

Faculty	Faculty of Engineering	
Program	B.Sc. in Civil Engineering	Elective
	B.Sc. in Computer Engineering	Required
	B.Sc. in Electrical-Electronics Engineering	Elective
	B.Sc. in Industrial Engineering	Elective
	B.Sc. in Mechanical Engineering	Elective

Course Code	COMP 421			
Course Title in English	Computer Networks			
Course Title in Turkish	Bilgisayar Ağları			
Language of Instruction	English			
Type of Course	Flipped Classroom			
Level of Course	Undergraduate			
Course Category (by % of Content)	Basic Science	Basic Engineering	Engineering Design	General Education
	10	40	50	0
Semester Offered	Fall			
Contact Hours per Week	Lecture: 3 hours	Recitation: -	Lab: -	Other: -
Estimated Student Workload	144 hours			
Number of Credits	6 ECTS			
Grading Mode	Standard Letter Grade			
Pre-requisites	COMP 106			
Expected Prior Knowledge	Object Oriented Programming			
Co-requisites	None			
Registration Restrictions	Only Undergraduate Students			
Overall Educational Objective	To understand the basic structure of computer networks			
Course Description	This course provides a comprehensive introduction to fundamental aspects of Computer networks. Topics to be covered include data communication concepts, layered network models (OSI reference model, TCP/IP networking architecture), different switching techniques, network congestion, network topologies, IP and Mac addressing, various types of networks (LAN, MAN, WAN and Wireless networks) and the protocols.			
Course Description in Turkish	Bu ders bilgisayar ağlarına kapsamlı bir giriş dersidir. Bu derste işlenecek temel konular; veri iletişimi konseptleri, katmanlı ağ modelleri, değişik bağlantı teknikleri, ağ sıklığı, ağ topolojileri, IP ve MAC adreslemeleri, çeşitli ağ tipleri ile bunlara ait protokoller olarak sıralanabilir.			
Course Learning Outcomes and Competences	Upon successful completion of the course, the learner is expected to: <ol style="list-style-type: none"> 1. describe basic computer network technologies and explain data communication systems; 2. enumerate OSI and TCP/IP layers, and explain the functions of each layer; 3. identify the different types of network devices and their functions within a network; 4. identify the basic protocols of computer networks, and how they can be used; 5. design and develop a new network program using socket programming libraries; 6. present the work in front of an audience. 			

Relationship of the Course with the Student Outcomes	Level	Learning Outcome(s)	Assessed by
Student Outcomes	N=None S=Supportive H=High		Exam, Project, HW, Experiment, Presentation, etc.
(1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	H	1,2,3,4	Exam, Project, In- class act., Assignment
(2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	S	5	Project
(3) an ability to communicate effectively with a range of audiences	S	6	Project, Assignment
(4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts			
(5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives			
(6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions			
(7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies			
Prepared by and Date	Assoc. Prof. Dr. İlker Bekmezci / September 2019		
Semester	Fall 2019-2020		
Name of Instructor	Assoc. Prof. Dr. İlker Bekmezci		
Course Contents	Week	Topic	
	1.	Introduction	
	2.	Application Layer – HTTP, ICMP, DNS	
	3.	Transport Layer 1 – TCP, UDP	
	4.	Transport Layer 2 – Connection, Reliability, Congestion	
	5.	Socket Programming 1	
	6.	Socket Programming 2	
	7.	Network Layer 1 – Addressing, Subnets	
	8.	Network Layer 2 – Routing Algorithms	
	9.	Data Link Layer 1 – Flow control, Error correction/detection	
	10.	Data Link Layer 2 - Medium Access Protocols	
	11.	Student Presentations - Assignment	
	12.	Physical Layer 1	
	13.	Physical Layer 2	
	14.	Advanced Topics in Computer Networks	
	15.	Final Exam/Project/Presentation Period	
	16.	Final Exam/Project/Presentation Period	
Required/Recommended Readings	Computer Networking: A Top-Down Approach 6th ed. J.F. Kurose and K.W. Ross		
Teaching Methods	Flip learning applications and exercises in the classroom with computers.		
Homework and Projects	Assignment, Term Project		
Laboratory Work	-		
Computer Use	For Programming, Packet Tracer, Wireshark applications and exercises		
Other Activities	In-class activities		

Assessment Methods	In-class activities: %15 Project: %15 Assignment: %10 Midterm (2): % 60
Course Administration	Instructor's office and phone number, office hours, email address: To be announced Rules for attendance: - Missing a quiz: Provided that proper documents of excuse are presented, each missed quiz by the student will be given a grade which is equal to the average of all of the other quizzes. No make-up will be given. Missing a midterm: Provided that proper documents of excuse are presented, a make-up exam will be given. Missing a final: Faculty regulations. A reminder of proper classroom behavior, code of student conduct: YÖK Regulations Statement on plagiarism: YÖK Regulations

ECTS Student Workload Estimation	Activity	No/Weeks	Hours			Calculation	Explanation
		No/Weeks per Semester (A)	Preparing for the Activity (B)	Spent in the Activity Itself (C)	Completing the Activity Requirements (D)		
	Lecture	14	1	3	1	70	A*(B+C+D)
	Lab etc.					0	
	Midterm(s)	2	4	2	1	14	A*(B+C+D)
	Assingment, Project, Presentation	6	5	3	2	60	A*(B+C+D)
	Total Workload					144	
	Total Workload/25					5,76	
	ECTS					6	