

## The Department of Mathematics

2022–23–A term

**Course Name** Discrete Mathematics for Communication Engineering

**Course Number** 201.1.6201

**Course web page**

<https://www.math.bgu.ac.il/en/teaching/fall2023/courses/discrete-mathematics-fo>

**Lecturer** Prof. Shakhar Smorodinsky, <shakhar@bgu.ac.il>, Office 208

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

### Abstract

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

### Course topics

Prerequisites: 20119531 Linear Algebra

#### Brief syllabus

- .1 Operations over sets, logical notation, relations.
- .2 Enumeration of combinatorial objects: integer numbers, functions, main principles of combinatorics.
- .3 Elementary combinatorics: ordered and unordered sets and multisets, binomial and multinomial coefficients.
- .4 Principle of inclusion and exclusion, Euler function.
- .5 Graphs: representation and isomorphism of graphs, valency, paths and cycles.
- .6 Recursion and generating functions: recursive definitions, usual and exponential generating functions, linear recurrent relations with constant coefficients.

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



.7 (Optional) Modular arithmetics: congruences of integer numbers,  $\mathbb{Z}_m$ , invertible elements in  $\mathbb{Z}_m$ .