King Fahd University of petroleum and Minerals

Department of Mathematics

Syllabus – Math 525

Semester 211 (2021-2022)

Dr. Mohammad Zuheir Abu-Sbeih

Course #: Math 525

Title: Graph Theory

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

Lecturer: Mohammad Zuheir Abu-Sbeih

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Office hours: 9:00 – 9:50 AM (UTR)

MATH 525 Graph Theory: Course description **(3-0-3)**

Review of basic concepts of graph theory. Connectivity, matching, factorization and covering of graphs, embedding, edge and vertex coloring. Line graphs. Reconstruction of graphs. Networks and algorithms.

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	20%
Exam II	20%
Homework	20%
Project	5%
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, homework, 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	Aug. 29-Sep.2	1	Graphs
2	Sep. 5-9	2	Subgraphs
3	Sep. 12-16	3	Connected Graphs
		7	Flows in Networks
4	Sep. 19-22	9	Connectivity
Thursday, Sep. 23, 2021: The National Day Holiday			
5	Sep. 26-30	---	Review and/or catching up
		Exam I	**Tuesday, September, 23 Material Chapters (1,2,3,7,9)**
6	Oct. 3-7	10	Planar graphs
7	Oct. 10-14	14	Vertex Colorings
Sunday October 17, 2021: Student Break			
8	Oct. 18-21	15	Coloring of maps
9	Oct. 24-28	16	Matchings
10	Oct. 31-Nov .4	---	Review and/or catching up
		Exam II	**Tuesday, November, 3 Material (10,14,15,16)**
11	Nov. 7-11	17	Edge Colorings
12	Nov. 14-18	18	Hamiltonian cycles
13	Nov. 21-25	18	Hamiltonian cycles - continued
Midterm Break: Nov. 28-Dec. 2			
14	Dec. 5-9	19	Covering and Packing in Digraphs
15	Dec. 12-16	---	Review
16	Dec. 19 Dec. 20	Review / catching up	**Normal Thursday Class**
Final Exam			

Review of basic concepts of graph theory. Connectivity, matching, factorization and covering of graphs, embedding, edge and vertex coloring. Line graphs. Reconstruction of graphs. Networks and algorithms.