GAU, Faculty of Engineering
Computer Engineering Department

Course Unit Title	Distributed Systems
Course Unit Code	CEN490
Type of Course Unit	Elective, computer engineering students
Level of Course Unit	4thYear BSc
National Credits	3
Number of ECTS Credits Allocated	6 ECTS
Theoretical (hour/week)	3
Practice (hour/week)	0
Laboratory (hour/week)	0
Year of Study	4
Semester when the course unit is delivered	8
Course Coordinator	Ezgi Deniz Ülker
Name of Lecturer (s)	Ezgi Deniz Ülker
Name of Assistant (s)	
Mode of Delivery	Face to Face, Laboratory Experiments,
Language of Instruction	English
Prerequisities and co-requisities	
Recommended Optional Programme Components	Basic background in computer systems

Objectives of the Course:

- Understanding distributed systems
- Understanding distributed computing in networks
- Understanding typical applications for distributed computing
- Design of simple distributed systems

Learning Outcomes

When this course has been completed the studentshould be able to		Assesment.
1	Understand architecture and operation of distributed systems	1,2
2	Analyze simple distributed systems	1,2,5
3	Identify the role of multicast and anycast computing	1,2
4	Identify typical underlying protocols in distributed computing	1,2
5	Learn the concepts of P2P and grid computing	1

Assesment Methods: 1. Written Exam, 2. Assignment 3. Project/Report, 4.Presentation, 5 Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	4
2	Ability to design and conduct experiments as well as to analyze and interpret data	3
3	Ability to work in multidisciplinary teams while exhibiting professional responsibility and ethical conduct	3
4	Ability to apply systems thinking in problem solving and system design	4
5	Knowledge of contemporary issues while continuing to engage in lifelong learning	
6	Ability to use the techniques, skills and modern engineering tools necessaryfor engineering practice	5
7	Ability to express their ideas and findings, in written and oral form	3
8	Ability to design and integrate systems, components or processes to meet desired needs within realistic constraints	4
9	Ability to approach engineering problems and effects of their possible solutions within a well structured, ethically responsible and professional manner	3
10	To apply fundamental concepts of software design, database design, data processing and artificial intelligence in the modeling, designing, implementing, testing and deploying software solutions.	2
11	Ability to analyse and design hardware systems by applying the principles of embedded systems, microprocessors, computer networks, distributed systems and data communication.	5

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate 4: High, 5:Very High)

Course Contents

Week			Exams
1		Evolution of distributed computing	
2		Basic concepts of distributed sytems	
3		Basic concepts of distributed systems	Quiz
4		Protocols	
5		Protocols	
6		Interprocess communicaiton for distributed computing	
7			Midterm
8		Multicasting in distributed computing	
9		Multicasting in distributed computing	
10		Anycasting in distributed computing	
11		Distributed anycast processing	Quiz
12		Mutual Exclusions	
13		Mutual Exclusions	
14		Review	
15			Final

Recommended Sources

Textbook: Distributed Systems: Concepts and Design, Coulouris, Dollimore, Kindberg, Addison-Wesley, 4th edition (Other editions are also useful)

Supplementary Material (s): Distributed Operating Systems. Tannenbaum, Prentice Hall, 1995

Assessment

Attendance	5%	
Laboratory	10%	
Midterm Exam	30%	Written Exam
Quiz	15%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

ECTS Allocated Based on the Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including the Exam week)	14	3	42
Labs and Tutorials	5	3	15
Assignments	7	3	21
Project/Presentation/Report Writing			
E-learning Activities			
Quizzes	2	10	20
Midterm Examination	1	15	15
Final Examination	1	25	25
Self Study	14	2	28
Total Workload			166
Total Workload/30 (h)			5.53
ECTS Credit of the Course			6