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	07

1.	**Course Title**	**Foundations of Mathematics**
2.	**Course Number**	0301451
3.	**Credit Hours (Theory, Practical)**	3
	Contact Hours (Theory, Practical)	3
4.	**Prerequisites/ Corequisites**	0301211
5.	**Program Title**	B.Sc.
6.	**Program Code**	
7.	**School/ Center**	Science
8.	**Department**	Mathematics
9.	**Course Level**	Bsc
10.	**Year of Study and Semester (s)**	Third or fourth, all semesters
11.	**Other Department(s) Involved in Teaching the Course**	
12.	**Main Learning Language**	English
13.	**Learning Types**	■Face to face learning ☐Blended ☐Fully online
14.	**Online Platforms(s)**	☐Moodle ■Microsoft Teams
15.	**Issuing Date**	2-12-2024
16.	**Revision Date**	4-11-2024

17. Course Coordinator:

Name: Prof. Abdalla Tallafha Contact hours:(M,W) 8:30-10:0

Office number: 354 Phone number:(N/A)

Email: a.tallafha@ju.edu.jo

18. Other Instructors:

Name:
Office number:
Phone number:
Email:
Contact hours:

19. Course Description:

The concepts of set theory (Finite and infinite sets, equipotent of sets). Cardinal numbers, arithmetic on cardinal numbers. Partial order relations, linearly order relations, well order relations. Lattices. Ordinal numbers, arithmetic on ordinal numbers. The paradoxes.

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. Recognize finite and infinite set and determine wither a given two sets are equipotent or not.
2. Understand the concept of cardinals and ordinals numbers.
3. Should be able to do operations on cardinals and ordinals.
4. Comprehend the main theorems of arithmetic on cardinal and ordinals.
5. Make mathematical thinking and reasoning and ask/answer relevant questions.
6. Understand the different paradoxes and the relation to each other.

Course CLOs	The learning levels to be achieved					
	Remembering	Understanding	Applying	Analysing	evaluating	Creating
1	■	■		■		
2		■	■	■	■	
3				■		■
4		■		■		
5		■	■	■		
6	■					

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

Program SO's / Course CLO'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)							■	

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	Functions.	1,5	FF	Teams	S		Text Book
	1.2	Equipotent of sets	1,5	FF	Teams	S		Text Book
	1.3	Finite and infinite sets	1,5	FF	Teams	S		Text Book
2	2.1	Finite and infinite sets	1,5	FF	Teams	S		Text Book
	2.2	Cardinal numbers	2,4,5	FF	Teams	S		Text Book
	2.3	Cardinal numbers Quiz1	2,4,5	FF	Teams	S		Text Book
3	3.1	Cardinal numbers	2,4,5	FF	Teams	S		Text Book
	3.2	Cardinal numbers	2,4,5	FF	Teams	S		Text Book
	3.3	Arithmetic on cardinal numbers	3,4,5	FF	Teams	S		Text Book
4	4.1	Arithmetic on cardinal numbers	3,4,5	FF	Teams	S		Text Book
	4.2	Arithmetic on cardinal numbers	3,4,5	FF	Teams	S		Text Book
	4.3	Partial order relations Quiz2	2,5	FF	Teams	S		Text Book
5	5.1	Partial order relations Partial order relations	2,5	FF	Teams	S		Text Book
	5.2	Partial order relations	2,5	FF	Teams	S		Text Book
	5.3	Hass diagram	2,5	FF	Teams	S		Text Book
6	6.1	Ordering types	2,5	FF	Teams	S		Text

		Quiz3						Book
	6.2	Partial order relations and similarity	2,5	FF	Teams	S		Text Book
	6.3	Partial order relations and similarity	2,5	FF	Teams	S		Text Book
7	7.1	Partial order relations and similarity Quiz4	2,5	FF	Teams	S		Text Book
	7.2	Partial order relations and similarity	2,5	FF	Teams	S		Text Book
	7.3	Midd term exam	2,5	FF	Teams	S		Text Book
8	8.1	Linearly order relation	2,5	FF	Teams	S		Text Book
	8.2	Linearly order relation	2,5	FF	Teams	S		Text Book
	8.3	Linearly order relation	2,5	FF	Teams	S		Text Book
9	9.1	Linearly order ration Quiz5	2,5	FF	Teams	S		Text Book
	9.2	Linearly order relation	2,5	FF	Teams	S		Text Book
	9.3	Lattices	2,5	FF	Teams	S		Text Book
10	10.1	Lattices and partial order relations	2,5	FF	Teams	S		Text Book
	10.2	Lattices and linearly order relations	2,5	FF	Teams	S		Text Book
	10.3	Well order relation Quiz6	2,5	FF	Teams	S		Text Book
11	11.1	Well order relation	2,5	FF	Teams	S		Text Book
	11.2	Well order relation	2,5	FF	Teams	S		Text Book
	11.3	Ordinal numbers	2,5	FF	Teams	S		Text Book
12	12.1	Ordinal numbers Quiz7	2,5	FF	Teams	S		Text Book
	12.2	Arithmetic's on ordinals	2,5	FF	Teams	S		Text Book
	12.3	Arithmetic's on ordinals, properties	2,5	FF	Teams	S		Text Book
13	13.1	Arithmetic's on ordinals	2,5	FF	Teams	S		Text

								Book
	13.2	Well order principle Quiz8	2,5	FF	Teams	S		Text Book
	13.3	Paradoxes	5,6	FF	Teams	S		Text Book
14	14.1	Paradoxes.	5,6	FF	Teams	S		Text Book
	14.2	Paradoxes	5,6	FF	Teams	S		Text Book
	14.3	Zones lemma	5,6	FF	Teams	S		Text Book
15	15.1	General product	5,6	FF	Teams	S		Text Book
	15.2	Axiom of choice	5,6	FF	Teams	S		Text Book
	15.3	Revision	all	FF	Teams	s		Text Book
16							Final Exam	

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
Midterm exam	30		1,2,3,4,5	8	Exam builder
Quizes	20		all	Every two weeks	Exam builder
Final	50		all	Final exams period	Exam builder

25. Course Requirements:

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

-Data show, Microsoft Teams account.

26. 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.

- **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:

27. References:

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

Set theory by Pinter

B- Recommended books, materials, and media:

Set theory, Schaum series, by Seymour Lipschutz
Set theory with applications, by Shwu-Yeng T. Lin and Toou -Feng Lin.

28. Additional information:

Name of the Instructor or the Course Coordinator: **Prof Abdalla Tallafha**	Signature: ……	Date: 2-11-2024
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: ……