Course Description Form

1. Course Name:
Graph Theory /2
2. Course Code:
ScMath 3310
3. Semester / Year:
2nd Semester / 2024-2025
4. Description Preparation Date:
20/9/2024
5. Available Attendance Forms:
Official working hours/lectures
6. Number of Credit Hours (Total) / Number of Units (Total)
60 Hours / 4 Units
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Ameen Shaman Ameen Email: amensh66@uoanbar.edu .iq
8. Course Objectives

Course Objectives	1. Introducing the concept of planar graph and some algebraic applications to it. 2. Study several types of matrices that represent graphs and related theorems. 3. Study some algorithms that facilitate the process of obtaining some disturbing results with graphs.
9. Teaching and Learning Strategies	
Strategy	1. Managing the lecture in an applied manner linked to the real of daily life to attract the student to the topic of the lesson without straying from the core of the topic so that the material is flexible and amenable to understanding. 2. Assigning the student to some group activities and duties. 3. Allocating a percentage of the grade to daily assignments and tests.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	4	Planar Graph.	Planar Graph / Part 1.	Lecture in classroom	Questions & discussion
2	4	Planar Graph.	Planar Graph / Part 2.	Lecture in classroom	Questions, discussion &
3	4	Matrix Representations of Graphs.	Matrix Representations of Graphs.	Lecture in classroom	Questions & discussion
4	4	Matrix Representations of Graphs.	Cycle Matrix / Part 1.	Lecture in classroom	Questions & discussion Quiz
5	4	Matrix Representations of Graphs.	Cycle Matrix / Part 2.	Lecture in classroom	Questions & discussion
6	4	---------	Review Exam 1	Lecture in classroom	Questions & discussion Monthly exam
7	4	Matrix Representations of Graphs.	Cut- Set Matrix / Part 1.	Lecture in classroom	Questions & discussion
8	4	Matrix Representations of Graphs.	Cut- Set Matrix / Part 2.	Lecture in classroom	Questions & discussion Monthly exam
9	4	Matrix Representations of Graphs.	Relation between $Af, Bf, Cf.$	Lecture in classroom	Questions & discussion Quiz
10	4	Matrix Representations of Graphs.	Adjacency Matrix / Part 1.	Lecture in classroom	Questions & discussion
11	4	Matrix Representations of Graphs.	Adjacency Matrix/ Part 2. Power of Adjacency Matrix.	Lecture in classroom	Questions & discussion
12	4	Matrix Representations of Graphs.	Path Matrix. Exam 2	Lecture in classroom	Questions & discussion Monthly exam

13	4	Graph Algorithms.	1) Computer Representation of a Graph. 2) Algorithm for Connectedness and Components.	Lecture in classroom	Questions & discussion
14	4	Graph Algorithms.	3) Spanning Tree Algorithm. 4) Minimal Spanning Tree Algorithms.	Lecture in classroom	Questions & discussion Quiz
15	4	Graph Algorithms.	5) Shortest Path Problems.	Lecture in classroom	Questions & discussion

11. Course Evaluation

Quiz & Daily oral 10%
Monthly exam 40%
Final exam 50%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Introduction to Graph Theory Fourth edition By Robin J. Wilson
Main references (sources)	R. Balakrishnan and K. Ranganathan, (2012). A textbook of graph theory, Springer, New York. 2) J.A. Bondy and U.S.R Murty, (2008). Graph theory, Springer.
Recommended books and references (scientific journals, reports…)	None
Electronic References, Websites	None