Department of Software and Informatics

College of Engineering

Salahaddin University

Subject: Computer Network

Course Book (High Diploma – First Semester)

Lecturer's name: Bnar Faisal A. Daham

Academic Year: 2023/2024

Course Book

1. Course name	**Computer Network**
2. Lecturer in charge	**Bnar Faisal A. Daham**
3. Department/ College	**Software and Informatics Engineering Department**
4. Contact	bnar.abdulrahman@su.edu.krd
5. Time (in hours) per week	**Theory three hours**
6. Office hours	**Office hours are stated in the time table**
7. Course code	
8. Teacher's academic profile	**Received the B.Sc. and M.Sc. degrees in Software Engineering, Salahaddin University, Erbil, Iraq, in 2006 and 2009, respectively.**
9. Keywords	**Network Types, Topologies, OSI Model, Layers, TCP/IP Model, IP Addressing, STP, Static Routing, Dynamic Routing, RIP, OSPF.**

10. Course overview:

This course provides an introduction to computer network, understanding how a computer network and how the internet is connected, familiarity with the major components and types of networks, understand the role of network layers, and familiarity with the role of network standards then routing and switching concepts.

11. Course objective:

The students in this course will learn the concepts used to acquire the computer networking knowledge as well as the existing connectivity technologies and the required infrastructure which comprises the key steps involved in the communication process. Identify the key issues for the realization of the LAN/WAN/MAN network architectures and the hybridized existing form in the business environment and enterprise. Establish a solid knowledge of the layered approach that makes design, implementation and operation of extensive networks possible. To learn the 7-layer OSI network model (each layer and its responsibilities) and understand the TCP/IP suite of protocols and the networked applications supported by it.

12. Student's obligation

Students are obliged to attend within the time for lectures, quizzes, and exams.

13. Forms of teaching

As the subject is covered in the class and the lab, so in the theoretical part data show, pen and board are mostly used to make a frequent step by step communication with the audience, whereas in the lab the students deal with their computers and any explanation or clarification

will be done the projectors which is a dynamic tool for such needs.

14. Assessment scheme

50% Quizzes, Seminar, Report, and Midterm Exam.

50% Final exam

Note:
- There will be randomly quizzes. Each quiz will be given at the beginning of the class.

15. Student learning outcome:

At the end of this course, students will be able to:

1. Describe the purpose and function of the networking devices.
2. Identify the importance of network equipment.
3. Identify the importance of the OSI 7-layer reference model & TCP/IP protocol model.
4. Describe routing and switching functions.
5. Identify static and dynamic routing.

16. Course Reading List and References:

- Any new reference related to computer network and Cisco Networking Academy Program, CCNA, 1,2, 3, and 4 could be useful.

17. Topics

- Introduction to Networking
- Network Types (LAN, WAN, MAN, SAN, PAN, etc.)
- Network Classifications
- Topologies (Bus, Star, Ring, etc.)
- Network Components
- Networking Media Types (UTP, Fiber Optic, etc.)
- Network Layers: Layers with TCP/IP protocol model and OSI reference model
- Network Protocols at each layer
- IPV4 & IPV6
- Types of IPv4 Address: Classful Addressing & Classless Addressing
- Public & Private IP addresses
- Subnetting

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(2 hrs. per week)

- Types of transmission in IPV4, IPV6, MAC - ARP Protocol - Networking devices types and differences between Repeater, switch, hub, bridge, and router - Collision Domain & Broadcast Domain - Spanning Tree Protocol (STP) - Routing Concepts, Static & Dynamic Routing - Types of Routing Protocols, Distance Vector and Link-State Routing Protocol Operations - Routing Information Protocol (RIP) - Open Shortest Path First (OSPF) - Network Security	
18. Extra notes	