CSCA 421: COMPUTER NETWORKS

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Pre-requisite:

- Basic Knowledge in Computers

Objectives:

- To understand the fundamentals of Computer Networks
- To get familiarized with Various Layers of Computer Networks
- To understand the working principles of Various Protocols
- To get familiarized with Network Security

Outcomes:

- Ability to understand the various hardware and software components of computer networks.
- Ability to understand the layered network architecture.
- Ability to configure networks and debug issues in networks.

Module-I: Introduction to Networks (9 Hrs)

Network Topology - Network Architecture - Reference Models - Example Networks - APRANET, NSFNET, Internet - Physical Layer - Transmission media.

Module-II: The Data Link Layer (9 Hrs)

Data Link Layer design issues - Error Detection and Correction Methods - Elementary Data Link Protocols - Sliding Window Protocols Protocol - Verification Methods - Channel Allocation Multiple Access protocols - IEEE 802 Standards.

Module- III: The Network Layer (9 Hrs)

Network Layer design issues - Routing algorithms - Congestion Control algorithms - Internetworking Network Layer in Internet.

Module- IV: The Transport Protocols (9 Hrs)

Transport Service - Transport Protocols - Internet Transport Protocols - UDP - TCP - Performance issues.

Module- V: The Application Layer (9 Hrs)

Application Layer design issues - Domain Name System - Electronic Mail - World Wide Web - Other Applications - Network Security - Basic Cryptography – Symmetric and Asymmetric Cryptography.

Text Book:

1. Behrouz Forouzan, Data Communications and Networking, McGraw Hill, 4th Edition, 2017.

Reference Books:

1. Andrew S. Tanenbaum, Computer Networks, International Economy Edition, 5th edition, 2010.
2. William Stallings, Cryptography and Network Security: Principles and Standards, Prentice Hall India, 4th Edition, 2005.