

<b>CLASS: B. Sc (Information technology)</b>		<b>Semester - II</b>
<b>SUBJECT: - Data Communication and Networking Standards (USIT2P5)</b>		
<b>Periods per week</b>	<b>Lectures - 5</b>	<b>(3 Credits)</b>

Unit-I	<b>Introduction to data communications and networking</b> Introduction, Fundamental concepts, Data communications, Protocol, standards, standard organizations, signal propagation, analog and digital signals, bandwidth of signal and a medium, Fourier analysis and the concept of bandwidth of a signal, The data transmission rate and bandwidth.	<b>8 Lect</b>
Unit-II	<b>Network Models</b> Layered Tasks, The OSI reference model , Layers in the OSI reference model , TCP/IP protocol suite , Addressing IPv4	<b>8 Lect</b>
Unit-III	<b>Information Encoding , Errors Detection and Correction</b> Introduction, Representing different symbols, Minimizing errors , Multimedia , Multimedia and Data compression. Error classification, types of errors, redundancy, detection versus correction , hamming distance , cyclic redundancy check.	<b>8 Lect</b>
Unit-IV	<b>Media and Transmission modes</b> Data and signals, Periodic analog signals, Digital signals, Transmission impairment, Data rate limits, Performance, Digital to digital, Analog to digital conversion , Transmission modes, Digital to analog conversion , Analog to analog conversion, Guided media and Unguided media	<b>8 Lect</b>
Unit-V	<b>Network topologies ,Switching and routing algorithms</b> Mesh, star, tree, ring, bus, hybrid, switching basics , circuit switching, packet switching and Message switching , routing algorithms	<b>8 Lect</b>
Unit-VI	<b>IP version 6</b> Overview , Terminology, IPv6 addresses , Special addresses , IP v 6 header formats, IPv6 extension headers , IPv6 autoconfiguration , configuration via DHCP v6 , IPv6 transition	<b>8 Lect</b>

**Books:**

Behrouz A Forouzan, “Data communications and Networking”, Fourth Edition , Mc-Graw Hill

Achyut Godbole, “Data communications and Networks, TMH

Dr.Sidnie Feit, “TCP/IP” ,Second Edition, TMH

Reference:

W.Stallings,”Data and Computer Communications”,Eight Edition,Pearson Education

**Term Work for USIT205**

- i) Assignments: Should contain at least 2 assignments covering the Syllabus.
- ii) Class Tests: One. Also Known as Unit Test or In-Semester Examinations
- iii) Tutorial : Minimum Three tutorials covering the syllabus

**Practical (USIT2P5):**

<b>Case Studies</b>	<b>3 Lectures Per Week ( 1 Credit)</b>
<p>List of Cases</p> <ul style="list-style-type: none"><li>i) Case study on implementation of TCP/IP model in different OS</li><li>ii) Case study on errors in data transmission</li><li>iii) Case study on transmission media</li><li>iv) Case study on static IP addressing</li><li>v) Case study on dynamic IP addressing</li><li>vi) Case study on network devices: Routers, Switches, Bridges</li><li>vii) Case study on IPv6</li></ul>	