Fall session - 2025
Finance 740, Analysis of Fixed Income Securities

Instructor

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Class times and location

M-W, 2:30pm to 3:45pm, Grainger 1210B

Instruction mode

Face-to-face

Office hours

Tuesdays, 3pm-5pm, online
Wednesdays, 4pm-6pm, in person in Grainger 5151A
Fridays, 10am-11am, in person in Grainger 5151A

Course objective

This course covers the fundamentals and goals of fixed income methods and portfolio management and describes how those fundamentals are applied in practice. This is a hands-on class with a heavy emphasis on quantitative applications.

Official course description and requisites

Detailed coverage of fixed income securities and their derivatives; asset backed/mortgage backed securities; pricing and portfolio strategies; term structures models and other analytical tools. Requisites: FIN 700 and GB 704, or MSFE enrollment. Or depart-

ment permission.

Resources

The main source of material for this course are my power point slides, all of which you can download from Canvas. No textbook is required. I will assign readings on occasion, you can download those from Canvas too.

Quantitative applications will rely on the Bloomberg terminal, Excel and, occasionally, Python. You will need to become proficient with Bloomberg. I will teach you the Python we need, as needed.

Grading

Your course grade will be computed as follows:

1. Become Bloomberg Certified (5%)
2. Class participation (10%)
3. Homework (20%)
4. Midterm (30%)
5. Final (35%)

The grade distribution will meet the following criteria:

A	Up to 40% of students
AB	20-40%
B	0-30%
BC	0-30%
C	0-30%
D/F	0-5%

To complete the Bloomberg certification requirement, please upload your (BMC) Bloomberg Market Concepts certificate of completion to Canvas **by December 11th.**

Your participation grade is based on my necessarily subjective assessment of your willingness to contribute to in-class conversations.

Homework problem sets will be assigned more or less on a weekly basis. The problems are meant to make you practice/replicate what I will show you in class. Being ready for my exams means first and foremost understanding the homework fully. You will need to upload your homework in a pdf form to Canvas. You cannot upload any excel file. Your pdf should provide answers to each of my questions and a short explanation of how you reached that answer, an explanation that can include images of excel tables. What you turn in should be 4 pages long or less. I encourage you to work in groups. However, each student must turn in their own write-up of answers. (Given that you will be working in groups I understand and accept that many answers will be identical to one another.) No late assignment will be accepted, barring a documented emergency or an exception within the University's guidelines.

The midterm will take place on Thursday, October 30th, from 6:00pm to 7:45pm, and you will take it remotely. Our class meeting on Monday, October 27th will be a review session. On Wednesday, October 29th, I will hold extra office hours in our standard classroom , but I will not advance the material on that day. The final will be remote as well on a date we will agree to later.

Academic misconduct

DO NOT, DO NOT, DO NOT COMMIT ANY ACADEMIC VIOLATION.

Academic misconduct of any sort will result in a failing grade, as a minimum consequence.

Now for the formal version: By virtue of enrollment, each student agrees to uphold the high academic standards of the University of Wisconsin-Madison; academic misconduct is behavior that negatively impacts the integrity of the institution. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these previously listed acts are examples of misconduct which may result in disciplinary action. Examples of disciplinary action include, but is not limited to, failure on the assignment/course, written reprimand, disciplinary probation, suspension, or expulsion. https://conduct.students.wisc.edu/syllabus-statement/

Students who require testing accomodations

Students who qualify for testing accommodations must schedule an appointment with

testing and evaluation services (please go to https://testing.wisc.edu/) who will administer the exams and enforce the appropriate time limitations. Exam appointments cannot be made prior to the official start of the exam. All exams must be completed within 24 hours of the official starting time.

Course learning outcomes

1. Students will be comfortable with the mathematics of fixed income markets
2. Students will use appropriate tools and techniques, including various measures of duration and convexity, to make decisions about trading and hedging portfolios of fixed income securities.
3. Students will be able to explain the structure and uses of fixed income derivative instruments, including options, forwards and swaps.

Credit hours

This is a 3-credit class. These are met according to the traditional Carnegie Definition: 3 times 75 minutes of classroom time and a minimum of two hours of out of class student work per hour of class over approximately 13 weeks.

Regular and substantive interaction

Students have ample opportunity for substantive interactions with the instructors on a predictable and scheduled basis commensurate with the length of time and the amount of content in the course or competency via, inter alia, both in person and virtual office hours, ample exchanges during class time, and can also request meetings with the instructor as and when needed.

List of topics

1. Fixed income basics
    (a) Debt math
    (b) Fixed income securities:
        i. Issuers
        ii. Seniority

iii. Security
iv. Covenants

(c) YTM, YTC, and YTW

(d) From spot yields to par rates to swap rates, and back

(e) Day count conventions

(f) Dirty vs clean prices

(g) Tick size and price quote conventions

(h) Risks of fixed income investing

(i) Duration and convexity

(j) DTS

(k) Floaters

(l) Quick introduction to swaps and the CDS basis

(m) Convertible bond arbitrage

(n) Capital structure arbitrage

(o) Stat arb and pairs trading

2. Portfolio immunization

(a) Basic immunization math

(b) Using swaps to manage duration risk

(c) The case of commercial banks

(d) M-reits

3. The term structure

(a) Bootstrapping

(b) Theories of the term structure

(c) Active yield curve strategies

i. Stable curve strategies
ii. Shifts, twists, and butterflies
iii. Bullets, barbells, and ladders

(d) Convergence trades

i. Off-the-run/On-the-run
ii. Treasury (Futures) basis trade

iii. LTCM's downfall

(e) Carry trade

4. Interest rate models

5. Prepayment and Default

(a) Refinancing math

(b) Make-whole (or yield maintenance) clauses

(c) Default math

(d) Bond ratings and reduced form models

(e) Market implied default probabilities

6. Spreads galore

(a) Plain vanilla spreads

(b) Option-adjusted spreads

(c) Fixed income attribution

i. Roll and carry

ii. Shift, twist, and butterflies

iii. Spreads

7. Asset-backed securitization

(a) Overview

(b) Mortgages

(c) Mortgage-backed securities

(d) Agency securities

8. Swaps

(a) Interest rate swaps

(b) Credit default swaps

(c) Synthetic CDOs

(d) Asset swaps and ASW spreads

(e) Total return swaps

(f) The Archegos debacle

(g) Real estate swaps