Al Imam Mohammad ibn Saud Islamic University
College of Computer and Information Sciences

CCIS

Computer Science Department

Course Syllabus
CS403 - Graph Theory

Catalog Description: Graph theory uses basic concepts to approach a diversity of problems and nontrivial applications in operations research, computer science and other disciplines. It is one of the very few mathematical areas where one is always close to interesting unsolved problems. Topics include directed and undirected graphs, subgraphs, connectivity; paths, circuits, Euler tours and Hamilton cycles, trees, graph colorings, planar graphs, partitioning; computer representation of graphs and graph algorithms. The problems considered will be typically motivated by computer science applications.

Credit Hours: **3 Credit hours:** **3** Lectures per week   **0** Labs. per week   **0** Recitation per week

Prerequisites: CS242 - Data Structure

Course Learning Outcomes: Upon successful completion of this course of study a student will be able to:
1. Understand the basics of graphs, directed graphs, weighted graphs and be able to relate them to practical examples.
2. Select the most appropriate type of graph to represent a particular problem.
3. Use effective techniques to study basic parameters and properties of graphs.
4. Apply efficient techniques that employ graph to find solution to optimization problems.
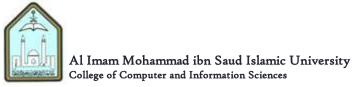5. Describe several practical applications of graph theory (in telecommunications, networking etc.).

Major Topics:
- Introduction to Graph
- Path and circuits
- Trees
- Cut-sets and cut-vertices
- Colorings
- Graph algorithms
- Planner graph

Text Books: Santanu Saha Ray,Graph Theory with Algorithms and its Applications, Springer, 2013.

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Grading:

◎ The grading scale for this course is:
- . 95 - 100 A+   Passing
- . 90 - 94   A   Passing
- . 85 - 89   B+   Passing
- . 80 - 84   B   Passing
- . 75 - 79   C+   Passing
- . 70 - 74   C   Passing
- . 65 - 69   D+   Passing
- . 60 - 64   D   Passing
- . 0 - 59   F   Failing

◎ Final grades will be determined based on the following components:
- . 60% Semester Work
- . 40% Final Exam

◎ Students may not do any additional work for extra credit nor resubmit any graded activity to raise a final grade.

◎ Late submissions will not be accepted for any graded activity for any reason.

◎ Studentshave one week to request the re-grading of any semester work.
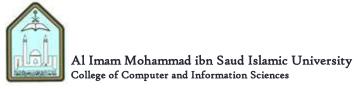
Attendance Policy:

Students should attend 80% of the overall course hours taught in the semester as per the University regulations.

If a student fails to achieve this portion, he/she shall not be allowed to appear in the final exam and shall be awarded "DN" grade and repeat the course.

Cheating and Plagiarism Policy:

The instructor will use several manual and automated means to detect cheating and/or plagiarism in any work submitted by students for this course.

When a student is suspected of cheating or plagiarism, the instructor raises the issue to the disciplinary committee.

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Communications: Registered students will be given access to a section of the Blackboard Learning System for this course. Bb will used as the primary mechanism to disseminate course information, including announcements, lecture slides, assignments, and grades.

Communication with the instructor on issues relating to the individual student should be conducted using CIS email, via telephone, or in person.