



*report summary form updated
9/18/2025*

Eight-Year Program Review IBHE Report Summary: see attached Resources page and the EIU report archive: <https://www.eiu.edu/assess/archivepr.php>

PROGRAM REVIEW REPORT SUMMARY

Reporting Institution: Eastern Illinois University

Program Reviewed	Neuroscience
Date	January 1, 2026
Contact Person	John Mace
Telephone	217-581-2127
E-mail	Jhmace@eiu.edu

OVERVIEW

The Neuroscience Major provides students with comprehensive foundational knowledge on the organization, development, and function of the nervous system, and how this relates to cognition and behavior, and disorders of the same. The program emphasizes the perspective of different disciplines and the exposure of the students to hands-on research experience. The curriculum is designed to nurture the development of analytical, critical thinking, and communication skills, and to prepare students for careers and graduate training in neuroscience and related fields. This aligns with the university's mission of "...foster[ing] opportunities for student-faculty scholarship and applied learning experiences within a student-centered campus culture. Throughout their education, students refine their abilities to reason and to communicate clearly so as to become responsible citizens and leaders."

According to the Illinois Board of Higher Education, the number of schools offering a neuroscience major has grown from 14 in 2018 to 16 in 2024. Of these schools, only three are public universities, and the totality of the offering institutions are in the northern half of the state (mostly in Chicago). For this reason, the Neuroscience major at EIU was developed to fulfill the demands of the student population in the central and southern regions of Illinois. More than half of our majors are from underrepresented groups.

The curriculum was designed to prepare students for careers and graduate training in this and related fields. Graduates with degrees in neuroscience are well-equipped to enter graduate programs in neuroscience, medicine, and psychology, leading to academic and professional employment in these areas. As neuroscience becomes increasingly relevant, and necessary, in both medicine and psychology, individuals with training in neuroscience will be in high demand.

We adopted our program's learning goals from the Society for Neuroscience's (SfN) Core Competencies for Neuroscience Undergraduates, which can be found here: <https://www.sfn.org/careers/higher-education-and-training/core-competencies/core-competencies-for-neuroscience-undergraduates>. These goals have not changed since the inception of the Neuroscience major at EIU.

Several curricular changes in EIU's neuroscience major have made it easier for students to schedule the required coursework and graduate in a timely manner. Neuroscience faculty in the psychology department have active research programs as noted by consistent publication of research, including 10 peer-reviewed publications in the past year.

MAJOR FINDINGS AND RECOMMENDATIONS

a. Description and assessment of any major changes in the program:

1. changes in the overall discipline or field
2. student demand
3. societal needs
4. institutional context for offering the degree
5. other elements appropriate to the discipline in question

1. Changes in Neuroscience (2020–2025)

- Brain-Computer Interfaces (BCIs) Maturity. BCIs evolved from lab prototypes to clinical tools. Wireless electrode arrays and AI-driven decoding now enable real-time neural control of devices, with breakthroughs like Neuralink's high-density recordings and Facebook's neural typing.
 - Complete Connectome Mapping. The full connectome of the fruit fly brain was mapped in 2024—130,000+ neurons and 50M+ synapses—setting a precedent for scalable brain circuit mapping in larger organisms.
 - AI Integration Across Neuroscience. AI became foundational in neuroscience, powering neuron segmentation, brain cell classification, neuroimaging analysis, and predictive modeling of neural circuits via “digital twins”—virtual replicas of brain circuits.
 - Biomarker Discovery and Precision Medicine in Neurodegenerative Disease. Neuroscience has embraced molecular, imaging, and digital biomarkers to enable earlier detection, monitor therapy response, and personalized treatment—especially in Alzheimer's research.
 - Multimodal Neuroimaging. fMRI is now integrated with modalities like PET and fNIRS, achieving high spatial-temporal resolution for more precise brain mapping in both research and clinical settings.
- (Perplexity.ai, 2025)

The Society for Neuroscience's strategic plan, the purpose of which is to “build consensus on changing conditions that may require new program initiatives,” demonstrates commitment to growing a diverse body of neuroscience students, trainees, and educators; the desire to increase opportunities for professional development for neuroscientists and trainees at all levels; and continuing to maintain the value of basic science research including the dissemination of research to public audiences and policy makers. The 2024 annual report (<https://www.sfn.org/about/what-we-do/annual-report/fy2024>) addresses the changing landscape in the field of Neuroscience, emphasizing translational research that bridges basic research interests with applied health and policy and utilizing new technologies like neural networks.

2. Student Demand

Nationally, Neuroscience degrees increased steadily from ~8,000 in 2015 to 11,689 in 2023, despite overall declines in college enrollment. While fewer students attended college overall, neuroscience demand grew—likely driven by strong career prospects and heightened interest in brain health during and after COVID.

Within Illinois, the number of students majoring in Neuroscience has grown by 472 (45%) from 2018 to 2024. Over the same period, however, the number of neuroscience majors at EIU has remained relatively stable at approximately 20 majors despite a 4% decline in EIU's undergraduate enrollment. The fact that we had 33 neuroscience minors in 2018 when the major was introduced and only 11 minors in 2024 suggests that about two-thirds of those who were neuroscience minors transitioned into the neuroscience major. The overall number of students in the neuroscience major and minor remains about a 2:1 ratio, respectively.

3. Societal Needs

- **Mental Health Crisis Post-COVID.** Global mental health disorders surged, especially among youth. Pandemic stress accelerated brain aging by ~5.5 months, even without infection, highlighting urgent needs for prevention and care access.
- **Aging and Dementia Burden.** Dementia cases are rising sharply, with 42% of Americans over 55 at risk. Early diagnostics—especially blood-based biomarkers—are now essential for public health planning and equitable care.
- **Sports-Related Brain Injury Awareness.** CTE affects over half of contact sport athletes. Growing evidence of brain damage from repetitive impacts has led to stricter safety protocols and a cultural shift toward prioritizing brain health.
- **Neurodiversity and Inclusion.** ADHD and autism are increasingly viewed as cognitive diversity, not deficits. Advocacy has driven awareness of diagnostic barriers, gender diversity, and the need for inclusive support systems.
- **AI Ethics in Neuroscience.** AI's rapid adoption in brain tech and diagnostics prompted global regulation. Laws like the EU AI Act aim to ensure transparency, safety, and human oversight in clinical applications.
(Perplexity.ai, 2025)

Careers opportunities in neuroscience continue to abound as indicated by the following neuroscience-related careers and their expected growth (%) over the next decade (2034) according to the US Bureau of Labor Statistics (<https://neurosciencemajor.osu.edu/careers-neuroscience>):

Bachelor's Level

- biological technician (3%)
- health education specialist (4%)
- Clinical lab technician (2%)
- Lab animal caretaker (9%)

Masters/Doctoral Level

- Vet (10%)
- Clinical Psychologist (6%)
- Pharmacist (5%)
- Physician (3%)
- Occupational Therapy (14%)
- Genetic Counselor (9%)
- Chiropractor (10%)

Because of the variety of applications, an undergraduate degree in neuroscience prepares students for many career options, including biomedical research, lab technician, pharmaceutical sales, as well as for advanced graduate and professional education in medicine, clinical psychology, neuropsychology, neuroscience, the cognitive sciences, occupational and physical therapy, neural engineering, forensic science, and audiology. According to the US Bureau of Labor Statistics, many of these occupations are projected to grow at or above average between 2024 and 2034.

4. Institutional Context for Offering the Degree

The neuroscience major is offered by the Department of Psychology in collaboration with the Department of Biological Sciences. Naturally, courses from these two departments provide a strong foundation for the study of brain and behavior. All courses but one were already offered at the institution and there was considerable interest in a neuroscience major based on the number of neuroscience minors at the time the program was approved.

5. Other Factors

- a. COVID caused a dip in undergraduate enrollment overall; and enrollments only started bouncing back in 2023 by 1.2%¹. Neuroscience programs were particularly affected by COVID lockdowns since many neuroscience programs rely on lab access, internships, and fieldwork.
- b. Cuts in the **BRAIN Initiative**. Although there remains meaningful federal funding in neuroscience research, recent cuts of \$278 million (a 40% decrease) may have contributed to enrollment declines due to student hesitancy and concerns over future federal investment in neuroscience research.²
- c. Demographic and Policy Impacts on Neuroscience Education (2020–2025)
 - i. Enrollment decline. The “enrollment cliff” caused by falling birth rates has reduced the number of college-age students, leading to lower undergraduate neuroscience enrollments starting in 2025. This trend threatens program sustainability, especially at smaller institutions.

¹ <https://www.usatoday.com/story/news/education/2024/08/13/college-enrollment-tuition-since-covid-graphics/74729160007/>

² <https://braininitiative.nih.gov/>

- ii. **Increasing Diversity.** While overall enrollment is down, racial and ethnic diversity has grown—over 45% of college students in 2022 were from minority groups. Women remain the majority in undergraduate programs, with rising participation in STEM, though gains vary by region and institution.
- iii. **DEI Policy Shifts.** Federal and state-level changes have reduced support for diversity, equity, and inclusion (DEI) initiatives. Legal restrictions on race-conscious admissions and cuts to DEI funding have disrupted recruitment and mentoring pipelines for underrepresented students.
- iv. **Continued Support via NIH/NSF Programs.** Despite policy setbacks, targeted programs like NIH's ENDURE and Diversity K22 continue to provide research access, mentoring, and career development, helping retain underrepresented students in neuroscience.
- v. **Admissions and Curriculum Adaptation.** Most neuroscience programs maintain rigorous prerequisites, but some are introducing flexible entry points, bridge programs, and enhanced advising to attract and support a broader student base.
- vi. **Net Effect:** Demographic decline and policy uncertainty pose challenges to enrollment and diversity in neuroscience. However, sustained investment in inclusive outreach and mentoring can help preserve workforce diversity and scientific innovation.

6.b. Description of major findings and recommendations, including evidence of learning outcomes and identification of opportunities for program improvement

Of students admitted to EIU as Neuroscience majors from Fall of 2018 through Fall of 2022, 14 of 17 students (82%) have graduated.

Over the past 2 years, we have collected direct assessment data of the Neuroscience student learning outcomes through embedded course assessments. PSY courses from which we report academic performance include the following:

- PSY 3310: Biological Psychology
- PSY 3450: Neuropsychology
- PSY 3518: Psych of Language Development
- PSY 3680: Sensation and Perception
- PSY 3820: Cognitive Neuroscience
- PSY 4810: Neuropsychopharmacology

In the future, we also plan to evaluate students on learning goals that pertain to their activities in the undergraduate research experience.

For the table below, embedded course measures included quizzes, exams, reaction papers, journal article critiques, term papers, and oral presentations.

Student Learning Objectives	Undergraduate Learning Goals*	Mean Percentage Grade (n)
I. CONCEPTUAL KNOWLEDGE		
1. Basic understanding of the development, structure, and function of the nervous system	N/A	81.5 (n = 52)
2. Basic understanding of the cellular and molecular biology of the nervous system	N/A	80.1 (n = 44)
3. Basic understanding of systems and behavioral approaches to neuroscience	N/A	80.1 (n = 44)
4. Broad-based and integrated knowledge acquisition in fields that intersect with neuroscience	N/A	82.6 (n = 52)
II. ANALYTIC AND SCIENTIFIC THINKING:		
1. Ability to collect, analyze, and interpret quantitative information	C, Q	90.6 (n = 24)
2. Abilities in scientific inquiry, such as hypothesis development, experimental design, and data analysis and interpretation	C	87.2 (n = 24)
3. Ability to read and critically analyze a primary research paper	C, W	89.3 (n = 43)
III. RIGOROUS AND RESPONSIBLE CONDUCT OF RESEARCH:		
1. Basic understanding of scientifically rigorous experimental design and execution, as well as data analysis and interpretation	C, Q	88.0 (n = 15)
2. Basic understanding of research ethics	R	86.9 (n = 24)
IV. COMMUNICATION SKILLS:		
1. Ability to present scientific information orally in an organized and coherent manner	S	69.5 (n = 4)
2. Ability to communicate scientific information in written format for scientific publication	W	88.0 (n = 15)
3. Ability to communicate scientific information to the lay public in both oral and written formats	S, W	90.6 (n = 24)
4. Listening carefully and asking pertinent questions	S	69.5 (n = 4)
5. Visual presentation of data and preparation of figures	W	69.5 (n = 4)
V. INDIVIDUAL DEVELOPMENT AND PROFESSIONALISM:		
1. Responsible and ethical behavior	R	88.0 (n = 15)
2. Teamwork and professional interpersonal skills	R	No data
3. Exposure to the cultural diversity of the neuroscience community	R	84.7 (n = 12)
4. Advocacy and community outreach	R	No data
5. Awareness of career opportunities and the paths to achieve career goals	NA	100.0 (n = 7)

* University Learning Goals: C=Critical Thinking, W=Writing & Critical Reading; S=Speaking and Listening; Q=Quantitative reasoning; R=Responsible Citizenship; NA=Not Applicable

The table below shows the career/education placement numbers of neuroscience majors who completed a Career Services survey within 1 year of graduation.

Fiscal Year	Employed/ Military/ Volunteering	Continuing Education	Still Looking for Employment
2021	0	1	0
2022	1	0	1
2023	2	2	0
2024	1	1	0
Total	4 (44%)	4 (44%)	1 (11%)

Thus, 8 of 9 respondents (89%) were either employed/military/volunteering or continuing their education.

6.c. Description of actions taken since the last review, including instructional resources and practices, and curricular changes

Revisions to the curriculum include swapping a required course with an elective to alter the sequence of coursework to shorten time to degree for some students. We created a new course prefix, NEU, to be used for courses specific to neuroscience majors and minors, specifically PSY 3905 Neuroscience Research Methods which was created to provide a greater focus on neuroscience research methods rather than more general research methods used in psychology. Lastly, we added NEU courses for undergraduate research, independent study, and internship courses that would appear on the transcript as such instead of the corresponding psychology courses.

6.d. Description of actions to be taken because of this review, including instructional resources and practices, and curricular changes

As we monitor the number of neuroscience majors, we will need to consider the frequency at which we offer the Neuroscience Research Methods course to maximize efficiency.

Despite growth in the field, we are not observing comparable growth in the number of neuroscience majors, suggesting that we should increase the visibility of the program both within and outside of the institution. For example, we could collaborate with Admissions to highlight neuroscience as a unique downstate Illinois offering and highlight student research on our department advertising materials.

Comments from the College Dean:

The interdisciplinary BS in Neuroscience major continues to be a successful program at EIU. Enrollment in the program has remained steady since the short progress report of 2020 and has averaged around 18 majors per year. At the state and national levels, demand for neuroscience remains strong and the Bureau of Labor Statistics predicts continued growth in the field. The department has implemented several changes since 2020 designed to improve student outcomes and shorten time to degree. A new prefix, NEU, was established for courses specific to neuroscience majors and minors. NEU 3905

(Neuroscience Research Methods) was developed to provide a greater focus on neuroscience research practices rather than more general research methods used in psychology. In addition, NEU specific undergraduate research, independent study, and internship sections were launched to allow the courses to appear on student transcripts as such instead of the corresponding psychology courses. The department continues to use assessment and enrollment data to inform curricular decisions and is developing strategies to attract more majors and enhance program visibility.

We recommend a decision of **Program in Good Standing**

VPAA Decision:

- ☒ Program in good standing
- ☐ Program flagged for priority review
- ☐ Program enrollment suspended

VPAA Explanation:

Neuroscience BS (261501)

The summary above describes the B.S. in Neuroscience's adaptations to the changing landscape of neuroscience programs across the state and the country. While the B.S. in Neuroscience program at the university is vital for downstate students to have access to this interdisciplinary area, the enrollment remains relatively stable in a field that is expected to grow rapidly with the super-enhancements of AI technology. The program has consistently measured learning outcomes, updated curricular materials to reflect current research, specified a new prefix for neuroscience courses, and focused on strengthening the research component of the major, particularly by creating a research methods course in neuroscience. The program will continue to work on increasing the visibility and accessibility of the major to all interested students.