

King Fahd University of Petroleum and Minerals
Department of Mathematical Sciences
SYLLABUS
Semester I, 2017-2018 (171)
Dr. Monther R. Alfuraidan

Course #: Math 525
Title: Graph Theory
Textbook: Graph Theory by J.A. Bondy U.S.R. Murty, 2008.
Lecturer: **Monther Alfuraidan** **Office:** 5-313
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Office hours: 11:20 – 12:00 PM (MW)

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.

Homework: A number of problems will be assign 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. You are encouraged to come to my office hours or make an appointment to discuss any difficulties related to the course, including 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.

Evaluation:

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

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.

Help: Individuals’ questions regarding the course work should be directed to the lecturer, either immediately after class or during scheduled office hours.

Week	Date	Ch. #	Topics
1	Sep. 17-21	1	Graphs
2	Sep. 24-28	2	Subgraphs
3	Oct. 01-05	3	Connected Graphs
		7	Flows in Networks
4	Oct. 07-12	9	Connectivity
5	Oct. 15-19	---	Review and/or catching up
		Exam I	Wednesday, October, 18 2017 Material (1,2,3,7,9)
6	Oct. 22-26	11	The Four-Colour Problem
7	Oct. 29-Nov. 02	12	Stable Sets and Cliques
8	Nov. 05-09	13	The Probabilistic Method
9	Nov. 12-16	---	Review and/or catching up
		Exam II	Wednesday, November, 17 2017 Material (11,12,13)
10	Nov. 19-23	14	Vertex Colourings
11	Nov. 26-30	15	Colourings of Maps
12	Dec. 03-07	16	Matchings
13	Dec. 10-14	---	Review and/or catching up
		Exam III	Wednesday, December, 13 2017 Material (14,15,16)
14	Dec. 17-21	19	Coverings and Packings in Directed Graphs
15	Dec. 24-28	---	Review and/or catching up
Final Exam: Saturday, Jan 06, 2018 [7:00 pm - 10:00 pm] Material: Comprehensive			