



Course Specification

(Bachelor)

Course Title: **Computer Networks**

Course Code: **CENX 441**

Program: **B.S. in Computer Engineering**

Department: **Department of Computer Engineering**

College: **College of Computer and Information Sciences**

Institution: **King Saud University**

Version: *Course Specification Version Number*

Last Revision Date: *Pick Revision Date.*

Table of Contents

A. General information about the course:	3
B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods	4
C. Course Content	5
D. Students Assessment Activities	5
E. Learning Resources and Facilities	5
F. Assessment of Course Quality	6
G. Specification Approval	6





A. General information about the course:

1. Course Identification

1. Credit hours: (3 hours)

2. Course type

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

3. Level/year at which this course is offered: (Level 8)

4. Course general Description:

Introduction to computer networks; Network architecture with respect to OSI and TCP/IP reference models; Ethernet, 802.11 technologies, Bluetooth, and cellular systems; Frame Switching and VLANs; Bridges and spanning trees; Basic network protocols: IPv4, ARP, DHCP, ICMP. Interior routing protocols. Transport layer protocols: UDP, TCP, and RTP.

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

CENX 341, Data Communication

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

7. Course Main Objective(s):

This course introduces students to computer networks. It covers the concepts and algorithms used in medium access control of the link layer. In addition, it provides various concepts, technologies, and algorithms used in network and transport layers.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	6 hours per week	100%
2	E-learning		
3	Hybrid - Traditional classroom - E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)





No	Activity	Contact Hours
1.	Lectures	45
2.	Laboratory/Studio	30
3.	Field	
4.	Tutorial	15
5.	Others (specify)	
Total		80

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Identify the essential network terminologies, devices, architecture and performance metrics.	1	Lectures and Tutorials	Exams and Homework
1.2	Describe the Ethernet LAN protocol and the major wireless systems standards.	4	Lectures and Tutorials	Exams and Homework
2.0	Skills			
2.1	Compare between virtual circuits and datagram networks.	7	Lectures and Tutorials	Exams and Homework
2.2	Apply and evaluate IP and addressing structure.	2	Lectures and Tutorials and Lab	Exams and Homework and Lap Report
2.3	Apply and analyze the transport layer protocols TCP, UDP.	2	Lectures and Tutorials	Exams and Homework
3.0	Values, autonomy, and responsibility			
3.1	Demonstrate VLAN and spanning trees.	6	Lectures and Tutorials and Lab	Exams and Homework and Lap Report
3.2	Apply and conduct routing algorithms and packet forwarding protocols.	5 and 6	Lectures and Tutorials and Lab	Exams and Homework and Lap Report



C. Course Content

No	List of Topics	Contact Hours
1.	Demonstrate VLAN and spanning trees.	6
2.	Apply and conduct routing algorithms and packet forwarding protocols.	6,5
3.	Demonstrate VLAN and spanning trees.	6
4.	Apply and conduct routing algorithms and packet forwarding protocols.	6,5
5.	Demonstrate VLAN and spanning trees.	6
6.	Apply and conduct routing algorithms and packet forwarding protocols.	6,5
7.	Demonstrate VLAN and spanning trees.	6
8.	Apply and conduct routing algorithms and packet forwarding protocols.	6,5
9.	Demonstrate VLAN and spanning trees.	6
Total		60

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quiz per chapter	Every 2-3 weeks	5%
2.	Lab work	Weekly	20%
3.	Midterm Examination (1)	6	15%
4.	Midterm Examination (2)	12	15%
	Homework Assignments and/or Project	Every 3 weeks	5%
	Final Exam (Laboratory + Theory)	End	40% (5+35)%

*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 Networks: A Systems Approach fifth edition, Bruce S. Davie and Larry L. Peterson, (Morgan Kaufmann).
Supportive References	Tanenbaum, Computer Networks, 5th Edition, Prentice Hall James F. Kurose, and Keith W Ross, Computer Networking: A Top-Down Approach, 6th Edition CCNA Portable Command Guide Second Edition, Author Scott Empson, Cisco Press, 28 July 2007; ISBN-10: 1-58720-193-6 / ISBN-13: 1-58720-193-6
Electronic Materials	https://lms.ksu.edu.sa http://www.sciencedirect.com/science/book/9780123850591



	http://booksite.elsevier.com/9780123850591/ https://learningnetwork.cisco.com/community/certifications/ccna
Other Learning Materials	Wireshark Packet tracer. GNS3.

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture room with number of seats enough to accommodate enrolled students.
Technology equipment (projector, smart board, software)	Computer Network Lab room with number of stations enough to accommodate enrolled students.
Other equipment (depending on the nature of the specialty)	The following are the minimum required devices per station: •3 switches •3 routers •1 access point •1 network tower rack •3 PCs

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Department Council	Course reports are evaluated by the Department Council.
Effectiveness of Students assessment	Faculty-Peer Review	Final examination is moderated.
Quality of learning resources	Students	Indirect – Edu-gate survey.
The extent to which CLOs have been achieved	Students	Attainment level of every CLO is measured directly.
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	

