FALL 2017
GRAPH THEORY; MATH 415-1; 3 CREDITS
Prerequisite: MATH 251, 330

Instructor: E. Salehi; Ph D. in mathematics from the University of Washington (1985)
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Text Books: A First Course in Graph Theory by Chartrand and Zhang; Required.
A Problem Oriented Approach by Daniel Marcus; Recommended.
Introduction to Graph Theory by Douglas West; Recommended.
A Beginner’s Guide to Graph Theory by Walter Wallis; Recommended.

TOPICS TO BE DISCUSSED: This is an introduction to the theory of graphs. Some
of the topics covered in this course are the fundamental concepts such as graphs, subgraphs,
connectivity, trees, cycles, vertex and edge colorings, planar graphs and their colorings, Euler-
ian and Hamiltonian graphs, matchings and factorization, and the applications of graphs as
models. Emphasis will be on proofs and proof techniques. Several famous graph problems
and associated algorithms are also covered.

COURSE OBJECTIVES: Graph theory is, one of the major areas of discrete mathematics
and graphs can be used to model a wide variety of situations. It is also useful in solidifying
one’s knowledge of proofs and in improving one’s technical writing.

The overall goal of this course would be to
a. provide an introduction to the language, methods and terminology of the subject;
b. study the main concepts of graph theory;
c. discuss some of the major results of graph theory;
d. recognize graphs as an important modeling technique in several applications;
e. learn about open problems in graph theory;

At the end of this course, a student should be able to
A. understand the fundamental concepts of graph theory;
B. write rigorous proofs involving mathematics concepts;
C. apply the abstract concepts of graph theory in several practical problems;

HOMEWORK: Homework will be assigned at each class meeting, due the following class
meeting. Five problems from each assignment will be graded at two points per problem, all
work must be shown to receive any credit.

PROJECTS: Each student will be assigned a project, which is a problem in graph labeling.
The students are expected to provide a written argument for the assigned problems and
present their solutions in the class.
TEST AND GRADING POLICY: There will be two (60-minutes) tests.

| Homework assignments will be collected unannounced | 100 points |
| Project presentation | 100 points |
| First test on Wednesday September 27, 2017 | 100 points |
| Second test on Wednesday November 1, 2017 | 100 points |
| Final on Wednesday December 13, 2017 (10:10 am) | 100 points |

Total possible points 500

90% and higher receives A- and A.
80% - 90% receives B- , B, and B+.
70% - 80% Receives C- , C, and C+.
60% - 70% Receives D- , D, and D+.
Below 60% of total will receive F.

IMPORTANT:
1. During the tests, graphing calculators are not allowed.
2. No make up tests or quizzes will be given.
3. Homework will be assigned at each class meeting, due the following class meeting.
4. Final date to drop or withdraw from classes, or change from credit to audit is November 3, 2017, no drop will be allowed after this date.
5. Learning Enhancement Services (LES) houses Disability Services, Tutoring Services, and Learning Strategies. If you have a documented disability that may require assistance, you will need to contact Disability Services for coordination in your academic accommodations. LES is located in the Reynolds Student Services Complex (SSC), Room 137. The phone is 895-0866, or 895-0652.
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