

| Course Description | | | | | | |
|--|--|--------------------------------|-------------------------|---------------------------|-------------|---|
| Name | Code | Semester | T+A Hour | Credit | ECTS | |
| DATA COMMUNICATION and COMPUTER NETWORKS | | EEE4149640 | Fall Semester | 3+2 | 4 | 8 |
| Prerequisites Courses | OLASILIK VE RASSAL DEĞİŞKENLER; PROGRAMLAMAYA GİRİŞ | | | | | |
| Recommended Elective Courses | COE323409 COMMUNICATION SYSTEMS | | | | | |
| Language of Instruction | English | | | | | |
| Course Level | First Cycle (Bachelor's Degree) | | | | | |
| Course Type | Elective | | | | | |
| Course Coordinator | Assist.Prof. Mustafa TÜRKBOYLARI | | | | | |
| Name of Lecturer(s) | Assist.Prof. Mustafa TÜRKBOYLARI | | | | | |
| Assistant(s) | | | | | | |
| Aim | Data communications and networking is a subject that involves many concepts, protocols, and technologies in today's modern computer networks. This course aims to teach student the principles and protocols of computer networks in a structured manner with hands-on Ethereal lab applications, which are organized around the "top down layers" of a network architecture. The course also aims to show relationships between OSI layers and how each layer addresses a subset of requirements of a computer networks. | | | | | |
| Course Content | This course contains; Computer Networks and Internet,Application Layer -Part 1 (Principles, The Web and HTTP, FTP, SMTP),Application Layer -Part 2 (DNS, P2P, Socket Programming with TCP and UDP),Ethereal Lab 1: Application Layer,Transport Layer- Part 1 (Services, Multiplexing-Demultiplexing, UDP),Transport Layer- Part 2 (Reliable Data Transfer, TCP, Congestion Control) ,Ethereal Lab 2: Transport Layer,Midterm,Network Layer-Part 1 (VC-Datagram Networks, Router, Teh Internet Protocol (IP)),Network Layer-Part 2 (Routing Algorithms,RIP,OSPF,BGP,Broadcast-Multicast Routing),Ethereal Lab 3: Network Layer,Link Layer - Part 1(Error Detection-Correction, Multiple Access, Link-Layer Addressing),Link Layer -Part 2 (Ethernet, Link Layer Switches, PPP, ATM, MPLS),Wireless and Mobile Networks(Wireless Links, 802.11 WLAN, Overview of Cellular Standards). | | | | | |
| Course Learning Outcomes | | | Teaching Methods | Assessment Methods | | |
| 1. Explain the concepts of OSI layering, networking, internet, ISP □□□ | | | 17, 19, 9 | A, E | | |
| 2. Learn and analyze application layer protocols | | | 17, 19, 4, 6, 9 | A, D, E, F | | |
| 3. Learn and analyze transport layer protocols | | | 17, 19, 4, 6, 9 | A, D, E | | |
| 4. Explain the concepts of IP addressing, subnet, routing, and routing algorithms. | | | 17, 4, 9 | A, E, F | | |
| 5. explain the concept of MAC addressing, and learn and analyze link layer protocols. | | | 17, 9 | A | | |
| 6. Explain Wireless Medium Access Protocols. | | | 17, 9 | A | | |
| Teaching Methods | 17: Experimental Technique, 19: Brainstorming Technique, 4: Inquiry-Based Learning, 6: Experiential Learning, 9: Lecture Method | | | | | |
| Assessment Methods | A: Traditional Written Exam, D: Oral Exam, E: Homework, F: Project Task | | | | | |
| Lecture Schedule | | | | | | |
| Sequence | Topics | Preliminary Preparation | | | | |
| 1 | Computer Networks and Internet | Textbook Chapter 1 | | | | |
| 2 | Application Layer -Part 1 (Principles, The Web and HTTP, FTP, SMTP) | Textbook Chapter 2 | | | | |
| 3 | Application Layer -Part 2 (DNS, P2P, Socket Programming with TCP and UDP) | Textbook Chapter 2 | | | | |
| 4 | Ethereal Lab 1: Application Layer | Textbook Chapter 2 | | | | |
| 5 | Transport Layer- Part 1 (Services, Multiplexing-Demultiplexing, UDP) | Textbook Chapter 3 | | | | |
| 6 | Transport Layer- Part 2 (Reliable Data Transfer, TCP, Congestion Control) | Textbook Chapter 3 | | | | |
| 7 | Ethereal Lab 2: Transport Layer | Textbook Chapter 3 | | | | |
| 8 | Midterm | Textbook Chapter 1, 2, 3 | | | | |
| 9 | Network Layer-Part 1 (VC-Datagram Networks, Router, Teh Internet Protocol (IP)) | Textbook Chapters 4 | | | | |
| 10 | Network Layer-Part 2 (Routing Algorithms,RIP,OSPF,BGP,Broadcast-Multicast Routing) | Textbook Chapter 4 | | | | |
| 11 | Ethereal Lab 3: Network Layer | Textbook Chapter 4 | | | | |
| 12 | Link Layer -Part 1(Error Detection-Correction, Multiple Access, Link-Layer Addressing) | Textbook Chapter 5 | | | | |
| 13 | Link Layer -Part 2 (Ethernet, Link Layer Switches, PPP, ATM, MPLS) | Textbook Chapter 5 | | | | |
| 14 | Wireless and Mobile Networks(Wireless Links, 802.11 WLAN, Overview of Cellular Standards) | Textbook Chapter 6 | | | | |
| Evaluation Methods | | Weight(%) | | | | |
| Midterm Exam | | 30 | | | | |
| General Exam | | 70 | | | | |
| Resources | | | | | | |
| Computer Networking: A Top Down Approach, James Kurose and Keith Ross, 7th Ed., ISBN-13: 978-0133594140, Pearson. various handouts | | | | | | |