هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد
NCAAA

2024
TP-153

Course Specification
(Bachelor)

Course Title:	Data Communication 2
Course Code:	442 CNET
Program:	BS in Computer and Network Engineering
Department:	Electrical and Electronics Engineering
College:	College of Engineering & Computer Science
Institution:	Jazan University
Version:	2
Last Revision Date:	23 September 2024

Table of Contents

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: (7)					
4. Course General Description:					
To develop an understanding of the various aspects of data communications, topics include: Local Area Networks: LANs, Standard Ethernet (10 Mbps),Fast Ethernet (100 Mbps) ,Gigabit Ethernet (1000 Mbps),WIFI, IEEE 802.11 Wide Area Networks: WANs, Major Components, LATAs, Signaling, Services Provided by Telephone Networks, Dial-Up Service, Packetizing, Routing, Error Control, Flow Control, Congestion Control, IPv4 Addressing, IPv6 Addressing, Network Layer Routing of Packets, Routing Algorithms, Distance-Vector Routing, Transport-Layer Services , Process-to-Process Communication, Addressing: Port Numbers, Encapsulation and Decapsulation.					
5. Pre-requirements for this course (if any)**:**					
Data Communication 1 (341 CNET)					
6. Co-requisites for this course (if any)**:**					
None					
7. Course Main Objective(s):					
1. Understand the basic concepts of LANs, WANs. **2.** Explain different types of Routing Algorithms. **3.** Differentiate different services provided by Data Link Layer. **4.** Identify LAN architectures with its standards. **5.** Describe different services provided by Transport Layer.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	E-learning	-	-
3	Hybrid	-	-

No	Mode of Instruction	Contact Hours	Percentage
	• Traditional classroom • E-learning		
4	Distance learning	-	-

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	26
2.	**Laboratory/Studio**	26
3.	**Field**	-
4.	**Tutorial**	-
5.	**Others (specify)**	8
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	**Explain** principle concepts of LANs and WANs	K1	Visual & Verbal [Lectures/Presentations]	Assignment-1 Midterm Exam Final Exam
1.2	**Describe** different services provided by data link layer.	K3	Visual & Verbal [Lectures/Presentations]	Assignment-1 Midterm Exam Final Exam
2.0	**Skills**			
2.1	**Solve** the concept of Routing Algorithms, with their implementation.	S1	Visual & Verbal [Lectures/Presentations].	Assignment-2 Midterm Exam Final Exam

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.2	**Apply** the services and applications of IPv4, IPv6 Addressing.	S3	Visual & Verbal [Lectures/Presentations]	Assignment-2 Midterm Exam Final Exam
2.3	**Analyze** the purpose of Routing protocols and their key routing algorithms used in routing packet from source to destination.	S5	Visual & Verbal [Lectures/Presentations]	Assignment-2 Final Exam
2.4	**Communicate** effectively with audience while presenting mini project and assignments	S4	Visual & Verbal [Lectures/Presentations]	Assignment -2 Mini Project
3.0	**Values, autonomy, and responsibility**			
3.1	**Show** the ability to work as a team member and take responsibilities for successful completion of mini projects and group assignments on recent trend.	V 1	Visual & Practical Lab Exercise/ Presentation	Lab Exam

C. Course Content

No	List of Topics	Contact Hours
1.	**Chapter 1: Local Area Networks: LANs** • ETHERNET • Standard Ethernet (10 Mbps) • Fast Ethernet (100 Mbps) • Gigabit Ethernet (1000 Mbps) • WIFI, IEEE 802.11 • Architecture • MAC Sublayer • Addressing Mechanism • Physical Layer	4T + 4P
2.	**Chapter 2: Wide Area Networks: WANs** • TELEPHONE NETWORKS • Major Components • LATAs • Signaling	4T + 4P

	• Services Provided by Telephone Networks • Dial-Up Service • Digital Subscriber Line (DSL) • CABLE NETWORKS • Traditional Cable Networks • Hybrid Fiber-Coaxial (HFC) Network • Cable TV for Data Transfer • CELLULAR TELEPHONY	
3.	**Chapter 3: Network Layer** • Packetizing • Routing • Error Control • Flow Control • Congestion Control • INTERNET PROTOCOL VERSION 4 • IPv4 Addressing • Mobile IP • IPv6 Addressing • The ICMPv6 Protocol	6T + 6P
4.	**Chapter 4: Network Layer Routing of Packets** • Introduction • Routing Algorithms • Distance-Vector Routing • Bellman-Ford Equation • Link-State Routing • Link-State Database (LSDB) • Path-Vector Routing • Spanning Trees • Unicast Routing Protocols • Distance Vector Multicast Routing Protocol	6T + 6P
5.	**Chapter 5: Transport-Layer Services** • Process-to-Process Communication • Addressing: Port Numbers • Encapsulation and Decapsulation • Combination of Flow and Error Control • Congestion Control • Connectionless and Connection-Oriented Protocols • TCP Congestion Control • TCP Timers	6T + 6P
6.	**Final Exam+ Lab Exam**	4T + 4P
Total		**60**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	ASSIGNMENT-1	6th week	10%
2.	MIDTERM	7-8th week	20%
3.	ASSIGNMENT-2	11th week	10%
.4	LAB EXAM	14th week	20%
5.	FINAL EXAM	15th week	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	Data Communications and Networking with TCP/IP Protocol Suite 6th Edition, McGraw-Hill Education; 6th edition (January 6, 2021) ISBN-13 : 978-0078022098
Supportive References	1. Data and Computer Communications, 10th edition William Stallings ,Pearson+ subscription, ISBN-13: 9780137561704 10th edition | Published by Pearson (July 14th 2021) 2. Computer Networks, 6th edition Andrew S. Tanenbaum David J.Wetherall Pearson+ subscription ISBN-13: 9780137523214 6th edition | Published by Pearson (July 14th 2021) - Copyright 2021
Electronic Materials	www.ebook.com www.share4.com www.google.com
Other Learning Materials	Cisco Packet Tracer

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	1. A Lecture room appropriate for 30 students with a personal computer, a data show and a smart board. 2. Auditorium of a capacity of not less than 100 seats for large lectures format classes.
Technology equipment (projector, smart board, software)	1. Data show and smart board in class rooms. 2. A Data Communication 2 Lab with Communication devices.
Other equipment (depending on the nature of the specialty)	Equipment and illustration tools relevant to the course material. Cisco Packet Tracer/ C/C++/ Network Devices/ Cables (Serial/ Parallel/ Cross and Straight).

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Course evaluation survey form

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of Students assessment	Students	Course evaluation survey form
Quality of learning resources		
The extent to which CLOs have been achieved	Track leaders / CRC	Review meetings and star rating with suggestions for further modification and improvements
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**DEPARTMENT COUNCIL**
REFERENCE NO.	**ENGCSEEE2411**
DATE	**10/10/24**