



SYLLABUS

Course Code	Course Num.	Course Name	Credit Hours	Lec.	Lab.	Tut.	Private study	Pre-requisites	Course Level	Teaching Language
MAT	624	Algebra (2)	4	3	0	1	8	MAT 623	3-4	English

A. Course Description

The purpose of this course is to introduce the advanced modern abstract algebra beyond the theory of rings and their modules, to proficiency in writing proofs, and to acquire more familiarity with abstract mathematical reasoning and proofs in general.

B. Course Outcomes

At the end of this course the student will be able to:

1. Enhance her/his knowledge in depth of in the areas of modules, rings and commutative algebra at postgraduate research level.
2. Ready to do research in the area of theory of groups and related topics.

C. References:

Required Textbook

Algebra, T.W. Hungerford, 1st Ed., Springer, 1980.

Other references:

1. *Introduction to Commutative Algebra*, M. Atiyah, I. MacDonal, 1st Ed., Westview Press 2002.
2. *Advanced Modern Algebra*, J. Rotman, 2nd Ed., American Mathematical Society, 2010.

Course Website: Google Classroom Webpage: <http://www.imamm.org/>



D. Topics Outline

Rings and Modules: Review of Basics on Rings and Modules, Submodules, Quotient Modules, Direct Products and Direct Sums of Modules, Free Modules and Finitely Generated Modules, Chain Conditions on Rings, Noetherian and Artinian Rings, Composition Series and Jordan-Hölder Theorem.

Commutative Algebra: Power Series Ring, Localization of a Ring and its Total Quotient Ring, Nilradical and Jacobson's Radicals, Primary Decompositions in Noetherian Rings, Tensor Product of Rings and Flatness, Integrality and Integral Extensions of a Ring.

E. Office Hours

Office hours give students the opportunity to ask in-depth questions and to explore points of confusion or interest that cannot be fully addressed in class.

F. Exams & Grading System

The semi-official dates of the exams for this course are:

- **Midterm:** 8th or 9th week.
- **Quizzes & Homework:** During the semester.
- **Final Exam:** 16th week.

Your course grade will be based on your semester work as follows:

Midterm : 30 %	Final Exam: 40 %
4 Quizzes + 4 Homeworks, Attendance & Participation: 30 %	

The grading distribution:

A ⁺	A	B ⁺	B	C ⁺	C	F
[95, 100]	[90, 95)	[85, 90)	[80, 85)	[75, 80)	[70, 75)	[0, 70)



G. Student Workload:

#	Teaching/learning activities	Contact Hours	Frequency	Total Contact hours	Self-study hours	Total self-study hours	Student Learning Time
1	Lecture	3	15	45	1.5	22.5	67.5
2	Tutorial	1	15	15	3	45	60
3	Lab\Practical	0	0	0	0	0	0
4	Homework	0	4	0	1.5	22.5	22.5
5	Quiz	0.25	4	1	1	4	5
6	Test (Midterm)	2	1	2	12	12	14
7	Final Exam	2	1	2	12	12	14
Total				65		118	183

Independent self-study = $118/15 \cong 8$ hrs per week

H. Student Attendance/Absence

Only three situations will be considered as possible excused absences:

- Occurrence of a birth or death in the immediate family will be excused. (“Immediate family” is defined by the University as spouse, grandparents, parents, brother, or sister).
- Severe illness in which a student is under the care of a doctor and physically unable to attend class will be excused. Students are not excused for a doctor's appointment. Do not make appointments that conflict with rehearsals. Notes from the University Health Center will be accepted.

[Executive Rules for Study Regulations and Exams](https://examsgoo.gl/ykm7t3)
[goo.gl/ykm7t3](https://examsgoo.gl/ykm7t3)

