

PRINCIPLES OF NEUROSCIENCE

Fall 2026 Syllabus (3 credits)

I. COURSE OVERVIEW

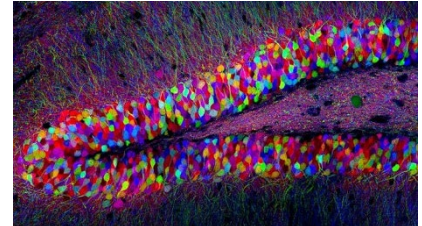
INSTRUCTOR INFORMATION

Instructor: Dr. Christina Ragan

Email: cragan8@gatech.edu

COURSE DESCRIPTION

This course provides students with an introduction to topics in neuroscience which will serve as a foundation for upper-level neuroscience courses. Students will learn neuroscience from a cellular/molecular, systems, and behavioral perspective.



COURSE GOALS/ LEARNING OUTCOMES

Upon completion of this course, students will be able to:

- Identify and describe the key terminology, concepts, and principles of neuroscience
- Interpret output responses to given input responses using cellular/molecular; systems/computational; and cognitive/behavioral principles of neuroscience
- Analyze graphical representation of neuroscientific data and illustrate key neuroscientific concepts using figures
- Apply knowledge of neuroscientific mechanisms to observe and or manipulate neural output responses

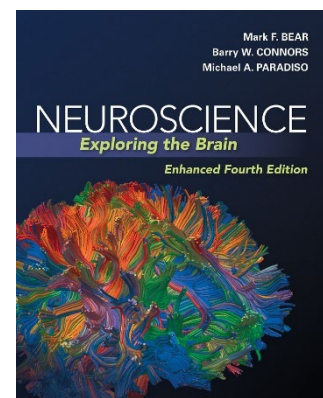
COURSE DELIVERY

All lectures will be delivered in-person. This format is to promote student engagement and access to instructors. Course recordings will be available upon request and with proper documentation from the Office of Disability Services.

TEXTBOOK/MATERIALS

- Neuroscience: Exploring the Brain, 5Ed (New!!), Mark F. Bear et al.
- Point Solutions clicker software for mobile device
- Please bring laptop or tablet to class

All course assignments, readings, and grades will be posted and submitted via Canvas. Please submit .doc, .docx, .pdf, .ppt, .pptx as these are file types we can access. Please note that all course materials are in the process of being updated for increased accessibility. Please do not hesitate to reach out to the instructional team if you have any issues with accessing course materials.



II. COURSE REQUIREMENTS & GRADING

Assignment	Points
Unit Exams 1, 2, & 3	450
Final Exam	200
Final Integrated Question (during final exam)	60
Quizzes (Pre-, Post-, and Practice Quizzes)	20
Engagement: Perusall readings, In-class activities (IIDs), Seminar Summaries	270
Total Points	1000

Grading Scale:

Your final grade will be assigned as a letter grade according to the following scale:

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	0-59%

Please utilize the Grade Calculator sheet found in the “Start Here” Module on Canvas. The Canvas gradebook “Total” will not be an accurate reflection of overall grades.

Listed below are several grade repair opportunities. There will be no additional allowances for grade repair. **Do not ask your instructor or TA for additional points or “grade rounding”!**

Grade Repair Opportunities:

To be fair to all students, extra credit must be offered to the entire class and cannot be offered to an individual student. Instructors and TAs **will not respond to inquiries for “grade adjustments”** at the end of the semester.

Exams 1 – 3 Grade Repair (for the short answer section only): You may earn up to ½ of the lost points from the free response section by providing the correct answer(s) and the reason for why the answer you provided was incorrect. Grade repair will be available to students who attend the majority of course lectures.

Course Feedback: If more than 80% of the students complete the midsemester feedback survey and final CIOS, every student will get an extra 1% to the overall final semester grade. If only one of these is met, students will receive 0.5% added to their final semester grade. These evaluations are very important to us for shaping current and future semesters.

III. DESCRIPTION OF GRADED COMPONENTS

Exams (150 points each x 3 Unit Exams = 450 points; Final = 200 points):

Exams will consist of both multiple choice and short answer questions. While exams 1-3 are not considered to be cumulative, material assessed on each exam does require an understanding of the material presented in the previous unit. Format: All exams are in-person via Canvas during the assigned class period with Lockdown Browser enabled.

Crib Sheet: You will be permitted one “3”x 5” index cards per exam (including the Final) **supplied by instructors for a handwritten, front and back crib sheet**; however, there will be a time limit, so it is to your advantage to study for these exams as if they were closed book/notes. All figures and tables must also be handwritten, as the act of re-creating these images can aid with retention. Students must work independently and any evidence of students working together or consulting outside sources in such a manner will be considered unauthorized collaboration as per the Georgia Tech honor policy.

Integrated Unit Exam Question (part of Final exam):

During the final exam, you will prepare an essay that integrates your knowledge of neural processes and demonstrates your learning over the course of each unit. A specific prompt will be given to you to combine your creativity along with your knowledge. For each unit you must describe five (5) distinct processes. Details will be given on the first day of class.

Engagement: Perusall assignments, Homework, Interactive Impact Day

Activities (75 points for Units 1 & 2; 120 points for Unit 3 = 270 points):

These are problem-based learning activities or additional assignments designed to provide opportunities to practice critical thinking skills of major concepts covered in the current unit.

***Please have PointSolutions set up by the second day of class.**

This course is designed to provide flexibility and autonomy in your learning experience. You will have the opportunity to tailor the course to your interests and strengths by selecting from a variety of assignments, projects, and activities. The goal is to encourage engagement, creativity, and deeper understanding of the subject matter by allowing you to choose how you meet the course objectives. You may have some flexibility in choosing which assignments or activities to complete within each bucket, depending on the course design. This system encourages a balanced approach to learning, ensuring that you engage with different types of assessments, rather than focusing solely on exams or written assignments.

For units 1&2, you may earn up to **75 points in Engagement and up to 120 points for unit 3**. How you earn these points from the following options is (partially) up to you! Engagement includes the following: Perusall assignments (3-4 sets of assignments per unit), Interactive Impact Days with in-class activities (3-5 per unit), Seminar Summaries (1 per unit). Extra points do not carry over to subsequent unit Engagement points.

Perusall Assignments (15 points each; up to 45 points/ unit for Units 1&2; up to 60 points for Unit 3)

To engage with other students in the course and interact with readings and videos related to Neuroscience here, students will respond to interesting parts of the articles and even pose challenging questions and respond to others' comments. More details for these annotations will be posted on Canvas. Students will first practice using Perusall by annotating

the syllabus by **the end of the first week and will take a syllabus quiz to familiarize themselves with the** course. Completion of this quiz will open access to the Unit 1 Module.

Interactive Impact Day Activities (15 points each; up to 45 points/unit for Units 1&2; up to 75 points for Unit 3). We are devoting several full class periods to engagement. Interactive Impact Day Activities are dynamic, **in-class** learning experiences designed to engage students in applying course concepts to real-world scenarios and to give students additional practice with neuroscience skills. These activities are structured to encourage collaboration, critical thinking, and hands-on problem-solving. During an Interactive Impact Day, students might work in small groups on case studies, simulations, other exercises that require them to analyze situations, make decisions, and assess the impact of their choices. The activities are meant to deepen understanding by moving beyond theory and allowing students to see how concepts function in practice. All in-class activities conducted on this day are due at the end of each class period for submission into Canvas. **To receive credit for this activity you MUST be present in class.** Students who attempt to submit these assignments for credit outside of the class will be in violation of the Honor Code.

Seminar Summaries (up to 15 points/unit possible): Attend & write one (1) summary of a neuroscience presentation (minimum of 12 sentences). Each summary must be on content related to the unit you are submitting it for and must be submitted by the Unit Exam. Students may select to attend a neuroscience presentation at Georgia Tech, GSU or Emory. The Institute for Neuroscience, Neurotechnology, and Science Seminar Series (Mondays @ 11:15 am in IBB 1128) is a great option! Most seminars should have a virtual option and there are recorded lectures available as well. You may choose a recorded talk from within the last year. All submissions must include the date of the seminar, the first and last name of the speaker, and the title of talk. These will be graded for quality and relevance to the talk.

Table 1: Sample Student with 100% Engagement for Unit 1

Assignment Type	Number Completed	Points per Assignment	Total Points Earned
Perusall Assignments	3	15	45
Interactive Impact Assignment	2	15	30
Seminar Summary	0	15	0
Total Points Earned			75/75
Final Engagement Score			100%

Table 2: Sample Student with 80% Engagement for Unit 1

Assignment Type	Number Completed	Points per Assignment	Total Points Earned
Perusall Assignments	2	15	30
Interactive Impact Assignment	1	15	15
Seminar Summary	1	15	15
Total Points Earned			60/75
Final Engagement Score			80%

There will be additional “practice” quizzes on Canvas. These will be approximately 5 – 10 questions designed to give practice with the type of questions that will be on the exams. These quizzes will be posted on Canvas and open for 1 week. These will be scored on completion (not correctness). ***There are no available past exams for practice.**

IV. OPTIONAL RECITATION

There are optional recitations scheduled to provide students with additional opportunities for practice. Some of the activities in recitation will involve additional explanations, creating process diagrams, and working through questions like those on the exams.

- Mondays - 5:00 – 5:50 pm
 - Thursdays - 5:00 – 5:50 pm
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V. COURSE EXPECTATIONS, POLICIES, & GUIDELINES

Georgia Tech Inclusive Values Statement

At Georgia Tech, we see different backgrounds and perspectives as essential to learning, discovery, and creation. We strive to remove barriers to student success, and to build a welcoming community where everyone has the opportunity to contribute to our mission. As outlined in our strategic plan (<https://strategicplan.gatech.edu/values>), we want to create an environment of holistic learning where all individuals can grow and learn to lead healthy, purposeful, impactful lives.

Extensions, Late Assignments, Re-Scheduled/Missed Exams:

Any assignments submitted after the posted deadline will be subject to a 10% reduction for every 24 hours it is late. No assignments will be accepted more than 5 days late. In-class assignments **may not** be submitted late.

Rescheduling an exam must be done in advance and receive approval from the instructor. An exam missed without prior approval will receive a zero.

Grade Disputes:

Any assignment grade disputes must be made within **7 days** of the grade posting. Request for assignment review beyond this window will not be granted.

Accommodations for Students with Disabilities:

If you are a student with learning needs that require special accommodations, contact the Office of Disability Services at (404) 894-2563 or <http://disabilityservices.gatech.edu> as soon as possible to make an appointment to discuss your needs and to obtain an accommodations letter. After you have received your accommodations letter you are welcome to email your course instructor to set up a private appointment to discuss how to best implement these accommodations within the course. It is highly recommended to schedule all exams with the testing center.

Re-grading and Correcting Grade Errors

If the grade in the gradebook/Canvas is incorrectly entered due to human error (ex: you got a 95 on the returned assignment but a 93 is written in the grade book), please let your assigned TA know immediately. It will be swiftly corrected, with our apology. If you believe the grade you received for an assignment is incorrect and wish for the instructor to re-grade or review the grade a second time you must make this request no later than **7 days** from the date the grade was given.

Academic Integrity, Collaboration, Group Work, & AI:

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. For information on Georgia Tech's Academic Honor Code, please visit <http://www.catalog.gatech.edu/policies/honor-code/> or <http://www.catalog.gatech.edu/rules/18/>.

Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment (including submitting in-class assignments outside of class) will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Any in-class group activities will require one submission per group.

Use of AI (ChatGPT and similar tools): This course values independent thinking, critical analysis, and genuine effort in your coursework. Assignments are intended to foster intellectual growth and strengthen essential skills. The use of digital tools and online resources to supplement your study is encouraged. However, the objective of assessments is to gauge your understanding and application of the course material, not to rely on automated responses. Your engagement with the course materials, active participation in discussions, and independent work are fundamental aspects of the learning process.

Submissions found to be generated or heavily influenced by AI tools will be considered a breach of academic integrity and will be addressed according to the institute's policies on academic misconduct. Approach assignments as opportunities for personal growth and learning. If you require clarification or assistance, please reach out for guidance.

Student Well-Being

At Georgia Tech, you are recognized as a human being navigating life's ups and downs. You may experience stressors that can impact both your academic journey and your personal wellness. These may include academic pressure and challenges associated with relationships, mental health, alcohol or other drugs, finances, etc.

If you are experiencing disruptive challenges, seeking help is a courageous thing to do for yourself and those who care about you. A comprehensive list of student services and resources has been compiled and maintained by the Office of the Vice President for Student Engagement and Well-Being, and you can find access that list here: <https://students.gatech.edu/student-resource-guide>

We Respect Everyone

It is our intent that students from all backgrounds will have an equal opportunity for a supportive learning environment in this course. We appreciate the variety of perspectives our students bring to this class. The unique experience that each student brings can enhance our discussions and understanding of neuroscience. To this end, it is our intent to employ teaching materials and learning activities that are respectful of our student population. We encourage you to reach out to us for constructive conversations on how we may continue to strive toward every student feeling included. Additionally, if you have a religious event during scheduled class, let us know via email at least 3 days prior so that we can make the appropriate arrangements for you.

Student-Faculty Expectations Agreement

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. See <http://www.catalog.gatech.edu/rules/22/> for an articulation of some basic expectation 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.

Email and Piazza Policy

We encourage all questions about course content to be submitted to Piazza. Posting here allows other students who have similar questions to also contribute and learn the answer so that learning can be collaborative. Email your assigned Instructor or your assigned TA if you have an issue with Canvas or Perusall or questions that are beyond the scope of the course content or explicitly personal (e.g., absences). We are here to help!

VI. ADDITIONAL ACCOMODATIONS & RESOURCES

Supplemental Materials:

Additional textbooks that may be beneficial: Principles of Neuroscience, 5Ed., Kandell, Schwartz, Jessell, Siegelbaum, Hudspeth

The list below presents a few online resources to assist in your understanding of the topics presented:

- <http://www.brainfacts.org/>
- <http://brainu.org/movies>
- <https://www.ted.com/playlists/browse?topics=neuroscience>
- <https://www.khanacademy.org/test-prep/mcat/organ-systems>
- <https://nba.uth.tmc.edu/neuroscience/index.htm>

Student Drop-in Hours

Every student can improve their skills, learn from their mistakes, and be successful in this course. Attending office hours is one strategy that students can utilize to do this. We recommend that all students attend drop-in hours as they feel are needed, regardless of performance (even if you are doing well, you are more than welcome to meet with us as there are always areas to improve!).

When in Doubt Contact:

The [Dean of Students Office](#) can connect you with specific resources if you are still unsure of where to go for help. The request assistance form is helpful for sharing documentation from Stamps with your professors among other things.