CS-2699-W15 and CS-4699-W15 – Undergraduate Research: Syllabus

What is undergraduate research? Broadly, undergraduate research is a research, scholarly, or creative project conducted by an undergraduate student under the guidance of a faculty mentor that contributes new knowledge and/or discoveries to the broader professional community.

Why is undergraduate research important? Undergraduate research is a recognized high-impact practice and an important transformative learning experience for students. High-quality mentored research experiences build confidence, foster deeper understanding, and enhance personal and professional development.

Course Prefix and Number

- Course prefix: CS
- Course numbers: https://undergradresearch.gatech.edu/register
    - CS-2699: graded academic credit research for freshman and sophomore students
    - CS-4699: graded academic credit research for junior and senior students.

Course Name

- CS-2699: Undergraduate Research
- CS-4699: Undergraduate Research

Instructor Name
Kai Wang (kwang692@gatech.edu)

Section
W15

CRN
CS-2699: 91937
CS-4699: 91886

Semester
Fall

Academic Year
2026

Course Description
Undergraduate research conducted under the guidance of Kai Wang.

Course Learning Outcomes

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

- **Analyze and synthesize** existing academic literature in machine learning and optimization to understand current methodologies and identify open research challenges.
- **Implement, test, and debug** computational models, algorithms, or data processing pipelines using Python.
- **Design and execute** empirical experiments to rigorously evaluate the performance of learning algorithms using appropriate quantitative metrics and datasets (e.g., healthcare applications).
- **Communicate** complex technical methodologies and research findings effectively through formal group presentations and structured academic reports typeset in LaTeX.

Required Course Materials
N/A

Statement About Acceptable Student Conduct
Faculty research mentors and students should discuss and agree on expectations before beginning an undergraduate research course. Expectations should 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. 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

Assessment Category	**Weight**
Research Progress & Technical Execution	40%
Participation & Communication	30%
Final Deliverable	30%

Research Progress & Technical Execution (40%)

Evaluates the student's consistent progress on agreed-upon research objectives. This includes the quality, efficiency, and documentation of technical work, such as developing, testing, and maintaining Python codebases, data pipelines, or experimental setups. Students are expected to demonstrate increasing autonomy and resourcefulness in troubleshooting technical obstacles.

Participation & Communication (30%)
Assesses the student's active engagement and reliability. This includes arriving prepared for weekly 1:1 mentoring meetings, actively participating in KOALA lab group discussions, and maintaining professional, clear communication regarding research updates, setbacks, and milestones.

Final Deliverable (30%)
Students must synthesize their semester's work into a formal academic format. This requirement can be fulfilled by submitting a comprehensive final research report (formatted in LaTeX) detailing the project's background, methodology, and preliminary results, or by delivering a formal presentation to the research group at the end of the term.

Letter Grade Translation

- **A (90 – 100%): Excellent**. The student consistently exceeded expectations in all categories, demonstrated significant independent thought, and produced high-quality, reproducible work.
- **B (80 - 89%): Good**. The student met all project expectations, maintained steady progress, and completed a solid final deliverable, though may have required more frequent guidance.
- **C (70 - 79%): Satisfactory**. The student completed the minimum requirements of the project but struggled with consistent progress, communication, or the quality of the technical execution.
- **D (60 - 69%): Passing**. The student's performance was consistently below expectations, with significant gaps in attendance, effort, or deliverable quality.
- **F (Below 60%): Failure**. The student failed to meet the basic obligations of the research agreement.

Attendance Policy
Undergraduate research students will participate in research activities on a weekly or biweekly basis commensurate with registered credit hours and as discussed with faculty research mentors.

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.