Course Syllabus
TK34207 Data Communication

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Course Description

Design and evaluation of computer networks using current trends in hardware and software. Data communication basic concepts, layered network models is studied.

Digital and analogue signals, encoding and modulating, transmission media, error detection and correction, data link control, local area networks.

Aims of the Course

- Introduce fundamentals of data and computer communications
- Provide the student with a conceptual foundation for the study of data communications using the open system interconnection (OSI) layered architecture model

- Review current events in the field of communications so that the student has a sound working knowledge in today's competitive environment

Course Material

- Behrouz A. Forouzan, Data Communication and Networking, Mc Graw Hill, 4th edition
- Andrew S. Tannenbaum, Computer Networks, Prentice Hall, 4th edition
- William Stalling, Data and Computer Communication, 8th edition

Assessment

- Midterm Exam   : 30%
- Final Exam   : 40%
- Individual Assignment   : 10%
- Group Assignment   : 10%
- Class/Discussion Participation : 10%

COURSE OUTLINE

Year : 2014 / 2015

Introduction and Basic Concepts

- Data Communication
- Network Topologies
- Network Categories
- The Internet

The OSI Model and TCP/IP Protocols

The layers and their functions

Signals

- Digital Signals
- Analog Signals
- Compsite Signals

Transmission Media

- Twisted Pair
- Coaxial Cable
- Fiber Optic Cable
- Radio Waves
- Microwaves
- Infrared

Encoding and Modulating

- Digital Transmission
- Analog Transmission

Multiplexing

- Frequency Division Multiplexing
- Time Division Multiplexing
- Wavelength Division Multiplexing

Error Detection and Correction

- Types of Errors
- Redundancy
- Detection vs Correction
- Error Detection
- Error Correction
- Hamming Code
- Cyclic Redundancy Check
- Checksum

Multiple Access

- Random Access
- Controlled Access
- Chanelization

Local Area Networks

- LAN Protocol Architecture
- Bridges
- Layer 2 and Layer 3 Switches

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