

The Department of Mathematics

2015–16–B term

Course Name Introduction to Commutative Algebra

Course Number 201.2.0371

Course web page

https://www.math.bgu.ac.il/~tyomkin/ICA_Spring2016/ICASpring2016.html

Lecturer Prof. Ilya Tyomkin, <tyomkin@bgu.ac.il>, Office 213

Office Hours <https://www.math.bgu.ac.il/en/teaching/hours>

Abstract

Requirements and grading¹

Course topics

This is a first course in modern commutative algebra that provides the background for further study of commutative and homological algebra, algebraic geometry, etc.

Syllabus

1. Rings, ideals, and homomorphisms
2. Modules, Cayley-Hamilton theorem, and Nakayama's lemma
3. Noetherian rings and modules, Hilbert basis theorem
4. Integral extensions, Noether normalization lemma, and Nullstellensatz
5. Affine varieties
6. Localization of rings and modules
7. Primary decomposition theorem

¹Information may change during the first two weeks of the term. Please consult the webpage for updates



8. Discrete valuation rings
9. Selected topics

Literature

1. Miles Reid, Undergraduate Commutative Algebra
2. Miles Reid, Undergraduate Algebraic Geometry
3. Altman, Kleiman, A Term of Commutative Algebra