

SYLLABUS: BMED4699 - Section HAY - Summer 2026

Georgia Institute of Technology & Emory University
Wallace H. Coulter Department of Biomedical Engineering

Course Title: **Undergraduate Research**

Semester: **Summer 2026**

Format: **Independent Research**

Credit Hours: 3 hours per week = 1 credit hour

Instructor: Dr. Karmella Haynes

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COURSE DESCRIPTION

This course provides students with the opportunity to engage in independent research under the supervision of a faculty advisor. Students will contribute to ongoing research projects in biomedical engineering, with emphasis on experimental design, data collection and analysis, and interpretation of results.

Research topics may include areas such as synthetic biology, epigenetic engineering, cancer biology, and related interdisciplinary fields. Students are expected to actively participate in the research process and develop skills in scientific reasoning, problem-solving, and communication.

LEARNING OBJECTIVES

By the end of this course, students will be able to:

- Design and execute independent or team-based research projects
- Analyze and interpret experimental or computational data
- Critically evaluate scientific literature

- Communicate research findings effectively (written and/or oral)
- Demonstrate reliable and professional conduct in a research environment

ASSESSMENT / EVALUATION

Grades will be based on:

- Research participation and effort
- Quality of research progress
- Clear and consistent documentation of experiments in an electronic notebook
- Final deliverable (e.g., written report or presentation)
- Professionalism and collaboration

GRADING SCALE

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

A	90-100%	At Georgia Tech, grades are awarded on a scale of A-F with no +/- grades permitted. See http://registrar.gatech.edu/info/grading-system for more information about the grading system at Georgia Tech.
B	80-89%	
C	70-79%	
D	60-69%	
F	0-59%	

SCHEDULE

This course follows the standard Georgia Tech academic calendar, with the exception of final exam periods, which are not applicable to independent research courses. Detailed research schedules (e.g., day-to-day activities) are arranged individually between the student and the research advisor. Expectations for time commitment and research milestones will be defined at the beginning of the term.

LAB SAFETY AND COMPLIANCE

Work will take place in a BSL-2 lab. The Standard Operating Procedures are available upon request. Students must have an email address registered by Georgia Tech or at Emory University, complete all required laboratory safety training in accordance with training offered through SciShield, and adhere to institutional safety protocols. Failure to comply with safety requirements may result in removal of access to the laboratory.

COURSE MATERIALS

There are no required textbooks for this course. Access to an electronic notebook, approved by the professor (e.g. Benchling) is provided at no cost. Students are expected to engage with primary scientific literature relevant to their research projects. Georgia Tech provides access to a wide range of high-quality scientific journals and databases through the University Library. Students are encouraged to use resources such as **PubMed** and **Web of Science** to identify, access, and evaluate peer-reviewed literature. Additional materials, including relevant articles,

protocols, or datasets, may be provided or recommended by the research advisor based on the specific project.

STATEMENT ON ACADEMIC INTEGRITY

Georgia Tech strives to cultivate a community grounded in trust, academic integrity, and honor. Students are expected to uphold the highest ethical standards in all academic work.

Review Georgia Tech's Academic Honor Code:

<https://policylibrary.gatech.edu/student-life/academic-honor-code>

STATEMENT ON MENTAL HEALTH AND WELL-BEING

Your instructors and the Biomedical Engineering Department are committed to supporting student mental health and well-being. Students are encouraged to utilize Georgia Tech's mental health resources:

<https://mentalhealth.gatech.edu>

For immediate support:

- Call 404-894-2575
 - After-hours counselor available
 - Emergency: 911 or GT Police (404-894-2500)
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STATEMENT ON ADA / ACCESSIBILITY

If you are a student with a disability and require accommodations, please contact the Office of Disability Services at 404-894-2563 and notify the instructor as soon as possible.

USE OF ARTIFICIAL INTELLIGENCE (AI)

AI tools may be used for support activities such as brainstorming, outlining, or improving clarity of writing. AI may not be used to generate original scientific content or analyses submitted as your own work. All AI use must be disclosed and must comply with Georgia Tech policies.