CS7646: Machine Learning for Trading (FA26)

Course syllabus · Georgia Institute of Technology · Canvas course 536288

Course Syllabus

Machine Learning for Trading (CS 7646) Syllabus

Course Prefix and Number: CS 7646
Course Title: Machine Learning for Trading
Semester and Academic Year: Fall 2026

Course Description

Machine Learning for Trading introduces students to the application of machine learning methods in financial markets and trading. The course combines machine learning, data analysis, financial market concepts, and trading strategy development in an applied setting. Students learn to work with market data, implement selected learning algorithms, evaluate performance, and analyze trading-related problems through code, written reports, and exams.

Course Learning Outcomes

Upon successful completion of this course, students should be able to:

1. Analyze financial data using appropriate statistical and computational methods.
2. Apply selected machine learning techniques to problems related to trading and investment analysis.
3. Design, implement, and evaluate trading-related models and experiments.
4. Interpret results and communicate findings clearly in written form.
5. Demonstrate understanding of the strengths, limitations, and practical considerations of machine learning approaches in trading contexts.

Recommended Course Materials

Recommended course materials may include selected video lessons, readings, book chapters, papers, study guides, and other course-provided resources published in Canvas. These resources support student mastery of the course learning outcomes; they are not designated as required readings.

Students should refer to the **Resources** Canvas page for the current list of recommended materials for the term. The published exam question pools define the questions eligible for selection on each exam.

Required Platforms and Tools

Students must have access to and use the following platforms and tools as directed:

- Canvas
- Ed Discussion

- Gradescope
- Python 3.10
- A Linux- or macOS-compatible development environment consistent with course guidance. The course does not support development on Windows.
- A Windows- or macOS-compatible environment for course exams.

Grading Policy and Weighting

Final grades are based on the weighted performance of graded course components. The course uses the following grading categories:

Grading Category	Weight
Projects	50%
Exams	40%
Participation	3%
Flexible Participation	7%
Total	**100%**

Project Weighting

Project	Weight
Project 1	3%
Project 2	3%
Project 3	10%
Project 4	3%
Project 5	3%
Project 6	8%
Project 7	5%
Project 8	15%
Total	**50%**

Exam Weighting

Exam	Weight
Exam 1	20%
Exam 2	20%
Total	**40%**

Participation Weighting

Participation Component	Number	Weight per Activity	Total Weight
Course Quizzes	4	0.25%	1%
Course Surveys	4	0.25%	1%
Professional Conduct	1	1%	1%
Total			**3%**

Flexible Participation

Flexible Participation gives students multiple ways to engage with the course and demonstrate learning beyond the required projects, exams, quizzes, and surveys. The course offers more Flexible Participation opportunities than are needed for full credit so that students may select the opportunities that best fit their interests and schedules.

Each value below represents percentage points toward the **overall course grade**, not a percentage of the 7% Flexible Participation category. Note, actual breakdown may vary as the instructional staff may change participation points once the term begins. Such changes will be made via course announcements.

Flexible Participation Opportunity	Available Course Percentage Points
Introduce Yourself	1%
Trading Experience Project	3%
Investors / Analyst Report	3%
Investor's & Trader's Dashboard	4%
Exam Pool Question Validation 1	1%
Total Available	**12%**

Students may earn a maximum of **7 percentage points toward the overall course grade** through Flexible Participation. Although 12 percentage points are available across the activities above, Flexible Participation is capped at 7% of the final course grade. Completing activities worth more than 7 percentage points does not increase the final course grade beyond this cap.

Flexible Participation activities are optional. Students should review each activity's Canvas instructions for eligibility, submission requirements, deadlines, grading criteria, and any dependencies. Peer-review opportunities, if offered, are subject to a sufficient number of qualifying submissions.

Flexible Participation points may be added to the course throughout the term at the discretion of the instructional staff.

Final Letter Grades

Final letter grades are assigned using the following scale:

- A: 90% or higher

- B: 80% to less than 90%
- C: 70% to less than 80%
- D: 60% to less than 70%
- F: Below 60%

Georgia Tech does not use plus/minus final grades in this course. Final grades are based on the overall weighted course average. The course does not grade on a curve.

Description of Graded Components

Projects

Projects evaluate students' ability to apply course concepts through programming and, where applicable, written analysis. Project-specific requirements, permitted resources, grading criteria, and submission procedures are provided in Canvas.

Exams

The course includes two exams, each worth 20% of the final course grade. Students have 90 minutes to complete each exam.

Each exam covers two knowledge areas: **Machine Learning (ML)** and **Quantitative Finance (QF)**. Each knowledge area contains 10 domains. The exam draws two questions at random from each domain, resulting in 20 ML questions and 20 QF questions, or 40 questions total.

- **Exam 1:** ML1 and QF1 domains
- **Exam 2:** ML2 and QF2 domains

All exam questions are drawn from the published exam question pools. All questions and corresponding answers in a pool are considered valid unless withdrawn by the instructional staff. Students are encouraged to review the pools and use the designated Exam Pool Question Validation activity to identify a potential issue before an exam.

After an exam has been graded, a grading dispute will be considered only when the answer applied on the exam does not match the corresponding answer in the published question pool. Disagreement with an answer in the question pool alone is not a sufficient basis for an exam regrade. A question remains valid unless the instructional staff withdraws it.

Exams are administered through Canvas using the course's designated proctoring requirements. Students may not use generative AI or other unauthorized assistance during an exam. Complete procedures, permitted resources, availability windows, and technical requirements are provided in the **Exam Instructions** in Canvas.

Participation

Course quizzes reinforce understanding of course policies, procedures, and designated instructional content. Course surveys provide structured opportunities for student feedback. Each of the four quizzes and four surveys contributes equally to its respective 1% participation component.

The Professional Conduct component recognizes compliance with the Course Policies and Guidelines, course communication and conduct expectations, academic integrity requirements, and the Georgia Tech Honor Code. Students receive the associated 1% by meeting these standards. The point may be reduced or removed following a documented violation of an applicable standard, including an academic integrity violation or disruptive conduct that continues after notice.

Flexible Participation

Flexible Participation activities may include course engagement, content mastery, peer learning, question-pool validation, and exploration of trading-related applications. Up to 7 percentage points count directly toward the overall course grade. Detailed requirements for each opportunity are maintained in Canvas.

Attendance and Participation Policy

Because this course is delivered online, students are expected to engage consistently with the course and remain current with course materials, announcements, and assigned work.

Attendance at live sessions, office hours, or discussion sessions may be encouraged, but unless explicitly stated otherwise in Canvas, attendance at such live events is not required and does not independently contribute to the course grade.

Students are responsible for:

- monitoring Canvas, Ed Discussion announcements, and official Georgia Tech email for course communications;
- completing graded work by the published deadlines;
- completing the defined Participation activities; and
- following the requirements for any Flexible Participation opportunities they choose to complete.

Additional Criteria for Successful Completion of the Course

Successful completion of the course requires students to do all of the following:

- submit work through the designated course systems and in the required formats;
- submit work by the published deadlines, as late work is not accepted;
- complete quizzes and exams within their assigned availability windows;
- comply with course technology and platform requirements;
- follow published course procedures that affect grading, submissions, and assessments; and
- adhere to course academic integrity, conduct, and communication expectations.

Any exception to the late-work policy must be required by an approved accommodation or applicable Institute policy and handled through the prescribed Georgia Tech and course procedures. Detailed operational procedures, assignment instructions, schedules, and submission requirements are maintained in Canvas.

Academic Integrity

Academic integrity is fundamental to this course. Students are expected to uphold the Georgia Tech Honor Code and complete all graded work in a manner consistent with Institute expectations and course-specific requirements.

Unless explicitly authorized in the applicable assignment instructions, students may not submit work that is not their own, use unauthorized assistance, or engage in prohibited collaboration. This includes inappropriate use of generative AI, unauthorized sharing of assignment or exam materials, and use of another person's code, text, or solutions.

Generative AI may be used only when the instructions for a specific assignment expressly permit it. The **Investor's & Trader's Dashboard** is the only course assignment for which generative AI use is authorized. Students remain responsible for understanding, validating, modifying, and defending any work produced with AI assistance and must follow the assignment's disclosure and submission requirements. Generative AI is not permitted on exams.

Suspected academic misconduct may result in a grade penalty up to and including a zero on the assignment or an F in the course, and the matter may be referred to the Office of Student Integrity.

Students should review the full Georgia Tech Honor Code and the detailed course academic integrity policies published in Canvas.

Acceptable Student Conduct / 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 Agreement preserves these principles and establishes standards for student and faculty conduct. Students are expected to contribute to a respectful, constructive, and professional learning environment in all course interactions.

Course-related communication is not social media discourse. Students must communicate professionally and may not use course spaces to attack, demean, harass, or disrupt others. Concerns and criticism should be raised privately through the designated course channels whenever appropriate. If a student believes a concern was not understood, the concern may be restated once; continued repetition after the matter has been addressed is not constructive participation.

These standards apply to official course spaces and to course-related interactions on external communication channels, including student-created Discord, WhatsApp, or similar groups. Students should consult the Course Policies and Guidelines in Canvas for the complete conduct and communication requirements.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services for information on appropriate accommodations. Students with approved accommodations should follow applicable Georgia Tech procedures and course procedures so those accommodations can be implemented appropriately.

Additional Course Information in Canvas

To keep this syllabus relatively stable across terms, detailed operational and term-specific information is maintained in Canvas. Students are responsible for reviewing those materials as applicable.

Canvas materials may include, but are not limited to:

- Course Schedule and Details
- Course Policies and Guidelines
- Exam Instructions
- Exam Question Pools and Study Guides
- Resources
- Participation and Flexible Participation instructions
- Development Environment / Technology Guidance
- Assignment instructions and project-specific requirements

These materials provide detailed information such as weekly schedules, recommended resources, assignment instructions, exam procedures, technology expectations, and other course processes.