The University of Jordan

الجامعة الاردنية

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
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	Number of Pages	07

1.	Course Title	Modern Algebra I
2.	Course Number	0331341
3.	Credit Hours (Theory, Practical)	3
	Contact Hours (Theory, Practical)	3
4.	Prerequisites/ Corequisites	0301211
5.	Program Title	BSc. Mathematics
6.	Program Code	
7.	School/ Center	Science
8.	Department	Mathematics
9.	Course Level	Compulsory Specialization Requirement
10.	Year of Study and Semester (s)	3rd year, 1st and 2nd or summer semester
11.	Other Department(s) Involved in Teaching the Course	None
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	15-10- 2024
16.	Revision Date	

17. Course Coordinator:

Name: Prof. Hasan Alnajjar	Contact hours: 11:30 – 12:30, (Su, Tue, Thu)
Office number: Math 310	Phone number: 22081
Email: h.najjar@ju.edu.jo	

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.

Groups and subgroups; cyclic groups; permutation groups; isomorphism's of groups; direct product of groups; cosets, and Lagrange 's theorem; normal subgroups and factor groups; homomorphisms of groups; the first isomorphism theorems

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. Express and solve problems using the axiom of various algebraic structures.
2. Describe groups, subgroups and give standard examples
3. Determine normal subgroups and factor groups of finite groups
4. Become more comfortable with abstract mathematics, and to see both the aesthetic appeal and the practicality of seeking abstraction.
5. Construct groups, subgroups and find homomorphisms between them
6. Apply famous theorems in group theory such as Cayley's theorem and Lagrange's Theorem
7. Writing mathematical proofs.

Course CLOs	The learning levels to be achieved					
	Remembering	Understanding	Applying	Analysing	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:

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)							●	
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	Group Definition	2	Face to Face	Moodle	S	Exam	Text Book
	1.2	Group Properties	4	Face to Face	Moodle	S	Exam	Text Book
2	2.1	Exercise: 1,3,5,8,12,14,15,17,18,23,25		Face to Face	Moodle	S	Exam	Text Book
	2.2	Order and Subgroups	2	Face to Face	Moodle	S	Exam	Text Book
3	3.1	Centers & Centralizers	1	Face to Face	Moodle	S	Exam	Text Book
	3.2	Exercise: 1,3,4,8,11,14,16,17,18,23,27, 33		Face to Face	Moodle	S	Exam	Text Book
4	4.1	Cyclic Groups	5	Face to Face	Moodle	S	Exam	
	4.2	Cyclic Groups	7	Face to Face	Moodle	S	Exam	Text Book
5	5.1	Cyclic Groups	2	Face to Face	Moodle	S	Exam	Text Book
	5.2	Exercise: 1,2,7,10,11,13,15,16,19,23,27,28,29,35,38		Face to Face	Moodle	S	Exam	Text Book
6	6.1	Permutation Groups	1, 2	Face to Face	Moodle	S	Exam	Text Book
	6.2	Permutation Groups	7	Face to Face	Moodle	S	Exam	Text Book
7	7.1	Even and Odd	2	Face to Face	Moodle	S	Exam	Text Book
	7.2	Exercise: 1,2,3,4,6,7,8,14,17,18,19,20,22,24,26,27,32,36,	7	Face to Face	Moodle	S	Exam	Text Book
8	8.1	Isomorphisms	4, 5	Face to Face	Moodle	S	Exam	
	8.2	Isomorphisms	7	Face to Face	Moodle	S	Exam	Text Book
9	9.1	Cayley's Theorem	6	Face to Face	Moodle	S	Exam	Text Book

	9.2	Exercise: 1,3,7,10,13,15,17,24, 25,33		Face to Face	Moodle	S	Exam	Text Book
10	10.1	Cosets	1	Face to Face	Moodle	S	Exam	Text Book
	10.2	Cosets	7	Face to Face	Moodle	S	Exam	Text Book
11	11.1	Lagrange's Theorem	6	Face to Face	Moodle	S	Exam	Text Book
	11.2	Exercise: 1,14,15,17,18,19,21, 22,23,24,25,26,34,37		Face to Face	Moodle	S	Exam	Text Book
12	12.1	Direct Products	5	Face to Face	Moodle	S	Exam	Text Book
	12.2	Exercise: 1,2,3,5,6,7,8,9,10,11, 15,16,17,26,37	7	Face to Face	Moodle	S	Exam	Text Book
13	13.1	Normal Subgroups	3	Face to Face	Moodle	S	Exam	Text Book
	13.2	Normal Subgroups	7	Face to Face	Moodle	S	Exam	Text Book
14	14.1	Internal Direct Product	5	Face to Face	Moodle	S	Exam	Text Book
	14.2	Exercise: 1,4,10,15,16,20,30,3 2,36,40,43,44		Face to Face	Moodle	S	Exam	Text Book
15	15.1	Homomorphisms	5	Face to Face	Moodle	S	Exam	Text Book
	15.2	Homomorphisms	7	Face to Face	Moodle	S	Exam	Text Book

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	20	Ch. 2+3+4	1+2+4+5+7	6	On Campus
Midterm	30	Ch. 5+6+7+8	1+2+3+5	12	On Campus
Final Exam	50				On Campus

25. Course Requirements:

Each student must have:

- Account on Microsoft Teams

26. Course Policies:

1. 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. All exams must be taken at the scheduled time. Exceptions will be made only in extreme circumstances, by prior arrangement with the instructor.
2. 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.
3. Medical certificates shall be given to the University Physician to be authorized by him. They should be presented to the Dean of the Faculty within two weeks of the student's ceasing to attend classes.
4. Test papers shall be returned to students after correction. His/her mark is considered final after a lapse of one week following their return.
5. Cheating is prohibited. The University of Jordan regulations on cheating will be applied to any student who cheats in exams or on home works.

27. References:

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

   J. Gallian Contemporary Abstract Algebra, (Houghton-Mifflin).

B- Recommended books, materials, and media:

   - David S. Dummit and Richard M. Foote. Abstract Algebra,

   - I. N. Herstein Topics in Algebra,.

   - Thomas W. Hungerford Abstract Algebra: An Introduction,.

   - J. Fraleigh A first course in Abstract Algebra,

28. Additional information:

	Signature:	Date:
Name of the Instructor or the Course Coordinator: **Prof. Hasan Alnajjar**	………………………	15 – 10 – 2024
Name of the Head of Quality Assurance Committee/ Department: **Prof. Manal Ghanem**	………………………	………………
Name of the Head of Department: **Prof. Baha Alzalg**	………………………	………………
Name of the Head of Quality Assurance Committee/ School of Science: **Prof. Emad A. Abuosba**	………………………	………………
Name of the Dean or the Director: **Prof. Mahmoud I. Jaghoub**	………………………	………………