Kingdom of Saudi Arabia
Ministry of Education
Northern Border University
Faculty of Computing and Information Technology
Department of Computer Sciences

المملكة العربية السعودية
وزارة التعليم
جامعة الحدود الشمالية
كلية الحاسبات و تقنية المعلومات
قسم علوم الحاسبات

# COURSE SYLLABUS

# CPCS371 - COMPUTER NETWORKS 1

| Course Information | | | |
|---|---|---|---|
| **Type** | Required | **Prerequisite(s)** | CPCS214 |
| **Credit Hours** | 3 | **Contact Hours** | 4 |

## Course Description

The objective of this course is to provide an introduction to computer networks and the ISO- layers reference model, which includes necessary protocols. This course also includes a detailed discussion of protocols in selected layers, such as data link layer, transport layer, network layer, application layer.

## Course Learning Outcomes (CLOs)

By the completion of the course the students should be able to:

1. Identify principle components of data networks and internet, and list layers for ISO reference model and Internet model.
2. List and elaborate steps of commonly used application layer protocols.
3. Differentiate between connectionless and connection oriented transport protocols.
4. List and elaborate the services provided by Network Layer.
5. List and elaborate the services provided by Link Layer.
6. Use network simulator tools to create some topology, configure devices and analyze network traffic using simulation mode.
7. Identify the course of action, given a scenario, which is in-line with their professional, ethical, legal and social responsibilities.
8. Classify a stated impact of computing related to computer networks as a local or global impact on individuals, organizations and society.

| Textbook(s) | | | |
|---|---|---|---|
| **Title** | Computer Networks: Principles, Technologies and Protocols for Network Design | | |
| **Author(s)** | Natalia Olifer , Victor Olifer | Publisher | Wiley |
| **Edition** | 1st | Year | 2006 |

| References | |
|---|---|
| **Book** | **Website** |
| 1. F. Kurose and Keith W. Ross , Computer Networking: A Top-Down Approach", 6th edition<br>2. Computers Networks, Andrew Tanenbaum, Fourth Edition.<br>3. W. Stallings, "Data and Computer Communications", 7th Ed., Prentice Hall, 2003. | |

| Evaluation | |
|---|---|
| **Assessment Tools** | **Marks** |
| **Class participation** | **5%** |
| **Assignments & Discussions** | **10%** |
| **Quizzes** | **5%** |
| **Labs** | **20%** |
| **Mid Term Exam** | **20%** |
| **Final Exam** | **40%** |

| Tentative Topics Covered | | |
|---|---|---|
| **Week No** | **Topic** | **Lab Titles** |
| **1** | Computer Networks and the Internet | |
| **2** | Network Core | Study the different cables used in the networking-Part 1 |
| **3** | Protocols, Layers and Service Models | Study the different cables used in the networking- Part 2 |
| **4** | Application Layer | Networking Devices:<br>Practice on Each device to understand how the devices Works. |
| **5** | Application Layer | Networking Devices:<br>Practice on Each device to understand how the devices Works. |
| **6** | Transport Layer | Network IP Addressing Scheme and Creation of LAN |
| **7** | Transport Layer | Study of Basic Networking commands and<br>Network Configuration Commands |
| **8** | Transport Layer | Learn to Use Packet Tracer Software |
| **9** | The Network Layer | Configure a Network topology using packet tracer<br>Configure a Network using Different Protocols |
| **10** | The Network Layer | How to setup the IP Address Manual and Automatic and how to configure DHCP |
| **11** | Link Layer | Configure a Local Area Network (Practical Work) |
| **12** | Link Layer | To understand Wide Area Concepts (Practical Work) |
| **13** | Wireless and Mobile Networks | File Sharing on Wired and Wireless Networks |
| **14** | Wireless and Mobile Networks | Building an advanced Switched Network and<br>Controlling an unauthorized access. |
| **15** | Wireless and Mobile Networks | Lab Evaluation |