

**Arab Academy for Science and Technology and Maritime Transport
Computer Science Curriculum
Course Syllabus**

Course Code: CE231	Course Title: Introduction to Networks	Classification: R	Coordinator's Name: Dr. Mohamed Mostafa Lecturer Name:	Credit Hours: 3
Pre-requisites: CS143 (Introduction to Problem Solving and Programming)	Co-requisites: None	Schedule: Lecture: 2 hours Tutorial-Lab: 2 hours Lab : 2 hours		
Office Hours:				
Course Description: This course is an introduction to computer networks architecture and protocols with special emphasis on the Internet. The course will present the IP protocol stack including application, transport, network, and link layers. Such presentation will illustrate the main concepts, protocols, and services provided by each layer. Hands-on experience will be provided through the use of a packet sniffing and protocol analysis tool. In addition, some simple client-server network programming assignments will be presented.				

Textbook:

James Kurose and Keith Ross, Computer Networking: A Top-Down Approach, Pearson Education.

References:

1. Andrew Tanenbaum, Computer Networks, Prentice Hall.
2. James Kurose and Keith Ross, Computer Networking: A Top-Down Approach Featuring the Internet, Addison-Wesley.
3. Douglas E. Comer, Internetworking with TCP/IP Volume I: Principles, Protocols, and Architecture, Prentice Hall.

Course Objective/Course Learning Out-come:	Contribution to Program Student Out-comes:
1. Differentiate between circuit switching and packet switching.	<p>(SO3) Communicate effectively in a variety of professional contexts.</p>
2. Master principles of network applications (Web and HTTP, FTP, Email, and DNS).	
3. Master transport layer services (connection-oriented (TCP) and connectionless (UDP) services).	
4. Experiment with TCP congestion control.	
5. Know the innerworkings of the IP protocol (Forwarding and addressing in the Internet) and sample routing algorithms.	<p>(SO1) Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.</p> <p>(SO3) Communicate effectively in a variety of professional contexts.</p>
6. Outline the design of Ethernet and multiple access protocols.	<p>(SO3) Communicate effectively in a variety of professional contexts.</p>

<p>7. Design and implement simple network applications.</p>	<p>(SO3) Communicate effectively in a variety of professional contexts. (SO6) Apply computer science theory and software development fundamentals to produce computing-based solutions.</p>
<p>Course Outline:</p> <p>Week 1. Introduction</p> <p>Week 2. Network Edge and Network Core</p> <p>Week 3. Delay, Loss and Throughput. Protocol Layers. Network Under Attack</p> <p>Week 4. Principles of Network Applications. HTTP protocol</p> <p>Week 5. SMTP and DNS</p> <p>Week 6. Trans Layer Services. UDP</p> <p>Week 7. 7th Week Exam</p> <p>Week 8. Principles of Reliable Data Transfer</p> <p>Week 9. TCP</p>	<p>Week 10. Internet Protocol</p> <p>Week 11. Forwarding and SDN</p> <p>Week 12. 12th Week Exam</p> <p>Week 13. Routing Algorithms</p> <p>Week 14. Link layer</p> <p>Week 15. Revision</p> <p>Week 16. Final Exam</p>
<p>Grade Distribution:</p> <p>7th Week Assessment (30%): Exam (20%) + Section Quiz 1 (10%)</p> <p>12th Week Assessment (20%): Exam (20%)</p> <p>Year Work (10%): Year Work (10%)</p> <p>Final Exam (40%)</p>	

Policies:

Attendance:

AASTMT Education and Study Regulations (available at aast.edu)

Academic Honesty:

AASTMT Education and Study Regulations (available at aast.edu)

Late Submission:

Late submissions are graded out of 75% (1 week late), 50% (2 weeks late), 25% (3 weeks late), 0% (more than 3 weeks late)