

Course : ICT 104: Advanced Computer Network

Course Code	104
Course Title	Advanced Computer Network
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	June 2019
Purpose of Course	To provide the student with knowledge of advanced network concepts and techniques
Course Objective	The course objective is to introduce internetworking, routing and network management concepts.
Pre-requisite	Basic concepts of computer network
Course Out come	Students will be able to understand the principles for implementing a multi layer network, management systems for the network and routing of information throughout the network.
Course Content	<p><b>Unit 1 : Introduction</b></p> <ul style="list-style-type: none"> <li>1.1 Internet Protocols and Standards <ul style="list-style-type: none"> <li>1.1.1 History</li> <li>1.1.2 Protocols &amp; Standards</li> <li>1.1.3 Standards &amp; Organizations</li> <li>1.1.4 Internet Standards</li> <li>1.1.5 Internet Administration</li> </ul> </li> <li>1.2 Overview of OSI Model and TCP/IP Model</li> </ul> <p><b>Unit 2 : Overview of physical and data link layer</b></p> <ul style="list-style-type: none"> <li>2.1 Overview of Network Topologies</li> <li>2.2 Overview of Data Link Layer Protocols</li> <li>2.3 Functions of Data Link Layer</li> </ul> <p><b>Unit 3 : IP Layer</b></p> <ul style="list-style-type: none"> <li>3.1 IP : Classful addressing <ul style="list-style-type: none"> <li>3.1.1 Two level addressing</li> <li>3.1.2 Subnetting</li> <li>3.1.3 Supernetting</li> </ul> </li> <li>3.2 IP : Classless addressing <ul style="list-style-type: none"> <li>3.2.1 Variable length blocks</li> <li>3.2.2 Subnetting</li> </ul> </li> <li>3.3 Special Addresses</li> <li>3.4 Delivery, Formatting and Routing</li> <li>3.5 ARP and RARP</li> <li>3.6 Internet Protocol (IP) <ul style="list-style-type: none"> <li>3.6.1 Datagram</li> <li>3.6.2 Fragmentation</li> <li>3.6.3 Options</li> <li>3.6.4 Checksum</li> <li>3.6.5 IP Package</li> </ul> </li> <li>3.7 ICMP</li> <li>3.8 IGMP</li> <li>3.9 Mobile IP <ul style="list-style-type: none"> <li>3.9.1 Addressing</li> <li>3.9.2 Agents</li> <li>3.9.3 Three Phases</li> <li>3.9.4 Inefficiency in Mobile IP</li> </ul> </li> <li>3.10 Introduction to Ipv6</li> </ul> <p><b>Unit 4 : Transport Layer</b></p> <ul style="list-style-type: none"> <li>4.1 Transport Layer Services</li> </ul>

	<p>4.2 Transport Layer Protocols</p> <p>4.2.1 UDP</p> <p>4.2.1.1 User Datagram</p> <p>4.2.1.2 Checksum</p> <p>4.2.1.3 UDP Operations</p> <p>4.2.1.4 Use of UDP</p> <p>4.2.2 TCP</p> <p>4.2.2.1 TCP Services</p> <p>4.2.2.2 TCP Features</p> <p>4.2.2.3 TCP Segment</p> <p>4.2.2.4 Format</p> <p>4.2.2.5 Encapsulation</p> <p>4.2.2.6 TCP Connection</p> <p>4.2.2.7 State Transition Diagram</p> <p>4.2.2.8 Flow Control</p> <p>4.2.2.9 Error Control</p> <p>4.2.2.10 Congestion Control</p> <p>4.2.2.11 TCP Timers</p> <p>4.2.2.12 TCP Options</p> <p><b>Unit 5 : Application Layer</b></p> <p>5.1 Introduction</p> <p>5.2 Client Server Paradigm</p> <p>5.3 DNS</p> <p>5.4 SNMP</p> <p>5.5 Electronic Mail (SMTP, POP3, MIME, IMAP)</p> <p>5.6 WWW &amp; HTTP</p> <p>5.7 File Transfer: FTP &amp; TFTP</p> <p>5.8 Remote Login: TELNET</p> <p>5.9 Host Configuration : BOOTP &amp; DHCP</p>
Reference Book	<ol style="list-style-type: none"> <li>1. Behrouz A. Forouzan, "TCP/IP Protocol Suit", TMH, 4<sup>th</sup> Edition</li> <li>2. TCP/IP Guide – A Comprehensive, Illustrated Internet Protocols Reference, Charles M. Kozierok</li> <li>3. TCP / IP Illustrated, Volume 1 - The Protocols, Kevin R. Fall, Vint Cerf, W. Richard Stevens ,2nd Edition ,</li> <li>4. Tananbaum A. S., "Computer Networks", 5th Edition., PHI.</li> </ol>
Teaching Methodology	Class Room Teaching, Discussion and Assignment
Evaluation Method	30% Internal assessment 70% External assessment