



Lahore University of Management Sciences

FINN- 453 Financial Derivatives

Fall Semester 2017

(Tentative-Under review)

Instructor	Arslan Shahid Butt			
Room No.	SDSB- 437			
Office Hours	Monday & Wednesday 10 Am-12 Pm- Other times by appointment			
Email	Arslan.butt@lums.edu.pk			
Telephone	+923364856818			
Secretary/TA	TBA			
TA Office Hours	TBA			
Course URL (if any)	suraj.lums.edu.pk/~ro/			
COURSE BASICS				
Credit Hours	3			
Lecture(s)	Nbr of Lec(s) Per Week	2	Duration	1 Hour and 15 Minutes
Recitation/Lab (per week)	Nbr of Lec(s) Per Week		Duration	
Tutorial (per week)	Nbr of Lec(s) Per Week		Duration	
COURSE DISTRIBUTION				
Core				
Elective				
Open for Student Category	SDSB(Juniors & Seniors), Open for All in phase II			
Close for Student Category				
COURSE DESCRIPTION				
<p>This course program is designed to expand students understanding of derivative-related financial instruments (forwards, futures options and swaps) and their use in investment and corporate financial management. Students taking the course must have a solid understanding of the concepts in several fields, namely, finance and economics. This course is designed to provide a comprehensive analysis on the properties various derivatives instruments and to offer a theoretical framework within which all derivatives can be valued and hedged.</p>				
COURSE PREREQUISITE(S)				
FINN 100 FINN 200	Principles of Finance Intermediate Finance OR Grad (This course requires (unless I allow this to be waived that you have taken intermediate finance. Generally, a student in this class must be very familiar with the structure and operations of equity and bond markets because this course covers the market for derivatives that are derived from those fundamental markets. There is no review of those markets in this class. It is assumed that you know this material already.)			
COURSE OBJECTIVES				
1. 2. 3.	To provide a comprehensive analysis on the properties of derivative instruments. To offer a theoretical framework within which all derivatives can be analyzed and valued. To provide practical and simple investment and corporate financial management strategies using derivatives in a manner which will allow students to apply these concepts and skills.			



Lahore University of Management Sciences

LEARNING OUTCOMES	
	At the end of this course, participants should be able to:
1.	Outline the structure and operation of derivatives markets.
2.	Demonstrate the pricing of swaps, forwards, futures and options.
3.	Implement and evaluate hedging, arbitrage and speculative trading strategies using derivatives.
4.	Construct simple options trading strategies.
5.	Understand and mitigate the risks associated with usage of derivatives and strategies.
6.	Present and evaluate the downfalls caused by inappropriate usage of derivatives, identify the risks associated and recommend recommendations to mitigate the associated risks.
7.	Discuss and debate a variety of topics including the ethical and global perspectives in usage of financial derivatives

UNDERGRADUATE PROGRAM LEARNING GOALS & OBJECTIVES	
	<p>Goal 1 –Effective Written and Oral Communication Objective: Students will demonstrate effective writing and oral communication skills</p> <p>Goal 2 –Ethical Understanding and Reasoning Objective: Students will demonstrate that they are able to identify and address ethical issues in an organizational context.</p> <p>Goal 3 – Analytical Thinking and Problem Solving Skills Objective: Students will demonstrate that they are able to identify key problems and generate viable solutions.</p> <p>Goal 4 – Application of Information Technology Objective: Students will demonstrate that they are able to use current technologies in business and management context.</p> <p>Goal 5 – Teamwork in Diverse and Multicultural Environments Objective: Students will demonstrate that they are able to work effectively in diverse environments. Goal</p> <p>6 – Understanding Organizational Ecosystems Objective: Students will demonstrate that they have an understanding of Economic, Political, Regulatory, Legal, Technological, and Social environment of organizations.</p> <p>Major Specific Learning Goals & Objectives</p> <p>Goal 7 (a) – Discipline Specific Knowledge and Understanding Objective: Students will demonstrate knowledge of key business disciplines and how they interact including application to real world situations. (including subject knowledge)</p> <p>Goal 7 (b) – Understanding the “science” behind the decision-making process (for MGS Majors) Objective: Students will demonstrate ability to analyze a business problem, design and apply appropriate decision-support tools, interpret results and make meaningful recommendations to support the decision-maker</p>



Lahore University of Management Sciences

Indicate below how the course learning objectives/outcomes specifically relate to any program learning goals and objectives.

PROGRAM LEARNING GOALS AND OBJECTIVES	COURSE LEARNING OBJECTIVES	COURSE ASSESSMENT ITEM
Goal 1 –Effective Written and Oral Communication	Students get a number of opportunities to demonstrate their ability to communicate effectively (CLO #6)	CP and Exam
Goal 2 –Ethical Understanding and Reasoning	Ethical perspectives are substantiated in the projects highlighting the major dilemmas caused by inappropriate applications of derivatives. (CLO #5&6)	Project and Exam
Goal 3 – Analytical Thinking and Problem Solving Skills	Major Goal: Analytical thinking and problem solving skills are essential for success in this course (CLO #1-6)	CP, Quizzes, Cases, and Exam
Goal 4 – Application of Information Technology	Application of information technology in preparing the project report (CLO#6)	Project
Goal 5 – Teamwork in Diverse and Multicultural Environments	Students work in groups of 4-5 persons each for project and analyses. Project would be on real life global companies and the impact of derivatives on their operations and financial results.	Project
Goal 6 – Understanding Organizational Ecosystems	Develop students understanding of financial derivatives with the securities markets, industry, and the economy as a whole(CLO #7)	CP, Quizzes, Project and Exam
Goal 7 (a) – Program Specific Knowledge and Understanding (Subject Knowledge)	Major Goal: Comprehensive coverage of topics in Financial Derivatives(CLO #1-5)	CP, Quizzes, Project and Exam
Goal 7 (b) – Understanding the “science” behind the decision-making process	NA	NA

GRADING BREAKUP AND POLICY

Home Work:	
Quiz(s):	20 %
Class Participation:	05 %
Attendance:	05 %
Midterm Examination:	25 %
Project:	15 %
Final Examination:	30 %

Please Note: Assignment questions will be distributed on a weekly basis and students will normally get a week for completing the assignment, in groups. No late assignments will be accepted.



Lahore University of Management Sciences

EXAMINATION DETAIL	
Midterm Exam	Yes/No: Yes Combine Separate: Combined Duration: 1 Hour and 40 Minutes Preferred Date: During last week of examinations Exam Specifications: Closed Books & Closed Notes
Final Exam	Yes/No: Yes Combine Separate: Combined Duration: 1 Hour and 40 Minutes Exam Specifications: Closed Books & Closed Notes

COURSE OVERVIEW			
SESSION	TOPICS	RECOMMENDED READINGS	SESSION OBJECTIVES
1-2	Derivative Markets and Instruments	Course Pack: Reading Package 1	1. Define a derivative and distinguish between exchange traded and over the counter derivatives 2. Define Forward/Future contracts, option and swaps and compare their characteristics 3. Describe the purpose and criticism of derivative markets 4. Explain arbitrage and the role it plays in promoting market efficiency
3-5	Forward Market and Contracts	Course Pack: Reading Package 2	5. Explain delivery/settlement and default risk for both long and short positions in a forward contract 6. Describe the procedure for settling a forward contract at expiration and how termination prior to expiration can effect credit risk 7. Describe the characteristics of equity forward contracts and forward contract on zero coupon and coupon bonds 8. Describe forward rate agreement(FRA) and calculate the gain or loss on a FRA



Lahore University of Management Sciences

			<p>9. Describe the characteristics of currency forward contracts</p>
6-7	Valuation of Forward Contract	Course Pack: Reading Package 3	<p>10. Explain how the value of forward contract is determined at initiation, during the life of the contract, and at expiration.</p> <p>11. Calculate the price and value of equity forward contract</p> <p>12. Calculate and interpret the price and value of a 1) a forward contract on a fixed income security, 2) a FRA, 3) a forward contract on currency.</p> <p>13. Evaluate credit risk in a forward contract and explain how market value is a measure of exposure to a party in a forward contract</p>
8-9	Future Market and Contracts	Course Pack: Reading Package 4	<p>14. Describe the characteristics of future contract</p> <p>15. Compare future and forward contracts</p> <p>16. Distinguish between margin in future market and security market</p> <p>17. Describe price limits and the process of marking to market, and calculate and interpret the margin balance</p> <p>18. Describe how a future contract can be terminated at or prior to termination</p> <p>19. Describe the characteristics of various types of future contracts</p>



Lahore University of Management Sciences

10-11	Valuation of future contracts	Course Pack: Reading Package 5	<p>20. Explain why future price must converge to spot price at expiration</p> <p>21. Determine the value of a future contract</p> <p>22. Explain why forward and future prices differ</p> <p>23. Describe backwardation and contango</p> <p>24. Describe the relationship between future prices and expected spot prices</p> <p>25. Calculate and interpret the prices of treasury bond futures, stock index futures and currency futures</p>
12-13	Introduction to Option Markets and Contracts	Course Pack: Reading Package 6	<p>26. Describe call and put option</p> <p>27. Distinguish between American and European options</p> <p>28. Define the concept of moneyness of a option</p> <p>29. Compare exchange traded and over the counter options</p> <p>30. Identify the types of options in terms of the underlying instruments</p> <p>31. Compare Interest rate options with FRA</p> <p>32. Calculate and interpret option payoff and explain how interest rate options differ from other options</p>
14	Review Session	N/A	33. Integration and synthesis of previous sessions
15	Midterm	N/A	



Lahore University of Management Sciences

16-17	Valuation of Options	Course Pack: Reading Package 7	<p>34. Define intrinsic and time value and explain their relationship</p> <p>35. Determine the maximum and minimum values for American/European options</p> <p>36. Calculate and interpret the lowest prices of call and put options based on rules for minimum values and lower bounds</p> <p>37. Determine the directional effect of an interest rate change or volatility change on an options price</p>
18	Put-Call Parity Theorem	Course Pack: Reading Package 8	<p>38. Explain put call parity for European options and explain how put call parity is related to arbitrage and construction of synthetic options.</p> <p>39. Explain how cash flows on the underlying asset effects put-call parity and the lower bound of option prices</p>
19	Synthetic Options	Course Pack: Reading Package 9	<p>40. Calculate and interpret the prices of synthetic call option, synthetic put option, synthetic bond, and synthetic underlying stock</p> <p>41. Explain why investor would want to create such instruments.</p>
20	Binomial Models	Course Pack: Reading Package 10	<p>42. Calculate and interpret prices of interest rate option and options on asset using one or two period binomial models.</p>
21	Black-Scholes- Merton Model	Course Pack: Reading Package 11	<p>43. Explain and evaluate the assumption underlying the model</p> <p>44. Explain how an option price, as represented by this model is effected by change in the value of each of the inputs.</p>



Lahore University of Management Sciences

22	The Greeks	Course Pack: Reading Package 12	<p>45. Explain and evaluate the 'Greeks'</p> <p>46. Explain the delta of an option and demonstrate how it is used in dynamic hedging</p> <p>47. Explain the gamma effect on the options delta and how can gamma effect a delta hedge</p> <p>48. Demonstrate the historical volatility and implied volatility methods for estimating the future volatility of the underlying asset</p>
23	SWAP markets and Contracts	Course Pack: Reading Package 13	<p>49. Describe the characteristics of swap contracts and explain how swaps are terminated</p> <p>50. Describe, calculate and interpret the payments of currency swaps, plain vanilla interest rate swaps and equity swaps</p>
24-25	Valuation of SWAPS	Course Pack: Reading Package 14	<p>51. Distinguish between the pricing and valuation of swaps.</p> <p>52. Calculate and interpret the fixed rate on a plain vanilla interest rate swap and the market value of the swap during its life.</p> <p>53. Explain and interpret the characteristics and used of swaptions, including the difference between payer and receiver swaption</p> <p>54. Calculate the payoff and cash flows of interest rate swaption</p>
26	Risk Management applications of derivative instruments	Course Pack: Reading Package 15	<p>55. Determine the value at expiration, the profit, maximum profit, maximum loss, breakeven underlying price at expiration and payoff graph of the strategies of buying and selling calls and puts and determine the potential outcome for investor using these strategies</p> <p>56. Determine the value at expiration, the profit, maximum profit, maximum loss, breakeven underlying price at expiration and payoff graph of a covered call strategy and protective put strategy and explain the risk management application of these.</p>



Lahore University of Management Sciences

27	Review Session	N/A	57. Final Review of the entire course
28	Review Session	N/A	
TEXTBOOK(S)/SUPPLEMENTARY READINGS			
54. Course Pack 55. Derivatives and Alternative Investment, CFA program Curriculum, Volume 6, Level I (CFA institute 2012) 56. Derivatives and Portfolio Management, CFA program Curriculum, Volume 6, Level II (CFA institute 2012) 57. Hull, John, 2011, 7 th Edition, Fundamentals of Futures and Options Markets(Prentice Hall)			