

ISYE 4600 METHODS AND APPLICATIONS OF MACHINE LEARNING - Fall 2026

Instructor information

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Course information

This course develops an understanding of core ML methods and their practical use in ISyE contexts. Upon completion, students will be able to: Gain a thorough understanding of ML algorithms, use machine learning algorithms and choose the correct ones, and gain experience with analyzing real data.

Prerequisites ISYE 3030 BASIC STATISTICAL METHODS and ISYE 3133 ENGINEERING OPTIMIZATION

Course Outcomes At the end of the course you should be able to

- Formulate ML problems and select appropriate algorithms.
- Implement and evaluate ML models using software tools.
- Analyze data and interpret model outputs with statistical rigor.
- Communicate ML-driven conclusions for engineering decision-making.

Required Course Materials

There are no required textbooks for the course. Python will be used for assignments and projects.

Grading Policy

The weights used for grade assignment will be

Assignment type	Weight
Quizzes:	20%
Homework:	50%
Final project:	30%

Thresholds for letter grade assignment are as follows.

Letter grade	Percentage range
A:	$89.5\% \leq \text{total grade} \leq 100\%$
B:	$79.5\% \leq \text{total grade} < 89.5\%$
C	$69.5\% \leq \text{total grade} < 79.5\%$
D	$59.5\% \leq \text{total grade} < 69.5\%$
F	$0\% \leq \text{total grade} < 59.5\%$

Quizzes Starting the second week of class, most lectures will include a short quiz, that involves answering questions related to lecture Colab notebooks. Quizzes are graded for correctness, with partial credit awarded for partial answers (e.g. work shown) or to account for minor errors.

Homework Four to six homework assignments will be given during the semester. Homework is graded for correctness, with partial credit awarded for partial answers (e.g. work shown) or to account for minor errors.

Final Project The course will culminate in a final project, where students work in teams to formulate a problem, develop an experimental design, utilize selected ML algorithms, and interpret results, communicating recommendations for an engineering problem. Students will choose their own teams. The project deliverables will include a project proposal (5%), mid-semester project checkpoint (2.5%), project report (15%), presentation (5%), and peer evaluation (2.5%). Final reports are due at the end of the final exam period scheduled for our class. Presentations will take place during the final exam period scheduled for our class.

Course policies

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 plagiarism 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.

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.

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.

Collaboration, Group Work, and Use of Generative AI You are allowed to talk to other students in class about homework assignments, but any work you turn in must be written yourself. In general, use of Generative AI and of any previous semester course materials, such as homework, projects, and any other coursework, are prohibited in this course. Using these materials will be considered a direct violation of

academic policy and will be dealt with in accordance with the GT Academic Honor Code. **When in doubt regarding what constitutes a violation, do not guess the answer and post on EdDiscussion for clarifications.**

Extensions, late assignments, and re-scheduled/missed exams Once per semester, a student can use a 24-hour extension on a homework assignment. Any homework assignments turned in past 24 hours (or a second time during the semester) will not be accepted. The two lowest quiz scores are dropped. Students should communicate with the instructor if a quiz is missed for institute-approved reasons within one day of the missed quiz, for an opportunity to make up the quiz. No extensions are available on project deliverables.