هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA T4 2020

Course Specifications

Course Title:	Computer Networks Lab
Course Code:	**IT423**
Program:	**Information Technology**
Department:	**Information Technology**
College:	**College of Computer and Information Sciences**
Institution:	**Majmaah University**

Table of Contents

A. Course Identification

1. Credit hours:
2. Course type **a.** University ☐ College ☐ ✓ Department ☐ ✓ Others ☐ **b.** Required ☐ Elective ☐
3. Level/year at which this course is offered:
4. Pre-requisites for this course (if any)**:** **IT 321**
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**		
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1	**Lecture**	
2	**Laboratory/Studio**	44
3	**Tutorial**	
4	**Others** (specify)	
	Total	44

B. Course Objectives and Learning Outcomes

1. Course Description

This course provides students with hands-on training regarding the design, configuration, troubleshooting, modelling and evaluation of computer networks. This course covers Peer-to-Peer and Server-based networks, Transmission media, MAC & IP addressing, Address Resolution Protocol (ARP), basic troubleshooting tools, IP routing Protocols such as RIP, IGRP, and OSPF, Transport protocols: TCP and UDP, Virtual LANs, Wireless networks, and Network security.
Students will also be introduced to network modelling and they will have the opportunity to build some simple networking models and evaluate their design approaches and expected network performance.

2. Course Main Objective

1. Understanding the Peer-to-Peer and Server-based networks

2. Understand the MAC & IP, LAN components and their interconnection addressing and evaluate different routing techniques,
3. Students able to construct access control lists for the routers and packet filtering firewalls.
4. Understanding the virtual network and ability to construct and configure virtual networks.
5. Understand the security standard, and configure the security standard into network.
6. Ability to Construct and configure wireless networks.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1		
1.2		
1.3		
1...		
2	**Skills :**	
2.1	Understanding the Peer-to-Peer and Server-based networks	S2
2.2	Understand the MAC & IP, LAN components and their interconnection addressing and evaluate different routing techniques,	S2
2.3	Students are able to construct access control lists for the routers and packet filtering firewalls.	S2
2.4	Understanding the virtual network and the ability to construct and configure virtual networks.	S4
2.5	Understand the security standard, and configure the security standard into the network.	S4
2.6	Ability to Construct and configure wireless networks.	S4
3	**Values:**	
3.1		
3.2		
3.3		
3...		

C. Course Content

No	List of Topics	Contact Hours
1	To study computer network devices, transmission media and types of networks.	4
2	Ethernet LAN, Token Ring, Switched LANs, Network Design	4
3	IP addresses, Address Resolution Protocol (ARP)	4
4	Dynamic Routing Protocols Distance Vector Routing Protocols	4
5	Link-State Dynamic Routing, RIP Routing	4
6	VLAN Implementations VLAN Security and Design VLAN Segmentation	4
7	Configure Static routing. Characteristics of OSPF	4

	Configuring Single/multi-Area OSPFv2 Configuring Single/multi-Area OSPFv3	
8	Wireless LAN Concepts, Wireless LAN Operation, Wireless LAN Security, Wireless LAN Configuration, Simulation of the different wireless routing protocols to check their performance	4
9	Simulate the different routing protocols with failure and recovery rate to check their performance. Transport Layer Protocols TCP and UPD Simulation	4
10	ACL Operation Standard IPv4 ACLs Extended IPv4 ACLs Troubleshoot ACLs	4
11	VPNs Site-to-Site GRE Tunnels Introducing IPsec Tunnels Remote Access	4
Total		44

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1			
1.2			
…			
2.0	**Skills**		
2.1	Understanding the Peer-to-Peer and Server-based networks	Class teaching	Class Test, Mid Exam, Final Exam
2.2	Understand the MAC & IP, LAN components and their interconnection addressing and evaluate different routing techniques,	Class teaching Lab Exercises	Class Test, Mid Exam, Final Exam
2.3	Students are able to construct access control lists for the routers and packet filtering firewalls.	Class teaching Lab Exercises	Class Test, Mid Exam, Final Exam
2.4	Understanding the virtual network and the ability to construct and configure virtual networks.	Class teaching Lab Exercises	Class Test, Mid Exam, Final Exam
2.5	Understand the security standard, and configure the security standard into the network.	Class teaching Lab Exercises	Class Test, Mid Exam, Final Exam
2.6	Ability to Construct and configure wireless networks.	Class teaching Lab Exercises	Class Test, Mid Exam, Final Exam
3.0	**Values**		
3.1			
3.2			
…			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Quiz	2,4,8	15
2	Midterm	6	20
3	Assignment	11	15
4	Lab	11	10
5	Final	12	40
6			
7			
8			

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for the availability of faculty and teaching staff for individual student consultations and academic advice :

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	CCNA Routing Switching Essential Cisco Press Larry L. Peterson & Bruce S. Davie, *Computer Networks - A Systems Approach*, 5th Edition, the Morgan Kaufmann Series in Networking.
Essential References Materials	
Electronic Materials	https://www.netacad.com/ http://www.sdl.edu.sa http://lms.mu.edu.sa
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Class Room. Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	PC or Laptop with Windows/Linux, Smart Board, Projector
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Router and switches

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Final Exam Answer Scripts	Faculty Member	Review
Verification Peer faculty members Review	Student	Feedback

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Information Technology
Reference No.	
Date	