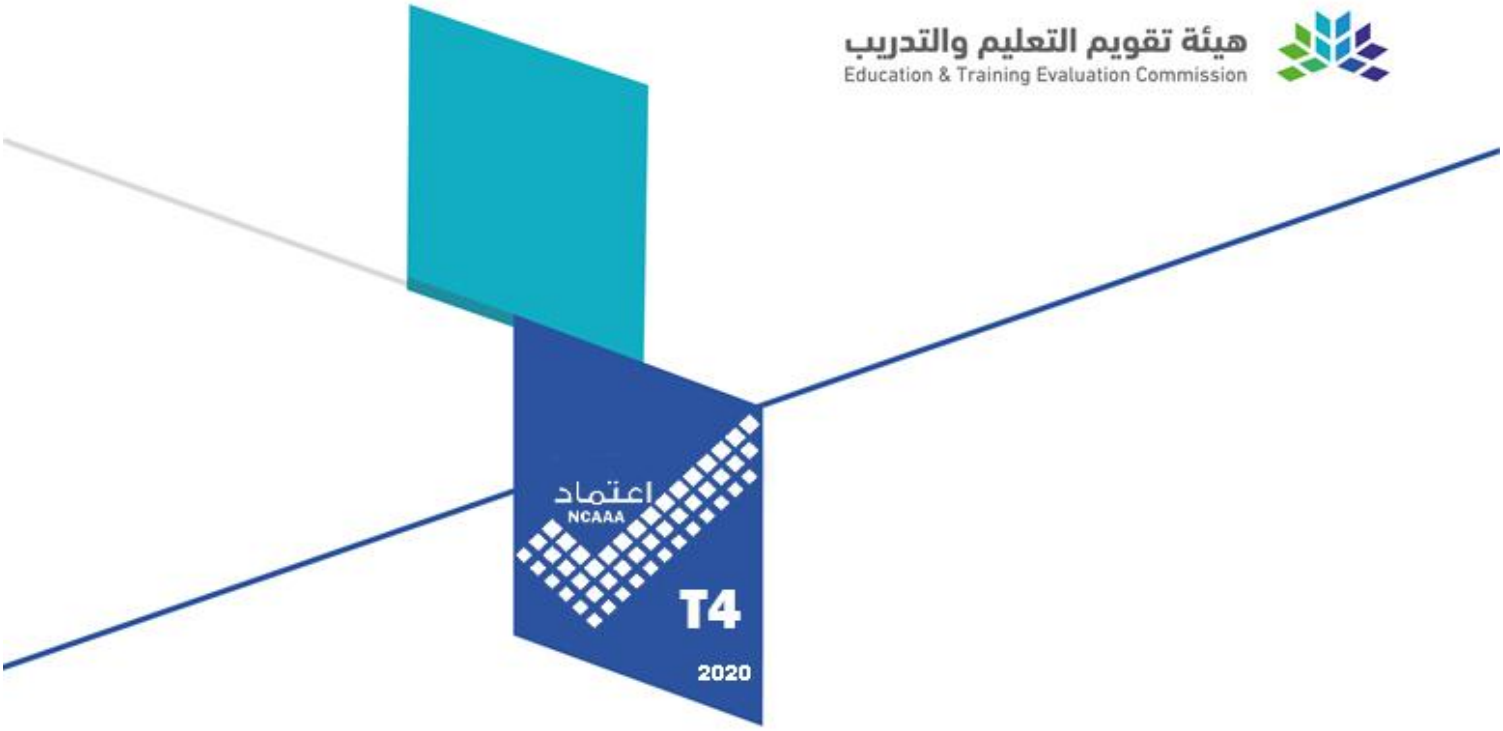
هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	**Financial Derivatives**
Course Code:	**ACTU 471**
Program:	**Actuarial and Financial Mathematics**
Department:	**Mathematics**
College:	**Science**
Institution:	**King Saud University**

Table of Contents

A. Course Identification

1. Credit hours: 3 (3+0+0)
2. Course type **a.** University ☐ College ☐ Department ☒ Others ☐ **b.** Required ☒ Elective ☐
3. Level/year at which this course is offered: Level 6
4. Pre-requisites for this course (if any)**:** ACTU 371
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	45 Hours	
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	45
2	**Laboratory/Studio**	
3	**Tutorial**	0
4	**Others** (specify)	
	Total	45

B. Course Objectives and Learning Outcomes

1. Course Description

This course gives an understand of the following terms and concepts:
Financial derivatives, short selling, long and short positions, bid and ask prices, bid-ask spread, net profit of long and short positions, forward contract, prepaid forward contracts, outright purchase, fully leveraged, purchase, payoff of long and short forward, net profit of long and short forward, futures contracts, marking to market, margin balance, maintenance margin, margin call, call and put options, expiration date, strike price / exercise price,
European option, American option, Bermudan option, payoff and net profit of long and short option positions, put-call parity to European options on the following underlying assets,
Option spreads (bull, bear, box, ratio), collar, zero-cost collar, straddle, strangle, butterfly spread

2. Course Main Objective

To provide an understanding of the fundamental concepts of financial derivatives including forward, futures and options and how we can use these contracts in strategies of investment and hedging.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Explain fundamental concepts of financial derivatives dealing with forward contracts, future contracts, call and put option, swaps contracts.	K1
1.2	Describe some models of financial derivatives.	K2
2	**Skills:**	
2.1	Perform calculations relating to financial derivatives.	S1
2.2	Quantify, evaluate and solve problems of investment and risk management using financial derivatives.	S2
3	**Values:**	
3.1	Study, learn and work constructively.	V1
3.2	Encourage students to pass IFM exam.	V3

C. Course Content

No	List of Topics	Contact Hours
1	**Introduction to derivatives** Definition of derivatives, examples, short selling, long and short positions, bid and ask prices, bid-ask spread, net profit of long and short positions.	6
2	**Forward contracts** Prepaid forward contract, forward contracts, outright purchase, fully leveraged, purchase, payoff of long and short forward, net profit of long and short forward.	9
3	**Futures contracts** Marking to market, margin balance, maintenance margin, margin call	3
4	**Options** Option Contracts: 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.	10
5	**Swaps Contracts**	3
6	**General Properties of Options** Put-call parity to European options on the following underlying assets	10

7	**Option strategies and risk management** Option spreads (bull, bear, box, ratio), collar, zero-cost collar, straddle, strangle, butterfly spread	6
Total		60

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Explain fundamental concepts of financial derivatives dealing with forward contracts, future contracts, call and put option, swaps contracts.	• Lecture strategy • Problem solving strategy	Quizzes Midterm and final exams
1.2	Describe some models of financial derivatives.		
2.0	**Skills**		
2.1	Perform calculations relating to financial derivatives.	Solving problems from FM exams of the Society of Actuaries (SOA)	Quizzes Midterm and final exams
2.2	Quantify, evaluate and solve problems of investment and risk management using financial derivatives.		
3.0	**Values**		
3.1	Study, learn and work constructively.		IFM Exam
3.2	Encourage student to pass IFM exam		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Tests, Quizzes	3	5%
2	First Midterm exam	6	25%
3	Tests, Quizzes	9	5%
4	Second Midterm exam	12	25%
5	Final exam	15 or 16	40%
6			
7			
8			

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

1. 10 office hours weekly.

2. Encouraging students to get in touch with the instructor via LMS (Bb).

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Derivatives Markets (Third Edition), 2013, by McDonald, R.L., Pearson Education, ISBN: 978-0-32154-308-0
Essential References Materials	ACTEX MFE Study Manual with StudyPlus+ Spring 2018, by: Johnny Li, Ph.D., FSA, Andrew Ng, Ph.D., FSA
Electronic Materials	https://www.soa.org http://www.casact.org/
Other Learning Materials	LMS (Bb), Webinars, TeamViewer, google apps, virtual classroom.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Classrooms
Technology Resources (AV, data show, Smart Board, software, etc.)	AV, data show, Smart Board, LMS (Bb)
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
1. An evaluation sheet for the course to be filled by the students at the end of each semester.	Department	Website: Edugate.ksu.edu.sa
2. Take the students' opinion about the course under consideration.	Department	Website: Edugate.ksu.edu.sa
3. Discussing the course with instructors who teach the same course.	Faculty Program	Questionnaire

Evaluation Areas/Issues	Evaluators	Evaluation Methods
4. Colleagues' opinions about students' performance in this course.	Instructor	Questionnaire
5. The level of the students in solving homework and quizzes	Instructor	Oral Discussion

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Department of Mathematics/Actuarial and Financial Mathematics
Reference No.	
Date	January 1, 2021