30.1.4

UNIVERSITY SCHOOL
OF
INFORMATION AND COMMUNICATION TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PROGRAMME STRUCTURE

B.TECH. COMPUTER SCIENCE AND ENGINEERING

SPECIALIZATION : CYBER SECURITY

2022-2026

30.1.4
08.09.23

GAUTAM BUDDHA UNIVERSITY
GAUTAM BUDH NAGAR, GREATER NOIDA, UP, INDIA

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Greater Noida, (U.P.)

SEMESTER I

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	MA101	Engineering Mathematics-I	3	1	0	4	GE1
2	PH102	Engineering Physics	3	1	0	4	GE2
3	EE102	Basic Electrical Engineering	3	1	0	4	GE3
4	ME101	Engineering Mechanics	3	1	0	4	GE4
5	ES101	Environmental Studies	3	1	0	4	OE1 / AECC
6	PH104	Engineering Physics Lab	0	0	2	1	GE-L1
7	EE104	Basic Electrical Engineering Lab	0	0	2	1	GE-L2
8	EN151	Language Lab	0	0	2	1	OE-L1 / SEC
9	ME102	Workshop Practice	1	0	2	2	GE-L3 / SEC
10	GP	General Proficiency	Non Credit				
		Total Hours and Credits	**16**	**5**	**8**	**25**	

SEMESTER II

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	CS101	Fundamentals of Computer Programming	3	1	0	4	CC1 / FC
2	CCC02	Introduction to Cyber Security	2	0	0	2	CC2 / FC
3	MA102	Engineering Mathematics-II	3	1	0	4	GE5
4	EC101	Basic Electronics Engineering	3	1	0	4	GE6
5	CS102	Computer Organistaion and Architecure	3	1	0	4	CC3
6	EN101	English Proficiency	2	0	0	2	OE2 / AECC
7	CE103	Engineering Graphics Lab	1	0	2	2	GE-L4
8	CS181	Computer Programming Lab	0	0	2	1	CC-L1 / SEC
9	CC182	Cyber Security Lab	0	0	2	1	CC-L2 / SEC
10	EC181	Basic Electronics Engineering Lab	0	0	2	1	GE-L5
11	GP	General Proficiency	Non Credit				
		Total Hours and Credits	**14**	**3**	**8**	**25**	

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SEMESTER III

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	CC201	Internet Technology	3	0	0	3	CC4 / SEC
2	CC203	Operating Systems	3	0	0	3	CC5
3	CC205	Data Structure & Algorithms	3	0	0	3	CC6 / SEC
4	CC207	Introduction to Python	3	0	0	3	CC7
5	CC209	Cyber Security Law and Standards	3	0	0	3	CC8
6	MA201	Engineering Mathematics-III	3	1	0	4	GE7
7	CC281	Internet Technology Lab	0	0	3	2	CC-L3
8	CC283	Data Structure & Algorithms Lab	0	0	3	2	CC-L4 / SEC
9	CC285	Python Programming Lab	0	0	3	2	CC-L5 / SEC
10	GP	General Proficiency	Non Credit				
		Total Hours and Credits	**18**	**1**	**9**	**25**	

SEMESTER IV

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	CC202	Software Engineering	3	0	0	3	CC9
2	CC204	Database Management System	3	0	0	3	CC10 / SEC
3	CC206	Java Programming	3	0	0	3	CC11
4	CC208	Artificial Intelligence	3	0	0	3	CC12
5	CC210	Theory of Automata	3	0	0	3	CC13
6	CC212	Biometric Security	3	1	0	4	CC14 / SEC
7	CC282	Database Management System Lab	0	0	3	2	CC-L6 / SEC
8	CC284	Java Programming Lab	0	0	3	2	CC-L7 / SEC
9	CC286	Biometric Security Lab	0	0	3	2	CC-L8 / SEC
10	GP	General Proficiency	Non Credit				
		Total Hours and Credits	**18**	**1**	**9**	**25**	

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SEMESTER V

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	CC301	Compiler Design	3	1	0	4	CC15 / AECC
2	CC303	Soft Computing Techniques	3	0	0	3	CC16
3	CC305	Analysis and Design of Algorithms	3	0	0	3	CC17 / SEC
4	CC307	Cryptography and Data Privacy	3	0	0	3	CC18
5	CC309	Computer Networks	3	1	0	4	CC19 / SEC
6		Elective 1	3	0	0	3	E1 / DSE
7	CC381	Analysis and Design of Algorithms Lab	0	0	3	2	CC-L9 / SEC
8	CC383	Cryptography and Data Privacy Lab	0	0	3	2	CC-L10 / SEC
9	CC385	Computer Networks Lab	0	0	3	2	CC-L11 / SEC
10	GP	General Proficiency	Non Credit				
		Total Hours and Credits	**18**	**1**	**9**	**25**	

SEMESTER VI

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	CC302	Web Development using PHP	3	0	0	3	CC20
2	CC304	Network Defense for Cyber Security - Risk Management and Audit	3	0	0	3	CC21
3	CC306	Cloud Computing	3	1	0	4	CC22
4	CC308	Digital Forensic, Audit and Investigations	3	0	0	3	CC23
5	CC310	Data Privacy and Database Security	3	0	0	3	CC24 / SEC
6		Elective 2	3	0	0	3	E2 / DSE
7	CC382	Web Development using PHP Lab	0	0	3	2	CC-L12 / SEC
8	CC384	Network Defense for Cyber Security Lab	0	0	3	2	CC-L13
9	CC386	Data Privacy and Database Security Lab	0	0	3	2	CC-L14
10	GP	General Proficiency	Non Credit				
		Total Hours and Credits	**18**	**1**	**9**	**25**	

Industrial Training will be done by candidate individually after third year during the summer break and it will be of minimum 4 weeks. It will be evaluated as per University Examination in VII semester.

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SEMESTER VII

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	CC401	Parallel Processing and CUDA Programming	3	1	0	4	CC25
2	CC403	Blockchain Technology	3	0	0	3	CC26
3	CC405	AI Enabled Cyber Security	2	0	0	2	CC27 / SEC
4		Elective 3	3	0	0	3	E3 / DSE
5		Elective 4	3	0	0	3	E4 / DSE
6	CC481	AI Enabled Cyber Security Lab	0	0	3	2	CC-L15
7	CC491	Minor Project	0	0	10	5	MP1 / E
8	CC493	Industrial Traning	0	0	6	3	IT1 / E
9	GP	General Proficiency	Non Credit				
		Total Hours and Credits	**14**	**1**	**19**	**25**	

SEMESTER VIII

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	CC490	Seminar	0	0	3	2	S / E
2	CC492	Major Project	0	0	16	8	MP2 / E
3	CC494	Intenship	0	0	30	15	I / E
4	GP	General Proficiency	Non Credit				
		Total Hours and Credits	**0**	**0**	**49**	**25**	

GRAND TOTAL OF CREDITS = 200

In the **Seminar**, student need to study and present individually, on latest research paper of their specialized area and It will be evaluated as per University Examination Rules.

The **Internship** in Industry will be done by candidate individually during the 8th semester and it will be for a minimum of 4 (-6) months. It will be evaluated as per University Examination Rules.

Minor and Major Project will be in a group and It will be evaluated as per University Examination Rules.

USICT will provide a mentor/supervisor for industrial training, seminar, internship, minor and major projects.

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ELECTIVES FROM DCSE

S.No.	Course Code	Course Name	L	T	P	Credits	Types
1	CC311	Security Information & Event Management	3	0	0	3	E1
2	CC313	Intrusion Detection and Prevention System	3	0	0	3	E1
3	CC315	Cryptography	3	0	0	3	E1
4	CC317	Biometric System and Security	3	0	0	3	E1
5	CC319	Ethical Hacking	3	0	0	3	E1
6	CC312	Mobile Security	3	0	0	3	E2
7	CC314	Cloud Architecture and Security	3	0	0	3	E2
8	CC316	Principle of Secure Coding	3	0	0	3	E2
9	CC318	Information Warfare	3	0	0	3	E2
10	CC320	Social Network Security	3	0	0	3	E2
11	CC407	Physical Security of IT Infrastructure	3	0	0	3	E3
12	CC409	NISTA 800-53 (Security Control)	3	0	0	3	E3
13	CC411	Operating Systems Security	3	0	0	3	E3
14	CC413	Mobile and Wireless Network Security	3	0	0	3	E3
15	CC415	Enterprise Security and Management	3	0	0	3	E3
16	CC417	Malware Analysis	3	0	0	3	E4
17	CC419	Android Security Design and Internals	3	0	0	3	E4
18	CC421	Data and Database Management Security	3	0	0	3	E4
19	CC423	Web Application and Penetration Testing	3	0	0	3	E4
20	CC425	Access Control and Identity Management Systems	3	0	0	3	E4

CC	Computer Science & Engineering / Cyber Security for Course Code	**SEC**	Skill Enhancement Course
CC	Core Course from USICT for Type of Course	**E**	Elective from USICT
GE	General Elective from related discipline of other Deptt./School	**CC-L**	Core Course Lab from USICT
GE L	General Elective Lab from related discipline of other Deptt./School	**IT1**	Industrial Training
OE	Open Elective from other discipline of other Deptt./School	**MP**	Minor / Major Project
AECC	Ability Enhancement Compulsary Course	**S**	Seminar
DSE	Discipline Specific Course	**I**	Internship

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CYBER SECURITY LAW AND STANDARDS			
Course Code:	**CC209**	**Course Credits:**	**3**
Course Category:	**CC**	**Course (U / P)**	**U**
Course Year (U / P):	**2U**	**Course Semester (U / P):**	**3U**
No. of Lectures + Tutorials (Hrs/Week):	**03**	**Mid Sem. Exam Hours:**	**1**
Total No. of Lectures (L + T):	**45**	**End Sem. Exam Hours:**	**3**

COURSE OBJECTIVES
1. To be a safety net against online data predators
2. To ensure justice for cybercrime victims
3. To prevent debit card or credit card fraud.
4. To ensure national security.
5. To block transactions when there is any unusual activity such as the input of an incorrect password

COURSE OUTCOMES
At the end of the course the students should be able to:
1. Analyze and evaluate the cyber security needs of an organization
2. Conduct a cyber security risk assessment
3. Acquainting the students with Cyber Security, Data Privacy and Data Protection
4. Design and develop a security architecture for an organization.
5. Design operational and strategic cyber security strategies and policies.

UNIT I

What is cyber security? Cyber Security Goals, Types of Cyber attacks,Types of Cyber, Attackers, Cyber Security Principles, Data Security Considerations, Cyber Security Technology, Threats to E-Commerce, Cyber security in context to organisation, Cyber security life cycle Advantage and Disadvantages of Cyber Security

UNIT II

Introduction to cyber law, Importance of cyber law,areas of cyber law, advantage of cyber law, Phishing attacks,email worns, Cyber Security Policies, Digital Signature Cyber Security Tools, Cyber Security Challenges, Security Risk Analysis,

UNIT III

Cyber Law & IT Act Overview, Cyber Law Objectives, Intellectual Property Right, Cyber Security Strategies, Policies To Mitigate Cyber Risk, Network Security Information Technology Act, 2000, Digital & Electronic Signatures, Offences and Penalties

UNIT IV

What is cyber security standards, cyber security framework , why are framework important, how

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to choose cyber security framework

UNIT V

ISO 27000 Series, NIST SP 800-53, NIST SP 800-171, NIST CSF, NIST SP 1800 Series, COBIT, CIS Controls, COSO, GDPR, HITRUST Common Security Framework,IT Act, Copyright Act, Patent Law, IPR

Reference Books

1. Josef Pieprzyk, Thomas Hardjono and Jenifer Seberry, "Fundamentals of Computer Security", Springer 2010.

2. Data Privacy And Security (Hb) by Salomon D., Springer

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THEORY OF AUTOMATA			
Course Code:	**CC210**	**Course Credits:**	**3**
Course Category:	**CC**	**Course (U / P)**	**U**
Course Year (U / P):	**2U**	**Course Semester (U / P):**	**4U**
No. of Lectures + Tutorials (Hrs/Week):	**03 + 00**	**Mid Sem. Exam Hours:**	**1.5**
Total No. of Lectures (L + T):	**45 + 00**	**End Sem. Exam Hours:**	**3**

COURSE OBJECTIVES
1. Define various categories of automata (deterministic and nondeterministic finite state automata, and variants of Turing machines)
2. Define the various categories of languages and grammars in the Chomsky hierarchy
3. Define the notions of computability and decidability
4. Recognize to which class in the Chomsky hierarchy the language described (by a grammar or machine)
5. Recognize problems reducible to/from well-known decidable/undecidable problems

COURSE OUTCOMES
At the end of the course the students should be able to:
1. Model, compare and analyse different computational models using combinatorial methods.
2. Apply rigorously formal mathematical methods to prove properties of languages, grammars and automata.
3. Construct algorithms for different problems and argue formally about correctness on different restricted machine models of computation.
4. Identify limitations of some computational models and possible methods of proving them.
5. Have an overview of how the theoretical study in this course is applicable to and engineering application like designing the compilers.

UNIT I INTRODUCTION

Alphabets, Strings and Languages; Automata and Grammars, Deterministic finite Automata (DFA)-Formal Definition, Simplified notation: State transition graph, Transition table, Language of DFA, Nondeterministic finite Automata (NFA), NFA with epsilon transition, Language of NFA, Equivalence of NFA and DFA, Minimization of Finite Automata, Distinguishing one string from other, Myhill-Nerode Theorem.

UNIT II REGULAR EXPRESSION (RE)

Definition, Operators of regular expression and their precedence, Algebraic laws for Regular expressions, Kleen's Theorem, Regular expression to FA, DFA to Regular expression, Arden Theorem, Non Regular Languages, Pumping Lemma for regular Languages . Application of Pumping Lemma, Closure properties of Regular Languages, Decision properties of Regular Languages, FA with output: Moore and Mealy machine, Equivalence of Moore and Mealy Machine, Applications and Limitation of FA.

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UNIT III CONTEXT FREE GRAMMAR (CFG) AND CONTEXT FREE LANGUAGES (CFL)

Definition, Examples, Derivation, Derivation trees, Ambiguity in Grammar, Inherent ambiguity, Ambiguous to Unambiguous CFG, Useless symbols, Simplification of CFGs, Normal forms for CFGs: CNF and GNF, Closure proper ties of CFLs, Decision Properties of CFLs: Emptiness, Finiteness and Membership, Pumping lemma for CFLs.

UNIT IV PUSH DOWN AUTOMATA (PDA)

Description and definition, Instantaneous Description, Language of PDA, Acceptance by Final state, Acceptance by empty stack, Deterministic PDA, Equivalence of PDA and CFG, CFG to PDA and PDA to CFG, Two stack PDA.

UNIT V TURING MACHINES (TM)

Basic model, definition and representation, Instantaneous Description, Language acceptance by TM, Variants of Turing Machine, TM as Computer of Integer functions, Universal TM, Church's Thesis, Recursive and recursively enumerable languages, Halting problem, Introduction to Undecidability, Undecidable problems about TMs. Post correspondence problem (PCP), Modified PCP, Introduction to recursive function theory.

Text Books:

1. Hopcroft, Ullman, "Introduction to Automata Theory, Languages and Computation", Pearson Education.
2. KLP Mishra and N. Chandrasekaran, "Theory of Computer Science: Automata, Languages and Computation", PHI Learning Private Limited, Delhi India.
3. Peter Linz, "An Introduction to Formal Language and Automata", Narosa Publishing house.
4. YN Singh "Mathematical Foundation of Computer Science", New Age International.
5. Malviya, AK "Theory of Computation and Application", BPaperback Publications
6. Papadimitrou, C. and Lewis, CL, "Elements of the Theory of Computation", Pearson Publication.
7 K. Krithivasan and R. Rama; Introduction to Formal Languages, Automata Theory and Computation; Pearson Education.

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BIOMETRIC SECURITY			
CourseCode:	**CC212**	**CourseCredits:**	**3**
CourseCategory:CC	**CC**	**Course(U/P)**	**U**
CourseYear(U/P):U	**2U**	**CourseSemester(U/P):**	**4U**
No.ofLectures+Tutorials(Hrs/Week):	**03+00**	**MidSem.ExamHours:**	**1**
TotalNo.ofLectures(L+ T):30	**45+00**	**EndSem.ExamHours:**	**3**
COURSE OBJECTIVES			
1.To provide students with understanding of biometrics.			
2.Make aware of different types of biometrics devices.			
3.Learn different process equipment and their working.			
4.Understanding of Security and standards applied to the security.			
5.To understand attacks in security from malicious attackers.			
COURSEOUTCOMES			
At the end of the course the students should be able to:			
1.Demonstrate knowledge of the basic physical and biological science and engineering Principles underlying biometric systems.			
2.Understandandanalyzebiometricsystems at the component level and be able to analyze And design basic biometric system application.			
3.Be able to work effectively in teams and express their work and ideas orally and in writing..			
4.Identifythe sociological and acceptance issues associated with the design and Implementation of biometric systems.			
5.Understand various Biometric security issues.			

UNIT I INTRODUCTION TO BIOMETRICS

Introduction- benefits of biometrics over traditional authentication systems -benefits of biometrics identification systems-selecting a biometric for a system –Applications - Key biometric terms andprocesses- biometric matching methods-Accuracy in biometric systems.

UNIT II PHYSIOLOGICAL BIOMETRIC TECHNOLOGIES

Physiological characteristics Biometric Technologies: Fingerprints - Technical description – - Competingtechnologies-strengths–weaknesses–deployment-Facialscan-Technicaldescription- characteristicsweaknesses-deployment - Iris scan - Technical description – characteristics - strengths – weaknesses –deployment-Retina vascular pattern

UNIT III MEMORY & STORAGE MANAGEMENT

Technical description – characteristics - strengths – weaknesses – deployment - Hand scan – Technical description-characteristics - strengths – weaknesses deployment – DNA biometrics. Behavioral Biometric Technologies: Handprint Biometrics -DNA Biometrics.

UNIT IV SIGNATURE AND HANDWRITING TECHNOLOGY

Signature and handwriting technology - Technical description – classification – keyboard / keystroke dynamics- Voice – data acquisition - feature extraction - characteristics - strengths – weaknesses-deployment.

UNIT V MULTIBIOMETRICS

Multi biometrics and multi factor biometrics - two-factor authentication with passwords - tickets and tokens– executive decision- implementation plan.

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TextBook:

1."Biometrics, Computer Security Systems and Artificial Intelligence Applications" by Khalid Saeed and Jerzy Pejas
2."Implementing Biometric Security" by John Chirillo and Scott Blaul
3."Biometrics: Advanced Identity Verification: The Complete Guide" by Julian Ashbourn

Reference Books:

1. "Biometrics: Identity Verification in a Networked World" by Samir Nanavati and Michael Thieme
2. "Guide to Biometrics for Large-Scale Systems: Technological, Operational, and User-Related Factors" by Julian Ashbourn

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BIOMETRIC SECURITY LAB			
Course Code:	**CC286**	**Course Credits:**	**2**
Course Category:	**CC-P**	**Course (U / P)**	**U**
Course Year (U / P):	**2U**	**Course Semester (U / P):**	**4U**
No. of Labs (Hrs/Week):	**2(3 hrs)**	**Mid Sem. Exam Hours:**	
Total No. of Labs:	**10**	**End Sem. Exam Hours:**	**3**

COURSE OBJECTIVES
1.To provide students with understanding of biometrics.
2.Make aware of different types of biometrics devices.
3.Learn different process equipment and their working.
4.Understanding of Security and standards applied to the security.
5.To understand attacks in security from malicious attackers.
COURSEOUTCOMES
At the end of the course the students should be able to:
1.Demonstrate knowledge of the basic physical and biological science and engineering Principles underlying biometric systems.
2.Understandandanalyzebiometricsystems at the component level and be able to analyze And design basic biometric system application.
3.Be able to work effectively in teams and express their work and ideas orally and in writing..
4.Identifythe sociological and acceptance issues associated with the design and Implementation of biometric systems.
5.Understand various Biometric security issues.

List of Experiments:

1. Fingerprint Examination
2. Face recognition using images
3. Face recognition using images- using came
4. Face Grouping using images
5. Voice Recognition
6. Iris Detection
7. Handwriting Detection
8. Signature verification

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COMPUTER NETWORKS			
Course Code:	**CC309**	**Course Credits:**	**3**
Course Category:	**CC**	**Course (U / P)**	**U**
Course Year (U / P):	**3U**	**Course Semester (U / P):**	**5U**
No. of Lectures + Tutorials (Hrs/Week):	**03 + 00**	**Mid Sem. Exam Hours:**	**1**
Total No. of Lectures (L + T):	**45 + 00**	**End Sem. Exam Hours:**	**3**

COURSE OBJECTIVES
1. Describe how computer networks are organized with the concept of layered approach.
2. Implement a simple LAN with hubs, bridges and switches.
3. Analyze the contents in a given Data Link layer packet, based on the layer concept.
4. Describe what classless addressing scheme is.
5. Describe how routing protocols work.

COURSE OUTCOMES
At the end of the course the students should be able to:
1. Analyse the requirements for a given organizational structure and select the most appropriate networking architecture and technologies.
2. Have a basic knowledge of the use of cryptography and network security.
3. Specify and identify deficiencies in existing protocols, and then go onto formulate new and better protocols.
4. Analyse, specify and design the topological and routing strategies for an IP based networking infrastructure
5. Have a working knowledge of datagram and internet socket programming

UNIT I INTRODUCTION AND PHYSICAL LAYER

Key concepts of computer network, transmission media, network devices, network topology, topology design issues, types of network: LAN, MAN, WAN, PAN, ISDN systems and ATM network, OSI-reference model, open system standards, characteristics of network, TCP/IP model, protocols and standards, encoding technique.

UNIT II SWITCHING AND DATA LINK LAYER

Circuit switching, packet switching, message switching, hybrid switching, and ATM switching, multiplexing techniques: TDMA, FDMA, WDMA, CDMA, data link layer: LLC &MAC level protocols and design issues, issues IEEE 802 LAN Standards, framing, CRC, error control, flow control, HDLC, ALOHA and performance issues. Frames relay networks and performance parameters.

UNIT III NETWORK LAYER

Network layer design issues, overview of IPv4 and IPv6, addressing: class full and classless, static and dynamic, subnet and super net, auto configuration through DHCP, routing protocols:

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RIP, DVR,LSR, OSFP, BGP, congestion control algorithm, subnet concept, virtual LAN, ICMP, multicasting, mobile IP.

UNIT IV TRANSPORT LAYER

Port addressing schemes, connectionless and connection oriented services: TCP and UDP, wireless TCP, Congestion control, queue management, NAT, PAT, socket format at transport level, socket interface and programming.

UNIT V APPLICATION LAYER

Client server architecture, domain name services, application services: HTTP, TELNET, RLOGIN, FTP, CBR, NFS, SMTP, POP, IMAP, MIME, voice and video over IP, social issues- privacy, freedom of speech, copy right.

Text Books:

1. S. Tanenbaum, Computer Networks, 4th edition, Prentice Hall, 2008
2. Forouzan, B.A., Data Communication and Networking, Tata McGraw-Hill.
3. W. Stallings, Data and Computer Communications, 8th edition, Prentice Hall, 2007
4. Douglus E. ComerTCP/IP Principles, Protocols and Architecture, Pearson Education

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Course Code:	**CC385**	**Course Credits:**	**2**
Course Category:	**CC-P**	**Course (U / P)**	**U**
Course Year (U / P):	**3U**	**Course Semester (U / P):**	**5U**
No. of Labs (Hrs/Week):	**2(3 hrs)**	**Mid Sem. Exam Hours:**	
Total No. of Labs:	**10**	**End Sem. Exam Hours:**	**3**

COURSE OBJECTIVES
1. Practical knowledge of working principles of various communication protocols.
2. Analyze structure and formats of TCP/IP layer protocols.
3. Understanding of networking fundamentals.
4. Understanding of learning the process of Internet of Things applications planning.
5. Understanding of configuration of various end devices, server, routers and switches.

COURSE OUTCOMES
At the end of the course the students should be able to:
1. Understand the practical approach to network communication protocols.
2. Understand network layers, structure/format and role of each network layer.
3. Able to design and implement various network application such as data transmission between client and server, file transfer, real-time multimedia transmission.
4. Understand the various Routing Protocols/Algorithms and Internetworking.
5. Learn to configure server.

List of Experiments:

1. Introduction to transmission media(CAT5, OFC, COAXIAL CABLE Wireless)
2. Introduces network interfaces(Wired and Wireless)
3. Configure and installing a Ethernet(10/100)
4. Performance evaluation of Ethernet(10/100)
5. Topology design(Ring, Bus)
6. Generation of data packet and measurement(CBR, VBR, Poison)
7. Implement the following:
   a) Router configuration
   b) Switch configuration
   c) Server configuration
8. Congestion control of network and QoS of network
9. Protocols and the configuration
10. Security (WEP, WPA) and Qualnet.

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