Course Title	Computer Networks II
Course Code	ITEC310
Type	Full Time
Semester	Fall/Spring
Category	AC (Area Core)
Workload	210 Hours
EMU Credit	(3,2,0) 4
Prerequisite	ITEC309
Language	English
Level	Third Year
Teaching Format	3 Hours Online Lectures and 2 Hours Online Laboratory work per week
ECTS Credit	7
Course Web Site	https://lms.emu.edu.tr

Instructor(s)	Asst. Prof. Dr. Hüsnü Bayramoğlu	**Office Tel**	+90 392 6302894
E-mail	husnu.bayramoglu@emu.edu.tr	**Office No**	CT103

Course Description
This course provides the student with fundamental knowledge of the various aspects of computer networking and enables students to appreciate recent developments in the area. The content of the course is based around the Internet Model (TCP/IP) which deals with the major issues in the upper three (Network, Transport, Application) layers of the model. Specific attention is given to IP addresses, network layer protocols such as IP, ARP, ICMP and IGMP, delivery, forwarding and routing of packets in the Internet, services and duties of the transport layer introducing protocols like UDP, TCP and SCTP, congestion control and quality services. The course also discusses DNS and some common applications protocols in the Internet.

General Learning Outcomes
On successful completion of this course students should be able to:

- Interpret logical or IP addressing.
- Explain the main protocol IP at the network layer that supervises and controls the delivery of packets from source to destination.
- List some auxiliary protocols, ARP, RARP, BOOTP, DHCP, IGMP, ICMPv6, defined at the network layer that help the IP protocol do its job.
- Examine delivery and routing packets in the Internet.
- Summarize the three protocols, UDP, TCP and SCTP, at the transport layer.
- Explain congestion and quality of service.
- Define DNS.
- Explain three common applications in the Internet: remote login, electronic mail, and file transfer.
- Summarize the ideas and issues in the famous world wide web (WWW) and client/server application program (HTTP).
- Describe network management.
- Explain multimedia and a set of widely-used application programs.

Teaching Methodology / Classroom Procedures

- The course has three hours of online lectures and two hours online practical laboratory work per week.

- Lecture notes are posted on the course web site.
- There is an online midterm and a final exam.
- Laboratory sessions are organized in parallel to theoretical study given at lecture hours. During the lab sessions, particular aspects of the Computer Networks are demonstrated. Students perform different experiments and submit reports for evaluation each week.
- There is no assignments or term project.
- Class attendance is compulsory.
- The student is responsible to check the course web site regularly and view the latest announcements.
- Students are encouraged to use internet to search for various related topics.

Course Materials / Main References

Text Book:

Behrouz A. Forouzan, Data Communications and Networking, Fourth Edition, McGraw-Hill, 2007, ISBN: 978-007-325032-8

Resource Books:

1. William Stallings, Data and Computer Communications, Tenth Edition, Pearson, 2014.
2. Tomasi, Introduction to Data Communications and Networking, Pearson, 2005.
3. James F. Kurose, Keith W. Ross, Computer Networking: A Top–Down Approach Featuring the Internet, Sixth Edition, Pearson, 2013.

Lecture Notes:

All course materials are also available online in PowerPoint Format or Adobe PDF (Portable Document Format).

Weekly Schedule / Summary of Topics

Week 1	**Network Layer: Logical Addressing:** IPv4 Addresses, IPv6 Addresses.
Week 2	**Network Layer: Internet Protocol:** Internetworking, IPv4, IPv6, Transition from IPv4 to IPv6.
Week 3	**Network Layer: Address Mapping, Error Reporting, and Multicasting:** Address Mapping, ICMP, IGMP, ICMPv6.
Weeks 4	**Network Layer: Delivery, Forwarding, and Routing:** Delivery, Forwarding, Unicast Routing Protocols, Multicasting Routing Protocols.
Weeks 5-6	**Process-to-Process Delivery: UDP, TCP and SCTP:** Process-to-Process Delivery, User Datagram Protocol (UDP), TCP, SCTP.
Week 7	**Congestion Control and Quality of Services:** Data Traffic, Congestion, Congestion Control, Quality of Services, Techniques to Improve QoS, Integrated Services, Differentiated Services, QoS in Switched Networks.
Week 8-9	**Midterm Examinations**
Week 10	**Domain Name System:** Name Space, Domain Name Space, Distribution of Name Space, DNS in the Internet, Resolution, DNS Messages, Registrars, Dynamic Domain Name System (DDNS), Encapsulation.
Week 11	**Remote Logging, Electronic Mail, and File Transfer:** Remote Logging, Electronic Mail, File Transfer.
Week 12	**WWW and HTTP:** Architecture, Web Documents, HTTP.
Week 13	**Network Management: SNMP:** Network Management System, Simple Network Management Protocol (SNMP).
Weeks 14-15	**Multimedia:** Digitizing Audio and Video, Audio and Video Compression, Streaming Stored Audi/Video, Streaming Live Audio/Video, Real-Time Interactive Audio/Video, RTP, RTCP, Voice over IP.
Weeks 16-17	**Final Examinations**

Requirements

- Each student can have only one make-up exam.
- One who misses an exam should provide a medical report or a valid excuse within 3 days after the missed exam.
- The make-up exam is done at the end of the term and covers all the topics
- Students who fail to attend the lectures regularly may be given NG grade.

- Once the grades are announced, the students have only one week to do objection about their grades.
- It is the students' responsibility to follow the announcement in the course web site.

Method of Assessment			
Evaluation and Grading	**Laboratory**	**Midterm Exam**	**Final Exam**
Percentage	20 %	40 %	40 %

Grading Criteria *											
A	**A-**	**B+**	**B**	**B-**	**C+**	**C**	**C-**	**D+**	**D**	**D-**	**F**
90 -100	85 - 89	80 - 84	75 - 79	70 - 74	65 - 69	60 - 64	56 - 59	53 - 55	50 - 52	40 - 49	0 – 39

* Letter grades will be decided upon after calculating the averages at the end of the semester and distribution of the averages will play a significant role in the evaluation of the letter grades.