



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	06

1.	Course Title	Algebra I
2.	Course Number	0331741
3.	Credit Hours (Theory, Practical)	3
	Contact Hours (Theory, Practical)	3
4.	Prerequisites/ Corequisites	None
5.	Program Title	Master in Mathematics
6.	Program Code	
7.	School/ Center	Science
8.	Department	Mathematics
9.	Course Level	Master
10.	Year of Study and Semester (s)	1 st year.
11.	Other Department(s) Involved in Teaching the Course	None
12.	Main Learning Language	English
13.	Learning Types	<input checked="" 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	4 – 11 – 2024
16.	Revision Date	

17. Course Coordinator:

Name: Prof. Emad Abuosba	Contact hours:
Office number: M308	Phone number: 22088
Email: eabusba@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. Isomorphism theorems of groups, group automorphism, finite direct products, finitely generated groups, groups actions, Sylow theorems, rings and ideals, prime and maximal ideals, polynomial rings and irreducibility tests, unique factorization domains, Euclidean domains.

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)

1. Read, analyze and write logical arguments to prove mathematical and statistical concepts and theorems.
2. Communicate with mathematical and statistical ideas clearly and consistently, in writing and verbally.
8. Apply methodologies and ethics of scientific research in preparation of scientific research in mathematics field.

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

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

- CLO 1:** Demonstrate knowledge of the basic algebraic concepts of groups and rings with emphasis on non-commutative rings with or without identity.
- CLO 2:** Study automorphism groups and calculate the automorphism group for some groups.



CLO 3: Understand the group actions on sets and Sylow's Theorems and use them to explore simple groups and to classify groups of some finite order.

CLO 4: Classify up to isomorphism finitely generated abelian groups.

CLO 5: Know the significance of unique factorization in integral domains and its relation to principal ideal domains and Euclidean domains.

CLO 6. Study polynomial rings and power series rings and prove some facts about them.

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

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)	•		•					•



23. Topic Outline and Schedule:

Week	Lecture	Topic	CLO/s Linked to the Topic	Learning Types (Face to Face/ Blended/ Fully Online)	Platform Used	Synchronous / Asynchronous Lecturing	Evaluation Methods	Learning Resources
1	1.1	Isomorphisms and automorphisms	2	FF		S	Homework	Hungerford
	1.2	Isomorphisms and automorphisms	2	FF		S	Homework	Hungerford
2	2.1	Isomorphisms and automorphisms	2	FF		S	Homework	Hungerford
	2.2	Isomorphism theorems and correspondence theorem	2	FF		S	Homework	Hungerford
3	3.1	Isomorphism theorems and correspondence theorem	2	FF		S	Homework	Hungerford
	3.2	Subgroups generated by a set, commutator subgroup	2	FF		S	Homework	Foot & Dummit
4	4.1	Subgroups generated by a set, commutator subgroup	2	FF		S	Homework	Foot & Dummit
	4.2	Direct products	2	FF		S	Homework	Hungerford
5	5.1	Group actions and some applications	3	FF		S	Homework	Foot & Dummit
	5.2	Group actions and some applications	3	FF		S	Homework	Foot & Dummit
6	6.1	Group actions and some applications	3	FF		S	Exam	Hungerford
	6.2	Sylow theorems and applications	3	FF		S	Homework	Hungerford
7	7.1	Sylow theorems and applications	3	FF		S	Homework	Hungerford
	7.2	Sylow theorems and applications	3	FF		S	Homework	Hungerford
8	8.1	Sylow theorems and applications	3	FF		S	Homework	Hungerford
	8.2	Sylow theorems and applications	3	FF		S	Homework	Hungerford
9	9.1	Finitely generated abelian groups	4	FF		S	Homework	Foot & Dummit
	9.2	Rings and ideals	1	FF		S	Homework	Hungerford
10	10.1	Rings and ideals	1	FF		S	Homework	Hungerford
	10.2	Rings and ideals	1	FF		S	Homework	Hungerford
11	11.1	Prime and maximal ideals	1	FF		S	Homework	Hungerford
	11.2	Prime and maximal ideals	1	FF		S	Homework	Hungerford
12	12.1	Prime and maximal ideals	1	FF		S	Exam	Hungerford
	12.2	Factorization of commutative rings	5	FF		S	Homework	Hungerford
13	13.1	Factorization of commutative rings	5	FF		S	Homework	Hungerford
	13.2	Polynomial rings	6	FF		S	Homework	Hungerford
14	14.1	Polynomial rings	6	FF		S	Homework	Hungerford



	14.2	Factorization of polynomials	6	FF		S	Homework	Hungerford
15	15.1	Factorization of polynomials	6	FF		S	Homework	Hungerford
	15.2	Factorization of polynomials	6	FF		S	Homework	Hungerford

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
Homeworks	20		1 – 6		
Exam 1	20	Groups	2 – 3	6	On Campus
Exam 2	20	Groups + Rings	1, 3, 4	12	On Campus
Final Exam	40		1 – 6	16	On Campus

25. Course Requirements:

Students should have a computer, internet connection, webcam, account on Microsoft Teams.

26. Course Policies:

1. The student is not allowed to take the course and its pre-requisite in the same time.
2. 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.
3. 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.
4. 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.
5. Test papers shall be returned to students after correction. His/her mark is considered final after a lapse of one week following their return.
6. 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:

(1) Algebra by Thomas Hungerford, 2nd edition.

B- Recommended books, materials, and media:

(1) Abstract Algebra by David Dummit and Richard Foote, 3rd edition.

28. Additional information:

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Name of the Instructor or the Course Coordinator: Prof. Emad A. Abuosba	Signature:	Date: 4 – 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: