

Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
MAT205	Rings and Fields	4	0	0	0	5	8

Prerequisites	
Admission Requirements	

Language of Instruction	French
Course Type	Compulsory
Course Level	Bachelor Degree
Objective	-
Content	-
References	

Theory Topics

Week	Weekly Contents
1	Rings from examples: integers, modular arithmetic, polynomials, matrices
2	Units, zero divisors, nilpotents, integral domains
3	Ideals and quotient rings; prime and maximal ideals
4	Ring homomorphisms; isomorphism theorems
5	Polynomial rings; division algorithm; roots and factors
6	Irreducibility; Eisenstein criterion
7	Midterm
8	Principal ideal domains; unique factorization domains
9	Introduction to field extensions; degree
10	Algebraic extensions; minimal polynomial; tower law
11	Finite fields: construction and uniqueness
12	Structure of finite fields; the multiplicative group is cyclic
13	Computations and applications
14	Revision