Course Name	Computational Geometry	Course Code	COMP	151
Credit Hours	3	Contact Hours	Lec: 2	Lab: 2 / Total: 4
Track	☐ University Requirement ☐ College Requirement ☒ Program Requirement ☒ Required ☐ Elective ☒ COMP ☐ INFS ☐ CNET			
Level	4th Level	Prerequisite	Nil	

Course Description:

The course begins by introducing the fundamentals of computational geometry as a new tool for modeling and designing algorithms, the application of the computational geometry in many different areas like geology and biology is also introduced. Graph theory is introduced in the next chapter including representing graphs, graph isomorphism, Euler graph, Hamilton path, shortest distance problems, adjacency matrix and distance matrix. The theory of trees is covered including binary search tree algorithm, decision tree and game tree. Tree traversal and spanning tree are also covered in the chapter.

Course Objectives:

These are the objectives of the course:

1. Develop the necessary information to deals with graph.
2. Explain the different useful way to represent the graph.
3. Describe the connectivity of graphs, Euler and Hamilton paths, planar graphs and their properties.
4. Provide the knowledge to determine distance in graphs and basic algorithm to find the shortest path between two vertices.
5. Explain the concepts of trees and their properties for some important graph algorithms.

Grading						
	☒ Assignment(s)	20%	☒ Exam-1	10%	☒ Exam-2	10%
	☐ Mini Project	%	☒ Quizzes Exam(Lab Exam)	20%	☒ Final	40%

Text Books:

- Kenneth H. Rosen " Discrete Mathematics and its Applications " McGraw. HILL, 7th edition, 2012.

References:

- Frank L. Severance " Computational Geometry: Algorithms and Applications " Mark de Berg. 2nd ed. Springer- Verlag.2000.
- Joseph O' Rourke.. " Computational Geometry in C . 2nd ed. Cambridge University Press 1998. ISBN 0 521 640105

*** University Required:** Introduction to Computer, Islamic Culture I – IV, Arabic Language

*** College Required:** Courses that are common and mandatory in all three programs