



ATTACHMENT 5.

T6. COURSE SPECIFICATIONS (CS)

ACTU 471 Financial Derivatives

1439/2018

Course Specifications

Institution: King Saud University	Date: 01/02/2018
College/Department: Science, Mathematics	

A. Course Identification and General Information

1. Course title and code: Financial Derivatives ACTU 471	
2. Credit hours: 3(3+0+0)	
3. Program(s) in which the course is offered. Actuarial and Financial Mathematics Program	
4. Name of faculty member responsible for the course: Pr. Dr. Souhail Chebbi	
5. Level/year at which this course is offered: 6/3	
6. Pre-requisites for this course (if any): ACTU 371	
7. Co-requisites for this course (if any): None	
8. Location if not on main campus:	
9. Mode of Instruction (mark all that apply):	
a. traditional classroom	<input checked="" type="checkbox"/> What percentage? <input type="text" value="100%"/>
b. blended (traditional and online)	<input type="checkbox"/> What percentage? <input type="text"/>
c. e-learning	<input type="checkbox"/> What percentage? <input type="text"/>
d. correspondence	<input type="checkbox"/> What percentage? <input type="text"/>
f. other	<input type="checkbox"/> What percentage? <input type="text"/>
Comments:	

B Objectives

1. What is the main purpose for this course?

The purpose of this course is to introduce students to the products and concepts underlying derivatives including forward, futures, options and swaps.

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field)

Use LMS (Bb) or Webinar to interact with student (discussions, forums, virtual class room).
Use updated syllabus of FM and Exams from SOA/CAS website.

C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

1. Topics to be Covered

List of Topics	No. of Weeks	Contact hours
1. Introduction to derivatives a. Definition of derivatives, examples, short selling, long and short positions, bid and ask prices, bid-ask spread, net profit of long and short positions b. Principles of financial markets	2	6
2. Forward contracts and prepaid forward contracts on stocks a. Forward contract, prepaid forward contracts, outright purchase, fully leveraged, purchase. b. payoff of long and short forward, net profit of long and short forward	3	9
3. Futures contracts Marking to market, margin balance, maintenance margin, margin call	1	3
4. Options a. Option Contracts: Call and put options, expiration date, strike price / exercise price, moneyness, b. European option, American option, Bermudan option, payoff and net profit of long and short option positions	3	10
5. Swaps Contract	1	3

6. General Properties of Options Put-call parity to European options on the following underlying assets	2	10
7. Option strategies and risk management Option spreads (bull, bear, box, ratio), collar, zero-cost collar, straddle, strangle, butterfly spread	2	6

2. Course components (total contact hours and credits per semester):							
		Lecture	Tutorial	Laboratory/ Studio	Practical (visit to companies)	Other:	Total
Contact Hours	Planned	42	None		None		42
	Actual	42	None		None		42
Credit	Planned	3	None		None		3
	Actual	3	None		None		3

3. Additional private study/learning hours expected for students per week.	6
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4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1	To be able to define and recognize the definitions of the following terms: Non-dividend-paying stocks, stocks paying discrete dividends, stocks paying dividends continuously at a rate proportional to the price, short selling, long and short positions, bid and ask prices, bid-	Traditional lecture class room	Quizzes Midterm and final exams

	ask spread, net profit of long and short		
1.2	Define and recognize the definitions of the following terms: Forward contract, prepaid forward contracts, outright purchase, fully leveraged purchase, payoff of long and short forward, net profit of long and short forward	Traditional lecture class room	Quizzes Midterm and final exams
1.3	Define and recognize the definitions of the following terms: Marking to market, margin balance, maintenance margin, margin call	Traditional lecture class room	Quizzes Midterm and final exams
1.4	Define and recognize the definitions of the following terms: Call and put options, expiration date, strike price / exercise price, moneyness, European option, American option, Bermudan option, payoff and net profit of long and short option positions.	Traditional lecture class room	Quizzes Midterm and final exams
1.5	To be able to define and recognize the definitions of the following terms: yield rate/rate of return, dollar-weighted rate of return, time-weighted rate of return, current value, duration (Macaulay and modified), convexity (Macaulay and modified), portfolio, spot rate, forward rate, yield curve, stock price, stock dividend.	Traditional lecture class room	Quizzes Midterm and final exams
2.0	Cognitive Skills		
2.1	a. Determine forward and prepaid forward prices by the principle of no-arbitrage. b. Construct a synthetic forward from the underlying stock and a risk-free asset. c. Identify arbitrage opportunities when the no-arbitrage forward price is different from the market forward price. d. Recognize that forward price is less than the expected future stock price.	Problem solving	Quizzes Midterm and final exams
2.2	Evaluate an investor's margin balance based on changes in asset values.	Problem solving	Quizzes Midterm and final exams
2.3	Explain the cash flow characteristics of the following exotic options: Asian (both arithmetic and geometric), barrier, compound, lookback	Problem solving	Quizzes Midterm and final exams
2.4	a. Recognize that a long put can be used as an insurance strategy for a long stock position and a long call can be used as an insurance strategy for a short stock position. b. Identify and explain how the following option strategies can be used as tools to manage financial risk or speculate on price or volatility: option spreads (bull, bear, box, ratio), collar,	Problem solving	Quizzes Midterm and final exams

	zero-cost collar, straddle, strangle, butterfly spread 3. Evaluate the payoff and profit of the strategies above.		
2.5	a. Apply put-call parity to European options on the following underlying assets: Stock (no dividends, discrete and continuous dividends), currency, futures contract b. Recognize generalized parity for European exchange options, put-call duality for European currency options, and put-call parity for barrier and compound options. c. Compare options with respect to maturity and strike. d. Identify factors affecting the early exercising of American options and the situations where the values of European and American options are the same.	Problem solving	Quizzes Midterm and final exams
3.0	Interpersonal Skills & Responsibility		
3.1	Study, learn and work independently.	-Encourage students to: - participate in class discussion. - participate in college and university activities. - be members of department committees and college committees.	
3.2	Work effectively in teams.		
3.3	Meet deadlines and manage time properly.		
3.4	Exhibit ethical behavior and respect different points of view.		
4.0	Communication, Information Technology, Numerical		
4.1	Present financial mathematics to others, both in oral and written form clearly and in a well-organized manner	Encourage students to: - Prepare the first part of MFE exam of SOA/CAS - use department and college computing facilities. - use e-mail, LMS, internet, college and department websites, and central library.	
4.2	Use IT facilities as an aid to mathematical processes and for acquiring available information		
4.3	Use library to locate mathematical information.		
4.4	Use Financial Calculator machine	Giving financial calculator group assignment	
5.0	Psychomotor		
	Not applicable	Not applicable	Not applicable

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (i.e., essay, test, quizzes, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Tests, Quizzes	3	5%
2	First Midterm exam	6	25%
3	Tests, Quizzes	9	5%
4	Second Midterm exam	12	25%
5	Final	15 or 16	40%

D. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

1. 10 office hours weekly.
2. Encouraging students to get in touch with the instructor via e-mail.

E Learning Resources

1. List Required Textbooks

1. [Derivatives Markets \(Third Edition\)](#), 2013, by McDonald, R.L., Pearson Education, ISBN: 978-0-32154-308-0
2. [ACTEX MFE Study Manual with StudyPlus+ Spring 2018](#), by: Johnny Li, Ph.D., FSA, Andrew Ng, Ph.D., FSA

2. List Essential References Materials (Journals, Reports, etc.)

3. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

1. <https://www.soa.org>
2. <http://www.casact.org/>

4. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

[LMS \(Bb\)](#), [Webinars](#), [TeamViewer](#), [google apps](#), [virtual classroom](#).

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access, etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Classrooms
2. Technology resources (AV, data show, Smart Board, software, etc.) AV, data show, Smart Board, LMS (Bb)
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)

G Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching Surveys, Exams, quizzes <ol style="list-style-type: none"> An evaluation sheet for the course to be filled by the students at the end of each semester. Take the students' opinion about the course under consideration. Discussing the course with instructors who teach the same course.
2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department <ol style="list-style-type: none"> The level of the students in solving homework and quizzes Colleagues' opinions about students' performance in this course.
3. Processes for Improvement of Teaching <ol style="list-style-type: none"> Encouraging students to get involved in the lecture. Getting the use of tutorial classes. Encouraging the students to read about the subject.
4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution) <ol style="list-style-type: none"> Common Examination Team grading. Exchanging experience by comparing students' results in other departments. Students who believe they are under graded can have their papers checked by a second reader.
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.

1. Providing reviews to develop the assigned book content.
2. Providing a discussion for the course subject by a specialized committee.
3. View other math departments in well-known universities and getting help from them.
4. Consulting some course specialists for course evaluation.

Name of Course Instructor: Prof. Dr. Souhail Mohsen Chebbi

Signature:



Date Specification Completed: 1/02/2016

Program Coordinator: Prof. Dr. Souhail Mohsen Chebbi

Signature



Date Received: 1/02/2016