



BUSINESS SCHOOL
Te Kura Pakihi

COURSE OUTLINE

FINC 310
Fixed Income Security Analysis

Semester Two, 2021

This course outline contains information specific to this paper. For more general information common to your papers, please refer to the COMMERCE_UG_2018: Commerce Undergraduate Students site on Blackboard.

Paper Description and Aims

This course covers the valuation of fixed income (interest) securities and derivatives. It will emphasize traditional bond and term structure concepts as well as interest rate derivatives. In 2018, U.S. debt securities outstanding is over USD 40 trillion according to Bank for International Settlements, which is even higher than the equity market capitalization (around USD 34 trillion). It is very important to carefully learn about bond markets. We can meaningfully analyse the 2008 subprime mortgage crisis (and resultant recession) using fixed income knowledge. Furthermore, over 80% of contracts in the huge notional global market value of derivatives in 2018 (around USD 600 trillion) are interest rate contracts. Explicitly studying the interest rate derivatives becomes very crucial.

The aim of this paper is to provide a comprehensive analysis of the fixed income securities and derivatives and to offer a theoretical framework within which all debt securities and derivatives can be priced. Topics covered: pricing of bond, bond price volatility, mortgage loans, the subprime mortgage crisis, Interest-rate models, and valuation of bonds with embedded option, options, interest-rate futures and swaps.

Prerequisite: FINC 202 and (FINC 102 or FINQ 102 or QUAN 102)

Learning Outcomes

Upon successful completion of this paper, you should be able to:

1. Understand the bond market and the subprime mortgage crisis
2. Calculate residential mortgage repayments and the balance
3. Price and analyse both option-free and option-embedded bonds
4. Understand the interest rate models
5. Price interest-rate derivatives, including options, futures and swaps

Teaching Staff

Paper Coordinator and Lecturer

Name: **Dr Edwin Ruan**

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Office Hours: Monday and Wednesday 14:00 – 15:30 or email for an appointment

You should contact **Dr Edwin Ruan** with any administrative enquiries about the paper, e.g. tutorial changes, or requests for late submission of assignments.

Class Representatives

Class representatives are an important means of communication between students and staff. Contact details for your student class representatives can be found on the Blackboard page for this paper.

Course Delivery

Lecture Day/Time/ Room:

Tuesday	14:00-14:50	BIG13
Thursday	14:00-15:50	ARCH1

Tutorials Day/Time/ Room:

Monday	13:00-13:50	CASTC
Monday	14:00-14:50	CASTC
Tuesday	12:00-12:50	OBSG17

Computer Labs Day/Time/ Room (Three weeks only):

Friday	10:00-10:50	OBS3.36
Friday	11:00-11:50	OBS3.36
Friday	12:00-12:50	OBS3.36

Every week students must attend: three 50 minute lectures and one 50 minute tutorial each week.

Lectures present the key conceptual material. Lectures are supported by independent readings. Lectures should be treated as a sign-post for wider independent study.

Tutorials are interactive, collaborative sessions in which students attempt to cement concepts presented at lectures with their peers in a supportive environment.

Tutorials begin in the second week of semester.

Computer labs teach how to use the Bloomberg Terminal for fixed income security analysis. It is **optional** for all students.

The Course Calendar (at the end of this document) details scheduling information. Note that this calendar may change as the course proceeds. Any changes will be announced at lectures and be detailed on Blackboard.

Course Learning Resources

Textbook Required

Bond Markets, Analysis and Strategies (9th edition), by Frank J. Fabozzi, 2016, Pearson.

You can buy it via <http://www.pearsoned.co.nz/9780133796773>. Older editions are floating around, they are very similar but you use them at your own risk.

Blackboard

<https://blackboard.otago.ac.nz/> provides you with access to course materials, class notices, and resources. Blackboard is used to email the whole class so it is important that you check your student email and *Blackboard* regularly.

Further information about student support, learning support and information, academic integrity and other University resources for students is available on the COMMERCE_UG_2017: Commerce Undergraduate Students site on Blackboard.

Student Webmail

We will use your student email account to email you information relevant to your programme. To forward your University email address to an email address that you use regularly:

1. Log into your StudentMail account (<http://www.otago.ac.nz/smlanding/>) using your student username and password.
2. Click the **Cog** button (top right corner).
3. Click on **Mail** under **Your App Settings**.
4. Under **Accounts** on left hand side, select **Forwarding**.
5. Under the Forwarding heading, type in the email address you want your email to be forwarded to. You can also choose to have a copy of these emails kept on your StudentMail account, so please check the box if you would like this.
6. Click the **Save** button.

Assessment

All material presented is examinable (except where stated otherwise) by assignments and the final examination. All-important assessment information such as due dates and times, content, guidelines and so on will be discussed at lectures and, where appropriate, detailed on Blackboard. *Students are responsible for ensuring that they are aware of this information, keeping track of their own progress, and catching up on any missed classes.*

Assessment	% of final grade
Assignment 1	10%
Assignment 2	10%
Midterm exam	20%
Final exam	60%

Course Requirements

Attendance

The material of this paper is highly sequential. To ensure that students gain the maximum benefit from classes, students are required to attend each lecture and tutorial. Attendance will be checked in each tutorial and randomly in lectures. Students are required to attend at least 70% of classes of this paper; otherwise they may be treated as having failed the whole course.

Assignments

There are two assignments with 5% each. You are required to work on them individually. Discussion among classmates is allowed. Please turn in your solutions on the due date (Assignment 1 due 12 August 2020 and Assignment 2 due 30 September 2020). Late turn-in will be heavily discounted (i.e., final marks= original marks * $\exp\{-0.05 * \text{number of late days}\}$). Remember to put your name and

student ID on the signed Declaration Sheet for Individual Assignment as the first page of your manuscripts. The assignment without the signed Declaration Sheet for Individual Assignment will not be marked.

Midterm Exam

The midterm exam will be in class on 25 Aug 2021 (Wed). The main purpose of the midterm is to test your understanding of the fundamental concepts and your ability of demonstrating the knowledge on practical questions. The midterm exam covers materials of Lectures 1-6.

Please bring your calculator! No restriction on the model of calculator to be used, but no device with communication capability shall be accepted as a calculator

The Comprehensive Final Examination

A three-hour final examination will be comprehensive of all course topics and materials. *In order to pass this paper, you must pass the final examination with a minimum mark of 45%.*

Learning Outcomes

Learning Outcome	Assessment	Assessment	Exam	Total
Understand the bond market and the subprime mortgage crisis	Assignment 1	Midterm exam	Final exam	20%
Calculate residential mortgage repayments and the balance	Assignment 1	Midterm exam	Final exam	10%
Price and analyse both option-free and option-embedded bonds	Assignments 1 and 2	Midterm exam	Final exam	30%
Understand the interest rate models	Assignment 2		Final exam	10%
Price interest-rate derivatives, including options, futures and swaps	Assignment 2		Final exam	20%
Total	20%	20%	60%	100%

Course Calendar

The following schedule of topics covered is subject to modification as the course progresses. We will not be following the textbook exactly. *Chapters are provided for reference. Class notes are the key!*

No.	Week Commencing	Topic	Reading	Notes
1	12 July 2021	Lecture 1: Introduction	Chapter 1&2	No Tutorial
2	19 July 2021	Lecture 2: Pricing of bond	Chapters 2&3	Computer lab 1
3	26 July 2021	Lecture 3: Bond price volatility	Chapter 4	Computer lab 2
4	2 August 2021	Lecture 4: Term structure of interest rates	Chapter 5	Computer lab 3
5	9 August 2021	Lecture 5: Residential mortgage loans	Chapters 10&11	Assignment 1 given on 9 August
6	16 August 2021	Lecture 6: The subprime mortgage crisis		Assignment 1 due 2pm, 19 August
7	23 August 2021	Review and midterm		Midterm Exam at 2-3.50pm on Thursday
Mid-Semester Break 30 August to 3 September				
8	6 September 2021	Lecture 7: Interest-rate models	Chapter 17	No Tutorial
9	13 September 2021	Lecture 8: Bonds with embedded option	Chapter 18	
10	20 September 2021	Lecture 9: Interest-rate options	Chapter 30	
11	27 September 2021	Lecture 10: Interest-rate futures	Chapter 29	Assignment 2 given on 27 September
12	4 October 2021	Lecture 11: Interest-rate swaps	Chapter 31	Assignment 2 due 2pm, 7 October
13	11 October 2021	Review		

Lectures end Friday 9 October 2021

University Exam Period 20 October - 13 November 2021

Disclaimer

While every effort is made to ensure that the information contained in this document is accurate, it is subject to change. Changes will be notified in class and via Blackboard. Students are encouraged to check Blackboard regularly. It is the student's responsibility to be informed.