|  |  |
| --- | --- |
| **Course Title:** | **Actuarial Corporate Finance** |
| **Course Code:** | **ACTU 471** |
| **Program:** | **Derivative Market** |
| **Department:** | **Mathematics** |
| **College:** | **Science** |
| **Institution:** | **King Saud University** |

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# A. Course Identification

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1. Credit hours:** 1(0+0+2) | | | |  | | | | | | | | | | | | |
| **2. Course type** | | | | | | | | | | | | | | | | |
| **a.** | University | |  | | College | | |  | Department | | | | **X** | Others |  |  |
| **b.** | | Required | | | | **X** | Elective | | |  |  | | | | | |
| **3. Level/year at which this course is offered:** | | | | | | | | | | | | Level 7 | | | | |
| **4. Pre-requisites for this course** (if any)**:**  All Actu previous courses | | | | | | | | | | | | | | | | |
| **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** | 26 |  |
| **2** | **Blended** |  |  |
| **3** | **E-learning** |  |  |
| **4** | **Distance learning** |  |  |
| **5** | **Other** |  |  |

**7. Contact Hours** (based on academic semester)

|  |  |  |
| --- | --- | --- |
| **No** | **Activity** | **Contact Hours** |
| **1** | **Lecture** | 26 |
| **2** | **Laboratory/Studio** |  |
| **3** | **Tutorial** |  |
| **4** | **Others** (specify) |  |
|  | **Total** | 26 |

# B. Course Objectives and Learning Outcomes

|  |
| --- |
| 1. Course Description |
| Drvative market is kind of investment strategy, in this course they study about Forward contract, Future contract,  Option price, Put option and call option, put- call parity, variety of investment strategy such as floor , cap, spread(bull, bear, ratio, butterfly) collar, zero-cost collar, streaddele and stragel. |
| 2. Course Main Objective |
| To understand investment strategy in Real Market |

## 3. Course Learning Outcomes

| **CLOs** | | **Aligned****PLOs** |
| --- | --- | --- |
| 1 | **Knowledge and Understanding** |  |
| 1.1 |  |  |
| 1.2 | . |  |
| 1.3 | To Become familiar with some of the elementary functions, matrix and numerical linear algebra functions, as well as some graphic and plot commands | K3 |
| **2** | **Skills :** |  |
| 2.1 | To solve various financial problems numerically via financial MATLAB toolbox. | S1 |
| 2.2 |  |  |
| 2.3 | -To analyze or manage portfolios. | S3 |
| 2.4 | Assess the impact of business strategies such as acquisitions, divestitures, and/or restructurings. | S4 |
| 2.5 | To present , design and evaluate and assess yield price and portfolio in MATLAB | S5 |
| **3** | **Values:** |  |
| 3.1 |  |  |
| 3.2 | Study, learn and work independently, Work effectively in teams and apply Critical thinking Group discussions in financial problem | V2 |
| 3.3 |  |  |
| 3.4 |  |  |

# C. Course Content

|  |  |  |
| --- | --- | --- |
| **No** | **List of Topics** | **Contact Hours** |
| 1 | Excel , balance sheet, financial statement  Operations on matrix in Matlab , format long, format short, meaning of %.  Multiplication and write vectore,transpose. | 6 |
| 2 | Multiplication and write vectore,transpose.  1-Dot product. For vector, and matrix. Number is dollar currency.  2-Solve system AX=b , solve portfolio.  3-Find variance var(A), Ais vector, matrix, | 6 |
| 3 | 4- Mean,Median, min, max.  5-Random Numbers  Probability density function pdf, cdf | 6 |
| 4 | 1- Plot stocks  1D,2D,3D  2- Plot function | 6 |
| 5 | 1-Create a script file  2-add legened  3-Plot statistic Graph  4-subplot | 3 |
| 6 | convert price to return: then you can plot it in 3D  1-Migrate portopt  2-Find number of portfolio and evaluate it | 3 |
| 7 | Annuities :   1. Calculate Payments, rate and PV, Fv   Loan and bonds :   1. Calculate Payments, rate and PV, Fv | 3 |
| 8 | **STOCK VALUATION**   1. Cash flow for bond: 2. Plot cash flow bond by using special function for cash flow   3-Piece treasury bond  4-Yield function  Calculating Duration and Convexity for Bonds | 6 |
| 9 | Treasury bill repurchase argument  Pricing and analysing Equity Derivatives  More application on Portfolio | 6 |
| 10 |
| **Total** | | 45 |

# 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 | 1. The basic types of financial management decisions and the role of the financial manager. 2. The goal of financial management. |  |  |
| 1.2 |  |
| 1.3 | To Become familiar with some of the elementary functions, matrix and numerical linear algebra functions, as well as some graphic and plot commands | * Introducing the new concepts by using examples from real life, * At the beginning of studying each topic: a discussion is conducted with the students about what have been done in the previous lecture in order to establish a link with the current lecture, and some examples from reality life will be laid out and discussed with the students encouraging them to derive the definitions of the concepts under consideration. * Encouraging students to develop some examples and contribute to the discussion of the metods of some rules and theorems.   Solving simple examples and give task as weekly work. |  |
| **2.0** | **Skills** | | |
| 2.1 | . To solve various financial problems numerically via financial MATLAB toolbox. | Solving Problems | Oral Discussion with students  Quizzes during class  Projects  final exams |
| 2.2 |  |
| 2.3 | -To analyze or manage portfolios.  . |
| 2.4 | Assess the impact of business strategies such as acquisitions, divestitures, and/or restructurings. |
| 2.5 | To present , design and evaluate and assess yield price and portfolio in MATLAB |
| **3.0** | **Values** | | |
| 3.1 |  | Discuss examples  Solving problems | Exams |
| 3.2 | Study, learn and work independently, Work effectively in teams and apply Critical thinking Group discussions in financial problem | Project |
| 3.3 |  |  |
| 3.4 |  |  |

## 2. Assessment Tasks for Students

| **#** | **Assessment task\*** | **Week Due** | **Percentage of Total Assessment Score** |
| --- | --- | --- | --- |
| **1** | Weekly work | Every week | 45% |
| **2** |
| **3** | Assignment | Deadline week13 | 15% |
| **4** | Final exam | Week 15 | 40% |
| **5** |  |  |  |

**\*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** | 1. Financial toolbox, Mathwork |
| **Essential References Materials** |  |
| **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 |
| 1. Take the students’ opinion about the course under consideration. | Department | Website:  Edugate.ksu.edu.sa |
| 1. Discussing the course with instructors who teach the same course. | Faculty Program | Questionnaire |
| Colleagues’ opinions about students’ performance in this course. | Instructor | Questionnaire |
| 1. 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** | 5/3/2022 |