



مركز الاعتماد
وإضمان الجودة
ACCREDITATION & QUALITY ASSURANCE CENTER



The University of Jordan

Accreditation & Quality Assurance Center

Course Syllabus

Course Name:
Principles of Mathematics

Course Syllabus

1	Course title	Principles of Mathematics	
2	Course number	0301211	
3	Credit hours	3	
	Contact hours (theory, practical)	3	
4	Prerequisites/corequisites	Cal 3	
5	Program title	Bsc	
6	Program code		
7	Awarding institution	The University of Jordan	
8	School	Science	
9	Department	Mathematics	
10	Course level	Bsc	
11	Year of study and semester (s)	second	
12	Other department (s) involved in teaching the course	None	
13	Main teaching language	English	
14	Delivery method	<input checked="" type="checkbox"/> Face to face learning <input type="checkbox"/> Blended <input type="checkbox"/> Fully online	
15	Online platforms(s)	<input checked="" type="checkbox"/> Moodle <input checked="" type="checkbox"/> Microsoft Teams <input type="checkbox"/> Skype <input type="checkbox"/> Zoom <input type="checkbox"/> Others.....	
16	Issuing/Revision Date	1.3.2023	

17 Course Coordinator:

Name: Saja Hayajneh

Contact hours:

Office number:

Phone number:

Email: s.hayajneh@ju.edu.jo



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18 Other instructors:

Name:

Office number:

Phone number:

Email:

Contact hours:

Name:

Office number:

Phone number:

Email:

Contact hours:

19 Course Description:

As stated in the approved study plan.

Logic: axioms and theorems, negations, quantifiers. Algebra of sets: union, intersection, symmetric difference, difference, complement. Functions: domain and range, different classes of functions including 1-1 and onto, graph of a function. Relations on sets: equivalence relations and equivalence classes, partial order relation, total order relation. Cardinality of sets: finite sets, countable sets, uncountable sets.



20 Course aims and outcomes:

A- Aims:

1. To acquaint students with mathematical logic and mathematical induction.
2. To understand the concept of sets.
3. To explore relations.
4. To study functions intensively.
5. To acquaint students with countable and uncountable sets.
6. To understand the concept of finite, infinite, countable and uncountable sets.
7. To understand the concept cardinal numbers.
8. To explore arithmetic of cardinal numbers.

B- Students Learning Outcomes (SLOs):

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

SLOs	SLO (7)			
SLOs of the course				
1 Formulate short proofs using Mathematical induction.	•			
2 Formulate short proofs using the following methods: direct proof, indirect proof, proof by contradiction	•			
3 Demonstrate a working knowledge of set notation and elementary set theory	•			
4 prove elementary results involving sets	•			
5 Determine equivalence relations on sets and equivalence classes.	•			
6 Understand the concepts of finite, infinite, Countable and uncountable sets.	•			

21. Topic Outline and Schedule:

Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
1-3	1.1	Statements and Their Connectives.	7	Face to Face	Microsoft Teams		quiz	Textbook
	1.2	Tautology.	7	Face to Face	Microsoft Teams		quiz	Textbook
	1.3	Implication and Equivalence.						
	1.4	Contradiction.	7	Face to Face	Microsoft Teams		quiz	Textbook
	1.5	Deductive Reasoning.	7	Face to Face	Microsoft Teams		quiz	Textbook
	1.6	Predicates and quantifiers.	7	Face to Face	Microsoft Teams		quiz	Textbook
Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
4-5	2.1	The Concept of Sets.	7	Face to Face	Microsoft Teams		quiz	Textbook
	2.2	Sets and Subsets.	7	Face to Face	Microsoft Teams		quiz	Textbook
	2.3	Union.	7	Face to Face	Microsoft Teams		quiz	Textbook
	2.4	Intersection.	7	Face to Face	Microsoft Teams		quiz	Textbook
	2.5	Complement.	7	Face to Face	Microsoft Teams		quiz	Textbook
	2.6	Specification of Sets.	7	Face to Face	Microsoft Teams		quiz	Textbook
	2.7	Index Families of Sets.	7	Face to Face	Microsoft Teams		quiz	Textbook

5-8	3.1	Cartesian Product of Two Sets.	7	Face to Face	Microsoft Teams		quiz	Textbook
	3.2	Relation and their properties.	7	Face to Face	Microsoft Teams		quiz	Textbook
	3.3	Partitions and Equivalence relations.	7	Face to Face	Microsoft Teams		quiz	Textbook
	3.4	Partial order relation	7	Face to Face	Microsoft Teams		quiz	Textbook
	3.5	Total order relation	7	Face to Face	Microsoft Teams		quiz	Textbook
	4.1	Functions.	7	Face to Face	Microsoft Teams		quiz	Textbook
9-12	4.2	Images and Inverse Images of Sets.	7	Face to Face	Microsoft Teams		quiz	Textbook
	4.3	Injective,	7	Face to Face	Microsoft Teams		quiz	Textbook
	4.5	Composition Functions.	7	Face to Face	Microsoft Teams		quiz	Textbook
Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
13-15	5.1	Finite and infinite sets.	7	Face to Face	Microsoft Teams		quiz	Textbook
	5.2	Equipotence of sets.	7	Face to Face	Microsoft Teams		quiz	Textbook
	5.3	Countable sets.	7	Face to Face	Microsoft Teams		quiz	Textbook
	5.4	Uncountable sets.	7	Face to Face	Microsoft Teams		quiz	Textbook
	5.5	Denumerable sets.	7	Face to Face	Microsoft Teams		quiz	Textbook
	5.6	Main theorems and examples.	7	Face to Face	Microsoft Teams		quiz	Textbook



	5.7	The concepts of cardinal numbers.	7	Face to Face	Microsoft Teams		quiz	Textbook
	5.8	Arithmetic of cardinal numbers.	7	Face to Face	Microsoft Teams		quiz	Textbook
	5.9	Finite and infinite sets.	7	Face to Face	Microsoft Teams		quiz	Textbook
	5.10	Equipotence of sets.	7	Face to Face	Microsoft Teams		quiz	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
Quiz #1	10		7		On Campus
Quiz #2	10		7		On Campus
Midterm	30		7		On Campus
Final Exam	50		7		On Campus

23 Course Requirements

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

- Account on Microsoft Teams

24 Course Policies:

A- Attendance policies:



- B- Absences from exams and submitting assignments on time:
- C- Health and safety procedures:
- D- Honesty policy regarding cheating, plagiarism, misbehavior:
- E- Grading policy:
- F- Available university services that support achievement in the course:

25 References:

- A- Required book(s), assigned reading and audio-visualls: Set Theory By Pinter
- B- Recommended books, materials, and media:
 1. Set Theory (Schaum Series).By Seymour Lipschutz.
 2. Set Theory with applications.By Shwu-Yeng T. Lin and Yoou-Feng Lin.
 3. Number, Sets axioms. The appartus of mathematics.By A. G. Hamilton.

26 Additional information:



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Name of Course Coordinator: -----Dr Saja Hayajneh-----Signature: -----

Date:.....1/3/2023.....

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

Head of Department:.....Signature:

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

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Dean:.....Signature: