Discrete Mathematics for Communication Engineering

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