B.M.S. COLLEGE OF ENGINEERING, BENGALURU-19

Autonomous Institute, Affiliated to VTU

DEPARTMENT OF CSE (IoT & Cyber Security including Blockchain)

Semester	**V**		
Course Title:	**Advanced Computer Network**		
Course Code:	**23IC5PEACN**	**Total Contact Hours: 40 hours**	
L-T-P:	**3-0-0**	**Total Credits:**	**3**

Unit No.	Topics	Hours
1	**Networking**: Datagrams, virtual circuit switching, source routing, bridges and LAN switches, Internetwork, service model, global addresses, datagram forwarding in IP, subnetting and classless addressing, Address Translation (ARP), Host Configuration (DHCP), Error Reporting (ICMP), virtual networks and Tunnels, Distance Vector (RIP), Link State (OSPF), routing areas, inter-domain routing (BGP), IPv6.	**8**
2	**End-to-End Protocols:** Simple Demultiplexer (UDP), Reliable Byte Stream(TCP), End-to-End Issues, Segment Format, Connecting Establishment and Termination, Sliding Window Revisited, Triggering Transmission-Silly Window Syndrome, Nagle's Algorithm, Adaptive Retransmission-Karn/Partridge Algorithm, Jacobson Karels Algorithm, Record Boundaries, TCP Extensions.	**8**
3	**Congestion Control and Resource Allocation:** Issues in resource allocation – network model, taxonomy, evaluation criteria; Queuing discipline – FIFO, Fair Queuing; TCP congestion control – additive increase/multiplicative decrease, slow start, fast retransmit and fast Recovery, Congestion avoidance mechanisms– DECbit, Random Early Detection (RED), Source-based congestion control.	**8**
4	**Network Management:** The Infrastructure for Network Management, The Internet-Standard Management Framework, Structure of Management Information: SMI, Management Information Base: MIB, SNMP Protocol Operations and Transport Mappings, Security and Administration, ASN.1, Conclusion.	**8**
5	**Cellular Networks and LTE Technology:** The Cellular Concept – System Design Fundamentals: Frequency Reuse, Channel Assignment Strategies, Handoff Strategies, Long-Term Evolution (LTE) Introduction: Architectural	**8**

	Review of UMTS and GSM, The Need for LTE, From UMTS to LTE, From LTE to LTE-Advanced, System Architecture Evolution: High-Level Architecture of LTE, User Equipment	

Prescribed Text Book					
Sl. No.	**Book Title**	**Authors**	**Edition**	**Publisher**	**Year**
1	Computer Networks: A System Approach	Larry Peterson and Bruce S Davis	5th Edition	Elsevier	2014
2	Data Communications and Networking	Behrouz A. Forouzan,	5th Edition	Tata McGraw Hill	2013
3	An Introduction to LTE	Christopher Cox	2nd Edition	Wiley	2014
Reference Text Book					
Sl. No.	**Book Title**	**Authors**	**Edition**	**Publisher**	**Year**
1.	High Speed Networks and Internet: Performance and Quality of Service	William Stallings	2nd	Pearson Education	2002
2.	Network Management Principles and Practice	Mani Subramanian	2nd	Pearson,	2010

E-Book						
Sl. No.	**Book Title**	**Authors**	**Edition**	**Publisher**	**Year**	**URL**
1.	An Introduction to Computer Networks	Peter L Dordal	Release 2.0.11	Loyola University	Jul 20, 2023	http://intronetworks.cs.luc.edu/current2/ComputerNetworks.pdf

B.M.S. COLLEGE OF ENGINEERING, BENGALURU-19

Autonomous Institute, Affiliated to VTU

DEPARTMENT OF CSE (IoT & Cyber Security including Blockchain)

MOOC Course				
Sl. No.	**Course name**	**Course Offered By**	**Year**	**URL**
1.	Advanced Computer Networks	NPTEL/ SWAYAM	2023	https://onlinecourses.nptel.ac.in/noc23_cs35/preview
2.	Introduction to TCP/IP	Coursera	2024	https://www.coursera.org/learn/tcpip

Course Outcomes

At the end of the course, the student will be able to

CO1	Apply fundamental concepts in network and IP addressing in real-world scenario
CO2	Apply computer network concepts to solve protocol layer design issues.
CO3	Analyze the different IP addressing mechanisms, routing, congestion control, and management layers

CO-PO mapping

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO11**	**PO 12**	**PS O1**	**PS O2**	**PS O3**
CO1	3												1		
CO2	3												1		
CO3		3													

Proposed Assessment Plan (for 50 marks of CIE)

Assessment Tool	**No. of Assessments**	**Marks**
Internals	2	40
QUIZ/AAT	2	10
Total		**50**

B.M.S. COLLEGE OF ENGINEERING, BENGALURU-19

Autonomous Institute, Affiliated to VTU

DEPARTMENT OF CSE (IoT & Cyber Security including Blockchain)

SEE Exam Question paper format

Unit-1	Mandatory	One Question to be asked for 20 Marks
Unit-2	Internal Choice	Two Question to be asked for 20 Marks each
Unit-3	Internal Choice	Two Question to be asked for 20 Marks each
Unit-4	Mandatory	One Question to be asked for 20 Marks
Unit-5	Mandatory	One Question to be asked for 20 Marks