



مركز الاعتماد
وإضمان الجودة
ACCREDITATION & QUALITY ASSURANCE CENTER



The University of Jordan

Accreditation & Quality Assurance Center

Course Syllabus

Course Name: Modern Algebra I

Course Syllabus

1	Course title	Modern Algebra I
2	Course number	0301341
3	Credit hours	3
	Contact hours (theory, practical)	3
4	Prerequisites/corequisites	0301211
5	Program title	B.Sc. Mathematics
6	Program code	
7	Awarding institution	The University of Jordan
8	School	Science
9	Department	Mathematics
10	Course level	Specialization requirement
11	Year of study and semester (s)	3 rd year, 1 st and 2 nd or summer semester
12	Other department (s) involved in teaching the course	None
13	Main teaching language	English
14	Delivery method	Face to face learning
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	7 th Nov, 2022

17 Course Coordinator:

Name: Prof. Hasan Alnajjar

Contact hours: 12:30 – 1:30 (Su, Tue, Thu)

Office number: 311

Phone number: 22081

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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.

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 Course aims and outcomes:

A- Aims:

1. Write mathematical proofs and reason abstractly in exploring properties of groups.
2. Define, construct examples of, and explore properties of groups, including symmetry groups, permutation groups and cyclic groups.
3. Determine subgroups, subgroups and factor groups of finite groups.
4. Determine, use and apply homomorphisms between groups.

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-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 Caylay's theorem and Lagrange's Theorem							•	
7- Writing mathematical proofs.							•	

21 . Topic Outline and Schedule:

Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous/ Asyncronous Lecturing	Evaluation Methods	Resources
1	1.1	Group Definition	7	Face to Face	Moodle		Exam	Text Book
	1.2	Group Properties	7	Face to Face	Moodle		Exam	Text Book
2	2.1	Exercise: 1,3,5,8,12,14,15,17,18, 23,25	7	Face to Face	Moodle		Exam	Text Book
	2.2	Order and Subgroups	7	Face to Face	Moodle		Exam	Text Book
3	3.1	Centers& Centralizers	7	Face to Face	Moodle		Exam	Text Book
	3.2	Exercise: 1,3,4,8,11,14,16,17,18, 23,27, 33	7	Face to Face	Moodle		Exam	Text Book
4	4.1	Cyclic Groups	7	Face to Face	Moodle		Exam	
	4.2	Cyclic Groups	7	Face to Face	Moodle		Exam	Text Book
5	5.1	Cyclic Groups	7	Face to Face	Moodle		Exam	Text Book
	5.2	Exercise: 1,2,7,10,11,13,15,16,19 ,23,27,28,29,35,38	7	Face to Face	Moodle		Exam	Text Book
6	6.1	Permutation Groups	7	Face to Face	Moodle		Exam	Text Book
	6.2	Permutation Groups	7	Face to Face	Moodle		Exam	Text Book
7	7.1	Even and Odd	7	Face to Face	Moodle		Exam	Text Book
	7.2	Exercise: 1,2,3,4,6,7,8,14,17,18,1 9,20,22,24,26,27,32,36,	7	Face to Face	Moodle		Exam	Text Book
8	8.1	Isomorphisms	7	Face to Face	Moodle		Exam	
	8.2	Isomorphisms	7	Face to Face	Moodle		Exam	Text Book
9	9.1	Cayley's Theorem	7	Face to Face	Moodle		Exam	Text Book
	9.2	Exercise: 1,3,7,10,13,15,17,24,25 ,33	7	Face to Face	Moodle		Exam	Text Book



10	10.1	Cosets	7	Face to Face	Moodle		Exam	Text Book
	10.2	Cosets	7	Face to Face	Moodle		Exam	Text Book
11	11.1	Lagrange's Theorem	7	Face to Face	Moodle		Exam	TextBook
	11.2	Exercise: 1, 14, 15, 17, 18, 19, 21, 22, 23, 24, 25, 26, 34, 37	7	Face to Face	Moodle		Exam	Text Book
12	12.1	Direct Products	7	Face to Face	Moodle		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		Exam	Text Book
13	13.1	Normal Subgroups	7	Face to Face	Moodle		Exam	Text Book
	13.2	Normal Subgroups	7	Face to Face	Moodle		Exam	Text Book
14	14.1	Internal Direct Product	7	Face to Face	Moodle		Exam	Text Book
	14.2	Exercise: 1, 4, 10, 15, 16, 20, 30, 32, 3 6, 40, 43, 44	7	Face to Face	Moodle		Exam	Text Book
15	15.1	Homomorphisms	7	Face to Face	Moodle		Exam	Text Book
	15.2	Homomorphisms	7	Face to Face	Moodle		Exam	Text Book

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
First Exam	30		7		On Campus
Second Exam	20		7		On Campus
Final Exam	50		7		On Campus

23 Course Requirements

Each student must have:

- Account on Microsoft Teams



24 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.

25 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,

26 Additional information:

Name of Course Coordinator: Prof. Hasan Alnajjar Signature: ----- Date: 7-11-2022

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: -----