Course Code	21ECC402P	Course Name	COMPUTER COMMUNICATION AND NETWORK SECURITY	Course Category	C	PROFESSIONAL CORE	L	T	P	C
							2	1	0	3

Pre-requisite Courses	Nil	Co- requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	ECE	Data Book / Codes / Standards		Nil	

Course Learning Rationale (CLR):	The purpose of learning this course is to:
CLR-1:	introduce the basic concepts in the field of computer networks
CLR-2:	provide the functional aspects of OSI model architecture
CLR-3:	acquire knowledge of the Network Layer protocols
CLR-4:	study the concepts in network security
CLR-5:	identify the effect of various malwares and counter measures

Course Outcomes (CO):	At the end of this course, learners will be able to:	Program Outcomes (PO)												Program Specific Outcomes		
		1	2	3	4	5	6	7	8	9	10	11	12			
		Engineering Knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern Tool Usage	The engineer and society	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO-1	PSO-2	PSO-3
CO-1:	provide the basic services and concepts related to internetworking	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
CO-2:	explain the basic OSI model architecture and its lower layer functions	2	3	-	-	-	-	-	-	-	-	-	-	-	-	3
CO-3:	give an insight of the various Network Layer concepts, mechanisms and protocols	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO-4:	gain knowledge in the various forms of network security	3	-	2	-	-	-	-	-	-	-	-	-	-	-	3
CO-5:	analyse the effects of intrusion, viruses, firewalls and various levels of system security	3	-	2	-	-	-	-	-	-	-	-	-	-	-	3

Unit-1 - Data Communication and Networking	**9 Hour**
Introduction to Data Communication and Networking, Data transfer modes-Serial and Parallel transmission, Protocols & Standards, Layered Architecture, Principles of Layering & Description, Brief description of concepts in OSI & TCP/IP model, Network topologies, switching- Circuit and Packet	
***Case Studies on** Network topologies*	
Unit-2 - Data Link Layer	**9 Hour**
Network models, OSI layer architecture, Data Link Layer-Introduction, Link Layer Addressing, Error Detection, Error correction, Data link Control-LLC, Data link control-MA, flow control and error control, HDLC	
***Case Studies on** Hamming code*	
Unit-3 - Networking Layer	**9 Hour**
Introduction to Network Layer, Need for Internetworking, Addressing-Classful, Addressing-Classless, Routing protocols- Distance vector and link state, Internet protocol-IPV4 and IPV6, border gateway protocol	
***Case Studies on** Routing protocol-DVR*	
Unit-4 - Network Security	**9 Hour**
Email security, Overview of PGP and S/MIME, IP Security, Web Security, Secure Socket Layer, Transport Layer Security, Secure Electronic Transaction	
***Case Studies on** Secure electronic Transaction*	
Unit-5 - Security Attack	**9 Hour**
Intrusion Detection Techniques, Password Management, Malicious software, Viruses, Worms, and Zombies. Introduction to Firewall Types and Configurations, Trusted System, Port Scanning and Knocking.	
***Case Studies on** firewall*	

Learning Resources		
	1. Behrouz A. Forouzan, "Data communication & Networking", Mc-Graw Hill, 5th Edition Reprint, 2014.	3. William Stallings, "Cryptography & Network Security", Pearson Education India, 6th edition 2014
	2. Andrew S. Tanenbaum, "Computer Networks", Pearson Education India, 5th Edition, 2013	4. Bruce Schneier, "Applied Cryptography", Pearson Education India, 2nd edition., 2015
		5. Bernard Menezes, "Network Security and Cryptography", Cengage Learning, 2010

Learning Assessment

	Bloom's Level of Thinking	Continuous Learning Assessment (CLA)						Final Examination (0% weightage)	
		Formative CLA-1 Average of unit test (20%)		Project Based Learning CLA-2 (60%)		Report and Viva Voce (20%)			
		Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember	20%	-	-	10%	-	-	-	-
Level 2	Understand	25%	-	-	20%	-	-	-	-
Level 3	Apply	30%	-	-	25%	-	-	-	-
Level 4	Analyze	25%	-	-	25%	-	-	-	-
Level 5	Evaluate	-	-	-	10%	-	-	-	-
Level 6	Create	-	-	-	-	-	-	-	-
	Total	100 %		100 %		100%		-	

Course Designers

Experts from Industry	Experts from Higher Technical Institutions	Internal Experts
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