

Course general Description of Math 431-1

January 20, 2024

This course is offered: (Eleventh level/ Fourth year)

Part 1

Basic concepts in graph theory.

Trees.

Eulerian and Hamiltonian graphs.

Planar graphs.

Coloring graphs. Color polynomials.

Part 2

Basic counting methods.

The principle of inclusion and exclusion.

The pigeon-hole principle.

Normal and exponential generating functions.

Homogeneous and nonhomogeneous recurrence relations.

Essential References

1. Introduction to combinatorics(in Arabic), A. Sharary and M. Alzohairi.
2. Introduction to graph theory(in Arabic), A. Sharary and M. Alzohairi.

Supportive References

1. Introductory Combinatorics , Richard A. Brualdi, Prentice- Hall, New Jersey, 1999.

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2. A First Look at Graph Theory, John Clark and Derek Allan Holton, Scientific Publishing Company, Singapore, 1991.
 3. Discrete and combinatorial mathematics : an applied introduction, R.P. Grimaldi ; Addison-Wesley.
 4. Applied combinatorics, A. Tucker; John Wiley and Sons.
 5. Introduction to graph theory, Robin J. Wilson; Longman(Arabic translation by M. Alabdullatif).
 6. Applied combinatorics, Fred S. Roberts; Prentice-Hall.
 7. Discrete mathematics: Applied combinatorics and graph theory, M. Townsend; Benjamain/Cummings.