Undergraduate Research: Syllabus

Course Prefix, Number, and Section: ME4699 MY3
Course Name: Undergraduate Research
Instructor: Yi Chen Mazumdar
Semester: Fall 2026

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

Course Learning Outcomes
Below are learning outcomes associated with high-quality mentored undergraduate research experiences (adapted from Singer et al. 2022). These learning outcomes are broadly applicable across disciplines and define academic and professional knowledge and skills acquired during undergraduate research.

- Communication
  - 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
- Creativity & Autonomy
  - Shows ability to approach problems from different perspectives
  - Uses information in ways that demonstrate intellectual resourcefulness
  - 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
- 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
- Critical Thinking and Problem Solving
  - Approaches problems with an understanding that there can be more than one right explanation or even none at all
  - 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

    - Project Knowledge and Skills
        - Demonstrates ability to properly identify and/or generate reliable data
        - 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
        - Displays knowledge of key facts and concepts
        - 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)

Required Course Materials
No textbooks or materials are required.

A Getting Started lab guide is available from Dr. Mazumdar detailing the required online safety training courses, procedures for getting keycard access, procedures for getting access to the fileshare system (Dropbox, Box, etc.), instructions for getting your photograph added to the lab webpage, and other lab policies. Please email Dr. Mazumdar to get the most up-to-date guide.

Statement About Acceptable Student Conduct
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. The Student-Faculty Expectations agreement can be found here: https://catalog.gatech.edu/rules/22/

Grading Policy
A = 90% or more, B = 80% or more, C = 70% or more, D = 60% or more, F <60%

Grading will be based on point ratings for the following elements:

- (60 pts) Evaluation by the graduate advisor based on:
    - Weekly or biweekly research discussions with graduate mentor
    - Time spent on project (3 credits = 9 hours/week, 2 credits = 6 hours/week)
    - Reliability, responsibility, and dependability
    - Effort and engagement with the research project
    - Independence and creativity in solving research problems
    - Teamwork skills, lab safety, and research ethics
    - Ability to meet research deadlines for presentations, reports, and papers

    - First semester researchers are expected to make contributions to projects and second semester researchers are expected to contribute to conference and journal papers. Beyond the second semester, students are expected to take on more project leadership roles and write their own conference paper if the opportunity arrises.
- (20 pts) Attendance and presentations at monthly lab meetings. You may leave early or arrive late if you have a conflicting class, please let Dr. Mazumdar know at the beginning of the semester to make arrangements
- (20 pts) Final semester report (3-6 pages, 11 pt, Times New Roman, single spaced, at least one figure per page) discussing work conducted over the semester and key results

Attendance Policy

Undergraduate research students will participate in research activities on a weekly basis commensurate with registered credit hours and as discussed with Dr. Mazumdar and the graduate research mentors. Attendance at lab meetings is required, but you may arrive late or leave early if you have a conflicting class.

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 Dr. Mazumdar 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.