



مركز الاعتماد  
وإضمان الجودة  
ACCREDITATION & QUALITY ASSURANCE CENTER



**The University of Jordan**

**Accreditation & Quality Assurance Center**

**COURSE Syllabus**

**Course Name: Calculus I**

## Course Syllabus

1	<b>Course title</b>	Calculus 1	
2	<b>Course number</b>	0301101	
3	<b>Credit hours</b>	3	
	<b>Contact hours (theory, practical)</b>	3+0	
4	<b>Prerequisites/corequisites</b>	None	
5	<b>Program title</b>	Mathematics	
6	<b>Program code</b>		
7	<b>Awarding institution</b>		
8	<b>School</b>	Science	
9	<b>Department</b>	Mathematics	
10	<b>Course level</b>	Basic	
11	<b>Year of study and semester (s)</b>	1 <sup>st</sup> year, first/second 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 checked="" type="checkbox"/> Moodle <input checked="" type="checkbox"/> Microsoft Teams <input type="checkbox"/> Skype <input type="checkbox"/> Zoom <input type="checkbox"/> Others.....	
16	<b>Issuing/Revision Date</b>		

### 17 Course Coordinator:

Name: Dr. Osama Alkam

Contact hours:

Office number:

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### 18 Other instructors:

Name:

Office number:

Phone number:

Email:

Contact hours:

Name:

Office number:

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Email:

Contact hours:

### 19 Course Description:

Functions: domain, operations on functions, graphs of functions; trigonometric functions; limits: meaning of a limit, computational techniques, limits at infinity, infinite limits; continuity; limits and continuity of trigonometric functions; the derivative: techniques of differentiation, derivatives of trigonometric functions; the chain rule; implicit differentiation; differentials; Roll's Theorem; the mean value theorem; the extended mean value theorem; L'Hopital's rule; increasing and decreasing functions; concavity; maximum and minimum values of a function; graphs of functions including rational functions (asymptotes) and functions with vertical tangents (cusps); antiderivatives; the indefinite integral; the definite integral; the fundamental theorem of calculus ; the area under a curve; the area between two curves; transcendental functions: inverse functions, logarithmic and exponential functions; derivatives and integrals; limits (the indeterminate forms); hyperbolic functions and their inverses; inverse trigonometric functions.

## 20 Course aims and outcomes:

### A- Aims:

1. Know the basic concepts and skills of calculus and the accompanying mathematical techniques and procedures required and become well-trained on them.
2. Solve several practical applications of calculus and several applied problems using differentiation and integration in a clear, logical manner.
3. Develop the ability of reasoning logically and transfer mathematical concepts from one situation to another rather than memorizing mechanical procedures.
4. Use mathematical symbols as well as calculus I concepts (limits, continuity, derivatives, applications of the derivative, antiderivative, the definite and indefinite integral, and the Fundamental Theorem of Calculus) to analyze, graph, and solve real world problems.
5. Choose the correct use of quantifiable measurements of real world situations.

### B- Students Learning Outcomes (SLOs):

Upon successful completion of this course, students will be able to:

SLOs	SLO (1)	SLO (2)	SLO (3)	SLO (4)	SLO (5)	SLO (6)	SLO (7)	SLO (8)
SLOs of the course								
1. Know the concept of a function, domain, range, basic properties of essential functions, graphs, and formulas of new functions from old.	•				•			•
2. Calculate limits for various types of functions.	•				•			•
3. Determine whether a given function is continuous at a certain point or on a given interval.	•				•			•
4. Differentiate and integrate various types of functions.	•				•			•
5. Apply some famous Theorems in calculus such as: Intermediate Value Theorem, Mean Value Theorem, and Fundamental Theorem of Calculus.	•				•			•

## 21. Topic Outline and Schedule:

Week	Lecture	Topic	Students Learning Outcomes	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
1	1.1	Welcoming students. Syllabus. Introducing the course, how to study and practice, and the assessment methods. Section 1.1.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	1.2	Section 1-1 continuation.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	1.3	Section 1-1 continuation.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
2	2.1	Section 1.2.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	2.2	Section 1.2 continuation.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	2.3	Section 1.3.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
3	3.1	Section 1.3 continuation.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
3 4	3.2	Section 1.4.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	3.3	Section 1.4 continuation.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	4.1	Section 1.5.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook

4 5	4.2	Section 1.5 continuation.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	4.3	Section 1.5 continuation.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	5.1	Section 1.5 continuation.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
5 6	5.2	Section 2.2.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	5.3	Section 2.3.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	6.1	Section 2.3 continuation.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
6 7	6.2	Section 2.5.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	6.3	Section 2.5 continuation.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	7.1	Section 2.6.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
7 8	7.2	Section 2.7.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	7.3	Section 2.8.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	8.1	Sections 3.1-3.3.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
8 9	8.2	Sections 3.1-3.3 continuation.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	8.3	Section 3.4.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	9.1	Section 3.5.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
9 10	9.2	Section 3.6.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	9.3	Section 3.6 continuation.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook

	10.1	Section 3.10.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
10	10.2	Section 3.11.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	10.3	Section 3.11 continuation.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	11.1	Section 4.1.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
11	11.2	Section 4.1 continuation.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
11 12	11.3	Section 4.2.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	12.1	Section 4.3.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	12.2	Section 4.4.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
12 13	12.3	Section 4.5.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	13.1	Sections 4.9.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	13.2	Sections 5.1.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
13 14	13.3	Section 5.2.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	14.1	Section 5.3.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	14.2	Section 5.4.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
14 15	14.3	Section 5.5.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	15.1	Course revision.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook
	15.2	Course revision.	1,5,8	Face-to-face	Teams,		Exams	Textbook

					Moodle				
15	15.3	Course revision.	1,5,8	Face-to-face	Teams, Moodle		Exams	Textbook	

## 22 Evaluation Methods:

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

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
Midterm exam	30		1,5,8	8	Exam builder
Second exam	20		1,5,8	11	Exam builder
Final	50		1,5,8	Final exams period	Exam builder

## 23 Course Requirements

**(e.g: students should have a computer, internet connection, webcam, account on a specific software/platform...etc):**

Data show, Microsoft Teams account.

## 24 Course Policies:

According to university regulations, attendance is mandatory. If a student is unable to attend a class, then he/she should contact the instructor. If a student misses more than 10% of the classes without excuse, then he/she will be assigned a falling grade in class.

In cases of extreme emergency or serious illness, the student will be allowed to make up the missed exams. Times and dates for makeup exams will be assigned later.

There are severe sanctions for cheating, plagiarizing and any other form of dishonesty. The university regulations on cheating will be applied to any student who cheats in exams or on any homework.





- Available university services that support achievement in the course:

Microsoft Teams and Moodle.

## 25 References:

A- Required book(s), assigned reading and audio-visuals:

James Stewart (2016) Calculus (Early Transcendentals), 8th Edition (or later), Thomson, Metric international version, Canada.

B- Recommended books, materials, and media:

- (1) G. Thomas (2005) Calculus, 11<sup>th</sup> edition, Addison Wesley (PersonEducation).
- (2) R. Smith and R. Minton (2007) Calculus, 3<sup>rd</sup> edition, McGrawHill.
- (3) Howard Anton, IrlBivens and Stephen Davis (2005) Calculus, 8<sup>th</sup> edition, John Wiley and sons Inc., New York.

## 26 Additional information:

Name of Course Coordinator: Dr. Osama Alkam Signature: ----- Date: 5/11/2022
Head of Curriculum Committee/Department: Prof. Ahmad Al Zghoul-- Signature: -----
Head of Department: -Prof. Manal Ghanem - Signature: M. Ghanem
Head of Curriculum Committee/Faculty: ----- Signature: ----
Dean: Mahmoud Jaghoub Signature: -----