Course Change Request

New Course Proposal

Date Submitted: 10/09/25 12:20 pm

Viewing: NEUR 430 : Introduction to Computational Neuroscience

Last edit: 10/09/25 12:20 pm

Changes proposed by: gscott21

Programs referencing this course	: Computational Neuroscience Minor SC-BS-NEUR: Neuroscience, BS

Are you completing this form on someone else's behalf?

Yes

Requestor:

Name	Extension	Email
Sarojini Attili	3-1686	sattili@gmu.edu

Effective Term: Fall 2026

Subject Code: NEUR - Neuroscience

Course Number: 430

Bundled Courses:

Is this course replacing another course? No

Equivalent Courses:

In Workflow

1. **NEUR Chair**
2. **SC Curriculum Committee**
3. SC Assistant Dean
4. Assoc Provost-Undergraduate
5. Registrar-Courses
6. Banner

Approval Path

1. 10/09/25 12:32 pm Saleet Jafri (sjafri): Approved for NEUR Chair

Catalog Title: Introduction to Computational Neuroscience

Banner Title: Intro Computational Neurosci

Will section titles vary by semester? No

Credits: 3

Schedule Type: Lecture

Hours of Lecture or Seminar per week: 3

Repeatable: May be only taken once for credit, limited to 3 attempts (N3)

Max Allowable Credits: 3

Default Grade Mode: Undergraduate Regular

Recommended Prerequisite(s):

Recommended Corequisite(s):

Required Prerequisite(s) / Corequisite(s) (Updates only):

Registrar's Office Use Only - Required Prerequisite(s)/Corequisite(s):

And/Or	(	Course/Test Code	Min Grade/Score	Academic Level	)	Concurrency?

Registration Restrictions (Updates only):

Registrar's Office Use Only - Registration Restrictions:

Field(s) of Study:

Class(es):

Level(s):

Degree(s):

School(s):

Catalog Description: Introduction to Computational Neuroscience serves as a prerequisite for NEUR 431 – Neuroinformatics Methods, providing foundational knowledge in computational and neuroinformatics approaches through the critical analysis of six seminal journal articles. Students will engage in a team project involving a literature search to explore current research trends and design a study for original research in fundamental or translational neuroscience using computational methods. The curriculum covers key papers on topics such as brain atlases, neuron morphology databases, neuron type knowledge bases, simulation environments, connectomics, and electrophysiological data analysis. It emphasizes reading, discussion, and critical evaluation skills to prepare students for hands-on data analysis in subsequent courses. No prior programming experience is required.

Justification: As neuroscience research generates increasingly complex data, computational methods are essential for analyzing and interpreting this information. To meet this demand, IPN is developing a computational neuroscience concentration for majors as well as a minor for non-majors. This course will serve as the introduction to neuroinformatics and will become the pre-requisite for NEUR 431 Neuroinformatics Methods.

Does this course cover material which crosses into another department? No

Learning Outcomes:

- Students will be able to review and comprehend journal articles in computational neuroscience, identifying and evaluating key methodologies and their applications.
- Students will be able to conduct literature search to explore current trends in computational neuroscience and design study proposals for original research.
- Students will be able to evaluate and discuss key concepts in areas like brain atlases, morphology databases, knowledge bases, simulation environments among others.
- Students will be able to collaborate effectively in a team project, integrating diverse perspectives to develop a cohesive research proposal using computational methods.

Will this course be scheduled as a cross-level cross listed section?

Attach Syllabus NEUR 430 Syllabus.pdf

Additional Attachments

Staffing: Sarojini Attili, IPN Assistant Professor

Relationship to Existing Programs: NA

Relationship to Existing Courses: Will become the pre-requisite for NEUR 431

Have you reached out to the Libraries to determine whether there are adequate resources to support your course? If not, please email Meg Meiman, Associate University Librarian for Learning, Research, and Engagement at mmeiman2@gmu.edu.

No

Additional Comments:

Reviewer Comments

Key: 19098

NEUR 430: Introduction to Computational Neuroscience

Instructor: Dr. Sarojini M. Attili
Email: sattili@gmu.edu
Semester and Year: TBD
Meeting time: TBD
Meeting location: TBD
Office Hours: TBD

Course Description/Overview: Introduction to Computational Neuroscience serves as a prerequisite for NEUR 431 – Neuroinformatics Methods, providing foundational knowledge in computational and neuroinformatics approaches through the critical analysis of six seminal journal articles. Students will engage in a team project involving a literature search to explore current research trends and design a study for original research in fundamental or translational neuroscience using computational methods. The curriculum covers key papers on topics such as brain atlases, neuron morphology databases, neuron type knowledge bases, simulation environments, connectomics, and electrophysiological data analysis. It emphasizes reading, discussion, and critical evaluation skills to prepare students for hands-on data analysis in subsequent courses. No prior programming experience is required.

Course Learning Outcomes:

- Students will be able to review and comprehend journal articles in computational neuroscience, identifying and evaluating key methodologies and their applications.
- Students will be able to conduct literature search to explore current trends in computational neuroscience and design study proposals for original research.
- Students will be able to evaluate and discuss key concepts in areas like brain atlases, morphology databases, knowledge bases, simulation environments among others.
- Students will be able to collaborate effectively in a team project, integrating diverse perspectives to develop a cohesive research proposal using computational methods.

Materials needed: No textbook is required. Journal articles and open educational resources will be provided from various sources.

Technological Requirements: Access to Canvas, email and an internet browser.

Grading Policies

Grading Scale:

A+ 97-100% A 93-96% A- 90-92%	B+ 87-89% B 83-86% B- 80-82%	C+ 77-79% C 73-76% C- 70-72%	D 60-69%	F 0-59%

Grade Breakdown:

5 quizzes (5 points each)	25 points
5 activities (15 points each)	75 points
Project report	30 points
Project presentation	20 points
Total	150 points

Grading-related Policies:

Quizzes and activities: There will be six quizzes and six activities, one for each of the six journal articles, worth 5 points per quiz and 15 points per activity. You must attend class to participate in quizzes and activities. Your lowest quiz and activity grades will be dropped, so your final score will reflect your top five scores for both quizzes and activities. This accommodates absences due to illness or emergencies.

Project: The course will culminate in a group project where students will apply insights from the journal articles to explore a computational neuroscience topic. Through a literature search, students will investigate current research trends and develop a study design for original research in fundamental or translational neuroscience using computational methods.

Attendance policy: Students are required to attend all classes punctually and engage fully in discussions and activities throughout each lecture. Grades will be based on participation in the journal club, in-class quizzes, and presentations, all of which require in-person attendance.

Late Work: Unless prior arrangements are made, late work will incur a deduction of 20% and will not be accepted more than two weeks after the due date. No late work will be accepted after TBD. It is imperative that you contact me as soon as possible regarding any issues that may affect your ability to complete assignments.

Class communication: If you need to contact me, please do so using e-mail from your university account only and include the course name in the subject line and include your name in the e-mail. Check your e-mail and course Canvas account daily and before each class meeting. The instructor reserves the right to make any changes in the course she determines academically advisable. I will use e-mail and Canvas to communicate with you regarding changes related to the course, syllabus, and other essential information. You are responsible for all announcements posted and sent via Canvas and e-mail, in addition to announcements made in class.

AI (Artificial Intelligence) Tools Policy:

AI tools such as ChatGPT, Gemini, or similar platforms may be used to assist with research and editing documents for clarity and language. However, students must not use these tools to complete assignments or produce work on their behalf. All submitted work must be original and created by the student, with AI tools limited to the specified purposes of research support and

language refinement. Please follow GMU AI guidelines if you choose to use AI tools for support with your coursework.

Academic Standards

Academic Standards exist to promote authentic scholarship, support the institution's goal of maintaining high standards of academic excellence, and encourage continued ethical behavior of faculty and students to cultivate an educational community which values integrity and produces graduates who carry this commitment forward into professional practice.

As members of the George Mason University community, we are committed to fostering an environment of trust, respect, and scholarly excellence. Our academic standards are the foundation of this commitment, guiding our behavior and interactions within this academic community. The practices for implementing these standards adapt to modern practices, disciplinary contexts, and technological advancements. Our standards are embodied in our courses, policies, and scholarship, and are upheld in the following principles:

- Honesty: Providing accurate information in all academic endeavors, including communications, assignments, and examinations.
- Acknowledgement: Giving proper credit for all contributions to one's work. This involves the use of accurate citations and references for any ideas, words, or materials created by others in the style appropriate to the discipline. It also includes acknowledging shared authorship in group projects, co-authored pieces, and project reports.
- Uniqueness of Work: Ensuring that all submitted work is the result of one's own effort and is original, including free from self-plagiarism. This principle extends to written assignments, code, presentations, exams, and all other forms of academic work.

Violations of these standards—including but not limited to plagiarism, fabrication, and cheating—are taken seriously and will be addressed in accordance with university policies. The process for reporting, investigating, and adjudicating violations is outlined in the university's academic standards procedures. Consequences of violations may include academic sanctions, disciplinary actions, and other measures necessary to uphold the integrity of our academic community.

The principles outlined in these academic standards reflect our collective commitment to upholding the highest standards of honesty, acknowledgement, and uniqueness of work. By adhering to these principles, we ensure the continued excellence and integrity of George Mason University's academic community.

Student responsibility: Students are responsible for understanding how these general expectations regarding academic standards apply to each course, assignment, or exam they participate in; students should ask their instructor for clarification on any aspect that is not clear to them.

Accommodations for Students with Disabilities

Disability Services at George Mason University is committed to upholding the letter and spirit of the laws that ensure equal treatment of people with disabilities. Under the administration of University Life,

Disability Services implements and coordinates reasonable accommodations and disability-related services that afford equal access to university programs and activities. Students can begin the registration process with Disability Services at any time during their enrollment at George Mason University. If you are seeking accommodations, please visit the Disability Services website for detailed information about the Disability Services registration process. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email: ods@gmu.edu. Phone: (703) 993-2474.

Student responsibility: Students are responsible for registering with Disability Services and communicating about their approved accommodations with their instructor *in advance* of any relevant class meeting, assignment, or exam.

FERPA and Use of GMU Email Addresses for Course Communication

The Family Educational Rights and Privacy Act (FERPA) governs the disclosure of education records for eligible students and is an essential aspect of any course. **Students must use their GMU email account** to receive important University information, including communications related to this class. Instructors will not respond to messages sent from or send messages regarding course content to a non-GMU email address.

Student responsibility: Students are responsible for checking their GMU email regularly for course-related information, and/or ensuring that GMU email messages are forwarded to an account they do check.

Title IX Resources and Required Reporting

As a part of George Mason University's commitment to providing a safe and non-discriminatory learning, living, and working environment for all members of the University community, the University does not discriminate on the basis of sex or gender in any of its education or employment programs and activities. Accordingly, **all non-confidential employees, including your faculty member, have a legal requirement to report to the Title IX Coordinator, all relevant details obtained directly or indirectly about any incident of Prohibited Conduct** (such as sexual harassment, sexual assault, gender-based stalking, dating/domestic violence). Upon notifying the Title IX Coordinator of possible Prohibited Conduct, the Title IX Coordinator will assess the report and determine if outreach is required. If outreach is required, the individual the report is about (the "Complainant") will receive a communication, likely in the form of an email, offering that person the option to meet with a representative of the Title IX office.

For more information about non-confidential employees, resources, and Prohibited Conduct, please see University Policy 1202: Sexual and Gender-Based Misconduct and Other Forms of Interpersonal Violence. Questions regarding Title IX can be directed to the Title IX Coordinator via email to TitleIX@gmu.edu, by phone at 703-993-8730, or in person on the Fairfax campus in Aquia 373.

Student opportunity: If you prefer to speak to someone ***confidentially***, please contact one of Mason's confidential employees in Student Support and Advocacy (SSAC), Counseling and Psychological Services (CAPS), Student Health Services (SHS), and/or the Office of the University Ombudsperson.