Course Description
Continuous Time Finance provides an introduction to the theory and practice of derivative pricing and hedging. The aim of this course is to provide students with the mathematical skills needed for the valuation of derivatives. Focus will be on the application of results rather than their mathematical derivation. These tools will be applied to derive the famous Black-Scholes formula, to price options on currencies, and to price interest-rate derivatives.

Semester and Year | S1 2016
---|---
Course URL | http://programsandcourses.anu.edu.au/course/FINM3003
Mode of Delivery | On campus
Prerequisites | Completion of FINM2002 and STAT3004
Incompatible Courses | None
Course Conveneer | Prof. Ross Maller
Office Location: | CBE Building 26c Room 4.56
Phone: | 6125 3650
Email: | Ross.Maller@anu.edu.au
Consultation hours: | Tuesday 4pm – 5pm
Bio and research interests | Probability theory, stochastic processes, and their applications.
Student Administrators | Anna Pickering
| anna.pickering@anu.edu.au
| Tel: 612 59045

COURSE OVERVIEW

Course Learning Outcomes
By the end of this course students are expected to have attained a sound working knowledge of both the arbitrage-free approach to pricing and the mathematical tools required: Brownian motion, Itô’s formula, martingales, stochastic differential equations, change of measure, and the martingale representation theorem.

Research-Led Teaching
Students undertaking this course will be imparted with the necessary skills for roles in financial trading, derivative sales, structuring, and/or risk management. At certain points in the course, the lecturer will link topics to cutting-edge research ideas and industry practices. These ideas could lead to potential Honours topics for interested students.

Continuous Improvement
We use feedback from students, professional bodies and staff to make regular improvements to the course. In response to this feedback, design improvements from the previous version of the course include:

- Prescribed Textbook Hull (Ed. 8e)
- Modification of material from 2015
Co-teaching
This course is co-taught with FINM7003.

Student Feedback
All CBE courses are evaluated using Student Experience of Learning and Teaching (SELT) surveys, administered by Planning and Statistical Services at the ANU. These surveys are offered online, and students will be notified via email to their ANU address when surveys are available in each course. Feedback is used for course development so please take the time to respond thoughtfully. Course feedback is anonymous and provides the Colleges, University Education Committee and Academic Board with opportunities to recognise excellent teaching and to improve courses across the university. For more information on student surveys at ANU and reports on feedback provided on ANU courses, visit http://unistats.anu.edu.au/surveys/selt/students/ and http://unistats.anu.edu.au/surveys/selt/results/learning/

COURSE SCHEDULE

<table>
<thead>
<tr>
<th>Week/Beginning</th>
<th>Summary of Activities</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 15/2/2016</td>
<td>Revision: Fwd/Futures Pricing &amp; Valuation, Fwd Int. Rates</td>
<td>1 (out)</td>
</tr>
<tr>
<td>2 22/2/2016</td>
<td>Pricing of Bills and Bonds and Futures on them.</td>
<td></td>
</tr>
<tr>
<td>3 29/2/2016</td>
<td>Options: Put-Call Parity, Option Price Bounds, Binomial Models</td>
<td>1 (due) 2 (out)</td>
</tr>
<tr>
<td>5 14/3/2016</td>
<td>Brownian Motion. Stochastic Calculus. Geometric Brownian Motion</td>
<td></td>
</tr>
<tr>
<td>6 21/3/2016</td>
<td>Continuous Time Market Theory. The Black-Scholes formula</td>
<td>2 (due) 3 (out)</td>
</tr>
<tr>
<td></td>
<td>Mid-semester Teaching Break (2 weeks)</td>
<td></td>
</tr>
<tr>
<td>8 18/4/2016</td>
<td>The Greeks and Hedging Strategies</td>
<td>3 (due) 4 (out)</td>
</tr>
<tr>
<td>10 2/5/2016</td>
<td>Dividends, Currencies, Futures Options</td>
<td>4 (due) 5 (out)</td>
</tr>
<tr>
<td>11 9/5/2016</td>
<td>Interest Rate Derivatives (Standard)</td>
<td></td>
</tr>
<tr>
<td>12 16/5/2016</td>
<td>Interest Rate Derivatives (Models of the Short Rate)</td>
<td>5 (due)</td>
</tr>
<tr>
<td>13 23/5/2016</td>
<td>Revision</td>
<td></td>
</tr>
</tbody>
</table>
Assessment Summary

<table>
<thead>
<tr>
<th>Item</th>
<th>Title</th>
<th>Value</th>
<th>Due Date</th>
<th>Linked Learning Outcomes (optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5 Assignments</td>
<td>30%</td>
<td>See Schedule</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Final Exam</td>
<td>70%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Assessment Task 1: Assignments
Details of task:
5 assignments to be completed and handed in through the semester. Each one of these is worth 6% of your final mark. If you miss one of these for any reason, the weight will be assigned to your final exam.

Examinations
All examinations are compulsory.

Scaling
Your final mark for the course will be based on the raw marks allocated for each assignment or examination. However, your final mark may not be the same number as produced by that formula, as marks may be scaled. Any scaling applied will preserve the rank order of raw marks (i.e. if your raw mark exceeds that of another student, then your scaled mark will exceed or equal the scaled mark of that student), and may be either up or down.

READING LISTS
Prescribed Text

Additional references:
- Shreve, Stochastic Calculus for Finance I: The Binomial Asset Pricing Model
- Baxter and Rennie, Financial Calculus

COMMUNICATION

Email
Communication should take place via the Wattle website. If necessary, the lecturers and tutors for this course will contact students on their official ANU student email address. Information about your enrolment and fees from the Registrar and Student Services' office will also be sent to this email address.

Announcements
Students are expected to check the Wattle site for announcements about this course, e.g. changes to timetables or notifications of cancellations. Notifications of emergency cancellations of lectures or tutorials will be posted on the door of the relevant room.
Course URLs
More information about this course may be found on:

• Programs and Courses (http://programsandcourses.anu.edu.au/2015/Catalogue)

• the College of Business and Economics website (http://cbe.anu.edu/courses) and

• Wattle (https://wattle.anu.edu.au), the University's online learning environment. Log on to Wattle using your student number and your ISIS password.

TUTORIAL AND/OR SEMINAR REGISTRATION
Enrolment in tutorials will be completed online using the CBE Electronic Teaching Assistant (ETA). To enrol, follow these instructions:

1. Go to http://eta.fec.anu.edu.au
2. You will see the Student Login page. To log into the system, enter your University ID (your student number) and password (your ISIS password) in the appropriate fields and hit the Login button.
3. Read any news items or announcements.
4. Select "Sign Up!" from the left-hand navigation bar.
5. Select your courses from the list. To select multiple courses, hold down the control key. On PCs, this is the Ctrl key; on Macs, it is the key. Hold this key down while selecting courses with the mouse. Once courses are selected, hit the SUBMIT button.
6. A confirmation of class enrolments will be displayed. In addition, an email confirmation of class enrolments will be sent to your student account.
7. For security purposes, please ensure that you click the LOGOUT link on the confirmation page, or close the browser window when you have finished your selections.
8. If you experience any difficulties, please contact the School Office (see page 1 for contact details).
9. Students will have until 5pm Wednesday 25 February to finalise their enrolment in tutorials. After this time, students will be unable to change their tutorial enrolment.

POLICIES
The University offers a number of support services for students. Information on these is available online from http://students.anu.edu.au/studentlife/

ANU has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University’s academic standards, and implement them. You can find the University’s education policies and an explanatory glossary at: http://policies.anu.edu.au/

Students are expected to have read the Student Academic Integrity Policy before the commencement of their course.

Other key policies include:

• Student Assessment (Coursework)
• Student Surveys and Evaluations