



Form: Course Syllabus	Form Number	EXC-01-02-02A
	Issue Number and Date	2/3/24/2022/2963 05/12/2022
	Number and Date of Revision or Modification	
	Deans Council Approval Decision Number	2/3/24/2023
	The Date of the Deans Council Approval Decision	23/01/2023
	Number of Pages	08

1.	Course Title	Principles of Mathematics
2.	Course Number	0301211
3.	Credit Hours (Theory, Practical)	3
	Contact Hours (Theory, Practical)	3
4.	Prerequisites/ Corequisites	0301102
5.	Program Title	Bsc
6.	Program Code	
7.	School/ Center	Science
8.	Department	Mathematics
9.	Course Level	Bsc
10.	Year of Study and Semester (s)	second
11.	Other Department(s) Involved in Teaching the Course	None
12.	Main Learning Language	English
13.	Learning Types	<input type="checkbox"/> Face to face learning <input type="checkbox"/> Blended <input type="checkbox"/> Fully online
14.	Online Platforms(s)	<input type="checkbox"/> Moodle <input type="checkbox"/> Microsoft Teams
15.	Issuing Date	Oct. 2024
16.	Revision Date	

17. Course Coordinator:

Name: Dr. Eman Aldabbaas	Contact hours: Sun,Tue, Thu: 10:30-11:30
Office number: Math 312	Phone number: -
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18. Other Instructors:

Name:
Office number:
Phone number:
Email:
Contact hour.

19. Course Description:

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. Program Student Outcomes (SO's):

(To be used in designing the matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program)

- 7. Utilize research methods, critical and creative thinking skills to assess and analyze information) to solve problems properly, then draw valid reasoning and logical conclusions leading to true consequences

21. Course Intended Learning Outcomes (CLO's):

(Upon completion of the course, the student will be able to achieve the following intended learning outcomes)

1. Give correct logical arguments and find errors in incorrect arguments using principles of mathematical logic, including axioms, theorems, negations, and quantifiers and mathematical induction.
2. Understand the concept of sets and perform the operations of union, intersection, complement, and difference on sets using proper notation.
3. Explore relations and classify them according to their properties.



4. Understand the concept of equivalence relations and determine the equivalence classes obtained by them.
5. Differentiate between partially ordered relations and totally ordered one.
6. Gain a comprehensive understanding of functions through detailed exploration.
7. Become familiar with finite, infinite, countable and uncountable sets.

Course CLOs	The learning levels to be achieved					
	Remembering	Understanding	Applying	Analyzing	evaluating	Creating
1				•	•	
2		•	•			
3		•		•		
4		•		•		
5		•	•			
6		•				
7		•				

22. The matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program:

Course CLO's	Program SO's							
	SO (1)	SO (2)	SO (3)	SO (4)	SO (5)	SO (6)	SO (7)	SO (8)
CLO (1)							•	
CLO (2)							•	
CLO (3)							•	
CLO (4)							•	
CLO (5)							•	
CLO (6)							•	
CLO (7)							•	



23. Topic Outline and Schedule:

Week	Lecture	Topic	CLO/s Linked to the Topic	Learning Types Face to Face (FF) Blended (BL) Fully Online (FO)	Platform Used	Synchronous (S) Asynchronous (A)	Evaluation Methods	Learning Resources
1	1.1	Statements and Their Connectives.	1	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	1.2	Connectives and Tautologies	1	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	1.3	Conditional and Equivalent Statements	1	FF	Moodle/ M.Teams	S		Class Notes+Textbook
2	2.1	Truth Tables	1	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	2.2	Nested Quantifiers	1	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	2.3	Nested Quantifiers	1	FF	Moodle/ M.Teams	S		Class Notes+Textbook
3	3.1	Math. Proofs	1	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	3.2	Math Proofs	1	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	3.3	Quiz 1	1	FF	On campus	S	Written quiz	Class Notes+Textbook
4	4.1	Logical Implications	1	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	4.2	Logical Implications	1	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	4.3	The Concept of Sets.	2	FF	Moodle/ M.Teams	S		Class Notes+Textbook
5	5.1	Operations on Sets	2	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	5.2	Operations on Sets	2	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	5.3	Indexed Family of Sets	2	FF	Moodle/ M.Teams	S		Class Notes+Textbook



6	6.1	Indexed Family of Sets	2	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	6.2	Cartesian Product of Sets	2	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	6.3	Quiz 2	1	FF	On campus	S	Writte n quiz	Class Notes+Textbook
7	7.1	Relations	3	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	7.2	Properties of Relations	4	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	7.3	Equivalence Relations	4	FF	Moodle/ M.Teams	S		Class Notes+Textbook
8	8.1	Equivalence Relations	4	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	8.2	Equivalence Relations	4	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	8.3	Midterm	1,2 ,3	FF	On campus	S		Class Notes+Textbook
9	9.1	Partitions	4	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	9.2	Partially Ordered Sets and Totally Ordered Sets	5	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	9.3	Partially Ordered Sets and Totally Ordered Sets	5	FF	Moodle/ M.Teams	S		Class Notes+Textbook
10	10.1	Partially Ordered Sets and Totally Ordered Sets	5	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	10.2	Mathematical Induction	1	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	10.3	Mathematical Induction	1	FF	Moodle/ M.Teams	S		Class Notes+Textbook
11	11.1	Functions	6	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	11.2	Images and Inverse Images of Sets.	6	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	11.3	Quiz 3	4	FF	On campus	S		Class Notes+Textbook
12	12.1	Special Functions	6	FF	Moodle/ M.Teams	S		Class Notes+Textbook



	12.2	Injective, Surjective and Bijective Functions	6	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	12.3	Preserve order Functions	6	FF	Moodle/ M.Teams	S		Class Notes+Textbook
13	13.1	composition of Functions	6	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	13.2	Finite and infinite sets.	7	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	13.3	Equipotency of sets.	7	FF	Moodle/ M.Teams	S		Class Notes+Textbook
14	14.1	Countable sets.	7	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	14.2	Uncountable sets	7	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	14.3	Main Theorem	4,5	FF	Moodle/ M.Teams	S		Class Notes+Textbook
15	15.1	Main Theorem	4,5	FF	Moodle/ M.Teams	S		Class Notes+Textbook
	15.2	Quiz 4	6	FF	On campus	S	Computer Lab	
	15.3	Examples		FF		S		

24. Evaluation Methods:

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

Evaluation Activity	Mark	Topic(s)	CLO/s Linked to the Evaluation activity	Period (Week)	Platform
Quiz 1	10	Nested quantifiers	(CLO 1)	3rd week	on campus
Quiz 2	10	Logical Implications	(CLO 1)	5th week	on campus
Midterm		Ch 1+ Ch 2+Properties of Relations	(CLO/s 1+2+3)	7th week	on campus
Quiz 3		Equivalence Relations	(CLO 4)	11th week	on campus
Final		All	All		on campus

**25. Course Requirements:**

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

- Account on Microsoft Teams.

26. Course Policies:

- A.** Attendance policies: Attendance is absolutely essential to succeed in this course. You are expected to attend every class; please notify your instructor if you know you are going to be absent. If a student is absent for more than 10% of lectures without an excuse of sickness or due to other insurmountable difficulty, then he/she shall be barred from the final examination also he/she will get a failing grade in this course.
- B.** Absences from exams and submitting assignments on time: All exams must be taken at the scheduled time. Exceptions will be made only in extreme circumstances, by prior arrangement with the instructor. Students must attend all the exams, students with acceptable excuse will have an average of the other exams. Medical certificates shall be given to the University Physician to be authorized by him.
- C.** Health and safety procedures:
- D.** Honesty policy regarding cheating, plagiarism, misbehavior: Cheating is prohibited. The University of Jordan regulations on cheating will be applied to any student who cheats in exams or on quizzes.
- E.** Grading policy: Test papers shall be returned to students after correction. His/her mark is considered final after a lapse of two days following their return.
- F.** Available university services that support achievement in the course: We will use E-learning/Microsoft Teams platforms to upload lecture notes, videos and other useful material.

27. References:

A- Required book(s), assigned reading and audio-visuals: Set Theory by Pinter.

B- Recommended books, materials, and media:

1. A Transition to Advanced Mathematics, by Douglas Smith, Maurice Eggen and Richard St. Andre. 7th ed.
2. Set Theory (Schaum Series). By Seymour Lipschutz.
3. Set Theory with applications. By Shwu-Yeng T. Lin and Yoou-Feng Lin.
4. Number, Sets axioms. The apparatus of mathematics. By A. G. Hamilton.



28. Additional information:

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Name of the Instructor or the Course Coordinator: Dr. Eman Aldabbas:	Signature:	Date: Oct 7,2024
Name of the Head of Quality Assurance Committee/ Department: Prof. Manal Ghanem	Signature:	Date:
Name of the Head of Department: Prof. Baha Alzalg	Signature:	Date:
Name of the Head of Quality Assurance Committee/ School of Science: Prof. Emad A. Abuosba	Signature:	Date:
Name of the Dean or the Director: Prof. Mahmoud I. Jaghoub	Signature:	Date: