PURDUE UNIVERSITY

Neurobiology & Physiology (NRPH)

College of Science

2025-2026

Program Progression Guides

Disclaimer: The 2025-26 Purdue West Lafayette catalog is considered the source for academic and programmatic requirements for students entering programs during the Fall 2025, Spring 2026, and Summer 2026 semesters. The Program Progression Guide assists students in the development of an individualized 8-semester plan. Students are encouraged to use this guide and MyPurduePlan* (online degree auditing tool) as they work with their academic advisor towards the completion of their degree requirements.

Notification: Each student is ultimately responsible for knowing, monitoring and completing all degree requirements.

An undergraduate degree in the College of Science requires completion of the following degree requirements.

University Degree Requirements		
Minimum 2.0 Cumulative GPA	Minimum 120 Credits that fulfill degree requirements	32 Residency Credits (30000-level and above) at a Purdue University campus
University Core Curriculum** https://www.purdue.edu/provost/students/s-initiatives/curriculum/courses.html		
• Human Cultures: Behavioral/Social Science • Human Cultures: Humanities • Information Literacy • Oral Communication	• Quantitative Reasoning • Science • Science, Technology & Society Selective • Written Communication	
Civic Literacy Proficiency https://www.purdue.edu/provost/about/provostInitiatives/civics/		
Required Major Program Courses (see following pages)		
Departmental specific requirements, including 2.0 average GPA in classes required to fulfill biology requirements. Minimum 2.0 cumulative GPA Must have a 500-level BIOL course (2-3 credit approved BIOL lecture)		
College of Science Core Curriculum https://www.purdue.edu/science/Current_Students/curriculum_and_degree_requirements/college-of-science-core-requirements.html?		
• Written Communication – 3 credits • Technical Writing and Presentation - 3 credits • Teaming & Collaboration (NC) • General Education - 9 credits	• Language & Culture – 9 credits • Great Issues - 3 credits • Laboratory Science - 8 credits • STS (Science, Tech & Society) - 3 credits	• Mathematics - 6-10 credits • Statistics - 3 credits • Computing - 3 credits
Degree Electives		
-Any Purdue or transfer course approved to meet degree requirements in accordance with individual departmental policies. -The College of Science has identified courses that are below the disciplinary level of each program and major area of study. While similar, Not Recommended course lists vary between departments.		

* This audit is not your academic transcript and it is not official notification of completion of degree or certificate requirements.

** University Core Curriculum Outcomes may be met through completion of the College of Science Core curriculum. Students should consult with their academic advisors and MyPurdue Plan for course selections.

2025-26 Neurobiology & Physiology (NRPH)
Degree Progression Guide

The Department of Biological Sciences has suggested the following degree progression guide for the Neurobiology & Physiology Degree. Students will work with their academic advisors to determine their best path to degree completion. Pre-requisite notes are specific to this degree plan (they may change; not all are listed for every course).

Credit	Fall 1st Year	Prerequisite	Credit	Spring 1st Year	Prerequisite
2	BIOL 12100		3	BIOL 13100	
5	CHM 12901	ALEKS 85 or Calc Placement	4	CHM 25500-25501	D or better in CHM 12901
2	BIOL 13500 or 145xx	BIOL 121 or 131 concurrent	3-5	Calculus II selective	C- or better in Calculus I
3-5	Calculus I selective	ALEKS 75 or 85	3-4	Science Core Option	
3	Science Core Option		3	Science Core Option	
1	Elective (BIOL 11500 recommended)	BIOL 12100 co-req			
16-18			**16-19**		

Credit	Fall 2nd Year	Prerequisite	Credit	Spring 2nd Year	Prerequisite
3	BIOL 23100	(BIOL 13100) and (CHM 12901 concurrent)	3	BIOL 24100	BIOL 23100
2	BIOL 23200	BIOL 23100 co-req	2	BIOL 24200	BIOL 24100 concurrent
4	CHM 25600-25601	C- or better in CHM 25500	3	CHM 33900	C- or better in CHM 25600
3	Science Core Option		1	CHM 33901	CHM 33900 concurrent
3	Science Core Option		2	BIOL 28600	BIOL 12100
			1	Free Elective (BIOL 29300 recommended)	
			3	Science Core Option	
15			**15**		

Credit	Fall 3rd Year	Prerequisite	Credit	Spring 3rd Year	Prerequisite
3	Neurobiology & Physiology Selective	varies	4	BIOL 32800	BIOL 23100
4	PHYS I Selective (23300 recommended)	BIOL 12100+13100; & CHM 12901; & Calc 2	4	PHYS II Selective (23400 recommended)	PHYS I
3	Science Core Option		3	Science Core Option	
3	Elective		3	Science Core Option	
3	Elective		1-3	Elective	
16			**15-17**		

Credit	Fall 4th Year	Prerequisite	Credit	Spring 4th Year	Prerequisite
3	Biology Selective	varies	3	Neurobiology & Physiology Selective 500 Level	varies
2-4	Base Lab Requirement	varies	3	Science Core Option– STAT 50300 rec.	C- or better in calc II
4	Science Core Option – CS 17700 rec.		3	Science Core Option	
3	Elective		3	Elective	
3	Elective		3	Elective	
15-17			**15**		

Science Core Curriculum Options

(one course needed for each requirement unless otherwise noted)

Options recommended for first- and second-year students	Options recommended for third- and fourth-year students
Written Communication[UC]	Technical Writing and Presentation[UC] (COM 217 recommended)
General Education[UC] (9 credits needed)	Statistics (STAT 50300 is required)
Language and Culture[UC] (9 credits; must include a JEDI course)	Computing (CS 17700 also meets Teambuilding)
Science Tech and Society[UC] (BIOL 12100)	Great Issues

[UC] Select courses may also satisfy a University Core Curriculum requirement; see the University Core Requirement course list for approved courses. Students must have 32 credits at the 30000 level or above taken at Purdue.

NEUROBIOLOGY AND PHYSIOLOGY (NRPH)

Fall 2025

Graduation Requirements:
- *A minimum 2.0 average in all biology courses required for this major*
- *At least one approved 2-3 credit **500-level Biology** course is required (excludes lab only courses like BIOL 542xx & 59500 lab modules)*
- *A minimum of 32 credits at or above the 300-level completed at a Purdue campus*
- *120 Total Credits*

BIOLOGY CORE (19 credits):

1. BIOL 12100 Biology I: Diversity, Ecology and Behavior (2 cr.; fall)
2. BIOL 13100 Biology II: Development, Structure, and Function of Organisms (3 cr.; spring)
3. BIOL 13500 1st Year Biology Lab (2 cr.; both) **or**
   BIOL 14503 First Yr Bio Lab Dis Ecol-Hnrs (2 cr.; alternate fall) **or**
   BIOL 14504 First Yr Lab Diet Disease Immun Sys-Hnrs (2 cr.; spring) **or**
   BIOL 14505 First Yr Lab Phages Folds-Hnrs (2 cr.; fall)
4. BIOL 23100 Biology III: Cell Structure and Function (3 cr.; fall)
5. BIOL 23200 Laboratory in Biology III: Cell Structure and Function (2 cr.; fall)
6. BIOL 24100 Biology IV: Genetics and Molecular Biology (3 cr.; spring)
7. BIOL 24200 Laboratory in Genetics and Molecular Biology (2 cr.; spring)
8. BIOL 28600 Intro. to Ecology & Evolution (2 cr.; spring)

UPPER-LEVEL BIOLOGY COURSEWORK (12-18 credits):

9. **Intermediate Biology Selective**: Complete ONE of these:
   (Neurobiology and Physiology majors must choose BIOL 32800 Principles of Physiology)
   - **A. BIOL 32800[1] Principles of Physiology (4 cr.; spring)**
   - B. BIOL 36700 Principles of Development (2 cr.; fall)
   - C. BIOL 38700 Macromolecules (2 cr.; fall)
   - D. BIOL 41500 Intro. to Molecular Biology (3 cr.; spring)
   - E. BIOL 41600 Viruses & Viral Diseases (3 cr.; spring)
   - F. BIOL 42000 Eukaryotic Cell Biology (3 cr.; fall)
   - G. BIOL 43600 Neurobiology (3 cr.; fall)
   - H. BIOL 43800 General Microbiology (3 cr.; fall)

10. **Neurobiology & Physiology Selective[2,3]**: Complete TWO of these (may NOT overlap with #11 Biology Selective):
    - A. BIOL 43600[3] Neurobiology (3 cr.; fall)
    - B. BIOL 53800[2,3] Molecular, Cellular & Developmental Neurobiology (3 cr.; spring)
    - C. BIOL 56200[2,3] Neural Systems (3 cr.; spring)
    - D. BIOL 51099[2,3,4] Neural Mechanisms in Health & Disease (3 cr.; alt spring)
    - E. BIOL 57340[2,3] Neurobiology of Learning & Memory (3 cr.; alt fall)

11. **Biology Selective**: complete ONE course (2-4 credits); may NOT overlap with #10 Neurobiology & Physiology Selectives:

BIOL 20400 Human Anatomy & Physiology II (4 cr.; spring)
BIOL 32101[5] Experimental Design & Quant Analysis (3 cr.; summer)
BIOL 36700 Principles of Development (2 cr.; fall)
BIOL 38700 Macromolecules (2 cr.; fall)
BIOL 41500 Intro. to Molecular Biology (3 cr.; spring)
BIOL 41600 Viruses and Viral Diseases (3 cr.; spring)
BIOL 41919[5] Data Science for Biologists (3 cr.; fall)
BIOL 42000 Eukaryotic Cell Biology (3 cr.; fall)
BIOL 43600[3] Intro. to Neurobiology (3 cr.; fall)
BIOL 43800 General Microbiology (3 cr.; fall)
BIOL 44400 Human Medical Genetics (3 cr.; spring)
BIOL 47800 Intro to Bioinformatics (3 cr.; fall)
BIOL 48100 Eukaryotic Genetics (3 cr.; spring)
BIOL 48300[6] Environmental & Conservation Biol (3 cr.; alt spring)
BIOL 49500BMR[5] Biodiversity & Museum Research (3 cr.; fall)
BIOL 49500RNA RNA World, CRISPR and Coronavirus (2 cr; spring)
BIOL 49500TEC[5] Topics in Endocrinology & Cancer (2 cr.; spring)
BIOL 51099[3,4] Neural Mechanisms in Health & Dis (3 cr.; alt spring)
BIOL 51101 Intro to X-Ray Crystallography (3 cr.; spring)
BIOL 51202 Methods & Measures in Biophysical Chem (3 cr.; fall)
BIOL 51600 Molecular Biology of Cancer (3 cr.; spring)
BIOL 51606 Pathways in Human Health & Disease (3 cr.; fall)
BIOL 51700 Molecular Biology: Proteins (2 cr.; alt spring)
BIOL 52905 Disease Ecology (3 cr.; spring)
BIOL 53300 Medical Microbiology (3 cr.; fall)
BIOL 53601 Biol & Structural Aspects of Drug Design & Action (3 cr; spring)
BIOL 53700 Immunobiology (3 cr.; fall)
BIOL 53800[3] Molecular, Cellular & Develop. Neuro. (3 cr.; spring)
BIOL 55101[5] Theory of Molecular Methods (3 cr.; fall)
BIOL 56200[3] Neural Systems (3 cr.; spring)
BIOL 56310 Protein Bioinformatics (3 cr.; spring)
BIOL 57340[3] Neurobiology of Learning & Memory (3 cr.; alt fall)
BIOL 58000 Evolution (3 cr.; spring)
BIOL 58210[5] Ecological Statistics (3 cr.; fall)
BIOL 58215[5] Building the Tree of Life (3 cr.; spring)
BIOL 58601 Ecology (3 cr.; fall)
BIOL 58705 Animal Communication (3 cr.; alt fall)
BIOL 59200 Evolution of Behavior (3 cr.; spring)
BIOL 59500CMA CRISPR Mechanisms & Applications (3 cr.; spring)
BIOL 59500ICI Immun of Cancer & Infectious Dis (3 cr.; spring)
BIOL 59500U Practical Biocomputing (3 cr.;spring)
BCHM 43400 Medical Topics in Biochemistry (3 cr.; spring)
BCHM 52100 Comparative Genomics (3cr. spring)

12. **Base Lab Requirement:** see "Base Lab Requirement (BLR) for all Biology Majors" as described on the next page.

Footnotes are on the last page

Base Laboratory Requirement (BLR) for all Biology Majors

1. Students must complete one course from the "Required Course" column in the chart below. Undergraduate research cannot be used to meet the "Required Course" portion of the BLR.
2. Students must also complete Objectives A and B as listed in the chart below with courses or research or a combination of the two.
3. Descriptions of Objectives A and B (not all tasks must be met to satisfy an objective):
    a. **Objective A** – Demonstrate the ability to plan and design hypothesis-driven experiments, simulations or discovery/observational experiments
        i. Conduct an appropriate literature review for a specific scientific topic.
        ii. Generate an applicable hypothesis (-es) for your research project
        iii. Identify techniques to be used in your project, with justification of those techniques.
        iv. Write a formal research proposal.
        v. Write a detailed outline of experiments
    b. **Objective B** - Develop the ability to appropriately analyze, critically evaluate, and depict data. Demonstrate the ability to effectively communicate scientific information orally and in writing, including synthesizing and evaluating scientific literature and putting experimental results in their appropriate scientific context.
        i. Analyze data
        ii. Use appropriate ways to depict and communicate data (e.g., graphs, movies, images, etc.). Present the research at lab meetings, in a talk, or at a poster session.
        iii. Write a summary (or summaries) of the data.
4. If research is used, the research director will be the one who decides if the research meets Obj A and/or Obj B.
5. If research is used, it must include at least four credits of BIOL 49400 or 49900. (BIOL 29400, non-BIOL research, and research for pay will not count toward the BLR).
6. Students who successfully complete a Biology Honors Research Thesis automatically meet Objective s A and B with the approved thesis but must still complete a "Required Course."
   and B but must still complete a "Required Course."
7. The *"Microbiology"* and the *"Health & Disease"* majors must use BIOL 43900 Micro Lab for the BLR; the *"Ecology, Evolution and Environmental Biology"* majors must use BIOL 58602 Lab in Ecology for the BLR; The *"Chemical Biology & Biochemistry"* majors will meet the BLR requirement through the CBB Research Capstone.

Base Laboratory Requirement Chart:

(NOTE: BIOL 32800 meets the "Required Course" for NRPH majors; Obj A and B still need to be fulfilled).

Course	Title	Required Course	Obj. A	Obj. B	Usually Offered	Format	Pre-Req (PR) or Co-Req (CR) *beyond* core courses
BIOL 32101	Experim Design & Analysis-Hnrs (3cr)		X	X	Summer	online	
BIOL 32800	***Principles of Physiology (4cr)***	***X***			***Spring***		
BIOL 41919	Data Science for Biologists (3cr)	X	X	X	Fall		PR=28600
BIOL 43900	Microbiology Lab (2cr)	X	X	X	Fall		PR/CR=43800
BIOL 44212	Microscopy & Cell Bio (1cr)	X		X	Spring	5-wk module	
BIOL 48300	Environmental & Conservation Biology (3cr)		X	X	alt Spring '26		
BIOL 49500BMR	Biodiversity & Museum Research (3cr)		X	X	Fall		PR=28600
BIOL 49500TEC	Topics in Endocrinology & Cancer (2cr)		X	X	Spring		
BIOL 51099	Neural Mechanisms in Health & Disease (3cr)		X	X	alt Fall		PR=32800 or 43600; CR=56200
BIOL 55101	Theory of Molecular Methods (3cr)		X	X	alt Spring		PR=41500
*BIOL 54200	Neurophysiology (1cr)	X		X	Fall	5-wk module	PR=32800 or CR=43600
*BIOL 54202	Data Analysis in Neuroscience (1cr)			X	Spring	5-wk module	
BIOL 58210	Ecological Statistics (3cr)		X	X	Fall		PR=STAT 50300
BIOL 58215	Building the Tree of Life: Phylogenetics (3cr)	X	X	X	Spring		PR=231/241/286 and prior research
*BIOL 58602	Laboratory in Ecology (1cr)	X	X	X	Fall		PR/CR=58601
*BIOL 59500SBL	Structural Biology Lab (1cr)	X		X	Spring	5-wk module	

**course does not meet the 500-level BIOL requirement*

CHEMISTRY (17 credits) -- complete all of the following:

1. General Chemistry (5 credits):
   CHM 12901 General Chemistry with a Biological Focus (5 cr.; fall)

2. Organic Chemistry (8 credits):
   An in-person gen chem lab must be completed to qualify for organic labs (met through CHM 12901)
   CHM 25500 Organic Chemistry I (3 cr.; both) and
   CHM 25501 Organic Chemistry Lab I (1 cr.; both) and
   CHM 25600 Organic Chemistry II (3 cr.; both) and
   CHM 25601 Organic Chemistry Lab II (1 cr.; both)

3. Biochemistry (4 credits):
   CHM 33900 Biochemistry: A Molecular Approach (3 cr.; spring) and
   CHM 33901 Biochemistry Laboratory (1 cr; spring)

PHYSICS (8 credits) – complete one of these options (PHYS 23300+23400 are recommended):

1. PHYS 23300 Physics for Life Sciences I (4 cr.; both) and
   PHYS 23400 Physics for Life Sciences II (4 cr.; both)

2. PHYS 17200 Modern Mechanics (4 cr.; both) and one of the following two choices:
   A. PHYS 27200 Electric and Magnetic Interactions (4 cr.; both) or
   B. PHYS 24100 Electricity and Optics (3 cr.; both) and PHYS 25200 Electricity and Optics Laboratory (1 cr.; spring)

STATISTICS (3 credits) -- STAT 50300 is required (3 cr.; fall, spring, summer); prerequisite is a C- or better in calculus 2

OTHER: all University Core, College of Science Core, and Civics Literacy Requirements must also be completed.

FREE ELECTIVES Approximately 4-36 credits

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[1] This course may count as the Intermediate Biology Selective and as the College of Science Teambuilding and Collaboration requirement.
[2] A 500-level BIOL course taken as part of requirement #10 meets the 500-level BIOL requirement.
[3] A course chosen for requirement #10 may NOT be used for requirement #11.
[4] This course may count toward the Base Lab Requirement (and may count for either requirement #10 or #11 but not both)
[5] This course may count for the Biology Selective (#11) and toward the Base Lab Requirement
[6] This course may count for the Biology Selective (#11) and as the College of Science Great Issues requirement and toward the Base Lab Requirement.

NRPH 05/16/2025