

Finance
Course Number: 22:390:611
Course Title: Analysis of Fixed Income

COURSE DESCRIPTION

OBJECTIVE: To give students an in-depth understanding of the quantitative methods and techniques used to analyze fixed income securities and their (often embedded) derivatives.

CONTENT: The universe of fixed income instruments is large and ever more complex. Besides standard fixed-coupon bonds, several other types of securities are available for investment and trade, from inflation indexed securities (TIPS) to floating-rate notes, from mortgage backed securities to debt instruments issued by government agencies. In addition, a large market of exchange traded and over-the-counter derivative securities is available for trade in order to undertake sophisticated hedging strategies or to adjust the risk/return characteristics of an investment portfolio.

This course covers models and techniques that are used to analyze fixed income securities their (often embedded) derivatives. By the end of the course, students will learn (i) the basic concepts of fixed income instruments, such as yield curve, forward curve, yield-to-maturity, duration, convexity; (ii) the modern empirical methodologies to describe Treasury bond data, such as "curve fitting" and factor analysis; (iii) effective hedging strategies for fixed income portfolios, such as duration matching, asset-liability management and factor neutrality; (iv) the advanced properties of bonds, such as their risk/return characteristics, and the best predictors of their future returns; (v) modeling techniques used by market participants, such as the models of Vasicek, Cox Ingersoll and Ross, Ho and Lee, Hull and White, Black-Derman-Toy, and Heath-Jarrow-Morton; and, importantly, (vi) how to use these methodologies in practice to value and hedge fixed income products and derivatives, from the traditional securities, such as Bonds, Swaps, Options, Caps and Floors, to the more recent products, such as Inverse Floaters, Range Notes, Mortgage Backed Securities.

COURSE MATERIALS

1. *Fixed income securities: Valuation, Risk, and Risk Management*, by Pietro Veronesi, Wiley and Sons, 2010, ISBN 9780470109106
2. *Fixed Income Analysis: CFA INSTITUTE Investment series*, 4th ed., Wiley, 2019, ISBN 9781119627289
(3rd edition can be used as well)
3. *Handbook of Fixed Income Securities*, by Pietro Veronesi, 2016, Wiley and Sons, ISBN 9781118709191

4. *Options, Futures, and Other derivatives*, by John C. Hull, 8th ed., Prentice Hall, 2012, ISBN 0132164949

LEARNING GOALS AND OBJECTIVES

1. Knowledge. Students graduating with an MBA degree will have broad understanding of basic business theory and practice and deep understanding of theory and practice within their major field.

Students will demonstrate:

- a. knowledge of current basic concepts in the functional areas of business;
- b. knowledge of current advanced concepts within their major field and an ability to integrate and apply these concepts to practical business problems;
- c. proficiency at using current software tools and information systems to manage business data and address practical business problems;
- d. ability to apply appropriate quantitative methods to analyze business data, and to apply quantitative modeling techniques to analyze business plans and decisions.

2. Global perspective. Students graduating with an MBA degree will have the breadth of perspective necessary to succeed in a global and diverse business environment.

Students will demonstrate:

- a. knowledge of the diversity of past and current economic, legal, political, and social structures;
- b. understanding of the impact of cultural and demographic diversity on business interactions.

3. Effective Communication. Students graduating with an MBA degree will be effective communicators.

Students will demonstrate:

- a. ability to construct clear, concise, and convincing written business communication;
- b. ability to construct and deliver clear, concise, and convincing oral communication.

MBA Graduates will demonstrate:

- (a) their ability to analyze investments in financial instruments and apply the basics of portfolio theory;
- (b) their knowledge of and the ability to analyze the characteristics of global financial markets and institutions.

Students develop these skills and knowledge through the following course activities and assignments:

- (a) reading the text and assigned articles;
 - (b) attending class and participating in class discussions;
 - (c) keeping current by reading news articles pertaining to financial analysis.
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ACADEMIC INTEGRITY

I do NOT *tolerate cheating*. Students are responsible for understanding the RU Academic Integrity Policy (<http://academicintegrity.rutgers.edu/>)

I will strongly enforce this Policy and pursue *all* violations. On all examinations and assignments, students must sign the RU Honor Pledge, which states, “On my honor, I have neither received nor given any unauthorized assistance on this examination or assignment.” I will screen all written assignments through *SafeAssign* or *Turnitin*, plagiarism detection services that compare the work against a large database of past work. Don’t let cheating destroy your hard-earned opportunity to learn. See business.rutgers.edu/ai for more details.

ATTENDANCE AND PREPARATION POLICY

There is a strong relationship between attendance/active participation and grades.

Students will be responsible for all work missed during an absence, no matter what the reason for the absence. For weather emergencies, consult the campus home page. If the campus is open, class will be held.

Attendance policy

The University is committed to a culture of academic engagement between students and faculty. Part of this commitment involves taking responsibility for attending your classes, workshops and exams, and informing your instructors when you cannot attend.

If you are absent from a class or exam for any reason, please **email the instructor**.

All students are expected to bring a positive attitude to the classroom, and to respect the learning environment. This means, at a minimum, that no student will disrupt the learning environment, even in small ways, which includes sending or receiving text messages, or surfing the internet, or tweeting, or talking to other students about anything unrelated to the subject matter at hand. So,

PLEASE NO CELL PHONES, COMPUTERS or OTHER ELECTRONIC DEVICES IN CLASS unless you are asked to use them.

Please notice that office hour time is reserved for students who have attended class; it is not for giving private classes to students who did not attend at the scheduled time, however good their reasons.

I understand that you might have to miss a class or two during the semester. In this case, you are encouraged to obtain class notes from your peers, read the textbook and come to office hours to clarify any topics you have difficulty with. **If you miss three or more classes, the instructor reserves a right to lower your course grade by one letter grade.**

Late arrivals and earlier departures are considered as a missed class.

Participation

You are expected to actively participate in the course. This participation can consist of in-class discussions, visits to office hours, or posting and answering questions about the content (not administrative questions) of the course in the Chat room on Sakai.

The most active participants in the Chat room (those who ask relevant questions and provide good answers) will get a bonus at the end of the course.

Time Commitment

This is a challenging course.

Mastering the material of this course requires time. Successful students in the past reported that they consistently spent at least 6 hours per week to review the material and solve problems, and more than that before major exams.

... There have been many studies of elite performers - concert violinists, chess grand masters, professional ice skaters, mathematicians, and so forth - and the biggest difference researchers find between them and lesser performers is the amount of deliberate practice they've accumulated. Indeed, the most important talent may be the talent for practice itself.

Gawande A., "The Learning Curve", The New Yorker, January 28, 2002, p.52-61.

I want you to do well in this class. Your approach should be learning concepts thoroughly and practicing with a variety of problems. You are warmly invited to ask questions in class, in office hours or in the Chat room on Sakai. Feel free to let me know if you have any problems with the class and express your concerns during the semester. Your feedback is always welcome!

CAUTION: The information in this syllabus is subject to change, as announced in class or via email/ Sakai. No major changes are anticipated, but you are expected to attend class and check email regularly.

GRADING POLICY AND EXAMS

There are following graded items in this course:

- Active class participation;
- Quizzes; • Midterm Exam;
- Final Exam.

You will receive a separate score for each of the items. The final grade will be a weighted average of these items using the weighting scheme indicated below.

- Grading distribution:
Participation in class . . . 5%

Quizzes (mostly in-class)	... 25%
Midterm Exam	... 30%
Final Exam	... 40%

- The **Midterm Exam** is scheduled for (), (). The format of the exam is closed-book. Please only bring pencils, pens, erasers, a standard calculator (with the basic functions; not programmable, not cell phone), and your Rutgers ID card with you to the exam. There will be no make-up midterm exam. You will receive a score of zero if you miss the exam. • The **Final Exam** (cumulative) will be held on (), during regular class hours.

The format of the exam is closed-book. Please only bring pencils, pens, erasers, a standard calculator (with the basic functions; not programmable and/or cell phone), and your Rutgers ID card with you to the exam. All course materials will be relevant for the final exam. There will be no make-up final exam. You will receive a score of zero if you miss the exam.

You need to score at least 40% on the Final Exam to pass the course.

There are no opportunities for extra credit except the ones provided in class and during quizzes and regular exams.

- Grade allocation:

Weighted average of graded items	Corresponding grade
[90, + ∞)	A
[80, 90)	B+
[70, 80)	B
[60, 70)	C+
[50, 60)	C
[0, 50)	F

- All (partial) scores received throughout the course will be added to the *Gradebook* on the Sakai course website.
- Your partial scores/final grades are not subject to negotiation. If you feel I have made an error, submit your written argument to me within one week of receiving your grade/score. Clarify the precise error I made and provide all supporting documentation. If I have made an error, I will gladly correct it. But I will adjust grades only if I have made an error.

COURSE SCHEDULE

The course follows the Rutgers Academic Calendar, which can be found here: <https://scheduling.rutgers.edu/scheduling/academic-calendar>.

SUPPORT SERVICES

If you need accommodation for a *disability*, obtain a Letter of Accommodation from the Office of Disability Services. The Office of Disability Services at Rutgers, The State University of New Jersey, provides student-centered and student-inclusive programming in compliance with the Americans with Disabilities Act of 1990, the Americans with Disabilities Act Amendments of 2008, Section 504 of the Rehabilitation Act of 1973, Section 508 of the Rehabilitation Act of 1998, and the New Jersey Law Against Discrimination. More information can be found at ods.rutgers.edu.

[Rutgers University-New Brunswick ODS phone (848)445-6800 or email dsoffice@echo.rutgers.edu]

[Rutgers University-Newark ODS phone (973)353-5375 or email ods@newark.rutgers.edu]

If you are *pregnant*, the Office of Title IX and ADA Compliance is available to assist with any concerns or potential accommodations related to pregnancy.

[Rutgers University-New Brunswick Title IX Coordinator phone (848)932-8200 or email jackie.moran@rutgers.edu]

[Rutgers University-Newark Office of Title IX and ADA Compliance phone (973)353-1906 or email TitleIX@newark.rutgers.edu]

If you seek *religious accommodations*, the Office of the Dean of Students is available to verify absences for religious observance, as needed.

[Rutgers University-New Brunswick Dean of Students phone (848)932-2300 or email deanofstudents@echo.rutgers.edu]

[Rutgers University-Newark Dean of Students phone (973)353-5063 or email DeanofStudents@newark.rutgers.edu]

If you have experienced any form of *gender or sex-based discrimination or harassment*, including sexual assault, sexual harassment, relationship violence, or stalking, the Office for Violence Prevention

and Victim Assistance provides help and support. More information can be found at <http://vpva.rutgers.edu/>.

[Rutgers University-New Brunswick incident report link: <http://studentconduct.rutgers.edu/concern/>. You may contact the Office for Violence Prevention and Victim Assistance at (848)932-1181]

[Rutgers University-Newark incident report link: https://cm.maxient.com/reportingform.php?RutgersUniv&layout_id=7 . You may also contact the Office of Title IX and ADA Compliance at (973)353-1906 or email at TitleIX@newark.rutgers.edu. If you wish to speak with a staff member who is confidential and does **not** have a reporting responsibility, you may contact the Office for Violence Prevention and Victim Assistance at (973)353-1918 or email run.vpva@rutgers.edu]

If students who have experienced a temporary condition or injury that is adversely affecting their ability to fully participate, you should submit a request via <https://temporaryconditions.rutgers.edu>.

If you are a military **veteran** or are on active military duty, you can obtain support through the Office of Veteran and Military Programs and Services. <http://veterans.rutgers.edu/>

If you are in need of **mental health** services, please use our readily available services.

[Rutgers University-Newark Counseling Center: <http://counseling.newark.rutgers.edu/>]

[Rutgers Counseling and Psychological Services–New Brunswick: <http://rhscaps.rutgers.edu/>]

If you are in need of **physical health** services, please use our readily available services.

[Rutgers Health Services – Newark: <http://health.newark.rutgers.edu/>]

[Rutgers Health Services – New Brunswick: <http://health.rutgers.edu/>]

If you are in need of **legal** services, please use our readily available services: <http://rusls.rutgers.edu/>

Students experiencing difficulty in courses due to **English as a second language (ESL)** should contact the Program in American Language Studies for supports.

[Rutgers–Newark: PALS@newark.rutgers.edu]

[Rutgers–New Brunswick: eslpals@english.rutgers.edu]

If you are in need of additional *academic assistance*, please use our readily available services.

[Rutgers University-Newark Learning Center: <http://www.ncas.rutgers.edu/rlc>

[Rutgers University-Newark Writing Center: <http://www.ncas.rutgers.edu/writingcenter>]

[Rutgers University-New Brunswick Learning Center: <https://rlc.rutgers.edu/>]

[Optional items that many faculty include:

- Students must sign, date, and return a statement declaring that they understand the RU Academic Integrity Policy.

- Students must sign, date, and return a statement declaring that they understand this syllabus.]