Course Specification

(Postgraduate Programs)

Course Title:	**Financial Derivatives**
Course Code:	**AFM 6212**
Program:	**Executive Master of Science in Actuaries and Financial Mathematics**
Department:	**Mathematics and Statistics**
College:	**Science**
Institution:	**Imam Mohammad Ibn Saud Islamic University**
Version:	**2024 – V1**
Last Revision Date:	**None**

Table of Contents

A. General information about the course: 3

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods 4

C. Course Content 5

D. Students Assessment Activities 5

E. Learning Resources and Facilities 5

F. Assessment of Course Quality 6

G. Specification Approval 6

A. General information about the course:

1. Course Identification

1. Credit hours:					
3 (2 Lectures, 0 Lab, 2 Tutorial)					
2. Course type					
A.	☐University	☐ College	☐ Department	☐Track	☒ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: Level 3 / Year 2					
4. Course general Description:					
This course emphasizes the important role of financial derivatives as one of the main tools in managing different types of risk. Topics include: theoretical frameworks for valuing different derivatives with emphasis on options and futures contracts, the markets for financial derivatives, and the speculative and hedging applications of derivatives.					
5. Pre-requirements for this course (if any):					
None.					
6. Co-requisites for this course (if any):					
None.					
7. Course Main Objective(s):					
The main objectives of this course are to: • Understand the concept of derivative contracts. • Be aware of the characteristics of various derivatives and explain the differences among them. • Grasp the intuition and gain skills on pricing of forward, futures, and swap contracts using no-arbitrage principle, Binomial tree model and the Black-Scholes-Merton model. • Learn how financial institutions hedge their risks by trading in derivatives.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	E-learning	0	0%
3	Hybrid • Traditional classroom • E-learning	0	0%
4	Distance learning	0	0%

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	30
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	30
5.	**Others (specify)**	0
Total		**60**

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Define different types of derivatives and their roles.	K1	2 lecture hours\week	Direct: Regular Exams
1.2	Classify pricing methods of derivatives, including Binomial and Blacl-Scholes methods.	K2	• 2 tutorial hours\week • Self-study	Direct: Short Quizzes
2.0	**Skills**			
2.1	Apply financial derivatives methods, with their various features and types, including forward, options, futures and Swaps.	S1	Self-study	Direct: • Participations • Short Quizzes
2.2	Analyze forward contract and its various features and to nderstand the difference between futures and forward contracts.	S2	Real-life problems	Direct: Simulation mini-projects
2.3	Differentiate approaches of pricing financial derivatives like Black-Scholes method and Binomial tree method.	S3	Real-life problems	Direct: Cases study
2.4	Construct strategies for hedging using individual or basket of financial derivatives.	S3	Self-study	Direct: Project
3.0	**Values, autonomy, and responsibility**			
3.1	Create connections in groups, adaptable to new circumstances, both independently and in collaboration with others.	V1	Personal questions	Direct: Participation
3.2	Generate the highest standards of ethical conduct and professional behavior, critical, interpersonal and communication skills as well as a commitment to life-long learning	V2	Teamwork and class discussions.	Direct: Real-life project

C. Course Content

No	List of Topics	Contact Hours
1.	Insurance, Hedging and Simple Strategies: Introduction to Derivatives, Forwards and Options. Insurance, Collars and Other Strategies, Introduction to Risk Management.	12
2.	Forwards, Futures and Swaps: Financial Forwards and Futures. Commodity Forwards and Futures. Interest Rate Forwards and Futures.	12
3.	Options: Parity and Other Option Relationships. Binomial Option Pricing. The Black-Scholes Formula. Market-Making and Delta-Hedging. Exotic Options.	12
4.	Financial Engineering and Applications: Financial Engineering and Security Design. Corporate Applications. Real Options.	12
5.	Advanced Pricing Theory and Applications: The Lognormal Distribution. Monte Carlo Valuation. Brownian Motion and Ito's Lemma. The Black-Scholes-Merton Equation. Risk-Neutral and Martingale Pricing. Exotic Options.	12
Total		60

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes, Mini projects, Real-life project	During the semester	30%
2.	Midterm	Week 8-9	30%
3.	Final Exam	Week 15	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	*McDonald, Robert L., Derivatives Markets, Third Edition, Pearson Addison Wesley, 2013.*
Supportive References	*Hull, John C., Options, Futures, and Other Derivatives. 9th Edition, Global Edition, 2018.*
Electronic Materials	None
Other Learning Materials	None

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	▪ Each class room should be equipped with a whiteboard and a projector. ▪ Laboratories should be equipped with computers and an internet connection.

Items	Resources
Technology equipment (projector, smart board, software)	**The rooms should be equipped with data show and Smart Board.**
Other equipment (depending on the nature of the specialty)	**None**

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	**Students**	**During the semester and at the end of the course each student will complete two evaluation forms.**
Effectiveness of Students assessment	**Instructor**	**At the end of each semester the course instructor should complete the course report, including a summary of student questionnaire responses appraising progress and identifying changes that need to be made if necessary.**
Quality of learning resources	**Students**	**During the semester and at the end of the course each student will complete two evaluation forms.**
The extent to which CLOs have been achieved	**Instructor**	**At the end of each semester the course instructor should complete the course report, including a summary of student questionnaire responses appraising progress and identifying changes that need to be made if necessary.**
Other	**None**	

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**MATHEMATICS AND STATISTICS DEPARTMENT COUNCIL**
REFERENCE NO.	**20/1446**
DATE	**11/08/1446 (10/02/2025)**