ISYE 4803 Financial Data Analysis
Summer 2026
Instructor: Xiaoming Huo, huo@gatech.edu **Phone**: +1 404-323-0037 (cell)
Dates: June 30, 2026 – July 15, 2026. See **Schedule** below.
Time: 9:30 am -11:30 am and 1 pm -3 pm. **Lecture room**: Hanyang University, Seoul.
First meeting time: 9:30 am local time on Tuesday, June 30, 2026.
Office hours: immediately after the lectures or by appointment. I live near Hanyang University campus.
Prerequisite: ISYE 3030 (introduction to statistics) or basic statistics, calculus, and computer programming.
Objectives: This course aims to introduce students to the concepts and methods of data analysis using publicly available, industry-adopted software systems. Students are expected to formulate statistical models, process necessary data, analyze them, draw conclusions, and present solutions. Although the word "financial" is in the course name, the course materials are generic.
Topics:

1) Preparation: CANVAS, GitHub.com, Jupyter notebooks
   a) Anaconda https://www.anaconda.com/ (https://www.anaconda.com/), incl. Python, Jupyter Notebooks
   b) An AI tool like Claude Code
2) R overview and examples
3) Linear regression
4) Regression application: financial returns, CAPM
5) Resampling methods
6) Subset selection
7) Classification methods: logistic regression
8) Unsupervised Learning - clustering
9) Dimension Reduction: Multivariate analysis & principal component analysis
10) Nonlinear Models
11) Tree-based methods
12) Support vector machines
13) Factor analysis
14) Nearest neighbors methods
15) Neural networks, deep learning

The above list of topics is tentative. We may adapt accordingly. We will emphasize both the usage of software to process data and the theory behind it. The theory will be kept at an adequate level. Some derivation will be done in the class.
Objectives: By the end of the course, students should be able to

1. Obtain and preprocess data from statistical software.
2. Choose adequate models to analyze data and provide adequate justification.
3. Analyze the goodness of fit of the model, exploring alternatives and exploiting extensions and generalizations.
4. Report findings systematically, professionally, and effectively.
5. Gain some experience with statistical figures.

Texts: The course will be based on lecture materials and assigned readings, which will be provided to students throughout the course.
Grading

- There will be frequent (i.e., daily/bi-daily) homework assignments.
- Exam Dates: See a table later in this document. Exams include a midterm and a final. All of them are closed books. For the midterm (respectively, final), you can bring three (resp., six) pages of double-sided notes. The notes need to be handwritten. Digital versions are not accepted. In the notes, you can write down anything you like. However, they have to be self-made. Photocopying is not acceptable.
- Homework/Project submission: canvas.gatech.edu for Georgia Tech students.
- Distribution of points:
  - Homework & Projects 10 %

- Midterm 40%
- Final Exam 50 %

Letter grades: A>90; B>80; C>70; D>60.

Schedule

C2 indicates this course. The class will meet on the following days.

GT wk	Sun	M	T	W	R	F	Sat
1	6/28/26	6/29/26	6/30/26	7/1/26	7/2/26	7/3/26	7/4/26
			C3	C3	C3		
2	7/5/26	7/6/26	7/7/26	7/8/26	7/9/26	7/10/26	7/11/26
		C3	C3	C3	C3		
3	7/12/26	7/13/26	7/14/26	7/15/26	7/16/26	7/17/26	7/18/26
		C3	C3	C3			

Week 1	June 30, 2026	Course Preparation Reproducibility; Python, GitHub
Week 1	July 1, 2026	R overview and examples
Week 1	July 2, 2026	Linear Regression Review
Week 2	July 6, 2026	Financial returns: returns; CAPM; Factor analysis
Week 2	July 7, 2026	Classification methods: logistic regression
Week 2	July 8, 2026	Nearest neighbors' methods Clustering
Week 2	July 9, 2026 AM	Review and Q&A
Week 2	July 9, 2026 PM	**Midterm**
Week 3	July 13, 2026	Tree-based methods
Week 3	July 14, 2026	Neural networks, deep learning
Week 3	July 15, 2026 AM	Review & Q&A
Week 3	July 15, 2026 PM	**final test**

Remarks:

1. **Late submission** of homework/projects will have a penalty (10-50%, depending on the lateness).
2. You are allowed (and encouraged) to work together with other students on homework as long as you write up and **turn in your own solution**s. You are also allowed (and encouraged) to ask me questions, although you should try to think about the problems before asking.
3. Make sure the **scores in CANVAS** are consistent with what you got. I gave the final grades based on them.
4. For fairness, no **extra credit** unless it is arranged before any tests.
5. We will not make any **change in grading** for work older than 2 days and after the course ends.
6. **Zero-tolerance**: any violation of honor codes (e.g., cheating on homework, tests, etc.) will result in an automatic F in this class.

Attendance Policy

Students are expected to attend all lectures. Regular attendance is strongly correlated with exam performance and will be considered in determining final grades.

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. For the detailed policy, see the Georgia Tech Honor Code and the student Code of Conduct.
Any student suspected of cheating or plagiarizing 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.

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.

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.

Xiaoming Huo
June 2026