

## 15.433-15.4331 Financial Markets

### Overview

This course provides an in-depth exploration of key financial markets including equity, fixed-income, and derivatives. The class content is mostly empirically driven: using financial data to test and understand financial models. For each of the financial markets covered in this class, our focus is on the key risk factors in the market. What are the natures of the risk factors? How are they related to the broader macro-economic environment? What are the risk-return tradeoffs of the risk factors? What are the important tools used in the quantitative analysis of the risk factors? What are the risk management concerns for such risk factors? For each of the financial markets, additional attention will also be given to its institutional details. For example, who are the major players in the market? What is the liquidity condition of the market? How has the market evolved over time?

In the end of this class, you are expected to be solidly grounded in your understanding of the key financial markets, well equipped with the empirical skills and tools necessary for quantitative analyses, and ready to extend the knowledge to other financial markets.

### Course Materials

- Required: Slides and lecture notes in pdf format will be posted on Stellar.
- Required: Assignments and datasets will be posted on Stellar.
- Optional: Bodie, Kane and Marcus, Investments, 10th edition or older, McGraw Hill.
- Optional: Additional reading materials will be posted on Stellar.
- There is no course reader.

### Office Hours and TA

- Office hours are Tuesdays 1:00-2:30pm or by appointment at E62-624.
- The TAs for this class are Anton Petukhov (petukhov@mit.edu) and Fangzhou Lu (luf@mit.edu). There will be weekly office hours held by one of the TAs. The TAs will also hold optional recitations for each problem set and the midterm and final exams. Time and location will be announced on the course website.

## Requirements

- **Lectures:**

- Lectures are on Tuesdays and Thursdays.
- Section A: 8:30-10:00am, E52-164.
- Section B: 10:00-11:30am, E52-164.

- **Readings:**

- I will post the slides for each class, at the latest, on the day before the class. Reading the first few slides will be helpful. If you would like to take notes, please print a hard copy and bring it to class.
- I will also write up a lecture note for each class and post it on Stellar.
- I will post additional reading materials on Stellar. These research papers and newspaper articles could be useful in providing background information or adding some depth to the materials covered in class.

- **Assignments:**

- There are four problem sets. Each of the first three assignments counts for 5 points toward your final grade, and the last assignment counts for 10 points. Here is a list of the problem sets. The due dates and the TA in charge are included in parentheses.
  1. Empirical Analysis of Returns: Alpha, Beta, and R2 (9/28 Anton).
  2. Time-Series Analysis of Stock Returns (10/12 Fangzhou).
  3. Options (11/9 Fangzhou).
  4. Fixed Income (12/7 Anton).
- Problem sets are to be done in groups with no more than four students.
- Each problem set must be handed in before 5pm of the due day.
- Late assignments will not be accepted.
- There is an optional recitation for each problem set.

- **Exams:**

- The midterm will be given on **Thursday, October 19**,
- The final will be given during the final exam week. It is comprehensive, covering the materials of the entire semester.
- Both exams are closed-book. Students will be allowed to bring one 8.5" × 11" two-sided sheet of notes into the midterm and two sheets of such notes into the final.

## Grading:

The final grade will be determined according to the following weighting scheme:

- 5% Class participation
- 10% Class attendance
- 25% Problem sets
- 25% Midterm examination
- 35% Final examination

## Course Calendar

*Tentative schedule. Due dates of group assignments are highlighted in green.*

| Week | Tu    | Class | Topic             | Th    | Class | Topic             |
|------|-------|-------|-------------------|-------|-------|-------------------|
| 1    |       |       |                   | 9/7   | 1     | Introduction      |
| 2    | 9/12  | 2     | Alpha and Beta    | 9/14  | 3     | Equity 1          |
| 3    | 9/19  | 4     | Equity 2          | 9/21  | 5     | Equity 3          |
| 4    | 9/26  | 6     | Equity 4          | 9/28  | 7     | Equity 5          |
| 5    | 10/3  | 8     | Equity 6          | 10/5  | 9     | Equity 7          |
| 6    | 10/10 |       | No Class          | 10/12 | 10    | Option 1          |
| 7    | 10/17 | 11    | Option 2          | 10/19 | 12    | MidTerm           |
| 8    | 10/24 |       | No Class          | 10/26 |       | No Class          |
| 9    | 10/31 | 13    | Option 3          | 11/2  | 14    | Option 4          |
| 10   | 11/7  | 15    | Risk Management 1 | 11/9  | 16    | Risk Management 2 |
| 11   | 11/14 | 17    | Bond 1            | 11/16 | 18    | Bond 2            |
| 12   | 11/21 | 19    | Bond 3            | 11/23 |       | No Class          |
| 13   | 11/28 | 20    | Bond 4            | 11/30 | 21    | Credit 1          |
| 14   | 12/5  | 22    | Credit 2          | 12/7  | 23    | Portfolio 1       |
| 15   | 12/12 | 24    | Portfolio 2       |       |       |                   |