TED UNIVERSITY, COURSE SYLLABUS

Faculty	Engineering	Department	Computer Engineering

Course Code & Number	CMPE 472	**Course Title**	Computer Networks
Type of Course	☑ Compulsory ☐ Elective	**Semester**	☐ Fall ☑Spring ☐Summer
Level of Course	BSc	**Year of Study**	Sophomore
Course Credit Hours	(2+2+0) 3	**Number of ECTS Credits**	6
Pre-requisite	N/A	**Co-requisite**	N/A
Mode of Delivery	☑ Face-to-face ☐Distance learning	**Language of Instruction**	☑ English ☐Turkish
Course Coordinator	Asst.Prof.Dr. Emin KUGU	**Course Lecturers**	Asst.Prof.Dr. Emin KUGU
Required Reading	Computer Networking, 7th Edition (2016) by James F. Kurose, Keith W. Ross ISBN-13: 978-0133594140 ISBN-10: 9780133594140	**Course Assistant(s)**	Yigit Sever (A217)

Course Catalog Description	Communication model, protocol architecture. OSI. Internet & TCP/IP. Wide Area Networks, ATM, Circuit & Packet Switching. Cellular wireless networks. Local Area Networks, High speed LANs, Wireless LANs, Internetworking, IPv6/IPv4. TCP congestion control, UDP, Network security.
Course Objectives	This course is an introduction to computer networks, with a focus on the Internet. We will focus on computer networking design principles and the fundamental mechanisms of the Internet. More specifically, we will cover the following topics: 1. Organization of the Internet (Internet Service Providers, Content Providers, etc.) 2. Switching techniques (e.g., circuit & packet switching) 3. Physical pieces of a network, including hosts, routers, switches, ISPs, wireless, LAN, access point, and firewalls 4. Layering principles (encapsulation, multiplexing) 5. Roles of the different layers (application, transport, network, datalink, physical) 6. Network Security (Private and public key cryptography, digital signatures, secure e-mail)
Course Learning Outcomes	LO1. Understand the layered architecture of computer networks, and describe the functions of each layer. LO2. Understand the fundamentals of computer networking concepts such as delay, throughput and loss. LO3. Understand and explain the network layer functions such as routing and addressing. LO4. Explain the functions of widely used Internet protocols such as DNS, HTTP and ARP. LO5. Identify the difference between connectionless and connection-oriented transports, understand the principles of reliable data transfer, such as congestion and flow control. LO6. Understand the basic principles of secure communication. LO7. Use network tools to observe and analyze network

	protocols. LO8. Explain the differences between link layer protocols 802.11 (a/b/g, wifi) and 802.3 (Ethernet). LO9. Implement a simple client-server socket-based application.	
Teaching Methods & Learning Activities	☑ Telling/Explaining ☑ Discussions/Debates ☐ Questioning ☑ Reading ☐ Peer teaching ☐ Scaffolding/Coaching ☑ Demonstrating ☑ Problem solving ☐ Collaborating ☐ Think-Pair-Share ☐ Microteaching ☐ Case Study/Scenario Analysis	☐ Simulations & Games ☐ Video Presentations ☑ Oral presentations/Reports ☐ Concept Mapping ☑ Brainstorming ☐ Drama/Role Playing ☐ Seminars ☐ Field Trips ☐ Guest Speakers ☑ Hands-on Activities ☐ Experiments ☐ Other(s): ………………………………
Assessment Methods (Formal & Informal)	☑ Test/Exam ☑ Quiz/Homework ☐ Oral Questioning ☑ Laboratory work ☐ Performance Project	☐ Observation ☐ Self-evaluation ☐ Peer-evaluation ☐ Portfolio ☐ Presentation (Oral, Poster) ☐ Other(s): ……………………………

Student Workload (Total 173 Hrs)	☑ Lectures ………………………………… 28 hrs ☑ Course Readings …………………… 22 hrs ☐ Workshop ……………………………… hrs ☐ Online Discussion ………………………. hrs ☐ Debate …………………………………. hrs ☐ Work Placement …………………………. hrs ☐ Field Trips/Visits ……………………………. hrs ☐ Observation ………………………………. hrs ☑ Laboratory Applications ………………… 28 hrs ☑ Quizzes ……………………………… 10 hrs ☐ Hands-on Work ……………………………. hrs ☑ Homework ………………………………30 hrs	☑ Midterm I …………………………… 10 hrs ☐ Midterm II …………………………………. hrs ☑ Final ……………………………… 20 hrs ☐ Resource Review ……………………… hrs ☑ Research Review ………………………20 hrs ☐ Report on a Topic …………………………. hrs ☐ Case Study Analysis ………………………. hrs ☑ Oral Presentation …………………………5 hrs ☐ Poster Presentation ……………………… hrs ☐ Demonstration ……………………………. hrs ☐ Web Designs …………………………………. hrs ☐ Mock Designs ………………………………. hrs ☐ Team Meetings …………………………. hrs ☐ Other ……………………………………. hrs

GRADING
A. Midterm [25%]
There will be a midterm examination worth 25% of the overall grade.
B. Final Exam [30%]
There will be a final examination worth 30% of the overall grade.
C. Quizzes [10%]
There will be 5 quizzes, each of them will contribute 2% towards your final grade.
D. Laboratory Works [15%]
There will be 6 graded lab activities, each is worth 3%, the lowest grade for lab activities will be dropped.
E. Programming Assignments [10%]
There will be 3 programming assignments.
F. Homework [10%]
There will be 3 homeworks.

COURSE POLICIES

Ⅰ. Attendance

Attendance is not compulsory, but it will greatly improve your learning experience.

Ⅱ. Missed Work

Make-ups for Midterm and Final exams will be provided if the student can provide a
medical document confirming a significant health issue on the day of the exam.
There will be no makeup for quizzes, labs and homework.

Ⅲ. Extra Credit

Extra credits will not be offered.

Ⅳ. Assignment Rules

All assignment works must be done individually. A student can submit only one work. In case of multiple submissions, only the latest submission will be considered. Students cannot submit work on other students' behalf.
Late submissions will be penalized by 20% for each day past the deadline.

Ⅴ. Plagiarism

All of the following are considered plagiarism
- turning in someone else's work as your own
- copying words or ideas from someone else without giving credit
- failing to put a quotation in quotation marks
- giving incorrect information about the source of a quotation
- changing words but copying the sentence structure of a source without giving credit
- copying so many words or ideas from a source that it makes up the majority of your work, whether you give credit or not (www.plagiarism.org)
- asking quiz, activity or assignment questions on online places, such as stackoverflow.com.

Plagiarism is a very serious offense and will be penalized accordingly by the university disciplinary committee.
The students who are involved in any plagiarism activity will be subjected to disciplinary action.

Ⅵ. Cheating

Cheating has a very broad description which can be summarized as "acting dishonestly". Some of the things that can be considered as cheating are the following:
- Copying answers on examinations, homework and laboratory works,
- Using prohibited material on examinations,
- Lying to gain any type of advantage in class
- Providing false, modified or forged data in a report
- Plagiarizing
- Modifying graded material to be regraded.
- Causing harm to colleagues by distributing false information about an examination, homework or laboratory

Cheating is a very serious offense and will be penalized accordingly by the university disciplinary committee.

Ⅶ. Class Participation

Participation in class is necessary but not mandatory. However, if you do not attend the laboratory and complete the requested tasks, you cannot /will not get the assigned points from the laboratory. By actively participating in class, you can improve your learning process and immediately confirm what you have earned and what you have not internalized.

Ⅷ. Class Readings

Class readings are necessary but not mandatory. The material covered in class by your instructor will only provide a fundamental understanding of the general context. If you are willing to effectively learn something, you must actively work on it yourself. Reading is one of the most successful ways of learning about a topic.

TENTATIVE COURSE OUTLINE				
Week		**Topic**	**Reading**	**LABS / QUIZZES / EXAMS**
W1	10.02 - 14.02	Introduction - The Internet and Computer Networks	CH 1.1 - 1.2	
W2	17.02 - 21.02	Delay, Loss, Throughput, Protocols	CH 1.3 - 1.7	**Quiz 1** Lab 1: Introduction to Wireshark
W3	24.02 - 28.02	Application Layer	CH 2.1 - 2.3	Homework 1
W4	02.03 - 06.03	SMTP, DNS, Socket Programming	CH 2.4 - 2.7	**Quiz 2** Lab 2: Web Server
W5	09.03 - 13.03	Transport Layer (Layer 4): Principles of Reliable Data Transfer	CH 3.1 - 3.3	Homework 2
W6	16.03 - 20.03	UDP and TCP	CH 3.4 - 3.6	**Quiz 3** Lab 3: TCP & UDP Prog. As. 1: TCP
W7	23.03 - 27.03	**Midterm Exam**		
W8	30.03 - 03.04	Exam Review, Congestion Control	CH 3.7	
W9	06.04 - 10.04	Network Layer (Data Plane) IP and Addressing	CH 4.1 - 4.4	Lab 4: Transport
W10	20.04 - 24.04	Network Layer (Control Plane) Routing	CH 5.1 – 5.4	**Quiz 4** Prog. As. 2: Routing
W11	20.04 - 24.04	Link Layer (Layer 2): Error Detection and Multiple Access	CH 6.1 - 6.3	Lab 5: ICMP
W12	27.04 - 01.05	LANs, MPLS, Data Center Networking	CH 6.4 - 6.7	**Quiz 5** Homework 3
W13	04.05 - 08.05	Presentations		Lab 6: SMTP
W14	11.05 - 15.05	Network Security	CH 8.1 - 8.6	Prog. As. 3: TBD
W15	18.05 - 22.05	No Lecture		

Prepared by Emin KUĞU, on 06/02/2020