The University of Jordan
College of Engineering & Technology
Department of Computer Engineering
Summer Term – A.Y. 2022-2023

Course:	Computer Networks Lab – 0907528 (1 Cr. – Core Course)
Catalog Data:	The Computer Networks Lab consists of a Set of Experiments to Give the Student the Practical Experience on Building Basic Local Area Networks (LANs). Introduction to Personal Computers Hardware, Installing Network Interface Cards, Networks Cabling, Local Area Networks and Basic Topologies, Understanding Routers and Routing Principles, Configuring Routers and Routing Protocols, Securing Local Area Networks Using Access Lists, Understanding Switches and Switching Principles, Configuring Switches, Building Virtual Local Area Networks, Trunking Protocols, IP Networks Address Translation and Dynamic Host Control Protocol.
Prerequisites by Course:	CPE422 Computer Networks
Prerequisites by Topic:	The student is expected to have a solid background in the principles of computer networks including switching, and routing. Also, knowledge of IP addressing in its different forms such as static, dynamic, and CIDR.
Textbook:	Lab theory sheets provided by instructors.
References:	• Computer Networking, A Top-Down Approach, 4th Ed. James Kurose and Keith Ross, Addison Wesley 2008. • Cisco website (www.cisco.com) for technical data sheets of devices.
Course Website:	**Documents will be posted over Microsoft Teams**
Schedule Duration:	6 Weeks, 10 labs, 3 hour each (including exams).
Minimum Student Material:	Text book, class handouts, some instructor notes, calculator and access to a personal computer and internet.
Minimum College Facilities:	Lab with whiteboard and projection display facilities, library, and computational facilities. Networking switches, routers, connecting cables, simulation software, high efficiency desktop computers, and network testing equipment.
Course Objectives:	1. To allow the students to expereince practically the basics of computer networking. 2. Introduce the main equipment used in real world networking environment. 3. Teach the students the basics of troubleshooting computer networks.
Course Outcomes and Relation to ABET Program Outcomes:	Upon successful completion of this course, a student should be able to: 1. Design and build a small to medium sized computer network including configuring IP addresses and switching or routing protocols. [b] 2. Use network testing devices to locate problems with network cables. [k] 3. Use troubleshooting techniques to locate network faults and fix them. [k] 4. Use network simulation tools to design a small to medium network and simulate its proper operation. [b] 5. Ability to configure and initialize network switches and routers for proper operation.

[k]

Course Topics:

1. Lab Preparation
2. Syllabus Distribution & Lab Introduction
3. Network Cabling and Devices and Packet Tracer
4. IP Addressing – Version 4 – Fixed and Variable Length Subnet Masks (FLSM and VLSM) and Classless Inter-domain Routing (CIDR)
5. IP Addressing – Version 6 – Types of Addresses and Subnettting
6. Static Routing & Default Routes
7. Routing Information Protocol (RIP) and Enhanced Interior Gateway Routing Protocol (EIGRP)
8. Open Shortest Path First (OSPF) Link State Routing Protocol
9. Device Configuration (Basic and Routing)
10. Transport Layer Protocols (TCP and UDP) using Wireshark
11. Application Layer Protocols (FTP, TFTP, DHCPv4, DHCPv6, and DNS)

Computer Usage: Extensive use of desktop computers for network device configuration and simulation.

Attendance: Class attendance will be taken every lab and the university's polices will be enforced in this regard.

Assessments: In-Lab Performance, Practical exams, and a Theoretical Exam.

Grading policy:

In-Lab Performance	20%
Practical Exams (Two)	40%
Final Exam	40%

Instructors: Prof. Khalid A. Darabkh (Coordinator), Email: k.darabkeh@ju.edu.jo

Lab Helper Eng. Batool Awawdeh, Email: batool_awawdeh1993@yahoo.com

Class Time and Location: Section 1: Sunday and Wednesday, 12:15 pm – 3:15 pm

Program Outcomes (PO)

a	An ability to apply knowledge of mathematics, science, and engineering
b	An ability to design and conduct experiment as well as to analyze and interpret data.
c	An ability to design a system, component, or process to meet desired needs , within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
d	An ability to function on multidisciplinary teams
e	An ability to identify, formulate, and solve engineering problems
f	An understanding of professional and ethical responsibility.
g	An ability to communicate effectively
h	The broad education necessary to understand the impact of engineering solutions in a gloabal, economic, environmental, and societal context
i	A recognition of the need for, and an ability to engage in life-long learning
j	Knowledge of contemporary issues
k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Last Updated: JULY 9, 2023