

# 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](https://www.math.bgu.ac.il/~tyomkin/ICA_Spring2016/ICASpring2016.html)

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

## Abstract

## Requirements and grading<sup>1</sup>

## 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

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<sup>1</sup>Information 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