENTS: BACHELOR OF SCIENCE (B.S.)

Students pursuing a Bachelor of Science degree in the College of Letters & Science must complete all of the requirements below. The College of Letters & Science allows this major to be paired with either the Bachelor of Arts or the Bachelor of Science degree requirements.

BACHELOR OF SCIENCE DEGREE REQUIREMENTS

Mathematics Complete two courses of 3+ credits at the Intermediate or Advanced level in MATH, COMP SCI, or STAT subjects. A maximum of one course in each of COMP SCI and STAT subjects counts toward this requirement.

Foreign Language Complete the third unit of a foreign language.

L&S Breadth Complete:

- 12 credits of Humanities, which must include at least 6 credits of Literature; and
- 12 credits of Social Science; and
- 12 credits of Natural Science, which must include 6 credits of Biological Science and 6 credits of Physical Science.

Liberal Arts and Science Coursework Complete at least 108 credits.

Depth of Intermediate/Advanced Coursework Complete at least 60 credits at the Intermediate or Advanced level.

Major Declare and complete at least one major.

Total Credits Complete at least 120 credits.

UW–Madison Experience Complete both:

- 30 credits in residence, overall, and
- 30 credits in residence after the 86th credit.

Quality of Work

- 2.000 in all coursework at UW–Madison
- 2.000 in Intermediate/Advanced level coursework at UW–Madison

NON-L&S STUDENTS PURSUING AN L&S MAJOR

Non-L&S students who have permission from their school/college to pursue an additional major within L&S only need to fulfill the major requirements. They do not need to complete the L&S Degree Requirements above.

REQUIREMENTS FOR THE MAJOR
MATH, STATISTICS, CHEMISTRY & PHYSICS

| Code | Title | Credits |
|--|---|--------------|
| Mathematics (complete one): | | 5 |
| MATH 211 | Calculus | |
| MATH 217 | Calculus with Algebra and Trigonometry II | |
| MATH 221 | Calculus and Analytic Geometry I | |
| MATH 275 | | |
| Statistics (complete one): | | 3 |
| STAT 240 | Data Science Modeling I | |
| STAT 371 | Introductory Applied Statistics for the Life Sciences | |
| STAT/B M I 541 | Introduction to Biostatistics | |
| General Chemistry (complete one): | | 5-9 |
| CHEM 103 & CHEM 104 | General Chemistry I and General Chemistry II | |
| CHEM 109 | Advanced General Chemistry | |
| CHEM 115 & CHEM 116 | Chemical Principles I and Chemical Principles II | |
| Organic Chemistry (complete one): | | 3-6 |
| CHEM 341 | Elementary Organic Chemistry | |
| CHEM 343 & CHEM 345 | Organic Chemistry I and Organic Chemistry II | |
| Physics (complete one) | | 8-10 |
| PHYSICS 103 & PHYSICS 104 | General Physics and General Physics | |
| PHYSICS 201 & PHYSICS 202 | General Physics and General Physics | |
| PHYSICS 207 & PHYSICS 208 | General Physics and General Physics | |
| PHYSICS 247 & PHYSICS 248 | A Modern Introduction to Physics and A Modern Introduction to Physics | |
| Total Credits | | 24-33 |

30 CREDITS OF BIOLOGY AND NEUROBIOLOGY

Will be calculated from General Biology, Neurobiology, Lab/Research Experience and Additional Elective (if required) sections.

General Biology

| Code | Title | Credits |
|---|----------------------|-----------|
| Choose one of these three sequences: | | |
| <i>Introductory Biology</i> | | <i>10</i> |
| ZOOLOGY/ BIOLOGY/ BOTANY 151 | Introductory Biology | |

| | | |
|--------------------------------|---|--------------|
| ZOOLOGY/ BIOLOGY/ BOTANY 152 | Introductory Biology | |
| <i>Biology Core Curriculum</i> | | <i>16-18</i> |
| BIOCORE 381 | Evolution, Ecology, and Genetics | |
| BIOCORE 383 | Cellular Biology | |
| BIOCORE 485 | Principles of Physiology | |
| BIOCORE 587 | Biological Interactions | |
| <i>Plus two from:</i> | | |
| BIOCORE 382 | Evolution, Ecology, and Genetics Laboratory | |
| BIOCORE 384 | Cellular Biology Laboratory | |
| BIOCORE 486 | Principles of Physiology Laboratory | |
| <i>Animal Biology</i> | | <i>10</i> |
| ZOOLOGY/ BIOLOGY 101 | Animal Biology | |
| ZOOLOGY/ BIOLOGY 102 | Animal Biology Laboratory | |
| BOTANY/ BIOLOGY 130 | General Botany | |

Neurobiology

| Code | Title | Credits |
|---|--|----------|
| <i>Required Neurobiology Courses</i> | | |
| ZOOLOGY/ PSYCH 523 | Neurobiology | 3 |
| PSYCH 454 | Behavioral Neuroscience | 3 |
| ZOOLOGY 500 | Undergraduate Neurobiology Seminar | 1 |
| <i>Distributed Neuroscience Coursework—choose three courses</i> | | <i>9</i> |
| ANAT&PHY 335 | Physiology ¹ | |
| ANAT&PHY 435 | Fundamentals of Human Physiology ¹ | |
| AN SCI/ DY SCI 373 | Animal Physiology | |
| BIOCHEM 501 | Introduction to Biochemistry ¹ | |
| BIOCHEM 508 | General Biochemistry II ¹ | |
| BIOCHEM 630 | ¹ | |
| BIOCHEM/ NUTR SCI 645 | Molecular Control of Metabolism and Metabolic Disease ¹ | |
| B M E 520 | Stem Cell Bioengineering ¹ | |
| B M E 602 | Special Topics in Biomedical Engineering (Introduction to Neuroengineering) | |
| CS&D 210 | Neural Basis of Communication | |
| CS&D 503 | Neural Mechanisms of Speech, Hearing and Language | |
| ED PSYCH 326 | Mind, Brain and Education | |
| ED PSYCH 506 | Contemporary Issues in Educational Psychology (Brain & Behavioral Development) | |
| GENETICS 520 | Neurogenetics | |
| KINES 531 | Neural Control of Movement | |

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|----------------------------|---|
| NTP/ NEURODPT 610 | Cellular and Molecular Neuroscience |
| NTP/NEURODPT/ PSYCH 611 | Systems Neuroscience |
| NTP/ZOOLOGY 616 | |
| NTP/ NEURODPT 629 | Molecular and Cellular Mechanisms of Memory |
| NTP 632 | |
| NTP/ MED PHYS 651 | Methods for Neuroimaging Research |
| NTP 666 | Neuroscience of Consciousness and its Disorders |
| NTP 670 | Stem Cells and the Central Nervous System |
| NTP 675 | Special Topics (Functional Brain Imaging of Cognitive Disorders) |
| NTP 675 | Special Topics (Molecular Mechanisms of Brain Damage) |
| NTP 675 | Special Topics (Trauma and Physiology Therapy) |
| NTP 675 | Special Topics (Neuroendocrinology) |
| NTP 675 | Special Topics (Reproductive Neuroendocrinology) |
| NTP 675 | Special Topics (Brain Mapping in Health and Disease: Applications) |
| NTP 677 | Basic Sleep Mechanisms and Sleep Disorders: from Neurobiology to Sleep Medicine |
| PHM SCI 310 | Drugs and Their Actions |
| PHM SCI 521 | Pharmacology I |
| PSYCH 406 | Psychology of Perception |
| PSYCH 414 | Cognitive Psychology |
| PSYCH 505 | Depth Topic in Biological Science (Cognitive Neuroscience: Bridging Mind and Brain) |
| PSYCH 513 | Hormones, Brain, and Behavior |
| PSYCH 601 | Current Topics in Psychology (Neural Basis of Cognitive Control) |
| PSYCH 601 | Current Topics in Psychology (Neuroeconomics) |
| PSYCH 603 | Epigenetics and the Brain |
| PSYCH 606 | Hormones and Behavior |
| PSYCH 612 | Neuropharmacology |
| ZOOLOGY 400 | Topics in Biology (Neural Movement Health&Disease) |
| ZOOLOGY 400 | Topics in Biology (Neuroscience and Society) |
| ZOOLOGY 400 | Topics in Biology (Neurogenetics of Sleep) |
| ZOOLOGY 400 | Topics in Biology (Music and the Brain) |
| ZOOLOGY 400 | Topics in Biology (Cell Biology: Neurons and Neural Circuits) |

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| ZOOLOGY 470 | Introduction to Animal Development 1 |
| ZOOLOGY 555 | Laboratory in Developmental Biology |
| ZOOLOGY 603 | Endocrinology |
| ZOOLOGY 604 | Computer-based Gene and Disease/Disorder Research Lab |
| ZOOLOGY 611 | Comparative and Evolutionary Physiology |
| ZOOLOGY/ ANTHRO/NTP/ PSYCH 619 | Biology of Mind |
| ZOOLOGY/ NTP 620 | Neuroethology Seminar |
| ZOOLOGY 625 | Development of the Nervous System |
| ZOOLOGY 655 | Modeling Neurodevelopmental Disease |
| ZOOLOGY/ NEURODPT/ PSYCH 674 | Behavioral Neuroendocrinology Seminar |

Lab/Research Experience

Choose one option from the 3 listed: Neuroscience Laboratory Course OR Directed Study OR Honors/Senior Thesis.

| Code | Title | Credits |
|--|--|---------|
| <i>1. Neuroscience Laboratory Course—one course:²</i> | | |
| BIOCORE 486 | Principles of Physiology Laboratory | |
| ANAT&PHY 435 | Fundamentals of Human Physiology | |
| ZOOLOGY 555 | Laboratory in Developmental Biology | |
| ZOOLOGY 604 | Computer-based Gene and Disease/Disorder Research Lab | |
| ZOOLOGY 612 | Comparative Physiology Laboratory | |
| ZOOLOGY/ NEURODPT 616 | Lab Course in Neurobiology and Behavior | |
| <i>2. Directed Study—3 credits from:³</i> | | |
| ANATOMY 699 | Independent Study | |
| ANESTHES 699 | Independent Study | |
| BIOCHEM 699 | Special Problems | |
| BIOLOGY 699 | Directed Studies | |
| B M E 399 | Independent Study | |
| BMOLCHEM 699 | Special Research Problems | |
| CBE 699 | Advanced Independent Studies | |
| CHEM 699 | Directed Study | |
| COMP BIO 699 | Directed Study | |
| CRB 699 | Independent Study | |
| CS&D 699 | Directed Study | |
| ED PSYCH 470 | Research Experience in Educational Psychology | |
| ED PSYCH 699 | Independent Reading Undergrad | |
| FAM MED 699 | Directed Study | |
| GENETICS 699 | Special Problems | |
| H ONCOL 699 | Independent Study in Human Cancer Biology | |

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| KINES 399 | Independent Study |
| KINES 699 | Independent Study |
| MED PHYS 699 | Independent Reading or Research |
| MEDICINE 699 | Independent Study |
| MED SC-V 669 | Small Animal Cardiology Rotation |
| M M & I 699 | Directed Study |
| MOL BIOL 699 | Directed Studies in Molecular Biology |
| NEURSURG 699 | Neurosurgery: Directed in Study in Research |
| NEUROL 699 | Directed Research in Neurology |
| NEURODPT 699 | Directed Study |
| NUTR SCI 699 | Special Problems |
| OBS&GYN 699 | Directed Study |
| ONCOLOGY 699 | Special Research Problems |
| OPHTHALM 699 | Directed Study |
| PATH 699 | Independent Study |
| PATH-BIO 699 | Directed Study |
| PEDIAT 699 | Independent Study |
| PHMCOL-M 699 | Independent Study |
| PHM SCI 699 | Advanced Independent Study |
| PHYSIOL 699 | Independent Work |
| POP HLTH 699 | Independent Reading |
| PSYCH 621 | Mentored Research and Seminar |
| PSYCH 699 | Directed Study |
| PSYCHIAT 699 | Independent Study |
| SURGERY 699 | Independent Study |
| SURG SCI 699 | Directed Study |
| ZOOLOGY 699 | Directed Studies in Zoology |
| 3. Honors/Senior Thesis (two semesters): | |
| ZOOLOGY 681 & ZOOLOGY 682 | Senior Honors Thesis and Senior Honors Thesis |
| ZOOLOGY 691 & ZOOLOGY 692 | Senior Thesis and Senior Thesis |
| B M E 389 & B M E 489 | Honors in Research and Honors in Research |

Additional Electives (if needed)

Students may take additional credits from the list of Distributed Neuroscience Coursework, Independent/Directed study, or the following list, to attain 30 credits in the major:

| Code | Title | Credits |
|-------------------------------------|---------------------------|---------|
| ANAT&PHY 337 | Human Anatomy | |
| ANAT&PHY 338 | Human Anatomy Laboratory | |
| AN SCI/ DY SCI 362 | Veterinary Genetics | |
| AN SCI/ DY SCI 434 | Reproductive Physiology | |
| AN SCI/ F&W ECOL/ ZOOLOGY 520 | Ornithology | |
| AN SCI 610 | Quantitative Genetics | |
| ANATOMY 329 | Human Anatomy-Kinesiology | |
| BIOCHEM 507 | General Biochemistry I | |

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| BIOCHEM/ NUTR SCI 510 | Nutritional Biochemistry and Metabolism |
| BIOCHEM 601 | Protein and Enzyme Structure and Function |
| BIOCHEM/ GENETICS/ MICROBIO 612 | Prokaryotic Molecular Biology |
| BIOCHEM/ GENETICS/ MD GENET 620 | Eukaryotic Molecular Biology |
| BIOCHEM 625 | Mechanisms of Action of Vitamins and Minerals |
| F&W ECOL 401 | Physiological Animal Ecology |
| GENETICS 466 | Principles of Genetics |
| GENETICS 545 | Genetics Laboratory |
| GENETICS/ MD GENET 565 | Human Genetics |
| GENETICS/ BIOCHEM/ MD GENET 620 | Eukaryotic Molecular Biology |
| KINES 200 | Introductory Neuroscience |
| KINES 314 | Physiology of Exercise |
| M M & I 301 | Pathogenic Bacteriology |
| M M & I 341 | Immunology |
| M M & I/ENTOM/ PATH-BIO/ ZOOLOGY 350 | Parasitology |
| M M & I/ BIOCHEM 575 | Biology of Viruses |
| MICROBIO 303 | Biology of Microorganisms |
| MICROBIO 304 | Biology of Microorganisms Laboratory |
| MICROBIO 330 | Host-Parasite Interactions |
| MICROBIO 450 | Diversity, Ecology and Evolution of Microorganisms |
| MICROBIO 470 | Microbial Genetics & Molecular Machines |
| MICROBIO/ SOIL SCI 523 | Soil Microbiology and Biochemistry |
| MICROBIO 526 | Physiology of Microorganisms |
| MICROBIO 527 | Advanced Laboratory Techniques in Microbiology |
| MICROBIO 551 | Capstone Research Project in Microbiology |
| MICROBIO 607 | Advanced Microbial Genetics |
| PATH-BIO/ M M & I 528 | Immunology |
| PL PATH/ ONCOLOGY 640 | General Virology-Multiplication of Viruses |
| MICROBIO/ BMOLCHEM 668 | Microbiology at Atomic Resolution |
| NTP/NEURODPT/ PSYCH 611 | Systems Neuroscience |
| NTP 660 | Neuroscience & Public Policy Seminar |
| NUTR SCI 431 | Nutrition in the Life Span |

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|-----------------------------------|--|
| NUTR SCI 631 | Clinical Nutrition I |
| ONCOLOGY 401 | Introduction to Experimental Oncology |
| ONCOLOGY/ PL PATH 640 | General Virology-Multiplication of Viruses |
| PHM SCI 558 | Laboratory Techniques in Pharmacology and Toxicology |
| PSYCH 449 | Animal Behavior |
| PSYCH 450 | Primate Psychology: Insights into Human Behavior |
| PSYCH 505 | Depth Topic in Biological Science (Comparative Psychology: What Animals Think) |
| ZOOLOGY/ ANTHRO/ BOTANY 410 | Evolutionary Biology |
| ZOOLOGY 425 | Behavioral Ecology |
| ZOOLOGY 430 | Comparative Anatomy of Vertebrates |
| ZOOLOGY 470 | Introduction to Animal Development |
| ZOOLOGY/ GEOSCI 541 | Paleobiology |
| ZOOLOGY/ GEOSCI 542 | Invertebrate Paleontology |
| ZOOLOGY 570 | Cell Biology |

RESIDENCE AND QUALITY OF WORK

- 2.000 GPA in all major courses
- 2.000 GPA on 15 upper-level major credits, taken in residence ⁴
- 15 credits in the major, taken on the UW-Madison campus

HONORS IN THE MAJOR

Students may declare Honors in the Neurobiology Major in consultation with the Neurobiology undergraduate advisor(s).

HONORS IN THE MAJOR REQUIREMENTS

To earn Honors in the Major in Neurobiology, students must satisfy both the requirements for the major (above) and the following additional requirements:

- Earn a 3.300 University GPA
- Earn a 3.300 GPA for all major courses
- Complete 14 credits, taken for Honors, with individual grades of B or better, while in residence, to include:
 - Two courses from PSYCH 454, ZOOLOGY/PSYCH 523, and ZOOLOGY 500
 - One course from the Required Neuroscience or Distributed Neuroscience course lists (above), taken for honors credit
 - A two-semester Senior Honors Thesis⁵, for a total of 6 credits, from:

| Code | Title | Credits |
|------------------------------|--|---------|
| BIOCHEM 681 & BIOCHEM 682 | Senior Honors Thesis and Senior Honors Thesis | |

| | |
|--------------------------------|--|
| BIOLOGY 681 & BIOLOGY 682 | Senior Honors Thesis and Senior Honors Thesis |
| B M E 389 & B M E 489 | Honors in Research and Honors in Research |
| CHEM 681 & CHEM 682 | Senior Honors Thesis and Senior Honors Thesis |
| CS&D 681 & CS&D 682 | Senior Honors Thesis and Senior Honors Thesis |
| GENETICS 681 & GENETICS 682 | Senior Honors Thesis and Senior Honors Thesis |
| H ONCOL 681 & H ONCOL 682 | Senior Honors Thesis in Human Oncology 1 and Senior Honors Thesis in Human Oncology 2 |
| NUTR SCI 681 & NUTR SCI 682 | Senior Honors Thesis and Senior Honors Thesis |
| PSYCH 681 & PSYCH 682 | Senior Honors Thesis and Senior Honors Thesis |
| ZOOLOGY 681 & ZOOLOGY 682 | Senior Honors Thesis and Senior Honors Thesis |

FOOTNOTES

1

Students may apply only one DNS course toward the elective requirement

2

Lab courses may also count in the Distributed Neuroscience Coursework above.

3

Only Directed Study courses taken **after**—and not concurrent with—the completion of an Introductory Biology sequence are accepted in the major.

4

Major courses numbered 300–699 are considered upper-level.

5

The Senior Honors Thesis project must be approved by the Neurobiology Major Program Committee at least one month before beginning the first course (681). The project must focus on its relevance to a neuroscience-related topic. Please see the Neurobiology major website (<https://neuromajor.wisc.edu/>) for more information.

UNIVERSITY DEGREE REQUIREMENTS

Total Degree To receive a bachelor's degree from UW-Madison, students must earn a minimum of 120 degree credits. The requirements for some programs may exceed 120 degree credits. Students should consult with their college or department advisor for information on specific credit requirements.

Residency Degree candidates are required to earn a minimum of 30 credits in residence at UW-Madison. "In residence" means on the UW-Madison campus with an undergraduate degree classification. "In residence" credit also includes UW-Madison courses offered in distance or online formats and credits earned in UW-Madison Study Abroad/Study Away programs.

Quality of Work Undergraduate students must maintain the minimum grade point average specified by the school, college, or academic program to remain in good academic standing. Students whose academic performance drops below these minimum thresholds will be placed on academic probation.

LEARNING OUTCOMES

- 1. Demonstrate understanding of basic concepts in biology, chemistry, mathematics, statistics, and physics.
- 2. Demonstrate understanding of the ionic basis for the neuronal membrane potential and action potential, and as well as the factors that determine neuronal excitability.
- 3. Demonstrate understanding of the basic mechanisms for synaptic transmission, neurotransmitter release, postsynaptic effects, and modulation of pre- and postsynaptic mechanisms. Predict how specific physiological and pathological conditions alter neuronal function at the cellular and synaptic levels.
- 4. Differentiate between examples of neuroplasticity at cellular, systems, and organismal levels.
- 5. Demonstrate understanding of central and peripheral neuroanatomy, basic functions of brain regions, and well-known neural pathways. Predict how localized disruptions of neuronal function alter behavior, motor function, or perception.
- 6. Demonstrate understanding of basic principles underlying motor function, sensory function (auditory, visual, touch, taste), emotion, autonomic regulation, and higher order cognitive functions (language, memory, attention, decision-making).
- 7. Demonstrate how experimental tools in neuroscience are used to address experimental questions, such as intra/extracellular recording, molecular biology techniques, immunohistochemical staining, fluorescent and electron microscopy, genetic manipulation, brain imaging, behavioral testing.

FOUR-YEAR PLAN

SAMPLE FOUR-YEAR PLAN

This Sample Four-Year Plan is a tool to assist students and their advisor(s). Students should use it—along with their DARS report, the Degree Planner, and Course Search & Enroll tools—to make their own four-year plan based on their placement scores, credit for transferred courses and approved examinations, and individual interests. As students become involved in athletics, honors, research, student organizations, study abroad, volunteer experiences, and/or work, they might adjust the order of their courses to accommodate these experiences. Students will likely revise their own four-year plan several times during college.

The grid below is a suggested plan for finishing your Neurobiology major in 4 years. Please see an advisor for more information, as you may have completed some of the requirements listed.

| Freshman | | | |
|--------------------------------|---------|------------------|---------|
| Fall | Credits | Spring | Credits |
| Communication A | | 3 Ethnic Studies | 3 |
| Quantitative Reasoning A | | 3 MATH 221 | 5 |
| Foreign Language (if required) | | 4 L&S Breadth | 3 |

| | | | |
|-----------------|----|----------|----|
| CHEM 103 or 109 | 4 | CHEM 104 | 5 |
| | 14 | | 16 |

| Sophomore | | | |
|---|---------|------------------------------|---------|
| Fall | Credits | Spring | Credits |
| BIOLOGY/BOTANY/ZOOLOGY 151 ¹ | | 5 BIOLOGY/BOTANY/ZOOLOGY 152 | 5 |
| CHEM 343 | | 3 CHEM 345 | 3 |
| INTER-LS 210 (optional) | | 1 Social Science Breadth | 3 |
| Social Science Breadth | | 3 PHYSICS 207 ² | 5 |
| | 12 | | 16 |

| Junior | | | |
|--------------------------------|---------|-----------------------------------|---------|
| Fall | Credits | Spring | Credits |
| Declare the Major ³ | | PSYCH 454 | 3-4 |
| ZOOLOGY/PSYCH 523 | | 3 Distributed Neuroscience Course | 2-4 |
| STAT 371 | | 3 L&S Breadth | 3 |
| L&S Breadth | | 3 Elective | 3 |
| PHYSICS 208 | | 5 Lab Research | 3 |
| Lab Research ⁴ | | 3 | |
| | 17 | | 16 |

| Senior | | | |
|---------------------------------|---------|-----------------------------------|---------|
| Fall | Credits | Spring | Credits |
| Distributed Neuroscience Course | | 3-4 ZOOLOGY 500 | 1 |
| Social Science Breadth | | 3 Distributed Neuroscience Course | 3 |
| Electives | | 6 L&S Breadth | 3 |
| Lab Research | | 3 Social Science Breadth | 3 |
| | | Lab Research | 3 |
| | 16 | | 13 |

Total Credits 120

- 1
- There are several options for fulfilling the introductory biology requirement. See listed Requirements.
- 2
- There are several options for fulfilling the Physics requirement. See listed Requirements.
- 3
- Students must declare a major by the time they reach 86 credits.
- 4
- It is recommended that students in the Neurobiology major participate in multiple semesters of research.

ADVISING AND CAREERS

NEUROBIOLOGY MAJOR ADVISING

The advisors for the neurobiology major are committed to providing students with first-rate guidance through the major and to graduation. The neurobiology major advisors are also dedicated to helping a student

focus their future plans after undergraduate study. If you are interested in declaring the neurobiology major, make an appointment to discuss this.

CONTACT INFORMATION

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Starfish (<http://go.wisc.edu/MeetBobW/>)

L&S CAREER RESOURCES

Every L&S major opens a world of possibilities. SuccessWorks (<https://successworks.wisc.edu/>) at the College of Letters & Science helps students turn the academic skills learned in their major, certificates, and other coursework into fulfilling lives after graduation, whether that means jobs, public service, graduate school or other career pursuits.

In addition to providing basic support like resume reviews and interview practice, SuccessWorks offers ways to explore interests and build career skills from their very first semester/term at UW all the way through graduation and beyond.

Students can explore careers in one-on-one advising, try out different career paths, complete internships, prepare for the job search and/or graduate school applications, and connect with supportive alumni and even employers in the fields that inspire them.

- SuccessWorks (<https://careers.ls.wisc.edu/>)
- Set up a career advising appointment (<https://successworks.wisc.edu/make-an-appointment/>)
- Enroll in a Career Course (<https://successworks.wisc.edu/career-courses/>) - a great idea for first- and second-year students:
 - INTER-LS 210 L&S Career Development: Taking Initiative (1 credit)
 - INTER-LS 215 Communicating About Careers (3 credits, fulfills Comm B General Education Requirement)
- Learn about internships and internship funding (<https://successworks.wisc.edu/finding-a-job-or-internship/>)
 - INTER-LS 260 Internship in the Liberal Arts and Sciences
- Activate your Handshake account (<https://successworks.wisc.edu/handshake/>) to apply for jobs and internships from 200,000+ employers recruiting UW-Madison students
- Learn about the impact SuccessWorks has on students' lives (<https://successworks.wisc.edu/about/mission/>)

Professors: Hardin (chair, jdhardin@wisc.edu), Bement, Blair, Damschen, Gammie, Halloran, Ives, Lee, Newmark, Orrock, Ritters, Stanley, Stretton, Turner, and Vander Zanden

Associate Professors Amann, Grinblat, and Jensen

Assistant Professors Dugan, Sharma, Wang, and Weber

Neurobiology Major Steering Committee: Michelle Ciucci (chair, Departments of Communication Disorders and Surgery), Stephen Gammie (Department of Integrative Biology), Vaishali Bakshi (Department of Psychiatry), Darcie Moor (Department of Neuroscience), Yuri Saalman (Department of Psychology).

PEOPLE

Neurobiology is a major in the Department of Integrative Biology. The faculty in this department are: