

# Math 501, Algebra II, Spring 2025

Igor Mineyev. Math 501, Spring 2025. MWF 3pm.  
<https://mineyev.web.illinois.edu/class/25s/501/>

Prerequisite: Math 500 or Math 418 or equivalent or consent of the instructor.

Note that the time of the 501 class will be 3pm MWF (different from the time previously posted in the class schedule).

In the good old days our department used to run a separate course on homological algebra. This is not the case anymore. (Oh, those good old days!) Homological algebra is important: it provides general tools to compute homology and cohomology that are important for multiple other areas of mathematics: algebraic topology, geometry of manifolds, algebraic geometry, group theory, and others.

This fact also gives an opportunity to restructure this 501 course. For this and other reasons, this course will be somewhat experimental. My plan is to generally follow the required syllabus, and also to modify it by including more tools from homological algebra, all the way up to *and including* spectral sequences.

Suggestions and comments on what this course should reasonably cover are also welcome.

There will be some homework and a project in which students will investigate and present topics related to algebra. (For example, possible applications of spectral sequences, or other uses of algebra.)

