



T.C.

ESKİŞEHİR OSMANGAZİ ÜNİVERSİTESİ

FACULTY OF SCIENCES

MATHEMATICS AND COMPUTER SCIENCES DEPARTMENT



COURSE INFORMATION FORM

Course Name	Course Code
Graph Theory	

Semester	Number of Course Hours per Week		Credit	ECTS
	Theory	Practice		
3	3	0		5

Course Category (Credit)				
Basic Sciences	Engineering Sciences	Design	General Education	Social
x				

Course Language	Course Level	Course Type
Turkish	Undergraduate	Compulsory

Prerequisite(s) if any	
Objectives of the Course	The aim of this course is to introduce the basic concepts of graph theory within a mathematical and theoretical framework. In addition, this course aims to develop students' knowledge and skills in various application areas by teaching the basic concepts of graph theory and providing them with the ability to model real-world problems.
Short Course Content	Graph definition and history, Basic concepts in graph theory, Graph types, Isomorphic graphs, Operations and the concept of distance in graphs, Connectivity and trees, Eulerian and Hamiltonian graphs, Shortest path problems, Coloring of graphs

Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1 Knowing the basic concepts in graph theory	2	1,2,5,6,10,11,12	A,D
2 Learning graph types and special graphs	2	1,2,5,6,10,11,12	A,D
3 Solving graph coloring problems	1,2,3,4,6,13,14	1,2,5,6,10,11,12	A,D
4 Ability to perform simple discrete mathematical modeling	1,2,3,6,13,14	1,2,5,6,10,11,12	A,D
5 To learn basic graph algorithms	1,2,5,6,8,13,14	1,2,5,6,10,11,12	A,D
6 To understand and use graphs' relationships with other disciplines	2,7,9	1,2,5,6,10,11,12	A,D
7 Modeling real-world problems within a mathematical framework and developing the ability to solve them	1,2,3,4,6,13,14	1,2,5,6,10,11,12	A,D
8			

*Teaching Methods 1:Expression, 2:Discussion, 3:Experiment, 4:Simulation, 5:Question-Answer, 6:Tutorial, 7:Observation, 8:Case Study, 9:Technical Visit, 10:Trouble/Problem Solving, 11:Individual Work, 12:Team/Group Work, 13:Brain Storm, 14:Project Design / Management, 15:Report Preparation and/or Presentation

**Measuring Methods A:Exam, B:Quiz, C:Oral Exam, D:Homework, E:Report, F:Article Examination, G:Presentation, I:Experimental Skill, J:Project Observation, K:Class Attendance; L:Jury Exam

Main Textbook	Douglas West, Introduction to Graph Theory (2nd Edition)
Supporting References	<ol style="list-style-type: none"> Reinhard Diestel, Graph Theory J. A. Bondy and U. S. R. Murty, Graph Theory with Applications
Necessary Course Material	-

Course Schedule	
1	Graph definition and history
2	Basic concepts in graph theory
3	Graph types
4	Isomorphic graphs
5	Operations and the concept of distance in graphs
6	Operations and the concept of distance in graphs
7	Connectivity and trees
8	Mid-Term Exam
9	Connectivity and trees
10	Eulerian graphs
11	Eulerian graphs
12	Hamiltonian graphs
13	Hamiltonian graphs
14	Shortest path problems
15	Coloring of graphs
16,17	Final Exam

Calculation of Course Workload			
Activities	Number	Time (Hour)	Total Workload (Hour)
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,...)	14	3	42
Homework	5	3	15
Quiz Exam			
Studying for Quiz Exam			
Oral exam			
Studying for Oral Exam			
Report (Preparation and presentation time included)			
Project (Preparation and presentation time included)			
Presentation (Preparation time included)			
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	20	20
Final Exam	1	2	2
Studying for Final Exam	1	30	30
		Total workload	153
		Total workload / 30	153/ 30
		Course ECTS Credit	5

Evaluation	
Activity Type	%
Mid-term	35
Quiz	
Homework	15
Bir öge seçin.	
Bir öge seçin.	
Final Exam	50
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)		
NO	PROGRAM OUTCOME	Contribution
1	The ability to apply knowledges of Mathematics and Computer Sciences,	4
2	To have sufficient theoretical and practical knowledge of Mathematics at international level,	5
3	The ability of describing, modelling and solving of mathematical problems at Mathematics and related subjects,	5
4	The skill to solve and design a problem process in accordance with a defined target,	5
5	Skills to analyze data, interpret and apply to other datum and using these data on computer,	4
6	The skill to use the modern techniques and computational tools needed for mathematical applications,	4
7	The skill to make team work within the discipline and interdisciplinary,	3
8	The ability to improve oneself by following the developments on other modern, scientific and technological subjects as well as Mathematics and Computer Sciences,	5
9	The skill to communicate orally and in written way, in a clear and concise manner by having individual work skills and ability to independently decide and analytical thinking,	4
10	The skill to have professional and ethical responsibility,	2
11	The skill to have consciousness for quality issues and scientific research,	2
12	The skill to be sensitive to environmental issues related with problems and development of living area and consistent in the social relations,	2
13	Ability to solve problems in the working life faced to find an appropriate algoritms via mathematical modeling and to write computer programs,	4
14	The skill to developed design of software systems at different complex levels,	4
15	The credence of necessity of life-long learning and ability to apply the formation long-life learning.	1

LECTUTER(S)				
Prepared by	Ass. Prof. Temel Ermiş			
Signature(s)				

Date: 24.07.2024