BMED 3600 Syllabus

Cell and Molecular Physiology

Summer 2026, R, 3.0

Instructor Information

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General Course Information

Description

Our goal is to prepare you to understand current cell and molecular biological technologies and apply them to current, real-world problems. In order to do this, you will need to understand the basics of cell biology, for both single cells and groups of cells. More specifically, we will be discussing the building blocks of cells, gene expression and genetic engineering, the organization and function of organelles, cell signaling, the cytoskeleton, the cell life cycle, the extracellular matrix, and how diseases such as cancer come from disruptions of the typical functions of these systems.

Course Learning Outcomes

Upon successful completion of this course, you will be able to:

- Demonstrate knowledge of cellular systems including gene expression, organelles, cell signaling, the cytoskeleton, the cell life cycle, and the extracellular matrix.
- Apply knowledge gained in the course to interrogate or solve cell biological problems.
- Read and analyze relevant scientific literature.
- Design rational experimental approaches toward treating a disease.
- Communicate clearly about cell biology in written and oral formats.

Required Course Materials

Essential Cell Biology, 6th Edition, Alberts et al. If you choose to use an older edition of this book, you are responsible for determining the corresponding sections.

All other course materials will be available on Canvas.

Grading Policy:

Your final grade is based on the weighted components below. Grades will be posted in Canvas throughout the semester so you can monitor your progress.

Course Grading Breakdown

Unit Exams (4) 40**% total**
Four exams will assess your understanding of course concepts and your ability to apply them to new scenarios. Each exam contributes **10%** to your final grade.

Final Exam 13.3%
The final exam assesses cumulative understanding of course material and your ability to integrate concepts across topics.

Problem Solving Studio (PSS) 13.3%
PSS sessions are collaborative, in-class activities focused on applying concepts and solving real-world problems.

Homework / Quizzes — 20%
Homework and quizzes provide opportunities to practice course material, check understanding, and prepare for exams.

Group Project — 13.3%
The group project allows you to collaboratively apply course concepts to a larger problem or case study and communicate your findings.

Grading Scale

Final letter grades will be assigned as follows:

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

No extra credit will be given on an individual basis.

Description of Graded Components

Exams (4) and Final Exam
Exams consist of a mix of multiple-choice and written-response questions that assess both foundational knowledge and conceptual understanding. Exams are taken in person using Canvas with Lockdown Browser or on paper if needed. The **final exam is cumulative** and evaluates your ability to integrate concepts across the course.

Problem Solving Sessions (PSS)
PSS are collaborative, in-class sessions where you will apply course concepts to complex or open-ended problems. PSS are evaluated using competency-based rubric in which each session is assessed as **Excellent (E), Meets Expectations (M), or Needs Improvement (N)** across rubric

categories. Your PSS grade is based on the number of sessions in which expectations are met. Work is not graded for accuracy; instead, emphasis is placed on reasoning, participation, and collaboration. Peer feedback is incorporated into the evaluation.

Homework / Quizzes
Homework and quizzes are designed to help you prepare for PSS and exams. Some lecture content is delivered through videos with associated quizzes to check understanding. These quizzes typically allow multiple attempts. Additional homework problems provide opportunities to practice applying concepts and identifying gaps in understanding.

Group Project
You will work with your PSS group to investigate a human disease and analyze how current therapies target the underlying biological mechanisms. Your presentation will include disease etiology, pathophysiology, clinical manifestations, and the mechanism of action of an existing treatment. Each group will also propose an evidence-based improvement to the therapy and explain how it could enhance outcomes.

Groups will submit a draft one week prior to presentation for feedback on clarity, organization, and reasoning, followed by a revised final presentation delivered during the scheduled session. The goal of this project is to connect disease mechanisms to treatment strategies and encourage evidence-based thinking about therapeutic innovation.

Course Policies

Attendance and/or Participation

Attendance and participation in lecture is expected. Many studies have shown that class attendance is critical for student learning.

Attendance and participation in PSS is expected. The PSS sessions are designed to help you apply basic knowledge from the course to solve complex and interesting problems.

You can miss up to 1 PSS for any reason with no penalty. The lowest PSS grade will be replaced with the highest PSS grade. An institute-approved excuse note for any additional absences can be requested here: https://new.iaa.gatech.edu/info/

Academic Integrity

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. Review Georgia Tech's Honor Code and the student Code of Conduct.

Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

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Core IMPACTS

Core IMPACTS is the University System of Georgia's General Education curriculum. If you are teaching a course that counts towards Core IMPACTS, you should include a syllabus statement about the Core area and associated career competencies. This resource developed by the Center for Excellence in Teaching and Learning and Online Education at Georgia State University includes template syllabus statements for each of the Core IMPACTS areas that you may adapt for your course.

Accommodation 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.

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. 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.

Pre- &/or Co-Requisites

BMED 3100

Collaboration, Group Work, and Use of Generative AI

Students are encouraged to discuss course problems and concepts with classmates as part of the learning process. However, any written work that is submitted must reflect a student's own understanding and original writing. When outside resources are consulted, including textbooks, scientific literature, or generative AI tools such as Copilot or ChatGPT, students should use them as learning supports rather than sources to copy from directly. As with discussions with classmates, these tools can help clarify ideas, but students remain responsible for the accuracy, relevance, and integrity of all work they submit.

Exams are closed-note, closed-book, and closed-internet assessments, and must be completed independently.

Group projects and Problem-Solving Studio (PSS) sessions are designed to support collaborative learning. Students are expected to participate actively and contribute meaningfully to their group's work. Credit for these activities reflects both the quality of the work and each student's engagement in the collaborative process.

All course activities are governed by the university's academic integrity policies. Cases of plagiarism or academic misconduct will be addressed according to the procedures of the Office of Student Integrity.

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

Please contact your instructor AS SOON AS POSSIBLE if you cannot complete an assignment or take an exam on time. We are willing to make reasonable accommodations, especially for things such as approved institute activities, emergencies, or religious observances. The key here is that you need to communicate! Without any communication and/or approval, assignments will be accepted up to 48 hours after their due date, but 25% of the points will be deducted each day. Assignments more than 48 hours late without communication get a 0. Extensions can only be granted for up to one week, and exam extensions may be limited by the course schedule.

Inclement Weather and Digital Learning Days

In case of inclement weather, Georgia Tech may declare a Digital Learning Day. Any lectures on these days would move online during class time. We will also move PSS to be virtual on these days.

Student Use of Mobile Devices in the Classroom

The use of laptops is permitted in lecture. We will be using laptops/phones to participate in PSS questions during regular lecture times. Please do not use your laptop or phone to play games or otherwise take your mind off lecture. It is truly distracting to other students and is not respectful to a learning environment. Students who are disruptive with their devices will be asked to put them down or turn them off. The use of laptops and phones will only be permitted in PSS on specific occasions.

Additional Course Policies

Regrades – any assignment that you think has been graded in error must be brought to the attention of your instructor no later than one week after you have received your grade. To dispute a grade, you should use the Grade Dispute Form on Canvas surveys, and the entire assignment will be reevaluated at the end of the term. It's important to note that the reevaluation may result in an increase or decrease in the overall score, and the submission of a grade dispute does not guarantee the awarding of points. If you have questions about the points accumulated in the course, it is essential to address them before the final instructional day. We reserve the right to lower the overall assignment score if we find that assignment parts have been given credit and are in fact incorrectly answered**.**

Campus Resources for Students

At Georgia Tech, we are concerned about your overall physical, social, and mental well-being. A comprehensive list of wellness related resources has been compiled and maintained by the Office of the Vice President for Student Engagement and Well-being (student-resource-guide (gatech.edu)

Undergraduate Student Academic Success Resources:

- Academic Support: Academic Success and Advising (a unit in the Office of Undergraduate Education & Student Success) provides free support for your courses. Students can attend scheduled supplemental review (PLUS) sessions, stop by Drop-In Tutoring, or schedule a one-on-one appointment through Knack. To explore what options work best for you, please visit us online at success.gatech.edu/tutoring, email us at tutoring@gatech.edu, or come see us at Clough Undergraduate Learning Commons, Suite 283.
- Academic Resources such as the Communications Center, Language Institute, Library, Catalog, Registrar, resources for conducting research, Advocacy and Conflict Resolution resources, and how to manage unexpected situations that may impact your academic performance;
- Student Resources such as Campus Services, Child Care/Family programs, Health & Wellness, Career Services, and the Student Resource Guide; and
- *Professional Development such as the programming from the Career Center and other professional development resources and events"*