Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
MAT461	Rings and Modules	7	3	0	0	3	5

Prerequisites	
Admission Requirements	

Language of Instruction	Turkish
Course Type	Elective
Course Level	Bachelor Degree
Objective	The main objective is to give an introduction to the theory of rings and that of modules.
Content	In this course, we study the general definition of a ring and the morphisms between them, before turning our attention to the important example of the rings of polynomials. Next we discuss the classes of rings that have some additional interesting properties (eg, Euclidean rings, principal rings, and factor rings). We then discuss modules.
References	1)Daniel Guin-Algèbre II Anneaux, Modules et Algèbre Multilinéaire 2)Hungerford - Algebra 3)Pierre Antoine Grillet - Abstract Algebra

Theory Topics

Week	Weekly Contents
1	Definitions and examples of rings
2	Rings of polynomials, rings of matrices
3	Homomorphism of rings, the sub-rings
4	The ideals and Operations on the ideals
5	Partial 1
6	Quotient rings, prime and maximum ideals
7	The main ideals
8	Euclidean rings
9	Definitions and examples of modules
10	Partial 2
11	Modules, sums and product of modules
12	Modules on the principal rings, free modules,
13	Noetherian and Artinian Modules
14	Projective and Injetive Modules