



Course Specification

(Bachelor)

Course Title: **Computer Networks**

Course Code: **APCS3213**

Program: **Programming and Computer Science**

Department: *Enter Department Name .*

College: **Applied College**

Institution: **Umm Al-Qura University**

Version: **1**

Last Revision Date: **Jan -2025**



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A. General information about the course:

1. Course Identification

1. Credit hours: (3)

2. Course type

A. ☐ University ☐ College ☒ Department ☐ Track ☐ Others
B. ☒ Required ☐ Elective

3. Level/year at which this course is offered: (3rd level –2nd year)

4. Course General Description:

In this course, student will have overview of computer networking and the Internet. The goal here is to paint a broad picture and set the context for the rest of network terminologies. Students will examine the basic hardware and software components that make up a network basic hardware and software components that make up a network. The course will cover the network's edge and look at the end systems and network applications running in the network. We'll then explore the core of a computer network, examining the links and the switches that transport data, as well as the access networks and physical media that connect end systems to the network core. The course then covers the OSI layering system. It introduces students to the most common network application at the application layer such as HTTP and FTP. It then covers the transport service with focus on TCP and UDP

5. Pre-requirements for this course (if any):

The main objective of this course is to introduce students to the fundamentals of computer networks, how the Internet works, what are the main network applications and what is the OSI layering model.

6. Co-requisites for this course (if any):

7. Course Main Objective(s):

2. Teaching mode (mark all that apply)





No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100 %
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> Traditional classroom E-learning 		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	2*15
2.	Laboratory/Studio	2*15
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		60

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Describe key elements of the OSI 7-Layer model and TCP/IP model for networking operations and the associated functionalities	k1	<ul style="list-style-type: none"> –Lectures –Lab activity –Participation 	<ul style="list-style-type: none"> –Written Exams –Pop Quizzes –Assignments
1.2	Explain different types of protocols	k4	<ul style="list-style-type: none"> –Lectures –Lab activity –Participation 	<ul style="list-style-type: none"> –Written Exams –Pop Quizzes –Assignments





Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
...				
2.0	Skills			
2.1	Use software tools to design and analyze a network	S5	–Lectures –Lab activity –Participation	–Written Exams – Lab Exam – Pop Quizzes Assignments
2.2	An ability to design and conduct experiments in Computer Networks.	S5	–LecturesLab activity –Participation	–Written Exams – Lab Exam – Pop Quizzes Assignments
...				
3.0	Values, autonomy, and responsibility			
3.1	To be independent and complete required tasks individually	V1	–Research activities –Cooperative learning E-learning	–Analytical reports –Observations
3.2				
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Principal of Communication systems	2
2.	Introduction to Computer Networks	2
3.	Network Classification –Computing Power Distribution	2
4.	Networks Classification – Geographical Distribution	2
5.	Networks Classification - Topology & Communication Media	2
6.	Connectivity devices	2
7.	Network Standards	2
8.	IP Addressing and Subnetting	2
9.	OSI Modes & Internet Protocols Physical Layer – Data Link Layer – Network Layer	2
10.	OSI Models & Internet Protocols Transport Layer – Session Layer- Presentation Layer – Application Layer	2





11.	TCP/IP Model	2
12.	Wireless and Mobile Networks	2
13.	Network Security I	2
14.	Network Security II	2
15.	Performance and Quality of Service (QoS)	2

Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Labs	Throughout Semester	30%
2.	Quizzes	Throughout Semester	10%
3.	Midterm Exam	Week 8	20%
4.	Final exam	Week 16	40%
...			

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Computer Networking: A Top-Down Approach (8th Edition) by James Kurose and Keith Ross,
Supportive References	- Networking All-in-One for Dummies (8th Edition) by Doug Lowe Internetworking with TCP/IP Volume One, Douglas E. Comer 6th Edition
Electronic Materials	https://www.netacad.com/
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	
Technology equipment (projector, smart board, software)	





Items	Resources
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching		
Effectiveness of Students assessment		
Quality of learning resources		
The extent to which CLOs have been achieved		
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Umm Al-Qura University Council
REFERENCE NO.	851141114462/190365
DATE	1446/11/22

