Course Name	GRAPH THEORY AND APPLICATIONS	Course Code	COMP-324		
Credit Hours	3	Contact Hours	Lec	Lab	Total
			3	-	3
Offered as	University Requirement ☐ College Requirement ☒ Program Requirement ☒ Core ☒ Elective ☐ ITEC ☐ COMP ☒ CNET ☐				
Level	6	Prerequisite	NIL		

Course Description:

The course covers basic of Graph theory and applications in the field of computing science. The areas that will be studied are graphs, trees and networks. Topics related to graphs will include graph models, graph isomorphism, connectivity and traversability, planarity, distance in graphs, digraphs and networks. Tree related topics will include properties of trees, tree traversal, minimum spanning trees and use of trees in sorting and prefix codes. Algorithms on networks such as shortest path algorithm, minimal spanning tree algorithm and min-flow max-cut algorithm.

Upon completion, the student will be able to:

- Explain the basic concepts of graph theory.
- Describe the graph representations and their usage in computer-based algorithms.
- Identify graph operations like connectivity, isomorphism and traversability and distances and their use in basic algorithms.
- Explain trees and their properties and use of tree algorithms in solving practical problems.

Assessment Methods						
	Exam-1 ☒	10%	Exam-2 ☒	10%	Assignments ☐	-
	Quizzes ☒	40 %	Lab Exam ☐		Final Exam ☒	40%

Text Book:

- G. Chartrand and P. Zhang, "Introduction to graph theory", McGraw-Hill Publishing Company Limited, ISBN-13: 9780070616080, 2006.
- Kenneth H. Rosen, "Discrete Mathematics and its applications", 7th Edition, McGraw-Hill, ISBN 978-0-07-338309-5, 2012.

References:

- Edgar G. Goodaire & Michael M. Parmenter, "Discrete Mathematics with Graph Theory", 3rd Edition, Prentice Hall, ISBN-13: 978 -0131679955, 2006.
- Mallik and Sen, Thomson, "Discrete Mathematical Structures, Theory and Applications", Thompson Press, ISBN 8131500160, 2004.
- Fred Buckley & Marty Lewinter, "A Friendly Introduction to Graph Theory", 1st Edition, Prentice Hall, ISBN-13: 978-0130669490, 2003.
- Reinhard Diestel, "Graph Theory", 5rd Edition, Springer Verlag, ISBN: 978-3-662-53621-6, 2016.