

Faculty of Eng. & Natural Sci.

MATH58000-202002

Special Topics in MATH: Commutative Algebra

Instructor(s)

Name	Email	Office	Phone	Web	Office Hours
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Objectives

To understand the basics of commutative ring theory

Textbook

Introduction to Commutative Algebra by Michael Atiyah and I. G. Macdonald

Monomial ideals by Jürgen Herzog and Takayuki Hibi

Commutative ring theory by Hideyuki Matsumura

Grobner Bases in Commutative Algebra by Viviana Ene and Jürgen Herzog

Grading Scheme

	Percentage(%)	Number of assessment methods
Final	35	1
Midterm	35	1
Quiz	30	2

Course Outline

- 1) Rings and ideals
- 2) Rings and modules of fractions
- 3) Primary decomposition
- 4) Chain conditions
- 5) Noetherian rings
- 6) Artinian rings
- 7) Graded rings and modules
- 9) Dimension theory
- 10) Monomial ideals and ideal operations on monomial ideals
- 11) A brief introduction to combinatorial methods in commutative algebra.
- 12) Gröbner basis (if there is any time left.)