هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد
NCAAA

2024
TP-153

Course Specification
(Bachelor)

Course Title:	Data Communication and Computer Networks
Course Code:	461CCS-3
Program:	Bachelor of Science in Computer Science
Department:	Department of Computer Science
College:	Computer Science and Information Systems
Institution:	Najran University
Version:	2.0
Last Revision Date:	August 2022

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3)					
3 (2, 2, 1) [Theory, Lab, Tutorial]					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (Level 8/Year 4)					
4. Course General Description:					
This course provides a general overview of Computer Networks and data communication concepts. In addition, it illustrates the network communication models, communication signals, and network classification. Moreover, it provides the students with the skills of Network analysis and design by covering the analysis and design in the following topics performance Management, Transmission Media, Network Devices, Network Addressing and Routing, Network Protocols, network scale, and network security.					
5. Pre-requirements for this course (if any)**:**					
None					
6. Co-requisites for this course (if any)**:**					
None					
7. Course Main Objective(s):					

After successful completion of this course, students should be able to:

- Define the key terminologies and concepts of data communications and networking
- Describe concepts of physical and data link layer protocols.
- Analyze performance issues in networks
- Explain the services and features of the various layers of data networks
- Design different types of networks based on IP classes and different network topologies
- Explain basic protocols of network, transport, and application layer, and how they can be used to assist in network design and implementation
- Setup different types of networks using proper network simulator

- Describe modern topics in networking.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	75	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**	30
2.	**Laboratory/Studio**	30
3.	**Field**	
4.	**Tutorial**	15
5.	**Others (specify)**	
Total		75

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	Explain the key terminologies and concepts of data communications and networking	K1	TS-1: Relate Course Learning Outcomes (CLOs) to the topics TS-2: Lectures: using PPT presentation and other software to address verbally in front of students the concepts associated with examples	Assignment, Midterm Exam And Quiz
1.2	Describe modern topics in networks.	K1		

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
			with taking help of writing on the board as needed. TS-3: Communication: Given to students the main requirements of the project's reports and presentation TS-4: Encourage students to read different journals, seminars or websites in their leisure time to have a better understanding of modern topics in the network. TS-5: Recall the topics of the last lecture and the critical issues based on different topics, which certainly helps students to recall memory frequently and store that topic in their memory for the long term	
1.3				
2.0	**Skills**			
2.1	Illustrate the services and features of the various network layers.	S2, S3	TS-1: Relate Course Learning Outcomes (CLOs) to the topics TS-2: Lectures: using PPT presentation and other software to address verbally in front of students the concepts associated with examples with taking help of writing on the board as needed. TS-3: LAB Work: Every student in the lab is using a separate PC. Practically showing them how to create a small network, configure IP addresses,	Assignment, Midterm Exam, Lab Assessment
2.2	Classify the network protocols, devices, Mediums and types that can be used in a real world network	S1		
2.3	Analyze the Network Performance Management issues	S2		
2.4	Illustrate the services and features of the various network layers.	S2, S3		
2.5	Setup different types of networks using a proper network simulator	S4		

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
			and implement some network protocols. TS-4: Tutorial: In the tutorials, we ask students to solve some problems in front of each other and give them some comments and the right answers. TS-5: Communication: Given to students the main requirements of the project's reports and presentation TS-6: Recall the topics of the last lecture and the critical issues based on different topics, which certainly helps students to recall memory frequently and store that topic in their memory for the long term.	
3.0	**Values, autonomy, and responsibility**			
3.1				
3.2				

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to computer networks	5
2.	OSI model	5
3.	TCP/IP protocol suit	5
4.	Network Performance Management	10
5.	Transmission Media	10
6.	Network Devices	10
7.	Network Addressing	10
8.	Network Layer and Routing	10

9.	Transport layer protocols & Application layer protocols	5
10.	Modern Topics	5
Total		**75**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Project, Presentation and Quiz	4, 6 and 11th	10%
2.	Midterm	7th week	20%
3.	Lab Activity	1-10 week	10%
4.	Lab Assessment 1	9th week	10%
5.	Final Lab Exam	11	10%
6.	Final Theory Exam	16 or 17	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	1. B.A. Forouzan, Data Communications and Networking, fourth edition, McGraw – Hill
Supportive References	1. William Stalling, Data and computer communications, Seventh edition, Prentice Hall. 2. Tanenbanum A., Computer Networks, Seventh edition., Prentice Hall
Electronic Materials	N/A
Other Learning Materials	N/A

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	• Lecture Rooms with an appropriate number of seats, Projector with Screen and a white board or a smart board.

Items	Resources
	• All the computers in all the laboratories should be installed with the latest version of the required software.
Technology equipment (projector, smart board, software)	• One PC and one projector and data show in the lecture room • Number of PCs according to the strength of students in the lab room
Other equipment (depending on the nature of the specialty)	cisco packet tracer

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Collecting students' suggestions to facilitate more during the class.	Students	Verbal discussion
Student's questionnaire once during the semester about course learning outcomes.	Students	Indirect Survey
Achievement percentage of course learning outcomes, direct evaluation using CLO assessment sheet	Course Instructor	Direct evaluation using CLO achievement calculation
Teaching strategies	Quality unit	Indirect
Assessment methods	Quality unit	Indirect
Instructor performance	Quality unit	Indirect
Course content	Quality unit	Indirect

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Computer Science Departmental Council
REFERENCE NO.	14440203-0185-00002
DATE	1st Sep, 2022