

ECON 433

Advanced Financial Markets

Dr. Alexis Akira Toda

Department of Economics

Rich Memorial Building 306G

✉ alexis.akira.toda@emory.edu

🌐 alexisakira.github.io/

Co-taught with Srinivas Pulavarti

srinivas.pulavarti@emory.edu

Class time and location

Tuesdays and Thursdays 10:00-11:15am, Math & Science Center E301A.

Communication

- I will reach out to you mostly through Canvas announcements. Please pay attention and turn on the notification.
- If you need to reach out to me, please send an email to my Emory email address. I will do my best to respond within two business days. I do not monitor Canvas Inbox.
- I may respond to inquiries through Canvas announcements.

✓ Please read the syllabus, Canvas announcements, etc. before hitting the send button. Questions on course material are best addressed in person, either in class or at office hours.

Office hours

Wednesdays 1:45-3:45pm at my office (Rich Memorial Building 306G) (preferred) or by appointment.

✓ The best opportunity to ask questions is during class, for two reasons: (i) you can resolve your question immediately (assuming I know the answer); (ii) your classmates are likely to have similar questions, so they can benefit from questions being resolved and I benefit by saving time.

Textbook

This course does not have required textbooks. Lectures will use my own slides and MATLAB live scripts partly inspired by [1]. It is not necessary, but it may be useful for background reading (older editions are fine). I recommend reading [2, 3] as introduction to personal finance. [2] explains the principles using parables, which are highly entertaining. The book is no longer copyrighted and you can read for free using the link or simple Google searches. [3] is more modern and practical.

Optional reading

- [1] Z. Bodie, A. Kane, and A. J. Marcus. *Investments*. 13th ed. New York: McGraw Hill, 2024. ISBN: 9781266085963.
- [2] G. S. Clason. *The Richest Man in Babylon*. 1926. URL: https://en.wikipedia.org/wiki/The_Richest_Man_in_Babylon.
- [3] B. G. Malkiel. *A Random Walk Down Wall Street*. 13th ed. New York: W. W. Norton & Company, 2024.

Overview

Economics 433 (Advanced Financial Markets) is an upper division course on finance. We study personal finance, some institutional details on the financial markets, bond pricing (including duration analysis), optimal portfolio problem, mutual fund theorem, Capital Asset Pricing Model, and option pricing (including bounds on option prices, suboptimality of early exercise of American call options, put-call parity, binomial option pricing). The course requires good analytical skills (basic calculus and probability/statistics). To solve numerical examples, we will learn programming in MATLAB, although no prior knowledge is necessary.

Goals

- Understand principles in personal finance to achieve financial independence.
- Understand basic concepts in financial markets.
- Acquire basic programming skill to analyze financial problems.

✓ Although I will use MATLAB as the programming language for instruction, if you are already proficient in other languages, you are free to use whatever language you are comfortable with to solve numerical questions. Being familiar with programming will help you get jobs.

Examinations and grading policy

Overview

There will be quiz, midterm, final, and oral exams.

February 5 **Quiz, 10%**

The quiz is a Canvas Quiz implemented **online** (open-book).

March 5 **Midterm, 20%**

The midterm exam is a Canvas Quiz implemented **in person**.

April 21 and **Final Exam, 40%**

23 The final exam is a Canvas Quiz implemented **in person**.

TBD **Oral Exam, 30%**

The oral exam is a Zoom interview (about 10 minutes per student). It will test the student's basic understanding of course material.

Problem sets, 0%

Problem sets are Canvas Quiz resembling the actual exams. They are ungraded but it is highly recommended that students work on their own.

The quiz will be implemented online, with ample time limit, and it will be open-book. The purpose of the quiz is to get you used to the exam format described below so that you will be ready to take the midterm and final (which carry much higher weights). The midterm and final will be in class and we will check attendance (please bring your student ID).

✓ Failure to take a test will lead to a score of zero for that test. No exception will be made. Make up exams are allowed only in medical emergencies (written verification required).

✓ You are responsible for all materials covered up to the date of the exam, unless otherwise explicitly announced.

Canvas quiz

We have invested significant effort to create large pools of questions that are closely related to the course materials. To maintain academic integrity and fairness, each student will be assigned questions randomly (e.g., n_X random questions from Chapter X material, n_Y random questions from Chapter Y material, etc., independent across students).

Exams will be automatically graded as soon as you submit and you will see whether your answer was correct or not, although we will provide no answer keys (to prevent students from copying and pasting for future use). However, we are happy to solve some questions during class upon request. To take the exams, you need to have a laptop computer with internet access and an appropriate computing software. (We recommend MATLAB but it can be anything, such as Python, R, or some basic spreadsheets. However, financial calculators are not recommended.)

The majority of questions will be numerical and simple coding will be required to answer correctly. (You will learn basic coding during the course, so you do not need to worry if you have no prior experience.) If a question is numerical, it will require to enter a number in a certain unit (e.g., percentage point) rounded to a certain decimal place (e.g., second decimal place). For instance, if the answer is $3.141592\dots$ and the question requires to round at the second decimal place, then the correct answer is 3.14. However, some error margin is allowed, so 3.13 and 3.15 could also be graded as correct. (The error margin may depend on the question and we cannot provide specific details.)

✓ You may feel the grading of Canvas Quiz (which is automatic and has the all-or-nothing nature) inflexible and frustrating. In our lives, there are many situations where we did almost everything right but suffered significant consequences from a small mistake (imagine a doctor that prescribed the right drug to the right disease but killed the patient because the dose was ten times large). Do not take partial credits for granted and pay attention to solve problems completely. It's a necessary skill in life and you must accept it.

Oral exam

The oral exam is a Zoom interview that lasts for about 10 minutes per student. We will ask you basic questions such as "explain such and such". Given the time constraint, we expect concise answers that are to the point. The purpose of the oral exam is to test the student's basic understanding of course material. Even if you made silly mistakes in Canvas Quiz (such as answering in decimals instead of percentage points, or messing up with call and put options), it is entirely possible to recuperate because the oral exam carries a high weight. The opposite is also true: in the past I have seen students who performed nearly perfectly in Canvas Quiz (perhaps by mechanically remembering codes and formulas) but performed poorly in the oral exam and hence also in the course.

Grading scale and distribution

Needless to say, regardless of the scale each exam is graded, the raw score will be converted proportionally to conform to the above weights. The course grade (0-100) will then be converted to a letter grade (A-F) at my discretion (i.e., "curved") at the end of the semester, based solely on ranking within class. The department has been experiencing grade inflation and recommends the average point scale to be close to 3.0 (letter grade B). I aim to assign letter grades to achieve the ABCD ratio of 0.5 : 0.3 : 0.2 : 0. Letter grades D and F are assigned only in exceptional circumstances such as detrimental performance or no-shows.

✓ It is important to attend class on a regular basis. Casual attendees will not be accommodated.

Tutoring

If you need tutoring, please go to

<https://economics.emory.edu/undergraduate/econ-dept-opportunities/tutoring.html>.

Honor code

Honor code violations will be dealt with decisively (failing grade and expulsion from school).

✓ The honor code is in effect throughout the semester. By taking this course, you affirm that it is a violation of the code to cheat on exams, to plagiarize, to deviate from the teacher's instructions about collaboration on work that is submitted for grades, to give false information to a faculty member, and to undertake any other form of academic misconduct. You agree that the teacher is entitled to move you to another seat during examinations, without explanation. You also affirm that if you witness others violating the code you have a duty to report them to the honor council.

Expected student conduct

Please do not miss any class. Students who miss class will not be accommodated.

✓ Please adhere to the following guidelines in class.

- Be on time. Late arrival disturbs the lectures and will not be allowed.
- Turn off your mobile phone and other electronic gadgets before you enter class.
- Participate in class discussions. Be attentive and take detailed notes.

✓ Please adhere to the following guidelines outside class.

- Look over the assigned material before class and read it carefully after the lecture.
- Do the assigned homework problems on a regular basis. Economics requires gradual learning.
- Please discuss with us any problems you may have in the course or any suggestions to improve the course.

Canvas

Canvas is a communication medium used to make announcements, distribute handouts and lectures, post reading material, collect assignments, and record and distribute grades. To get to the Canvas main page go to <https://classes.emory.edu> and then use your network ID and password to log in and select our course. If you cannot log in, you perhaps have difficulty with your network ID and password. You may contact classes@emory.edu for any problems or questions you might have. There are several navigation buttons on our entry page that help us organize and classify information.

✓ I do not monitor Canvas Inbox; please do not use it. Turn on the notification setting to receive announcement notifications. Go to Account → Notifications and select "Notify immediately" for "Announcement". Make sure to also check your spam folders. In the past, I received complaints such as "we didn't receive announcements" but this is an issue on the student's end.

Reading list and class-by-class schedule

- Week 1-2 **Introduction to personal finance and Matlab**
- Week 3-4 **Risk and returns, *BKM Chapter 5***
- Week 5-8 **Bond pricing, *BKM Chapters 14-16***
- Week 9-10 **Optimal portfolio and capital asset pricing model, *BKM Chapters 6, 9***
- Week 11-13 **Options pricing, *BKM Chapters 20, 21***

Department links

- Website <https://economics.emory.edu/>
- X <https://x.com/emoryeconomics>
- Linkedin <https://www.linkedin.com/company/emory-university-department-of-economics/>
- Facebook <https://www.facebook.com/EmoryEcon/>
- Instagram <https://www.instagram.com/econemory/>

Enjoy your break!