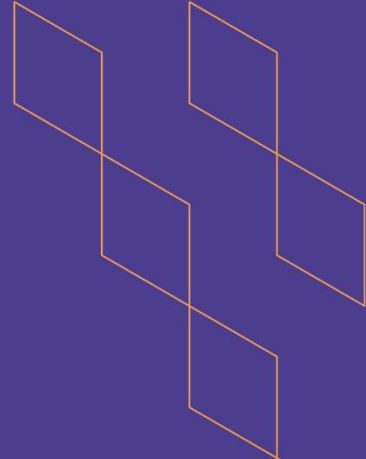T-104
2022

Course Specification

Course Title: **Computer Networks 1**

Course Code: **ITXXXX**

Program: **Information Technology**

Department: **Information Technology**

College: **Computer Science and Information Technology**

Institution: **Albaha University**

Version: *Course Specification Version Number*

Last Revision Date: *Pick Revision Date.*

Table of Contents:

A. General information about the course:

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:5th

4. Course general Description

<u>Lecture:</u>

Technologies related to data communication and networking may be the fastest growing in our culture today. People use the Internet more and more every day. They use the Internet for research, shopping, airline reservations, checking the latest news and weather, and so on. This course is given to provide students with fundamentals of computer networking, the OSI model, and the TCP/IP model. A discussion of the physical layer of the Internet model and the transmission media is given. Students will learn switching techniques which can be used in several layers. A discussion of the data-link layer and network layer of the Internet model will also be given.

<u>Lab:</u>

The lab is planned to give students practical experiments on computer networks. Students will be given an introduction to Packet Tracer network simulator. Students will also learn how to:
- Configure Initial Switch Settings
- Build an Ethernet
- Configure IPv4 Protocol.

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

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

7. Course Main Objective(s)

The main objective for this course is to teach students how to:
- **Describe conceptual models of networking. (TCP/IP, and OSI models)**
- **Describe the characteristics of the transmission media and transmission impairments.**
- **Explain the fundamentals of data and signals.**
- **Explain the operation and principles of multiplexing and switching techniques.**
- **Analyze the principles and operations of the Data-Link Layer protocols.**
- **Analyze the principles and operations of Network Layer and Internet protocols.**
- **Discuss concepts and techniques during class.**
- **Participate in groups collaboratively.**

1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	44	100%
2.	E-learning		
3.	Hybrid • Traditional classroom • E-learning		
4.	Distance learning		

2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	22
2.	Laboratory/Studio	22
3.	Field	
4.	Tutorial	
5.	Others (specify)	
	Total	44

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	Describe conceptual models of networking. (TCP/IP, and OSI models)	K1	Lectures Lab	Midterm Exam
1.2	Describe the characteristics of the transmission media and transmission impairments.	K1	Lectures Class discussions	Midterm Exam Final Exam
2.0	Skills			
2.1	Explain the fundamentals of data and signals.	S4	Class discussions Assignments	Homework
2.2	Explain the operation and principles of multiplexing and switching techniques.	S4	Lectures Assignments Lab	Midterm Exam Lab Exam Final Exam
2.3	Analyze the principles and operations of the Data-Link Layer protocols.	S5	Lectures Assignments Lab	Lab Exam Final Exam
2.4	Analyze the principles and operations of Network Layer and Internet protocols.	S5	Lectures Assignments Lab	Lab Exam Final Exam
2.5	Discuss concepts and techniques during class	S6	Case-based discussion	Homework
3.0	Values, autonomy, and responsibility			
3.1	Participate in groups collaboratively.	V1	Team-based learning	Homework

C. Course Content

No	List of Topics	Contact Hours
	Lectures	
1.	Introduction to Computer Networks	2

2.	Network Models	2
3.	Physical Layer: Bandwidth Utilization	1
4.	Physical Layer: Transmission Media	2
5.	Physical Layer: Switching	4
6.	Introduction To Data-Link Layer	2
7.	Data-Link Layer Protocols	2
8.	Introduction to Network Layer	3
9.	IPv4 Protocol	4
Total		22

Labs		
1.	Lab. 1: Introduction to Packet Tracer	4
2.	Lab. 2: Packet Tracer - Navigating the IOS	4
3.	Lab. 3: Configuring Initial Switch Settings	4
4.	Lab. 4: Implement Basic Connectivity	4
5.	Lab. 5: Exploring Internetworking Devices	4
6.	Lab. 6: Pinging and Tracing to Test the Path	2
Total		22

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Homework	Week 7	15%
2.	Midterm exam	Week 6	25%
3.	Lab Exam	Week 10	20%
4.	Final Exam	Week 13	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	Forouzan, Behrouz. "Data Communications and Networking", 5th edition, Mc-Graw Hill International Edition, 2013.
Supportive References	• Computer Networks, 5th Edition by Andrew Tanenbaum and David Wetherall, Prentice Hall, 2010. ISBN 978-0132126953. • William. Stallings, "Data and Computer Communications", 10th edition, Pearson Prentice Hall, 2013. • Douglas. Comer, "Computer Networks and Internets", sixth edition. Pearson International Edition, 2014.
Electronic Materials	• Access to the Saudi Digital Library (SDL). • Using the learning management system of the university – Rafid System (https://lms.bu.edu.sa/). • IEEE/ACM Transactions on Networking • https://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=90
Other Learning Materials	None

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	A classroom or lecture hall with whiteboard for 25 students.
Technology equipment (projector, smart board, software)	• A digital image projection system with connection to desktop computer or laptop computer. • High-speed Internet connection. • An instructor computer station.
Other equipment (depending on the nature of the specialty)	A laboratory with: 25 computers with Windows and Packet Tracer.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students Peer Reviewer Program Leader	Indirect: Survey Direct: Peer Review Direct: Class Visits
Effectiveness of students assessment	Exams Evaluation Committee Students	Direct: Exam Review Indirect: Survey
Quality of learning resources	Faculty Students	Indirect: Survey Indirect: Survey
The extent to which CLOs have been achieved	Faculty	Direct: Exams

Assessment Areas/Issues	Assessor	Assessment Methods
Other		

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

G. Specification Approval Data

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	