



Shanghai Jiao Tong University

BU463 Risk Management and Derivatives

<b>Instructor Information:</b>	<p>Lin Mi          Home Institution: The University of Queensland          Email: l.mi@business.uq.edu.au          Office Hours: Determined by Instructor</p>		
<b>Term:</b>	December 16, 2019 - January 7, 2020	<b>Credits:</b>	4 units
<b>Class Hours:</b>	Monday through Friday, 160 mins per teaching day		
<b>Discussion Sessions:</b>	2 hours each week, conducted by teaching assistant(s)		
<b>Total Contact Hours:</b>	64 contact hours (1 contact hour = 45 mins, 2880 mins in total)		
<b>Required Texts (with ISBN):</b>	<p>No prescribed textbook. Lecture notes, lecture slides and other relevant supporting materials are sufficient.</p> <p>Recommended Resources:</p> <p>Students who need additional reading materials can refer to the following books:</p> <ul style="list-style-type: none"> <li>• Hull, J.C., 2012, Options, Futures, and Other Derivatives, sixth/seventh/eighth/ninth edition, Prentice Hall or</li> <li>• Hull, J.C., 2014, Fundamentals of Futures and Option Markets, sixth/seventh/eighth edition, Prentice Hall</li> <li>• McDonald, R.L., 2006, Derivatives Markets, second edition, Addison Wesley</li> </ul>		
<b>Prerequisite:</b>	Students are expected to have a thorough knowledge of all material covered in an introductory finance course.		



## Course Overview

In the last three decades, there have been some remarkable losses seen in the financial markets; for example, the October 1987 market crash, 1998 LTCM crisis and the 2007-2008 subprime mortgage crisis, to name but a few. Accordingly, organizations have embraced sound risk management practices to avoid exposing themselves to unnecessary financial risks on the one hand, and taking calculated risks on the other. In particular, organizations have embraced derivatives as a risk management and hedging vehicle to the extent that many corporations now feature risk management divisions. It is likely that risk management issues will continue to arise in the majority of business scenarios. With these in mind, this course is designed to equip students with the essential frameworks and tools needed to understand and effectively manage financial risks. The primary focus will be on pricing derivatives, particularly forward, futures, options and swaps, using various state-of-the-art techniques.

## Course Goals

After successfully completing this course you should be able to:

1. Understand the operation of derivatives markets (options, futures, forwards and swaps)
2. Identify different derivative products that are available in the financial market
3. Master the fundamental concepts in pricing derivative instruments using various state-of-the-art techniques
4. Demonstrate how a range of derivative products can be used to hedge and speculate market risk



### Grading Policy

Mid-semester Exam	30%
Report (Individual Assignment)	20%
Final Exam	50%

### Grading Scale is as follows

Number grade	Letter grade	GPA
90-100	A	4
85-89	A-	3.7
80-84	B+	3.3
75-79	B	3
70-74	B-	2.7
67-69	C+	2.3
65-66	C	2
62-64	C-	1.7
60-61	D	1
≤59	F (Failure)	0



### Class Schedule

Day	Lecture	Chapter
Day 1	Introduction, hedging with forwards and futures: Introduction to the course; hedging using forwards and futures	Lecture notes and supporting material
Day 2	Hedging with and pricing forwards and futures: Hedging using forwards and futures (cont'd) & valuing forwards and futures	Lecture notes and supporting material
Day 3	Pricing forwards and futures: Valuing forwards and futures (cont'd)	Lecture notes and supporting material
Day 4	Introduction to options: Introduction to plain vanilla options	Lecture notes and supporting material
Day 5	Option valuation and hedging: Valuing plain vanilla options analytically (using Black-Scholes model) and hedging using options	Lecture notes and supporting material
Day 6	Mid-semester Exam Review	Lecture notes and supporting material
Day 7	Mid-semester Exam	
Day 8	Implied volatility: Using Bloomberg to price options and implied volatility	Lecture notes and supporting material
Day 9	Exotic derivatives: Exotic derivatives and trading strategies	Lecture notes and supporting material
Day 10	Binomial pricing: Pricing derivatives using binomial approach	Lecture notes and supporting material
Day 11	Swaps and other fixed income securities: Interest rate swaps, currency swaps and other fixed income securities	Lecture notes and supporting material
Day 12	Swaps and other fixed income securities: Interest rate swaps, currency swaps and other fixed income securities (cont'd)	Lecture notes and supporting material
Day 13	Monte-Carlo simulation: Pricing options using Monte-Carlo simulation	Lecture notes and supporting material
Day 14	Course review: course review	Lecture notes and supporting material
Day 15	Final Exam	