

## GSBS6142: Derivatives and Risk Management 2023



*MISSION: Our mission is to advance responsible and impactful business knowledge. To achieve our mission, we develop life ready graduates and build global and local partnerships through ethical and innovate practices.*

### OVERVIEW

<b>Course Description</b>	A broad range of derivative products are examined with a primary focus on how to use these for the management of financial risks. The course introduces standard models of pricing forward, futures and options on diverse underlying assets. The course then explores hedging methods to conduct risk management for business operations, speculative trades, and issued financial instruments. After completing this course students will be familiar with derivatives valuation and their use in risk management.
<b>Contact Hours</b>	<b>Workshop:</b> Face to Face on Campus 3 hour(s) per week for 12 weeks
<b>Unit Weighting</b>	10 units
<b>Assumed Knowledge Workload</b>	GSBS6140 Investment Analysis Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.
<b>Please refer to the course CANVAS site for details of teaching staff for ALL course offerings. The primary contact for courses is the Course Coordinator, whose details are listed on the course CANVAS site.</b>	
<b>Student Consultation</b>	A minimum of one (1) hour of consultation per week. Please see course CANVAS site for details on time and location.
<b>Course Learning Outcomes</b>	<b>On successful completion of this course, students will be able to:</b> <ol style="list-style-type: none"><li>1. Analyse and price diverse derivatives products to generate an optimal risk management strategy;</li><li>2. Demonstrate critical thinking, analytical and problem-solving skills in the context of derivatives pricing and hedging practice;</li><li>3. Explain the binomial model and its extension in continuous time to the Black-Scholes model; and</li><li>4. Demonstrate an understanding of pricing forwards, futures and options contracts.</li></ol>

# COURSE OUTLINE

# ASSESSMENTS

This course has 3 assessments. Each assessment is described in more detail in the sections below:

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	In-Class test	Week 7 – during timetabled class time	Individual	20%	1, 2, 3
2	Written Assignment	Sunday, Week 10 by 11:59 pm	Group	30%	1, 2, 3, 4
3	Formal Examination	Formal Examination Period	Individual	50%	1, 2, 3, 4

**Please note:** students are advised that **ALL** assessments must be submitted in English. Assessments **not** submitted in English will receive a mark of zero.

Results of individual assessment items and final results, including those provided via the Learning Management System (LMS) are 'unofficial results' until they are confirmed as finalised by the School Assessment Body and the Head of School or delegate. Finalised results are released directly to students on the Fully Graded Date of the relevant Semester/Trimester.

## Time referenced is time in Newcastle NSW

<b>Late Submissions</b>	The mark for an assessment item submitted after the designated time on the due date, without an approved extension of time, will be reduced by 10% of the possible maximum mark for that assessment item for each day or part day that the assessment item is late. <b>Note:</b> this applies equally to week and weekend days.
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### Assessment 1 – In-Class Test

<b>Assessment Type</b>	In Term Test
<b>Purpose</b>	The purpose of this assessment is to assess students' progressive development of option pricing and hedging practice.
<b>Description</b>	This test will cover subject matter from Weeks 1-5 inclusive.
<b>Weighting</b>	20%
<b>Length</b>	90 minutes
<b>Due Date</b>	Week 7 – during timetabled class time
<b>Submission Method</b>	In class
<b>Assessment Criteria</b>	Five (5) criteria will be used: <ol style="list-style-type: none"> <li>1. Demonstrated understanding of theory and relevant concepts</li> <li>2. Demonstrated application of derivatives pricing and hedging</li> <li>3. Accuracy of information/argument.</li> <li>4. Clarity of expression</li> <li>5. Relevance to the question.</li> </ol>
<b>Return Method</b>	In class
<b>Feedback Provided</b>	In class

### Assessment 2 - Written Assignment

<b>Assessment Type</b>	Written Assignment
<b>Purpose</b>	This assignment provides a context for students to demonstrate advanced knowledge of option pricing and hedging practice.
<b>Description</b>	You are expected to work in groups of three (3) to four (4) members. Each group will be asked to undertake analysis of data and apply it to the theory and practice of option pricing and/or trading.
<b>Weighting</b>	30%
<b>Length</b>	2000 words (maximum)
<b>Due Date</b>	Sunday, Week 10 by 11:59 pm
<b>Submission Method</b>	Online – via Turnitin
<b>Assessment Criteria</b>	The marking criteria to be used include <ul style="list-style-type: none"> <li>• Relevance to the question.</li> <li>• Accuracy of information/argument.</li> <li>• Clarity of expression</li> </ul> <p><b>Please note:</b> Self and Peer Assessment: A single mark is given for the group assignment. This mark will then be moderated by "self and peer assessment" using the SPARKPlus software so that individual group members may receive different marks. Any</p>

	moderated individual mark received by each group member is based on contribution to the assignment and, more importantly the ability to work with others.
	Individually group members are required to submit a self and peer assessment through SPARK within 24 hours of the due date. Failure to complete SPARK will result in a mark of zero. The criteria for the self and peer assessment are found along with the instructions on how to use SPARK on CANVAS. Please note: <b>NO SPARK NO MARK.</b>
<b>Return Method</b>	In class
<b>Feedback Provided</b>	In class

## Assessment 3 - Final Examination

<b>Assessment Type</b>	Formal Examination
<b>Purpose</b>	This assessment evaluates students' capacity to consolidate and apply advanced knowledge of derivatives pricing and hedging practice.
<b>Description</b>	<p>The final exam will be held for 2 hours during the exam period. The exam will cover all course material. It will include both numerical solving questions and discussion questions.</p> <p>This course has a <b>RESTRICTED OPEN BOOK</b> examination. A memory aid is permitted. The memory aid is a single double sided A4 sheet of handwritten or typed notes for use during the examination. Note: memory aids must be left on the examination table and cannot be removed from the examination venue.</p>
<b>Weighting</b>	50%
<b>Length</b>	120 minutes
<b>Due Date</b>	Formal Examination Period
<b>Submission Method</b>	Formal Exam
<b>Assessment Criteria</b>	<p>Five (5) criteria will be used:</p> <ol style="list-style-type: none"> <li>1. Demonstrated understanding of theory and relevant concepts</li> <li>2. Demonstrated critical thinking, analytical and problem-solving skills in the context of derivatives pricing and hedging practice</li> <li>3. Accuracy of information/argument/calculations.</li> <li>4. Clarity of expression</li> <li>5. Relevance to the question.</li> </ol>
<b>Return Method</b>	Not Returned
<b>Feedback Provided</b>	No Feedback. Examinations will not be returned to students. Final examinations will be made available for review by students, upon request, in a controlled and monitored setting. Students are required to make requests, directly to the relevant course coordinator. Completed examinations are kept by the Newcastle Business School for a period of six (6) months only, from the relevant fully graded date. Requests made after the six (6) month period <b>cannot</b> be considered.

## SYLLABUS

### Course Content

#### Topics in the course include but are not limited to the following:

1. Operation of derivatives market.
2. Risk and return characteristics of derivative securities.
3. Pricing forward and future contracts.
4. Mechanics of option trading.
5. Option pricing with the Binomial and Black-Scholes models.
6. Options on stock indices, futures and exotic options.
7. Managing financial risk using derivative securities.
8. Credit derivatives markets and instruments

### Course Materials

#### Required Text:

Hull, John (2021) *Options, Futures, and Other Derivatives*, 11 Global Edition, Pearson Education, Limited.

**ISBN:** 9781292410654 (print) or 9781292410623 (ebook)

Please refer to the course CANVAS site for details of additional recommended texts.

# SCHEDULE

Week	Topic	Class Preparation	Workshop Activities
1	Interest Rates & Basic Statistics	Hull, et al. Chapter 4 & notes supplied	Use continuous compounding to calculate the market value of future cash flows
2	Options	Hull, et al. Chapter 10, 11	Describe the characteristics of option contracts
3	Option strategies Group Formation	Hull, et al. Chapter 11, 12	Understand the properties of stock options and explain how a low-price portfolio can be formed
4	Introduction to Binomial Tree	Hull, et al. Chapter 13	Develop a simple binomial tree to price options
5	Black-Scholes Model	Hull, et al. Chapter 15	Apply Black-Scholes model to price options
6	The Greek Letters	Hull, et al. Chapter 19	Construct a hedged portfolio using derivatives based on the Greek letters
7	Mid-term Quiz	Review weeks 1 to 5	<b>Assessment 1 due:</b> Mid-Trimester Quiz – <b>during scheduled class time</b>
8	Diverse Options	Hull, et al. Chapter 17, 118	Modify the Black-Scholes to price options with different underlying
9	Empirical Option Pricing	Hull, et al. Chapter 13 & notes supplied	Employ the binomial tree in practical option pricing
10	Implied Volatility Smile	Hull, et al. Chapter 20	Understand the relationship between a volatility smile and the probability distribution being assumed for the future asset price  <b>Assessment 2 due:</b> Sunday of Week 10 by 11:59 pm
11	Hedging Strategies Using Futures	Hull, et al. Chapter 3	Develop a hedging strategy using futures
12	Forwards and Futures Pricing	Hull, et al. Chapter 5	Pricing futures contracts with various underlying assets

If a lecture/class is scheduled on a public holiday, a make-up lecture may be announced by the course coordinator on the course CANVAS site.

# CONTACTS

## School Office

### Newcastle Business School – Callaghan, Newcastle City & Online

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### PSB Academy Enquiries

Log your question or request to the PSB Program Executives at the following website:  
<http://www.psb-academy.edu.sg/enq>  
+65 6390 9000

### Newcastle Australia Institute of Higher Education Pte Ltd

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# ADDITIONAL INFORMATION

## Grading Scheme

This course is graded as follows:

Range of Marks	Grade	Description
85-100	High Distinction (HD)	Outstanding standard indicating comprehensive knowledge and understanding of the relevant materials; demonstration of an outstanding level of academic achievement; mastery of skills*; and achievement of all assessment objectives.
75-84	Distinction (D)	Excellent standard indicating a very high level of knowledge and understanding of the relevant materials; demonstration of a very high level of academic ability; sound development of skills*; and achievement of all assessment objectives.
65-74	Credit (C)	Good standard indicating a high level of knowledge and understanding of the relevant materials; demonstration of a high level of academic achievement; reasonable development of skills*; and achievement of all learning outcomes.
50-64	Pass (P)	Satisfactory standard indicating an adequate knowledge and understanding of the relevant materials; demonstration of an adequate level of academic achievement; satisfactory development of skills*; and achievement of all learning outcomes.
0-49	Fail (FF)	Failure to satisfactorily achieve learning outcomes. If all compulsory course components are not completed the mark will be zero. A fail grade may also be awarded following disciplinary action.

\*Skills are those identified for the purposes of assessment task(s).

<b>Communication Methods</b>	<p>Communication methods used in this course include:</p> <ul style="list-style-type: none"> <li>- CANVAS Course Site: Students will receive communications via the posting of content or announcements on the CANVAS course site.</li> <li>- Email: Students will receive communications via their student email account.</li> <li>- Face to Face: Communication will be provided via face to face meetings or supervision.</li> </ul>
<b>Course Evaluation</b>	Each year feedback is sought from students and other stakeholders about the courses offered in the University for the purposes of identifying areas of excellence and potential improvement.
<b>Oral Interviews</b>	As part of the evaluation process of any assessment item in this course an oral examination may be conducted. The purpose of the oral examination is to verify the authorship of the material submitted in response to the assessment task. The oral examination will be conducted in accordance with the principles set out in the <u>Oral Examination Guidelines</u> . In cases where the oral examination reveals the assessment item may not be the student's own work the case will be dealt with under the <u>Student Conduct Rule</u> .
<b>Academic Misconduct</b>	All students are required to meet the academic integrity standards of the University. These standards reinforce the importance of integrity and honesty in an academic environment. Academic Integrity policies apply to all students of the University in all modes of study and in all locations. For the Student Academic Integrity Policy, refer to <a href="https://policies.newcastle.edu.au/document/view-current.php?id=35">https://policies.newcastle.edu.au/document/view-current.php?id=35</a> .
<b>Adverse Circumstances</b>	<p>The University acknowledges the right of students to seek consideration for the impact of allowable adverse circumstances that may affect their performance in assessment item(s). Applications for special consideration due to adverse circumstances will be made using the online Adverse Circumstances system where:</p> <ol style="list-style-type: none"> <li>1. the assessment item is a major assessment item; or</li> <li>2. the assessment item is a minor assessment item and the Course Co-ordinator has specified in the Course Outline that students may apply the online Adverse Circumstances system;</li> <li>3. you are requesting a change of placement; or</li> <li>4. the course has a compulsory attendance requirement.</li> </ol> <p>Before applying you must refer to the Adverse Circumstances Affecting Assessment Items Procedure available at:  <a href="https://policies.newcastle.edu.au/document/view-current.php?id=236">https://policies.newcastle.edu.au/document/view-current.php?id=236</a></p>
<b>Important Policy Information</b>	The 'HELP for Students' tab in UoNline contains important information that all students should be familiar with, including various systems, policies and procedures.

*This course outline was approved by the Head of School. No alteration of this course outline is permitted without Head of School approval. If a change is approved, students will be notified and an amended course outline will be provided in the same manner as the original.*

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