King Fahd University of Petroleum and Minerals
Department of Mathematical Sciences
SYLLABUS
Semester I, 2024-2025 (T241)
Prof. Monther R. Alfuraidan

Course #: Math 525

Title: Graph Theory

Textbook: Graph Theory by J.A. Bondy U.S.R. Murty, 2008.

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Office hours: 12:30 – 01:30 PM (UT)

COURSE DESCRIPTION

A basic introduction to graph theory for advanced students in computer science, mathematics, and related fields. Connectivity, matching, factorization and covering of graphs, embeddings, edge and vertex coloring. Line graphs. Reconstruction of graphs. Networks and algorithms. Topological Subgraphs: Contractions.

Weekly Schedule

Week	Dates	Ch. #	Topics
1	August 25-29	0	Introduction
2	September 1-5	1	Graphs
3	September 8-12	2	Subgraphs
		3	Connected Graphs
4	September 15-19	4	Trees
		7	Flows in Networks
National Day Holiday September 22-23, 2024			
5	Exam I: Tuesday, September 24, 2024	Material (1, 2, 3, 4, 7)	
6	September 29 - October 3	9	Connectivity
7	October 6-10	10	Planar Graphs
8	October 13-17	11	The Four-Colour Problem
9	October 20-24	Review and/or catching up	
	Exam II: Tuesday, October 22, 2024	Material (9, 10, 11)	
10	October 27-31	12	Stable Sets and Cliques
11	November 3-7	13	The Probabilistic Method
Midterm Break November 10-14, 2024			
12	November 17-21, 2024	14	Vertex Colourings
	Exam III: Tuesday, November 19, 2024	Material (12,13, 14)	
13	November 24-28, 2024	16	Matchings
14	December 1-5, 2024	17	Edge Colourings
15	December 8-12, 2024	18	Hamilton Cycles
16	December 16	Review/ Catching up -Last Day of classes for the term	
Final Exam	TBA: (December 17-29)	Material: Comprehensive	

Homework: A number of problems will be assigned regularly. It is recommended that you try to work out these problems after the lecture. The problems in the exams will be similar to the homework problems. Remember that "The best way to learn Mathematics is to do Mathematics." Working as a group is recommended. However, each student needs to write his own solution.

Attendance: KFUPM policy with regard to attendance will be enforced. Students are expected to attend all class meetings and are responsible for all of the material covered. Any changes in this syllabus or in the scheduling of exams, HomeWorks, etc. will be announced during class meetings. Students who miss a class meeting should copy a classmate's notes for that meeting.

Evaluation:

Exam I	15%
Exam II	15%
Exam III	15%
Homework	20%
Final Exam	35%
Total	100