**NEUR 4699 - Credit research hours for 3rd+ year students**
**Neuroscience Undergraduate Research**

Instructor
Mark E. Wheeler

Section
MW

CRN
53906

Semester
Fall

Academic Year
2026

Course Description
Undergraduate research conducted under the guidance of a faculty mentor.

Course Learning Outcomes

- Communication
  - Uses and understands professional and discipline-specific language
  - Expresses ideas orally in an organized, clear, and concise manner
  - Writes clearly and concisely using correct grammar, spelling, syntax, and sentence structure
  - Demonstrates an ability to interpret, evaluate, and create visual representations of ideas
  - Communicates scientific knowledge in written, graphical, and oral format and recognize importance of accurate reporting of methods and data for replication studies
- Creativity
  - Shows ability to approach problems from different perspectives
  - Uses information in ways that demonstrate intellectual resourcefulness
  - Effectively connects multiple ideas/approaches
- Autonomy
  - Demonstrates an ability to work independently and identify when guidance is needed
  - Accepts constructive criticism and uses feedback effectively
  - Uses time well to ensure work gets accomplished
  - Works collaboratively toward shared research goals
- Ability to Deal with Obstacles
  - Is not discouraged by setbacks or unforeseen events and perseveres when challenges are encountered
  - Shows flexibility and a willingness to take risks and try again
  - Troubleshoots problems and searches for ways to do things more effectively
- Intellectual Development
  - Recognizes that problems are often more complicated than they first appear
  - Approaches problems with an understanding that there can be more than one right explanation or even none at all

**Commented [MK1]:** Faculty may add/edit course learning outcomes as desired.

    - Displays insights into the limits of their knowledge and an appreciation for what isn't known
- Critical Thinking and Problem Solving
    - Uses a reflective and iterative approach to problem solving
    - Looks for the root causes of problems and develops or recognizes the most appropriate corrective actions
    - Recognizes flaws, assumptions, and missing elements in arguments
- Practice & Process of Inquiry
    - Demonstrates ability to formulate questions and hypotheses within the discipline
    - Demonstrates ability to properly identify and/or generate reliable data
    - Shows understanding of how knowledge is generated, validated, and communicated within the discipline
- Nature of Disciplinary Knowledge
    - Shows understanding of the criteria for determining what is valued as a contribution in the discipline
    - Shows awareness of important contributions in the discipline and who was responsible for those contributions
    - Reads and applies information obtained from professional journals and other sources
- Project Knowledge and Skills
    - Displays knowledge of key facts and concepts
    - Displays a grasp of relevant methods and is clear about how these methods apply to the research project
    - Demonstrates an appropriate mastery of skills needed to conduct the project
- Ethical Conduct
    - Shows understanding of the importance of principles of Responsible Conduct of Research (RCR)
    - Follows the APA Code of Ethics in the treatment of human and nonhuman participants in the design, data collection, interpretation, and reporting of neuroscientific research and follow proper biosafety procedures

Required Course Materials

There is no textbook for this class.

Commented [MK2]: If there is anything the student is required to have to work in your lab, you must list it here (e.g., access to a personal computer, internet, open-source software, etc.)

Student-Faculty Expectations

Faculty research mentors and students will discuss and agree on expectations before beginning an undergraduate research course. Expectations will include the student's weekly time commitment; methods and frequency of communication between the student and mentor(s); how research will be recorded, stored, and shared; and when and how students will reflect on their successes and challenges.

**All students conducting neuroscience research at Georgia Tech are required to do the following:**

- Join the Neuroscience Research Canvas Page
- Submit a Research Agreement signed by student and PI by the 6th week of each semester
- Submit a Research Reflection by the last day of class each semester
- Students in their final thesis semester must submit a signed Thesis Contract by the 6th week of the semester

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulate some basic expectations that you can have of me and that I have of you.

In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class. To support mutual respect and understanding between students and faculty, Georgia Tech faculty and students collectively adopted a list of student-faculty expectations. See the full Student-Faculty Expectations agreement here: https://catalog.gatech.edu/rules/22/

Grading Policy

Research grades will be determined based on student effort and communication throughout the semester. The signed Research Agreement will act as a guide in determining the final grade; however, students will not be penalized for not achieving goals due to circumstances beyond their control (e.g., experiment optimization, protocol approval delays, etc.). Grades for NEUR 4699 will be assigned a letter grade.

**Commented [MK3]:** Specify how final grades will be determined, including weighting scales or points assigned to various course requirements. Your grading process and scoring methods should be clearly stated, allowing students to reasonably predict progress towards their final grade throughout the semester. Finally, you should define your approach to calculating course grades, including how assignments are weighted, so that students can clearly see the ways in which their work and grades earned along the way will contribute to their final grade in the course.

Attendance Policy

Undergraduate research students will participate in research activities on a weekly basis commensurate with registered credit hours and as discussed with faculty research mentors. Students earning research credit are expected to commit approximately 3hr of lab-related work per credit hour earned. This includes all in-person or remote lab work, meetings, readings, writing, and any other work that is directly related to the student's role in the lab.

Academic Honesty/Integrity Statement

Students are expected to maintain the highest standards of academic integrity. All work submitted must be original and properly cited. Plagiarism, cheating, or any form of academic dishonesty will result in immediate consequences as outlined in the university's academic honor code: https://policylibrary.gatech.edu/student-life/academic-honor-code

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services (404-894-2563) as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Campus Resources

The Undergraduate Research Opportunities Program (UROP) provides resources and support for undergraduate research students and their mentors. Visit https://undergradresearch.gatech.edu/ or contact UROP at urop@gatech.edu for more information.