



## Course Syllabus

1	<b>Course title</b>	Mathematics for finance
2	<b>Course number</b>	(0301274)
3	<b>Credit hours</b>	3
	<b>Contact hours (theory, practical)</b>	3
4	<b>Prerequisites/corequisites</b>	None
5	<b>Program title</b>	B.Sc.
6	<b>Program code</b>	
7	<b>Awarding institution</b>	The University of Jordan
8	<b>School</b>	Science
9	<b>Department</b>	Mathematics
10	<b>Course level</b>	Elective Specialization requirement
11	<b>Year of study and semester (s)</b>	2rd year, 1st or 2nd semester
12	<b>Other department (s) involved in teaching the course</b>	none
13	<b>Main teaching language</b>	English
14	<b>Delivery method</b>	<input checked="" type="checkbox"/> Face to face learning <input type="checkbox"/> Blended <input type="checkbox"/> Fully online
15	<b>Online platforms(s)</b>	<input type="checkbox"/> Moodle <input type="checkbox"/> Microsoft Teams <input type="checkbox"/> Skype <input type="checkbox"/> Zoom <input type="checkbox"/> Others.....
16	<b>Issuing/Revision Date</b>	October 31, 2022

### 17 Course Coordinator:

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**18 Other instructors:**

Name:

Office number:

Phone number:

Email:

Contact hours:

Name:

Office number:

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**19 Course Description:**

An introduction to mathematical and numerical models used to price financial securities and make risk estimates. Topics include time value of money, simple and compound interest, annuities, Amortization and Sinking Funds and Bonds.

## 20 Course aims and outcomes:

### A- Aims

1. Know the concepts in financial mathematic and the accompanying financial instruments as they relate to financial mathematics.
2. Apply the basics of personal finance to real-world situations
3. Distinguish between various forms of debt and credit, and analyze each.
4. Know the concept of interest.
5. Distinguish between simple and compound interest.
6. Calculate return on various forms of investments

### B- Intended Learning Outcomes (ILOs):

Successful completion of the course should lead to the following outcomes:

#### A. Knowledge and Understanding Skills: Student is expected to

- A1. Identify the concept of time value of money.
- A2. Demonstrate understanding of simple and compound interest.
- A3. Demonstrate understanding of nominal, effective interest rates, rate and force of interest.
- A4. Demonstrate understanding of concepts relating to annuities.

#### B. Intellectual Analytical and Cognitive Skills: Student is expected to

- B1. Calculate different types of interest: simple and compound interest.
- B2. Compare and distinguish between nominal and effective rates of interest and discount.
- B3. Define and describe the use of cash flow models.
- B4. Derive equations of value and various tools like linear interpolation & annuity tables.

#### C. Subject- Specific Skills: Student is expected to

- C1. Explain how to modify a simple valuation problem by taking into account tax and transaction costs.
- C2. Develop formulae for the expected value and variance of the present values of simple insurance and annuity contracts.
- C3. Explain difficult concepts in simple terms and in an effective way, both in oral and written forms.

#### D. Creativity /Transferable Key Skills/Evaluation: Student is expected to

- D1. Explain how to evaluate and assign a value to a series of cash flows using different assumptions about the time value of money (interest);
- D2. Employ methods related to these concepts in a variety of financial applications.

## 21. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
<b>Simple Interest and Simple Discount</b> Simple interest, equations of value, partial payments, Simple Discount Promissory Notes.	1-2		A1, A2, A3, B1, D1	Exam	
<b>Compound Interest and Compound Discount</b> Accumulated value, equivalent rates, discounted value, accumulated discounted values for fractional interest periods, equation of value, compound discount at a discount rate.	3-5		A1, A2, A3, B1, D1	Exam	
<b>Simple Annuities</b> Accumulated value of an ordinary simple annuity, discounted value of an ordinary simple annuity, other simple annuities.	6-7		A4, B4, C1, C3	Exam	
<b>General and Other Annuities</b> General annuities, perpetuities, annuities whose payments vary.	8-10		A3, A4, B2, B3, B4, C2	Exam	
<b>Amortization and Sinking Funds</b> Amortization of a debt, outstanding principal, mortgages, refinancing, sinking funds, comparison of Amortization and sinking-fund methods.	11-12		A3, A4, B2, B3, B4, C2, D1, D2	Exam	
<b>Inviting an expert from a bank or insurance company to speak to students about potential job opportunities within their field of study.</b>	13				
<b>Bond</b> Purchase price to yield a Given investment rate, callable bonds, premium discount, price of a bond between bond interest dates, other types of	13-15		A4, B3, B4, D1, D2	Exam	

## 22 Evaluation Methods:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

ILO/s	Learning Methods	Evaluation Methods	Related ILO/s to the program
	Lectures	Exam	A1- A4, B1-B4, D2

## 23 Course Requirements

Data show.

## 24 Course Policies:

1. All cell phones must be turned off during class at all times. Phones cannot be used during class (even as a calculator to check your answer). Earphones/buds may not be used during a quiz, test or exam. Phone texting and chatting on the web is not allowed.
2. The questions should be addressed to the instructor not to your classmate's while lecture is in progress. There is a zero-tolerance policy for disrespectful or disruptive behavior.
3. If you are late to class or need to leave early, enter and leave the room quietly.
4. Please come to class prepared to participate. Please be courteous to your classmates and keep extra noise to a minimum.
5. Appeal of grading should be submitted in writing within 5 days of receiving the evaluation.
6. Students are responsible for all announcements and supplements given within any



lecture.

7. Cheating and/or plagiarism will not be tolerated. Please see the University of Jordan student Handbook for definition of cheating and plagiarism, and the sever consequence of such behaviors.
8. Neither food nor drink is allowed in the classroom with the exception of bottled water.
9. No guests are allowed in class.

## 25 References:

Mathematics of Finance by Zima, Brown and Kopp

## 26 Additional information:

- 1- Do not miss class.
- 2- Print out and read lecture notes before each class.
- 3- Take notes directly on the printed notes.
- 4- Complete your homework as soon as possible after class, preferably the same day.
- 5- Work in groups of two or more.
- 6- If you are experiencing major difficulty, see or make an appointment with me immediately

Name of Course Coordinator: Prof. Amal Helu----Signature: -A. Helu- Date: -October 31, 22-----  
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Head of Curriculum Committee/Department: Prof. Ahmad Al Zghoul-- Signature: -----  
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Head of Department: -Prof. Manal Ghanem - Signature: -M. Ghanem

Head of Curriculum Committee/Faculty: ----- Signature: ----

Dean: Mahmoud Jaghoub Signature: -----