T-104
2022

Course Specification
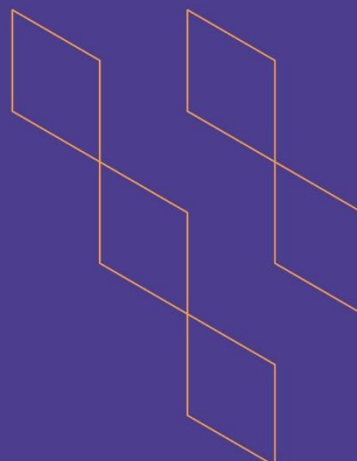
Course Title:	**Computer Networks**
Course Code:	**165 CIS-3**
Program:	**Programming and Database**
Department:	**Computer**
College:	**Applied College**
Institution:	**Najran University**
Version:	**version 4**
Last Revision Date:	7 Aug 2023

Table of Contents:

A. General information about the course:

Course Identification					
1. Credit hours:	3 (2+1)				
2. Course type					
a.	University ☐	College ☐	Department ☒	Track☐	Others☐
b.	Required ☒	Elective☐			
3. Level/year at which this course is offered:			**Level: 3rd**		

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- requirements 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

1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	4 hours per week	95%
2.	E-learning		5%
3.	Hybrid • Traditional classroom • E-learning		
4.	Distance learning		100%

2. 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 CLOs aligned with 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		
...				
2.0	Skills			
2.1	Design different types of networks based on IP classes and network topologies	S2	•Lecture •Discussion •Lab work •Brainstorming	•Exam •Assignments •Quizzes
2.2	Setup different types of network and manage them using proper network simulator and software	S1		
2.3	Analyze and Implement different network protocols in TCP/IP	S1		
3.0	Values, autonomy, and responsibility			
3.1	Demonstrate the ability to work in group laboratory activities, delivers presentations.	C1	• Discussion • Project	•Assignments •Report
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 • Lab: Design network topologies	4
4.	• Network models • Layered tasks • TCP/IP protocol suite • Addressing • Lab: Network Devices	6
5.	• Physical layer concepts. • Digital Signals and its representation blocks. Using Switch	3
6.	• Transmission media • Wired and wireless • Lab: Connecting Networks with different IP blocks. Using Router	4
	• Data link layer Concepts	4
7.	• Network layer concepts • Network layer services • Lab: Prepare DHCP-server at a server	6
8.	• Ipv4 Addresses • DHCP and NAT • Lab: Prepare DHCP-server at a server to support many networks over router	6
9.	• IP Protocol	4
10.	• ICMP Protocol	3
	• Unicast Routing Protocols	4
	• Transport layer Concepts	4
	• Application Layer Concepts	4
Total		60

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Assignment	4, 7, 11	10%
2.	Mid Monthly Exam	8	20%
3.	Practical exam	16	20%
4.	Final exam	17	50%
5.	Total		100%

*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, 5th Edition, McGraw-Hill, 2013, ISBN:9780-07-337622-6
Supportive References	William Stallings Data and Computer Communications, 10th Edition, Pearson, 2014, ISBN-10: 0-13-350648-7
Electronic Materials	http://www.nu.edu.sa/web/guest/979 • Najran University E.Library • Saudi Digital Library
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.)	Computer Lab with 25 seats + A Lecture room with 30 seats per section
Technology equipment (projector, smart board, software)	25 PCs, Data show, Cisco Packet Tracer Software, Network Simulators, Software to manage networks.
Other equipment (depending on the nature of the specialty)	Networks cabling tools, Switches and routers

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Head of the department and Departmental Council discussions	Directly
Effectiveness of students Assessment	Students	End term Questionnaire
Quality of learning resources	instructor	Direct (software) CLO assessment
The extent to which CLOs have been achieved		
Other		

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

G. Specification Approval Data

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	