



UNIVERSITI TEKNOLOGI MARA

ASC570: FINANCIAL ECONOMICS II

Course Name (English)	FINANCIAL ECONOMICS II APPROVED
Course Code	ASC570
MQF Credit	4
Course Description	This course explains on hedging using option. Pricing the option, modeling stock price using lognormal distribution, the effect of Brownian motion and ito's lemma to the option price.
Transferable Skills	Demonstrate ability to apply creative, imaginative and innovative thinking and ideas to problem solving. Demonstrate ability to investigate problems and provide effective solutions. Demonstrate professional skills, knowledge and competencies.
Teaching Methodologies	Lectures, Tutorial
CLO	CLO1 Analyse the Black-Scholes formula for option pricing based on different underlying assets, varying option Greeks and highlight the risk management practices of modern institution. CLO2 Construct risk management techniques under delta hedging method. CLO3 Differentiate some basic kinds of exotic options, including Asian, barrier, compound, gap and exchanges. CLO4 Explain the parameters of the Lognormal Distribution on stocks. CLO5 Formulate Brownian motion, Ito's Lemma and Monte Carlo simulation in valuating the price of the option assuming lognormal stock prices.
Pre-Requisite Courses	No course recommendations
Topics	
1. Black-Scholes Formula Revisited 1.1) Option Greeks	
2. Market Making and Delta Hedging 2.1) What Do Market Makers Do? 2.2) Market-Maker Risk 2.3) Delta Hedging 2.4) The Mathematics of Delta Hedging 2.5) The Black Scholes Analysis 2.6) Market-Making as Insurance	
3. Exotic Option 3.1) Introduction. 3.2) Asian Options. 3.3) Barrier Options. 3.4) Compound Options. 3.5) Gap Options. 3.6) Exchange Options.	
4. The Lognormal Distribution 4.1) The Normal Distribution. 4.2) The Lognormal Distribution. 4.3) A Lognormal Model of Stock Prices. 4.4) Lognormal Probability Calculations. 4.5) Estimating the Parameters of a Lognormal Distribution. 4.6) How Are Asset Prices Distributed?	

5. Monte Carlo Valuation

- 5.1) Computing the Option Price as a Discounted Expected Value.
- 5.2) Computing Random Numbers.
- 5.3) Simulating Lognormal Stock Prices
- 5.4) Monte Carlo Valuation
- 5.5) Efficient Monte Carlo Valuation

6. Brownian Motion and Ito,s Lemma

- 6.1) The Black Scholes Assumption about Stock Prices
- 6.2) Brownian Motion
- 6.3) Geometric Brownian Motion.
- 6.4) The Sharpe Ratio
- 6.5) The Risk-Neutral Process
- 6.6) Ito's Lemma

Assessment Breakdown	%
Continuous Assessment	40.00%
Final Assessment	60.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Assignment - CLO4 - 5%	5%	CLO4
	Assignment	Assignment - CLO5 - 5%	5%	CLO5
	Individual Project	CLO1 - 5%	5%	CLO1
	Test	Test 1 CLO2 - 12.5%	12%	CLO2
	Test	Test 2 - CLO3 - 12.5%	13%	CLO3

Reading List	Recommended Text	<ul style="list-style-type: none"> McDonald, R.L. 2016, <i>Derivatives Markets</i>, 2 Ed., Boston: Pearson Education Inc Hopkin, P., 2018, <i>Fundamentals of Risk Management: Understanding, Evaluating and Implementing Effective Risk Management</i> 5 Ed., Kogan Page
	Reference Book Resources	<ul style="list-style-type: none"> Hull, J. C. 2017, <i>Option, futures and other derivatives</i>, New Jersey: Pearson Prentice Hall Hull, J.,C. 2018, <i>Risk Management and Financial Institutions (Wiley Finance)</i> 5 Ed., Wiley Jarrow, R., Chatterjea, A. 2019, <i>An Introduction to Derivative Securities, Financial Markets, and Risk Management</i>, 2 Ed., World Scientific Publishing Company Elton, E. J., Gruber, M. J. & Brown, S. J. et 2013, <i>Modern portfolio theory and investment analys</i>, 7 Ed., USA: John Wiley
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	