

MATH 341

GRAPH THEORY

METU Credit & ECTS Credit: (3-0) 3 and 6.0

Prerequisites: None

Instructor: Yıldırım Ozan, M-217

Schedule: Monday 13:40-15:30 and Wednesday 12:40-13:30 M-203 and also as online Zoom Lecture. Recorded lecture videos and lecture notes will be posted on the internet.

Web Site: <http://www.metu.edu.tr/~ozan>

Office Hours: Friday 12:40-13:30 in Room M-203 and also via Zoom. Also by appointment.

Textbook: Lecture Notes by Ali Doğanaksoy

Reference Books: Harary, F. (1969). *Graph Theory*, Addison Wesley, Reading, Mass.
Ore, O. (1962).

Theory of Graphs, American Mathematical Society, Providence, R.I.

Richard Diestel, *Graph Theory*. Springer–Verlag (2005) /
<http://www.esi2.us.es/~mbilbao/pdf/DiestelGT.pdf>

Robin J. Wilson, *Introduction to Graph Theory*, 4th Edition, Prentice Hall (1996)

Exams and Grading: There will be 2 midterm exams and a final exam. Each midterm exam will worth 35% and the final exam will worth 30% of the total grade. The midterms will be written exams, whereas the final exam will be an oral exam covering all the topics. Throughout the semester I will prepare several problems, mostly theoretical. The oral exam content will be from these problems and written exams questions.

Exam Dates: Midterm 1: December 7, 2021, Tuesday at 17:40.

Midterm 2: January 18, 2021, Tuesday at 17:40.

Tentative Weekly Syllabus:

- 1) Preliminaries
- 2) Graph Isomorphism
- 3) Special Graphs
- 4) Obtaining New Graphs from a Given Graph
- 5) Binary Graph Operations
- 6) Walks, Trails, Paths and Cycles
- 7) Connectedness
- 8) Matchings

- 9) Trees
- 10) Eulerian Tours, Hamiltonian Cycles
- 11) Planarity-I
- 12) Planarity-II
- 13) Coloring-I
- 14) Coloring-II