

ECONOMICS 173A:

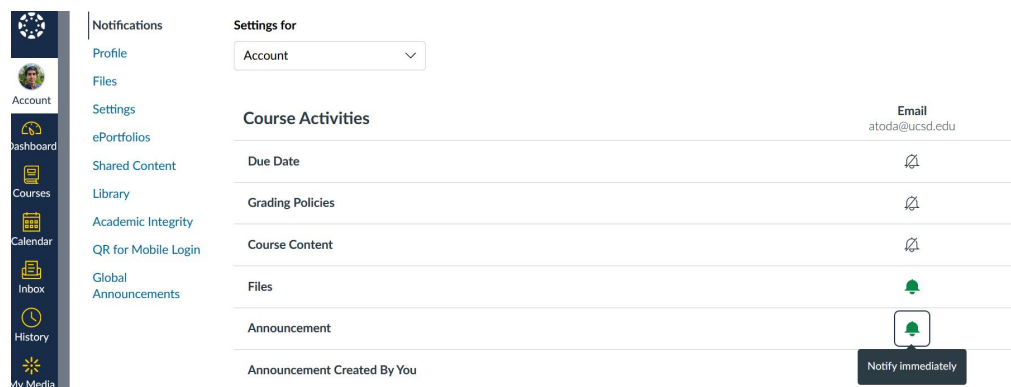
Financial Markets

Basic information

Lectures	Tu/Th 9:30-10:50, PODEM 0133
Instructor	Prof. Alexis Akira Toda
Office hours	M 12:30-13:30, Zoom
Email	atoda@ucsd.edu
Webpage	https://alexisakira.github.io/
TA	Alisher Batmanov, abatmanov@ucsd.edu
Discussion sessions	Th 17:00-17:50, HSS 2321

Canvas

I will be using Canvas (<https://canvas.ucsd.edu>) to communicate with you. Please access it and familiarize yourself. We do not monitor Canvas Inbox; please do not use it. Most importantly, please turn on the notification setting to receive announcement notifications. Go to **Account** → **Notifications** and select “Notify immediately” for “Announcement”. See the screen shot below. 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 at the student’s end.



Course description

Economics 173A (Financial Markets) is an upper division course on finance. We study 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.

Lectures are inspired by the textbook *Investments*, 11th edition, McGraw Hill by Bodie, Kane, and Marcus. The course will cover the following topics (in this order):

1. Introduction to personal finance and MATLAB,
2. Risk and returns (Chapter 5),
3. Bond pricing (Chapters 14–16),
4. Optimal portfolio and Capital Asset Pricing Model (Chapters 6, 9)
5. Options pricing (Chapters 20, 21).

I will be using slides and MATLAB live scripts that cover part of the textbook plus some additional materials.

Textbook

As mentioned above, the recommended textbook is

- “Investments”, 11th edition, McGraw Hill by Bodie, Kane, and Marcus.

There is a newer 12th edition, but it is more expensive and the material is nearly identical to the 11th edition, so it is up to you to choose the edition.

If you google “Bodie Kane Marcus investments 11th edition pdf”, you can find plenty of cheap options. I do not endorse any particular option: please decide how to obtain the book at your own responsibility and risk.

Other recommended readings are:

- “A Random Walk Down Wall Street” by Malkiel,
- “The Richest Man in Babylon” by Clason.

The latter is no longer copyrighted and you can find free copies by googling.

Evaluation

The course grade will be based on a quiz, a midterm, a final, and an oral exam. Please mark your calendar:

Quiz Thursday January 25 (online)

Midterm Thursday February 15 (in class)

Final Monday March 18 (online)

Oral Thursday March 14 (in class) or Tuesday March 19, 8:00-11:00 (online)

The exam dates are not negotiable. Please do not take the course if you know you have a schedule conflict other than university-approved excuses (e.g., illness, family emergency, official university trip). There will never be make-up exams. If you miss a midterm for a university-approved reason (you need to provide evidence), the weight on the midterm will be transferred to the final. If you miss a midterm for other reasons, your score will

be zero. Per UCSD Academic Senate Regulations¹ a final exam is required. Hence the failure of taking the final exam for any reason will result in a letter grade F, regardless of the overall performance in other categories.

The weight and format of each exam is as follows.

Exam	Format	Weight
Quiz	online, open-book	10
Midterm	in class, closed-book	40
Final	online, open-book	30
Oral	Zoom	20

Obviously, regardless of the scale each exam is graded, it will be converted to the above grade proportionally. The course grade will then be converted to letter grades at my discretion (i.e., “curved”) at the end of the quarter, based solely on ranking within the class. **You are responsible for all materials covered up to the date of the exam**, unless otherwise explicitly announced.

The quiz will be done 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 have much higher weights). The midterm will be in class and we will check attendance (please bring your student ID).

The table below lists the past cutoffs for the letter grades and the letter grade distribution. Here are a few observations and background information.

- Until 2020, exam questions were all taken from the textbook end-of-chapter exercises and the exam format was pencil-and-paper.
- 2020 was the pandemic and I believe there was widespread cheating, which could explain the very high scores.
- I introduced Matlab programming in 2021, which I think is a very important skill.
- In 2022, I eliminated the textbook end-of-chapter questions and expanded the question bank with my own questions, which raised the difficulty of the exam and lowered the score.
- The grade distribution is not stable. This is because I tend to become more generous if many students withdraw from the class (as students who are struggling are more likely to withdraw).
- I introduced an oral exam in 2022, which was a huge success.
- In any case, I think I am generous with the letter grades, and you will get at least a B if you put reasonable effort.

Year	A/B cutoff	B/C cutoff	C/D cutoff	ABCD ratio
2019F	80	55	20	0.42:0.42:0.15:0.01
2020F	90	79	0	0.24:0.51:0.25:0
2021F	71	55	0	0.35:0.34:0.31:0
2022S	58	34	0	0.55:0.37:0.18:0
2023S	71	40	0	0.27:0.55:0.18:0

¹<https://senate.ucsd.edu/operating-procedures/educational-policies/courses/epc-policies-on-courses/policy-exams-including-midterms-final-exams-and-religious-accommodations-for-exams/>

Exam format

All exams will take the form of Canvas Quizzes. I and the former TAs have invested significant effort to create large pools of questions that are closely related to end-of-chapter exercises of relevant chapters/sections in the textbook and 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 lectures or discussion sessions 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 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 I cannot provide specific details.)

More details on the exam logistics will be announced through Canvas announcements. **It is your responsibility to pay attention to these announcements and follow the instructions in order to receive credit for the exams.**

Problem sets

There will be biweekly problem sets that consist of questions similar (but not necessarily identical) to those in the exams. The problem sets do not count towards your grade in any way and you do not need to submit your solutions. However, **I highly recommend that you attempt to solve the problems to get prepared for the exams.** The TAs will explain solutions to selected problems in discussion sessions.

Matlab

You can install MATLAB to your computer following the instructions here. You can also run MATLAB online from here. We (I and TAs) will not provide technical support for how to install or use MATLAB (there are abundant online tutorials that you can google, for instance this), but TAs may help you if you come to the discussion sessions. If you have no prior experience in coding, it could be frustrating at the beginning because your code will contain bugs and you will see many error messages. Don't worry, you will improve over time.

Questions

The best opportunity to ask questions is *during* the class, for two reasons. First, you can resolve your question immediately (assuming—well—I know the answer). Second, your classmates are likely to have similar questions, so they can benefit from questions being resolved and I benefit by saving time. So, don't be shy, please ask questions.

My expectations

- I expect you to read the syllabus. The syllabus is like a contract between you and me. If you don't like the course organization, you do not need to take it. If you decide to take the course, please follow its rules.
- I expect you to pay attention to Canvas announcements. Most communications from me to you will be made orally during lectures or verbally through Canvas announcements.
- I expect you to come to classes. If you miss a class, it is your responsibility to catch up.
- I expect you to put reasonable effort. You will pass the class if you do so.
- You may feel the grading of Canvas Quizzes (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.
- The university sets various deadlines for withdrawing from the course. If you choose to take the course, I understand that you agree to everything described in the syllabus.
- I take academic integrity seriously: please click "Academic Integrity" tab on Canvas.
- If you want me to write a letter of recommendation, please follow my policy: <https://alexisakira.github.io/misc/letter-of-recommendation>