

SYLLABUS

MATH 381 - Modern Algebra II

Spring 2020

Instructor: Kalina Mincheva

Lecture: T/Th 11:35am-12:50pm, LOM 215

Office hours: DL 406, Monday 4-5pm

Course webpage: <http://users.math.yale.edu/~km995/algebra2S20.html>

Course description: We would cover as many of the following topics as we have time for.

- Non-commutative rings: Jacobson Radical, Wedderburn-Artin Theorem, Modules over group algebras, irreducible representations, Maschke's theorem.
- Commutative rings: Primary decomposition of modules, Lasker-Noether Theorem, Krull Intersection theorem, Krull dimension, Integral extensions, Going Up/Going Down Theorems, Dedekind domains and DVRs, Noether Normalization Lemma, Completion of a ring, Dimension theory and Hilbert polynomials.

Textbook: We will not follow a specific textbook, but here is a list of reference materials which can serve as a complement to the lecture notes.

- *Basic Algebra I, II*, N. Jacobson
- *Introduction To Commutative Algebra*, M. Atiyah, G. MacDonald
- *Commutative Algebra: With a View Toward Algebraic Geometry*, D. Eisenbud

Prerequisites: Math 380 Modern Algebra I

Grading: The final grade for the class will be formed by:

Homework: 60 %

Final Exam: 40 %

Exams: The final will be based on the homework problems.

- Make-up for the exam will only be allowed with a deans excuse.

Homework: Assignments will be posted on the course webpage and on Canvas in advance.

- Homework will be due at the beginning of class. Exact dates TBA.
- Late homework will not be accepted unless accompanied by a dean's excuse.
- Homework should be *legibly written* otherwise we will not grade it.

Academic Honesty: At Yale, academic honesty is taken very seriously. You are welcome and encouraged to collaborate with other students, however writing the final draft should be your own individual effort.