



مركز الاعتماد
وإضمان الجودة
ACCREDITATION & QUALITY ASSURANCE CENTER



The University of Jordan

Accreditation & Quality Assurance Center

Course Syllabus

Algebra I

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	Awarding institution	The University of Jordan
8	Faculty	Science
9	Department	Mathematics
10	Level of course	Master
11	Year of study and semester (s)	1 st year.
12	Final Qualification	Master in Mathematics
13	Other department (s) involved in teaching the course	
14	Language of Instruction	English
15	Date of production/revision	30/3/2017

16. Course Coordinator:

Dr. Manal Ghanem
Math 321

17. Other instructors:

Prof. Hasan Al-Ezeh
Prof. Omar Abu Ghneim
Dr. Emad Abu Osba
Dr. Osama Alkam

18. Course Description:

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.

1. 19. Course aims and outcomes:

2.

A- Aims:

Calculate automorphism groups and inner automorphism groups for some groups, use Group actions and Sylow's theorems to explore simple groups and to classify groups of some finite orders, classify finitely generated abelian group, Study the basic properties of ideals and characterize prime and maximal ideals in several ways, study the unique factorization in integral domains and its relation to principal ideal domains and Euclidean domains, Study the polynomial rings and power series rings.

B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to

B1: Demonstrate knowledge of the basic algebraic concepts of groups and rings with emphasis on non-commutative rings with or without identity.

B2: Study automorphism groups and calculate the automorphism group for some groups.

B3: 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.

B4: Classify up to isomorphism finitely generated abelian groups.

B5: Know the significance of unique factorization in integral domains and its relation to principal ideal domains and Euclidean domains.

B6. Study polynomial rings and power series rings.

20. Topic Outline and Schedule:

3.

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
1. Isomorphisms and automorphisms.	1,2		B1, B2	Homework	Hungerford
2. Isomorphism theorems and correspondence theorem.	2,3		B2	Homework	Hungerford
3. Subgroups generated by a set, commutator subgroup	3,4		B1	Homework	Foot & Dummit
4. Direct products.	4		B1	Homework	Hungerford
5. Group actions and some applications.	5,6		B1, B3	Exam	Foot & Dummit
6. Sylow theorems and applications.	6, 7,8		B1, B3	Homework	Hungerford

7. Finitely generated abelian groups.	9		B1, B4	Homework	Foot & Dummit
8. Rings and ideals.	9,10		B1	Homework	Hungerford
9. Prime and maximal ideals.	11,12		B1	Exam	Hungerford
10. Factorization of commutative rings.	12,13		B1, B5	Homework	Hungerford
11. Polynomial rings.	13		B1, B6	Homework	Hungerford
12. Factorization of polynomials.	14		B1, B6	Homework	Hungerford

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

In order to succeed in this course, each student needs to be an active participant in learning – both in class and out of class.

- Class time will be spent on lecture as well as discussion of homework problems and some group work.
- To actively participate in class, you need to prepare by reading the textbook and doing all assigned homework before class (homework will be assigned each class period, to be discussed the following period).
- You should be prepared to discuss your homework (including presenting your solutions to the class) at each class meeting - your class participation grade will be determined by your participation in this.

You are encouraged to work together with other students and to ask questions and seek help from the professor, both in and out of class.

22. Evaluation Methods and Course Requirements:

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

ILO/s	Learning Methods	Evaluation Methods	Related ILO/s to the program
	Lectures	Exam	
		Presentation	
		Homework	

23. 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. Solutions for the exams questions and marks will be announced at the webpage of the instructor:
<http://eacademic.ju.edu.jo/mghanem/default.aspx>
7. Cheating is prohibited. The University of Jordan regulations on cheating will be applied to any student who cheats in exams or on home works.

24. Required equipment:**25. References:**

- (1) Algebra by Thomas Hungerford, 2nd edition.
- (2) Abstract Algebra by David Dummit and Richard Foote, 3rd edition.

26. Additional information:

Name of Course Coordinator: Dr. Manal Ghanem Signature: ----- Date: 30/3/2017

Head of curriculum committee/Department: ----- Signature: -----

Head of Department: ----- Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

Dean: ----- -Signature: -----

Copy to:

Head of Department
Assistant Dean for Quality Assurance
Course File