

Advanced Computer Networks

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| Course Code | 19CS4503B | Year | III | Semester | I |
| Course Category | Program Elective - I | Branch | CSE | Course Type | Theory |
| Credits | 3 | L-T-P | 3-0-0 | Prerequisites | Computer Networks |
| Continuous Internal Evaluation : | 30 | Semester End Evaluation: | 70 | Total Marks: | 100 |

| Course Outcomes | | |
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| Upon successful completion of the course, the student will be able to: | | |
| CO1 | Understand the Fundamentals of Computer Networks, performance Issues, and Technologies. | L2 |
| CO2 | Apply appropriate multicast routing protocol for a given context and make an effective report | L3 |
| CO3 | Apply suitable Congestion control/Congestion Avoidance mechanism for improving QoS. | L3 |
| CO4 | Apply resource Allocation for a given multimedia application/overlay networks. | L3 |

| Syllabus | | |
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| Unit No. | Contents | Mapped CO |
| I | Foundation: Applications, Requirements, Network Architecture, Implementing Network Software, Performance | CO1 |
| II | Wired and Wireless Networks: Ethernet and Multiple access networks – Physical properties, Access Protocol, Experience with Ethernet. Wireless - Wi-Fi (802.11), Bluetooth (802.15.1), Cell Phone Technologies. | CO1 |
| III | Inter-networking (Part - I): Implementation and Performance - Switch Basics, Ports, Fabrics, Router Implementation. The Global Internet – Routing Areas, Inter-domain Routing (BGP), IP Version 6 (IPv6). Multicast – Multicast Addresses, Multicast Routing (DVMRP, PIM, MSDP), Multiprotocol Label Switching - Destination-Based Forwarding, Explicit Routing, Virtual Private Networks | CO1, CO2 |

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| | and Tunnels. | |
| IV | Inter-networking (Part - II): End-to-End Protocols - Transport for Real-Time Applications (RTP) – Requirements, RTP Design, Control Protocol. Congestion Control and Resource Allocation - Issues in Resource Allocation, Queuing Disciplines, TCP Congestion Control, Congestion- Avoidance Mechanisms , Quality of Service. | CO1,CO3 |
| V | Applications: Multimedia Applications - Session Control and Call Control (SDP, SIP, H.323), Resource Allocation for Multimedia Applications, Overlay Networks - Routing Overlays, Peer-to-Peer Networks, Content Distribution Networks. | CO1,CO4 |
| Learning Resources | | |
| Text Books | | |
| 1. Computer Networks, A Systems Approach, Larry L .Peterson, Bruce S. Davie, Fifth edition, 2012, Morgan Kaufmann publishers. | | |
| References | | |
| 1. Computer Networks, Andrew S Tanenbaum and David J Wetherall, Fifth Edition, Pearson,2012, Education. | | |
| e-Resources & Other Digital Material | | |
| 1. https://cseweb.ucsd.edu/classes/wi19/cse124-a/courseoverview/compnetworks.pdf | | |
| 2. https://fdocuments.in/document/solution-manual-for-computer-networks-by-larry-l-peterson-bruce-s-davie.html | | |