



## METADATA

**Title:** Combinatorics

**Other Titles:** An upper-level introductory course in enumeration, graph and design theory

**Language:** Greek

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**ISBN:** 978-618-228-176-5

**Subject:** MATHEMATICS AND COMPUTER SCIENCE

**Keywords:** Combinatorics / Discrete Mathematics / Logic / Enumeration / Graph Theory

**Bibliographic Reference:** Nikolopoulos, S., & Manolopoulos, I. (2024). Combinatorics [Undergraduate textbook]. Kallipos, Open Academic Editions. <http://dx.doi.org/10.57713/kallipos-409>

### Abstract

This textbook covers three important areas of combinatorics: enumeration, graph theory and design theory. Within Enumeration, topics related to Basic Techniques, Transpositions, Combinations, the Binomial Theorem, Issues of Amplification and Combinatorial Proofs, Basic Counting Techniques, Counting by Repetition, Induction and Recursion, and Generating Functions are considered. It is well known that Graph Theory is, in itself, a vast field of knowledge in Discrete Mathematics. However, basic and introductory topics are covered here, such as Definitions and Symbolisms, Issues of Isomorphisms

and Automorphisms, Graph Crossings (Traces, Walks, Paths and Circles), Eulerian Rounds and Traces, Hamiltonian Paths and Circles, Trees, as well as Coloring and Flat Graphs. Finally, in the context of Design Theory, the following are considered topics on Latin Squares, Group Designs, Steiner and Kirkman Systems, and Error Correction Codes. The text is concise yet analytical in the didactic sense, as it not only explains in detail a wide range of topics in Combinatorics, but also includes numerous examples and exercises, many of which are accompanied by their solutions.

