Course Specification
(Bachelor)

Course Title:	Computer Networks
Course Code:	165 CIS-3
Program:	Information Systems
Department:	Computer Department
College:	Applied College
Institution:	Najran University
Version:	2
Last Revision Date:	9 Sep. 2025

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (.....)					
3 H					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (.....)					
Second Year, Level 3					
4. Course General Description:					
This course introduces the principles, design, and implementation of computer networks. This course is based on layering architecture. Topics include: Overview of Computer Networks, communication models, TCP/IP Protocol suit, Network Performance Management, Transmission Media, Network Devices, Network Addressing, Network Protocols.					
5. Pre-requirements for this course (if any)**:**					
None					
6. Co-requisites for this course (if any)**:**					
None					
7. Course Main Objective(s):					
• Introduce the main concepts of Data communications and computer networks. • Introduce the network layers' services and protocols, devices, and Mediums. • Design and implement LAN and WAN network and appropriate IPv4 addressing schemes. • Use the appropriate network hardware and software to construct various networks					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	4 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**	30
2.	**Laboratory/Studio**	30
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	**Explain the key terminologies and concepts of data-communications and networking**	**K1**	Lecture Discussion	Exam Assignments Quizzes
1.2	**Classify the various network layers services and protocols, devices, Mediums and types that can be used in a real-world network**	**K2**		

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.0	**Skills**			
2.1	**Design different types of networks based on IP classes and network topologies**	**S1**	•Lecture •Discussion •Lab work •Brainstorming	•Exam •Assignments •Quizzes
2.2	**Setup different types of network and manage them using proper network simulator and software**	**S2**		
2.3	**Analyze and Implement different network protocols in TCP/IP**	**S3**		
3.0	**Values, autonomy, and responsibility**			
3.1	**Take responsibility for effective time management to ensure meeting the deadlines for course deliverables**	**V1**	**Milestone-based Structure**	**Directed Methods: LMS & Version Control Logs**
3.2				
…				

C. Course Content

No	List of Topics	Contact Hours
1.	• Background and overview of the course • Overview of Data communications Lab: Introduction to Cisco Packet Tracer and create simple topology	**4**
2.	• Networks • Type of Connection • Physical Topology Lab: Ethernet cable types and connecting Network devices	**4**
3.	• NETWORK TYPES • Protocols and standards • Lab: Connecting Networks with different IP	**4**

	Lab: Design network topologies	
4.	• Network models • Layered tasks • TCP/IP protocol suite • Addressing Lab: Network Devices	7
5.	• Physical layer concepts. Digital Signals and its representation blocks. Using Switch	4
6.	• Transmission media • Wired and wireless Lab: Connecting Networks with different IP blocks. Using Router	3
7.	MidTerm Exam	1
8.	Data link layer Concepts	3
9.	• Network layer concepts • Network layer services Lab: Prepare DHCP-server at a server	6
10.	• Ipv4 Addresses • DHCP and NAT Lab: Prepare DHCP-server at a server to support many networks over router	8
11.	IP Protocol	6
12.	ICMP Protocol	4
13.	Unicast Routing Protocols	4
14.	Review	2
Total		60

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm exam	8	20%
2.	Homework's	From 4 to 11	10%
3.	Practical exam	15	20%
4.	Final exam	16	50%

*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	Behrouz A. Forouzan, Data Communications and Networking with TCP/IP Protocol Suite, 6th Edition, McGraw-Hill, 2022, ISBN 978-1-26-436335-3
Supportive References	James Kurose, Keith Ross. Computer Networking: A Top-Down Approach. 8th Edition, Pearson Education Limited, 2021 ISBN 978-1292405469
Electronic Materials	• https://www.netacad.com/courses/packet-tracer https://free4arab.net/courses/ccna-200-301-lab-guide/
Other Learning Materials	Manuals of Network simulators and network managements software

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom with a suitable size for students
Technology equipment (projector, smart board, software)	Whiteboard/projector/Networks Simiulator/ Ethernet Cables/ crimping tools/
Other equipment (depending on the nature of the specialty)	None

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	**Student**	**Direct: Questioners**
Effectiveness of Students assessment	• **Teacher** • **Audit and review committees**	• **Direct: CW & HW** • **Exercises and short quizzes** • **Projects** • **Mid and final paper exams.**
Quality of learning resources	**Teachers and course description committees**	• **Indirect: Benchmarking** • **Self-evaluation** • **External evaluation**
The extent to which CLOs have been achieved	**Teacher**	**Direct: Measuring the learning outcomes**
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	