

<b>Course Title and Code</b>	<b>COE351 - Computer Networks</b>
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I. **Course Identification and General Information:**

<b>Course Title</b>	Computer Networks	<b>Course Code</b>	COE351	<b>Pre-requisite</b>	CS222
<b>Department</b>	Computer Engineering	<b>Course Level</b>	8	<b>Credit Hours</b>	3 (3+0)

II. **Course Description/Topics:** The following course topics will be covered.

- Introduction: What is the Internet, What is a protocol?, Network Edge, Network Core, Network Access, Physical Media, Delay and Loss in Packet-Switched Networks, Protocol Layers and their Service Models, Internet Backbones, NAPs and ISPs, Brief History of Computer Networking and the Internet.
- Application Layer: Principles of Application Layer Protocols, HTTP, FTP, and Electronic Mail in the Internet, DNS and P2P File Sharing.
- Transport Layer: Services and Principles, Multiplexing and De-multiplexing Applications, UDP, Principles of Reliable of Data Transfer: TCP case study, Principles of Congestion Control.
- Network Layer: Service Models, What is Inside a Router? IP: the Internet Protocol, Routing Algorithms, Hierarchical Routing, Routing in the Internet.
- Link Layer & LANs: Link Layer: Services, Multiple Access Protocols and LANs, LAN Addresses and ARP, Ethernet, Hubs, Bridges and Switches, PPP.

III. **Course Outcomes:** Summary of the main learning outcomes for students enrolled in the course.

- Understand the technical literature on computer networks.
- Demonstrate an insight into the design, organization, operation of state of the art, widely used networks and protocol suites.
- Learn various network protocols and algorithms
- Acquire the required skill to design simple computer networks
- Identify different layers of network reference model and the functions of each layer.
- Apply Internet Protocol Addressing and subnetting in designing networks.
- Describe background and history of networking and the Internet
- Explain how a network can detect and correct transmission errors
- Familiar with network application architectures
- Classify the different network technologies
- To be familiar with data transferring techniques using TCP
- To understand the Principles of Congestion Control
- Introducing routers and their applications in network layer
- Understanding about Addressing, Ethernet and PPP

IV. **Required Text:**

- Computer Networking: A Top-Down Approach Featuring the Internet. By James F. Kurose, Keith W. Ross. 6th edition, Addison-Wesley, 2012.

V. **References:**

- Data and Computer Communications, 9/E Author: William Stallings, Andrew S.