UNSW Business School

School of Banking & Finance

FINS3635
Options, Futures, and Risk Management Techniques

Course Outline
Semester 2, 2017

Course-Specific Information

The Business School expects that you are familiar with the contents of this course outline. You must also be familiar with the School's Course Outlines Policies webpage which contains key information on:

- Program Learning Goals and Outcomes
- Academic Integrity and Plagiarism
- Student Responsibilities and Conduct
- Special Consideration
- Student Support and Resources

This webpage can be found on the Business School website:
https://www.business.unsw.edu.au/degrees-courses/course-outlines/policies

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COURSE-SPECIFIC INFORMATION

1 STAFF CONTACT DETAILS

Position	Name	Email	Room	Phone
Lecturer-in-charge	Dr David Colwell	d.colwell@unsw.edu.au	BUS 367	9385 5851
Lecturer/tutor	Dr Hai (Johnno) Wu	hai.wu@unsw.edu.au	BUS339	9385 7520

Consultation Times for Dr David Colwell: Thursdays, 12-14:00, Weeks 1-6.
Consultation Times for Dr Hai (Johnno) Wu: Fridays, 13-15:00 Weeks 7-12.
A full list of tutors will be posted on Course Website.

2 COURSE DETAILS

2.1 Teaching Times and Locations

Lectures start in Week 1(to Week 12): The Time and Location are:
Wednesdays, 13-15:00, Chemical Sciences M17.

Tutorials start in Week 2 (to Week 13). A full list of tutorials, times and tutors will be on the Course Website.

2.2 Units of Credit

The course is worth 6 units of credit.

2.3 Summary of Course

This course will provide a rigorous introduction to fundamental pricing principles and hedging techniques in derivative markets. It focuses on the main types of exchange-traded options and futures contracts. It is designed to acquaint students with the tools that are necessary to analyse common issues in derivative markets. In particular, appreciable time will be spent on investigating various arbitrage opportunities and developing risk management strategies using derivative instruments.

2.4 Course Aims and Relationship to Other Courses

The aims of the course are to:

- Provide a rigorous understanding of the main types of exchange-traded options and futures contracts,
- Develop a working knowledge on the use of options and futures in risk management,
- Provide the necessary skills to value options and futures.

The prerequisite for this course is FINS 2624 Portfolio Management. It is the responsibility of students to ensure that the prerequisite has been met before commencing this course.

There is some overlap with material discussed in FINS2624, though the course will explore these topics in much greater depth. Students interested in Interest Rate

Derivatives or Applied Portfolio Management will benefit from concepts explained in FINS3635.

Students also need to be able to use a word processing package (such as WORD) and a spreadsheet (such as EXCEL). Some quantitative skills such as basic mathematical ability in dealing with algebraic manipulation is expected.

2.5 Student Learning Outcomes

On completion of the course, you will:

1. understand the features of the most commonly used derivatives and apply the fundamental principles of derivatives pricing in different contexts
2. be able to choose the right derivative for the purpose of hedging different types of risk
3. be mindful of the imperfections of hedging and of financial markets in general
4. be able to price options in several ways
5. be aware of the dangers of financial derivatives and be able to explain their potential for abuse

The Course Learning Outcomes are what you should be able to DO by the end of this course if you participate fully in learning activities and successfully complete the assessment items.

The Learning Outcomes in this course also help you to achieve some of the overall Program Learning Goals and Outcomes for all undergraduate students in the Business School. Program Learning Goals are what we want you to BE or HAVE by the time you successfully complete your degree (e.g. 'be an effective team player'). You demonstrate this by achieving specific Program Learning Outcomes - what you are able to DO by the end of your degree (e.g. 'participate collaboratively and responsibly in teams').

For more information on Program Learning Goals and Outcomes, see the School's Course Outlines Policies webpage available at https://www.business.unsw.edu.au/degrees-courses/course-outlines/policies
The following table shows how your Course Learning Outcomes relate to the overall Program Learning Goals and Outcomes, and indicates where these are assessed (they may also be developed in tutorials and other activities):

Program Learning Goals and Outcomes		**Course Learning Outcomes**	**Course Assessment Item**
This course helps you to achieve the following learning goals for all Business undergraduate students:		*On successful completion of the course, you should be able to:*	*This learning outcome will be assessed in the following items:*
1	Knowledge	Explain the definitions and uses of a variety of derivatives, e.g., futures,	• Assignment

		options, swaps, and some exotic options Determine valuations of such instruments Differentiate between discrete time and continuous time valuation principles	• Exams
2	Critical thinking and problem solving	Use such instruments for managing market risk.	• Assignment • Exams
3a	Written communication	Construct written work which is logically and professionally presented.	Not specifically assessed.
3b	Oral communication	Not specifically addressed in this course	
4	Teamwork	Work collaboratively to complete a task.	Not specifically assessed.
5a.	Ethical, social and environmental responsibility	Not specifically addressed in this course	
5b.	Social and cultural awareness	Not specifically addressed in this course	

3 LEARNING AND TEACHING ACTIVITIES

3.1 Approach to Learning and Teaching in the Course

This course provides the basis to analyse and solve a variety of problems related to derivative securities. The course consists of weekly two-hour lectures plus a one-hour tutorial. The lecture notes will be available before class, so that students can have an overview of the topics in advance. During the lecture, we discuss the details of the lecture notes, and answer various questions that are left unanswered in the notes. We discuss the intuition behind results and regularly refer to the "big picture" issues, of how each topic relates to other topics. Questions and discussion in class are welcome. Practice problems will be available for each chapter, and doing these should help students prepare for the exams as well as the spreadsheet assignment. The assessments will be based on the lecture notes and practice problems. Note that the lecture notes also include ASIDES that are clearly labelled and are **not** examinable. They may be of interest to some students who want a glimpse of more advanced material.

3.2 Learning Activities and Teaching Strategies

In order to obtain the full benefit from the course, students are expected to follow the following points below:

1. Read the relevant lecture notes before the lectures. This will make it easier for students to follow the lectures and to ask questions.
2. Attend class lectures.
3. Participate in the lectures, asking questions and answering the occasional questions posed by the lecturer.
4. Review the lectures after class.
5. Do the practice problems or take-home assignment when available.
6. Attend the tutorials.

If any issues are still not clear, ask me, send me an e-mail, or come to my office during my consultation hours.

4 ASSESSMENT

4.1 Formal Requirements

In order to pass this course, you must:

- achieve a composite mark of at least 50;
- make a satisfactory attempt at all assessment tasks (see below);

4.2 Assessment Details

Assessment Task	Weighting	Length	Due Date
Assignment #1	5%		Week 4
Assignment #2	15%	Last three weeks of session	Week 13
Mid-session Exam	40%	1 hr 35 min	Week 7
Final Exam	40%	2 hours	University Exam Period
Total	100%		

The exams will be closed book, with formula sheets provided. The formula sheets will be on the course website with the practice problems. The exams will be multiple choice with a few short answer questions. They are based on material from the **lecture notes and practice problems**. The final exam does not directly cover the chapters covered by the mid-session exam.

If applicable, students should notify their employers of the requirement to attend exams. Failure to show up at the exams does not automatically lead to reassessment. **The exams are not learning tools and will not be returned to students.** If you have questions about your performance on the mid-session, see the lecturer during consultation hours.

The assignments will be based on a number of spreadsheets that will be provided to the students. The details will be described on Moodle under the assignment segments. The first assignment should be relatively quick, and only involves one spreadsheet.

For the first assignment, each student will hand in their own assignment.

The second assignment is almost solely based on material from the second half of the course, and so will **only be made available during the last three weeks of session**. It is a group assignment (groups of size $\leq$ 4). Students will choose their groups themselves, and group members do not have to be from the same tutorial.

4.3 Assessment Format

The exams will be closed book, with formula sheets provided. The formula sheets will be on the course website with the practice problems. The exams will be multiple choice with a few short answer questions.

For exams, you are allowed to bring with you UNSW approved scientific or financial calculators, writing and drawing instruments. NO PROGRAMMABLE CALCULATORS WILL BE ALLOWED.

4.4 Assignment Submission Procedure

For the assignments, we will use the Assignment link on Moodle.

4.5 Late Submission and Penalties

Assignments submitted late will have marks deducted (10% of the total marks per day).

Quality Assurance
The Business School is actively monitoring student learning and quality of the student experience in all its programs. A random selection of completed assessment tasks may be used for quality assurance, such as to determine the extent to which program learning goals are being achieved. The information is required for accreditation purposes, and aggregated findings will be used to inform changes aimed at improving the quality of Business School programs. All material used for such processes will be treated as confidential.

5 COURSE RESOURCES

The website for this course is on Moodle at:
http://moodle.telt.unsw.edu.au

Lecture Notes
The lecture notes and important announcements will be available on UNSW Moodle. Practice problems with solutions will also be made available on the course website. The assessments for this course are primarily based on the lecture notes and practice problems.

Textbook - The prescribed textbook for this course is:
Options, Futures and Other Derivatives, by John C. Hull, 8th Ed., Prentice-Hall, 2011. This textbook is widely used in courses and on the “street”. It includes almost everything you want to know about derivatives. It can be hard reading, but it is well worth the effort.

Reference Books
- Fundamentals of Futures and Options Markets, by John C. Hull, 4th Ed., Prentice-Hall, 2002.
- Fundamentals of Futures and Options Markets, by J.C. Hull, S. Treepongkaruna, R. Heaney, D. Pitt, D. Colwell, (Australian edition) Prentice-Hall, 2014.
- Futures, Options and Swaps, by R. W. Kolb, 4th Ed, Blackwell Publishing, 2003.

6 COURSE EVALUATION AND DEVELOPMENT

Each year feedback is sought from students and other stakeholders about the courses offered in the School and continual improvements are made based on this feedback. UNSW's myExperience survey is one of the ways in which student evaluative feedback is gathered. In this course, we will seek your feedback through e.g., end of semester myExperience responses. For example, feedback from previous students indicated that the lecturer sometimes speaks too quickly. As a result of this feedback, the lecturer is careful about speaking slowly and clearly.

7 COURSE SCHEDULE

Week 1 no tutorials
Week 13 no lectures

Each week, tutorials cover material from the previous lecture.

NOTE: The timing of these lectures is only approximate. If I do not finish a topic one week, I will continue with that chapter the following week. Also, if I finish a topic early, I will go right to the next topic. Usually, you will need to bring two sets of lecture notes to a given lecture. Each week I'll try to let you know what you'll need to bring the following week.

COURSE SCHEDULE			
Week	Topic	References	Lecturer / assessment
Week 1 24 July	Fundamentals of Forwards and Futures; Hedging with Futures	Ch. 1 and 2; Ch. 3	David Colwell
Week 2 31 July	Pricing Futures	Ch. 5	David Colwell
Week 3 7 August	Pricing Futures (continued) Currency Swaps; Fundamentals of Options	Ch. 5 Ch. 7 Sec. 7.8 and 7.9; Ch. 9 and 10	David Colwell
Week 4 14 August	Fundamentals of Options (continued)	Ch. 9 and 10	David Colwell First assignment due
Week 5 21 August	Trading Strategies involving Options	Ch. 11	David Colwell
Week 6 28 August	Binomial Option Pricing Models	Ch. 12	David Colwell
Week 7 4 September	**Mid-session exam**	(Covers all topics discussed in lectures so far)	
Week 8 11 September	Wiener Processes & Ito's Lemma	Ch. 13	Johnno Wu
Week 9 18 September	Black-Scholes Option Pricing Model	Ch. 14	Johnno Wu
Mid-semester break: 23 September – 2 October inclusive (2 Oct = Labour Day Public Holiday)			
Week 10 3 October	Options on indices, currencies and futures	Ch. 16 and 17	Johnno Wu
Week 11 9 October	The Greek Letters	Ch. 18	Johnno Wu
Week 12 16 October	Numerical Procedures	Ch. 20	Johnno Wu
Week 13 23 October			Second assignment due