SEM-I

Course Code:	UCSC0301
Course Name:	Computational Mathematics

L	T	P	Credit
3	1		4

Course Prerequsites:

Statistics, Probability, Vectors and Set Theory

Course Description:

This Course contains Statistics, Probability, Vectors and Fuzzy Set

Course Outcomes:

CO1	After the completion of the course the student will be able to, Demonstrate the basic mathematical concepts in Computer Science Engineering related to Fuzzy Sets and Statistics
CO2	Explain Vector Space concepts in dealing with problems in Computer Science Engineering.
CO3	Apply the knowledge of Statistics to solve problems arising in Computer Science Engineering.
CO4	Apply the knowledge of Fuzzy Equation to solve problems arising in Computer Science Engineering.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	-	1	-	-	-	-	-	-	-	1		
CO2	2	2	-	-	-	-	-	-	-	-	-	1		
CO3	2	2	-	1	-	-	-	-	-	-	-	1		
CO4	1	2	-	-	-	-	-	-	-	-	-	1		

Assessment Scheme:

SN	Assessment	Weightage	Remark
1	In Semester Evaluation 1 (ISE1)	10%	Assignment, Test, Quiz, Seminar, Presentation, etc.
2	Mid Semester Examination (MSE)	30%	50% of course contents
3	In Semester Evaluation 2 (ISE2)	10%	Assignment, Test, Quiz, Seminar, Presentation, etc.
4	End Semester Examination (ESE)	50%	100% course contents

Course Contents:

Unit 1	Advanced Linear algebra	6 Hours

1.1 Solutions of simultaneous linear equations using Gauss-Jordan method.
1.2 Solutions of simultaneous linear equations using LU decomposition method.
1.3 Determination of Eigen Value by Iteration method.
1.4 Solution of non-linear simultaneous equations.

Unit 2	Vector Algebra	8 Hours

2.1 Vector Spaces,
2.2 Subspaces, basis, span,
2.3 Linear Independence, Basis and Dimension,
2.4 Four Fundamental Subspaces
2.5 Orthogonality - Orthogonal Vectors and Subspaces,
2.6 Cosines and Projections onto Lines
2.7 Orthogonal Bases and Gram – Schmidt

Unit 3	Probability and Distributions	7 Hours

3.1 Random variables.
3.2 Discrete distributions and Continuous distributions
3.3 Binomial Distribution
3.4 Poisson Distribution
3.5 Normal Distribution

Unit 4	Statistical Techniques	8 Hours

4.1 Lines of regression of bivariate data, Correlation coefficient.
4.2 Fitting of Curves by method of Least-squares.
4.3 Fitting of Straight lines.
4.4 Fitting of Parabola.
4.5 Fitting of Exponential curves.

Unit 5	Introduction to Fuzzy sets	7 Hours

5.1 Crisp Sets: An overview.
5.2 Fuzzy sets: Basic concepts
5.3 Operations on fuzzy sets.
5.4 Extension Principle

Unit 6	**Fuzzy Arithmetic**	**6 Hours**

Fuzzy numbers.
6.2 Fuzzy cardinality
6.3 Operations on Fuzzy numbers.
6.4 Fuzzy equations of type A + X = B and A.X = B.

Text Books:

1. Higher Engineering Mathematics by Dr. B. S. Grewal.
2. Fuzzy sets and Fuzzy Logic by George J. Klir, Bo Yuan.

Reference Books:

1. Probability and Statistics for Computer science by James L. Johnon.
2. Fundamentals of Mathematical Statistics by Gupta and Kapoor. S. Lang, Introduction to Linear Algebra, 2nd Ed., Springer, 2005. 4. Gilbert Strang, Linear Algebra an

Course Code:	UCSC0302
Course Name:	Discrete Mathematical Structures

L	T	P	Credit
3	1		4

Course Prerequsites:	Mathematics - Probability theory, Set theory, functions

Course Description:	This Course consists of concepts of Discrete mathematical structures such as mathematical logic, Sets, relations, functions, lattices and Boolean algebra, combinatory and graph theory

Course Outcomes:

CO1	Explain the basic concepts of discrete mathematical structures
CO2	Demonstrate the applications of discrete structures in different fields of computer science.
CO3	Solve problems using the concepts of Discrete structures.
CO4	Apply the mathematical proofs and techniques to prove the theorems in computer science.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3		2										
CO2	3		2	2										2
CO3	3	3		3										1
CO4	2	2		2										

Assessment Scheme:

SN	Assessment	Weightage	Remark
1	In Semester Evaluation 1 (ISE1)	10%	Assignment, Test, Quiz, Seminar, Presentation, etc.
2	Mid Semester Examination (MSE)	30%	50% of course contents
3	In Semester Evaluation 2 (ISE2)	10%	Assignment, Test, Quiz, Seminar, Presentation, etc.
4	End Semester Examination (ESE)	50%	100% course contents

Course Contents:

Unit 1	Mathematical logic (Text book-1)	8 Hours

1.1 Statements and Notations
1.2 Connectives , Statement formulas and truth tables, well formed formulas, Tautologies, Equivalence of formulas, Duality law, Tautological implications, functionally complete sets of connectives, other connectives
1.3 Normal and principal normal forms, completely parenthesized infix and polish notations
1.4 Theory of Inference for statement calculus – validity using truth table, rules of inference, consistency of Premises and indirect method of proof, Predicate calculus

Unit 2	Set theory (Text book-1)	8 Hours

2.1 Basic concepts of set theory, Operations on sets, Ordered pairs, Cartesian Products
2.2 Representation of discrete structures
2.3 Relation and ordering - properties of binary relations in a set, Relation matrix and the graph of a relation, Partition and Covering of set, Equivalence relations, Recurrence relations, Composition of Binary relations, Partial ordering , POSET and Hasse diagram.
2.4 Functions – types, composition of functions, Inverse functions.

Unit 3	Algebraic systems (Text book-1)	5 Hours

3.1 Algebraic systems, properties and examples
3.2 Semigroups and Monoids, properties and examples, Homomorphism of Semigroups and Monoids
3.3 Groups: Definition and examples, Subgroups and homomorphism

Unit 4	Lattices and Boolean algebra (Text book-1)	5 Hours

4.1 Lattice as POSETs , definition , examples and properties
4.2 Lattice as algebraic systems, Special lattices
4.3 Boolean algebra definition and examples
4.4 Boolean functions

Unit 5	Permutations, Combinations and Probability theory (Text book-2)	7 Hours

.1 The Basics of Counting
5.2 The Pigeonhole Principle
5.3 Permutations and Combinations
5.4 Generalized Permutations and Combinations
5.5 Discrete Probability
5.6 Conditional probability
5.7 Bayes' Theorem

Unit 6	Graphs (Text book-2)	7 Hours

5.1 Introduction to Graphs
5.2 Graph Terminology
5.3 Representing Graphs and Graph Isomorphism
5.4 Connectivity
5.5 Euler and Hamilton Paths
5.6 Planar Graphs
5.7 Introduction to Trees

Text Books:

1. Discrete Mathematical Structures with Application to Computer Science - J. P. Tremblay & R. Manohar (MGH International)
2. Discrete Mathematics and its Applications - Kenneth H. Rosen (AT&T Bell Labs) (mhhe.com/rosen)

Reference Books:

1. Discrete Mathematics - SemyourLipschutz, MarcLipson (MGH), Schaum's outlines.
2. C. L. Liu and D. P. Mohapatra, "Elements of Discrete Mathematics", SiE Edition, TataMcGrawHill, 2008,ISBN 10:0-07-066913-9
3. Schaums Solved Problem Series – Lipschutz.
4. Discrete Mathematical Structures – Bernard Kolman, Robert Busby, S.C.Ross and NadeemurRehman (Pearson Education)

Course Code:	UCSC0303		L	T	P	Credit
Course Name:	Data Structures		3			3

Course Prerequsites:

Fundamentals of Programming Language.

Course Description:

Introduces data structure concepts like lists, stack, queues, trees, and graphs. Discussess about the implementations of these data objects, programming styles, and run-time representations. Examines algorithms for sorting, searching and some graph algorithms. Algorithm analysis and efficient code design is introduced.

Course Outcomes:

After completion of the course, students shall be able to -

CO1	explain various concepts of data structures.
CO2	analyze different data structures and algorithms to find their complexity.
CO3	select appropriate data structure(s) to solve different computing problems.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1												1	
CO2	2	1		1								1		
CO3	3	2	2	1								1	1	2

Assessment Scheme:

SN	Assessment	Weightage	Remark
1	In Semester Evaluation 1 (ISE1)	10%	Assignment, Test, Quiz, Seminar, Presentation, etc.
2	Mid Semester Examination (MSE)	30%	50% of course contents
3	In Semester Evaluation 2 (ISE2)	10%	Assignment, Test, Quiz, Seminar, Presentation, etc.
4	End Semester Examination (ESE)	50%	100% course contents

Course Contents:

Unit 1 — **6 Hours**

Concept of data, data structures, and data types; Abstract Data Types (ADT) - Atomic & Composite, Operations; Linear and non-linear data structures; Pseudo code; algorithm efficiency.

Unit 2 — **8 Hours**

Concept of linked data organization; Types & representation of - singly linked list, doubly linked list, and circular linked list; Operations on lists - insertion, deletion, traversal, search, etc; Applications using these data structures.

Unit 3 — **6 Hours**

Stack: Introduction; representation; opearations; implementaion using array & list; applications of stack.
Queue: Introduction; representation; operations; implementation using array & list; types of queue - circular queue, double ended queue ,and priority queue; applications of queue.

Unit 4 — **7 Hours**

Tree: Basic terminology; binary tree and its representation; binary tree traversal methods; binary search tree (BST), AVL tree, Heaps; Operations and applications of BST, AVL, Heaps

Unit 5 — **5 Hours**

Graph: Basic terminology; Graph storage structures - adjacency matrix and adjacency list; Graph operations, graph traversal techniques - BFS, DFS; Applications using graphs

Unit 6	**8 Hours**

Searching and Sorting: Need of sorting and searching, sorting order, stability in sorting, Sorting Techniques: Concept of internal & external sorting, algorithms for Bubble sort, Selection sort, Insertion sort, Radix sort, Heap sort, Quick sort and Merge sort. Analysis of each sorting technique for best, worst and average case.
Searching Techniques: Algorithms for Sequential search, Binary search, analysis of each searching technique for best, worst and average case.

Text Books:

1. Data Structures and Pseudocode approach with C, 2nd Edition by Richard F. Gilberg & Behrouz A. Forouzan
2. Data Structures using C and C++ by Yedidyah Langsam, Moshe J. Augenstein, Aaron M. Tenenbaum
3. Data Structures by Seymour Lipschutz

Reference Books:

1. Data Structures and Algorithms by G A V Pai (McGrawHill)
2. Data Structures and Algorithms in python Michael T. Goodrich (Wiley)

Course Code:	UCSC0304
Course Name:	Digital Logic Design & Microprocessors

L	T	P	Credit
3			3

Course Prerequsites:

Fundamentals of Electronics and Computers, Basic Number System and Boolean Algebra

Course Description:

The course is designed to provide knowledge of different sequential and combinational logic design. The subject provides fundamentals of 8085 & 80x86 Family Microprocessors. The subject gives idea of how assembly language programming works. This course is prerequisite for hardware based courses like Computer Architecture & Organization.

Course Outcomes:

CO1	Describe working of basic digital components
CO2	Illustrate different microprocessors operations & addressing modes
CO3	Analyze changes in microprocessor evolution
CO4	Develop Assembly Language Programs

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	-	2	-	-	-	-	-	-	-	-	-	1	-
CO3	-	2	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	2	-	-	-	-	-	-	-	-	-	-	-	-

Assessment Scheme:

SN	Assessment	Weightage	Remark
1	In Semester Evaluation 1 (ISE1)	10%	Assignment, Test, Quiz, Seminar, Presentation, etc.
2	Mid Semester Examination (MSE)	30%	50% of course contents
3	In Semester Evaluation 2 (ISE2)	10%	Assignment, Test, Quiz, Seminar, Presentation, etc.
4	End Semester Examination (ESE)	50%	100% course contents

Course Contents:

Unit 1	Combinational & Sequential Logic Design	7 Hours

Number System, Boolean Algebra-Reduction, minterm,Maxterm,Multiplexer, implementation of expression using MUX, Demultiplexer, decoder(74138), Classification, Flip-flops(S-R, J-K,T,D)using gates, Race around condition Master –Slave J-K Flip Flop, Counters (Asynchronous & Synchronous), Design examples, Shift registers , State transition diagram, excitation table.

Unit 2	8085 Microprocessor Architecture	7 Hours

The 8085 MPU, Microprocessor communication and bus timing, Demultiplexing address and Data bus, Generating control signals, The 8085 Architecture, opcode fetch machine cycle, memory read and write machine cycle. 8085 instruction groups, addressing modes.

Unit 3	8085 Programming Techniques	7 Hours

Writing and execution assembly language program, counters & delays, Stack, Instruction related to stack execution of CALL and RET, The 8085 interrupt, RST instructions, vectored interrupts, RIM and SIM instructions .
Basic interfacing concepts, peripherals I/O instructions IN, OUT, I/O execution, Memory - structure, interfacing & address decoding. Memory mapped I/O, I/O mapped I/O.

Unit 4	8086 Microprocessor and Assembly Language	9 Hours

Architecture of 8086, Registers of 8086, Memory Model, Addressing Modes, Instruction Set, Programming Model

Unit 5	80x86 Family	5 Hours

Introduction to 80186,80286,80386,80486 processors, Special Registers

The 80386 Microprocessor: The memory System, Special 80386 Registers
Virtual 8086 Mode, The Memory Paging Mechanism

Unit 6	**Introduction to Pentium Microprocessors**	**5 Hours**

The Pentium Microprocessor : The Memory System, Special Pentium Registers, Pentium Memory Management,
The Pentium Pro Microprocessor : Internal structure of the Pentium Pro
The Pentium 4 : Memory Interface, Register Set, Hyper Threading Technology.

Text Books:

1. Fundamental of Digital Circuits –A. Anand Kumar, 2 nd Edition, PHI Private Limited.
2. Microprocessor architecture, programming & applications Ramesh S. Gaonkar, New Age International publication.
3. Microprocessors & Interfacing: Programming & Hardware, Douglas V. Hall, Tata McGraw Hill

Reference Books:

1. Digital fundamentals Floyd & Jain, , Pearson education, eighth edition, 2007
2. Digital Design –Morris Mano, Pearson Education
3. Modern Digital Electronics, R.P.Jain, 3rd Edition, Tata McGraw Hill, 2003
4. Digital systems, principles and applications – Ronald Tocci, Neal S. Widmer, Gregory Moss (Pearson Education) 9th Edition.

Course Code:	UCSC0305
Course Name:	Computer Network

L	T	P	Credit
3			3

Course Prerequsites:

Must have basic knowledge of computers and network

Course Description:

This course provides a solid understanding of OSI reference model and TCP/IP protocol suite. Also make us familiar with functionalities of different layers and gives exposure to different application layer protocol. This course will help students ready with all fundamental networking concepts

Course Outcomes:

CO1	Define different concepts of OSI/TCP/IP network models and physical layer
CO2	Make use of framing, error control, flow control and medium access control techniques
CO3	Elaborate IP addresses, IP protocols, types of routing algorithm and congestion control techniques
CO4	Describe process to process communication, multiplexing and transport layer protocols
CO5	Outline different types of application layer protocols from TCP/IP protocol suite

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	2	-	-	-	-	-	-	-	-	-	-	-	1
CO3	2	-	-	-	-	-	-	-	-	-	-		-	-
CO4	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	3	-	-	-	-	-	-	-	-	-	-	-	1	-

Assessment Scheme:

SN	Assessment	Weightage	Remark
1	In Semester Evaluation 1 (ISE1)	10%	Assignment, Test, Quiz, Seminar, Presentation, etc.
2	Mid Semester Examination (MSE)	30%	50% of course contents
3	In Semester Evaluation 2 (ISE2)	10%	Assignment, Test, Quiz, Seminar, Presentation, etc.
4	End Semester Examination (ESE)	50%	100% course contents

Course Contents:

Unit 1	Introduction to Network	5 Hours

1.1 Data Communication
1.2 Networks
1.3 Internet
1.4 Protocols and Standards
1.5 Layered Task
1.6 OSI Model and Layers
1.7 TCP/IP Protocol Suite
1.8 Addressing
1.9 Physical Layer and Media

Unit 2	Data Link Control Layer	9 Hours

2.1 Error Detection and Correction
2.2 Block Coding, Linear Block Codes
2.3 Cyclic Codes
2.4 Checksum
2.5 Data Link Control: Framing
2.6 Flow and Error Control
2.7 Protocols: Noiseless channels, Noisy Channels

Unit 3	Medium Access Control Sub layer	7 Hours

3.1 Channel allocation Problem
3.2 Multiple Access Protocols: ALHOA, CSMA
3.3 Collision free protocols
3.4 Limited contention protocols
3.5 IEEE Standard 802 for LANS and MANS
3.6 Bridges
3.7 Introduction to VLANS

Unit 4	Network Layer	8 Hours

4.1 Network Layer Design Issues Routing Algorithms : Shortest Path, Flooding, Distance Vector, Link State, Broadcast
4.2 IP,ARP,RARP,ICMP,IGMP
4.3 Congestion control algorithms: Principles, Congestion prevention policies, Traffic Shaping, congestion control in datagram subnet, Choke Packet, Load Shedding, Jitter Control
4.4 IPv4 Addresses : Introduction, Classfull and Classless addressing, Special Addresses and NAT

Unit 5	Transport Layer	4 Hours

5.1 Transport Layer functions
5.2 UDP- datagram, services, applications
5.3 TCP - services, segment, connection, state transition diagram, Flow control, congestion control, error control, timers.

Unit 6	Application Layer	9 Hours

6.1 DHCP: Introduction, Previous Protocols, DHCP operation, Packet Format, DHCP Configuration.
6.2 DNS: Need, Name Space, Domain Name Space, Distribution of name space, and DNS in internet, Resolution, DNS massages, Types of records, Compression examples, encapsulation.
6.3 Telnet and SSH
6.4 FTP and TFTP.
6.5 HTTP and SMTP
6.6 SNMP: Concept and Management Component,SMI,MIB,SNMP, UDP Port and Security

Text Books:

1. Data Communications and Networking – Behrouz A Forouzan (The McGraw Hill)
(Unit 1,2,3)
2. Computer Networks – Andrew S. Tanenbaum- (Prentice Hall) 5th Edition (Unit 3, 4)
3. TCP/IP Protocol Suite- Behrouz Forouzan-(The McGraw Hill) (4,5,6)

Reference Books:

1. Computer Networking with Internet Protocols and Technology, William Stallings (Prentice Hall)

Course Code:	UCSC030**	L	T	P	Credit
Course Name:	Data Structures Lab			1	1

Course Prerequsites:

Fundamentals of Programming Language.

Course Description:

The course have assignements based on the Data Structure and algorithms. The assignments will help students to understand the working of linear and non-linear data structures. Students will also focus on the applications of Data Structures and algorithms in computer programming.

Course Outcomes:

After completion of the course, students shall be able to -

CO1	Implement Linear and Non-Linear Data Structures
CO2	Implement Searching and Sorting algorithms
CO3	Develop programs and applications using data structures and algorithms.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1														
CO2														
CO3														

Assessment Scheme:

SN	Assessment	Weightage	Remark
1	In Semester Evaluation 1 (ISE1)	50%	Assignment, Test, Quiz, Seminar, Presentation,etc.
2	End Semester Examination (ESE)	50%	Practical Performance & Viva

Course Contents:

Assessment No. 1	**2 Hours**
Write a program using recursion techniq - 1. GCD calcualtion 2.Factorial Calculation 3. String Operations. Calculate the time complexity of the program.	
Assessment No. 2	**2 Hours**
Write a program using Structure, Pointer & Function	
Assessment No. 3	**2 Hours**
Create a Linear List by using Structure, memory management functions and pointers in C	
Assessment No. 4	**2 Hours**
Implement a Doubly Linked List and its all operations (Insert,Delete,Search)	
Assessment No. 5	**2 Hours**
Application of List - Write a program to maintain the navigational history (forward/backward) tracking	
Assessment No. 6	**2 Hours**
Implement the stack and its operation (array/list)	

Assessment No. 7	**2 Hours**
Implement a Circular Queue and its operation(array/list)	
Assessment No. 8	**2 Hours**
Write a program to convert infix expression into postfix expression	
Assessment No. 9	**2 Hours**
Write a program to implement Linear Search algorithm. Analyse the time complexity	
Assessment No. 10	**2 Hours**
Write a program to sort the array in ascending order. (use – Selection Sort/Bubble Sort/Insertion Sort)	
Assessment No. 11	**2 Hours**
Write a program to sort the array in ascending order.(Quick Sort) with recursion	
Assessment No. 12	**2 Hours**
Implement a binary search algorithm using array/list	
Assessment No. 13	**2 Hours**
Impement hashing algorithm using list and colision resolution.	

Course Code:	UCSC03087
Course Name:	Digital Logic Design and Microprocessor Lab

L	T	P	Credit
		2	1

Course Prerequsites:

Digital Logic Design & Microprocessors

Course Description:

This subject covers practical details of subject Digital Logic Design and Microprocessors.

Course Outcomes:

CO1	Model basic digital circuits
CO2	Develop simple assembly language programs using 8085 instruction set

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2													
CO2		2												

Assessment Scheme:

SN	Assessment	Weightage	Remark
1	In Semester Evaluation (ISE)	100%	Experiment, Practical Performance and Oral Exam
2	Practical Oral and Exam (POE)	100%	Oral Exam

Course Contents:

Experiment 1	**Study of MUX** **Aim and Objectives: Understand working of MUX** **Outcomes: Students will be able to implement MUX** **Theoretical Background: MUX -working, functions** **Experimentation: Construct MUX** **Results and Discussions: Truth Tables for MUX** **Conclusion: Implemented MUX**	**2 Hours**
Experiment 2	**Study of DEMUX** **Aim and Objectives: Understand working of DEMUX** **Outcomes: Students will be able to implement DEMUX** **Theoretical Background: DEMUX -working, functions** **Experimentation: Construct DEMUX** **Results and Discussions: Truth Tables for DEMUX** **Conclusion: Implemented DEMUX**	**2 Hours**

Experiment 3	**Study of R-S flip-flops** **Aim and Objectives: Construct R-S flip-flops** **Outcomes: Students will be able to implement R-S flip-flops** **Theoretical Background: Characteristics of different Flip-Flops** **Experimentation: Construct R-S flip-flops** **Results and Discussions: Truth Tables for R-S flip-flops** **Conclusion: Implemented circuit for R-S flip-flop**	**2 Hours**

Experiment 4	**Study of J-K flip-flops** **Aim and Objectives: Construct J-K flip-flops** **Outcomes: Students will be able to implement J-K flip-flops** **Theoretical Background: Characteristics of different Flip-Flops** **Experimentation: Construct J-K flip-flops** **Results and Discussions: Truth Tables for J-K flip-flops** **Conclusion: Implemented circuit for J-K flip-flop**	**2 Hours**

Experiment 5	**Study of Registers** **Aim and Objectives: Construct Different type of Registers** **Outcomes: Students will be able to implement Registers** **Theoretical Background: Characteristics of different Registers** **Experimentation: Construct Registers** **Results and Discussions: Truth Tables for Registers** **Conclusion: Implemented circuit for Registers**	**2 Hours**

Experiment 6	**Study of counters** **Aim and Objectives: Implementing UP and DOWN counter** **Outcomes: Students will be able to implement UP and DOWN counter** **Theoretical Background: Characteristics and types of counter** **Experimentation: Construct UP and DOWN counter** **Results and Discussions: Truth Tables for UP and DOWN counter** **Conclusion: Implemented circuit for UP and DOWN counter**	**2 Hours**
Experiment 7	**Interfacing counter circuit with seven segment display** **Aim and Objectives: Interfacing counter circuit and seven segment display** **Outcomes: Students will be able to connect counter circuit to seven segment display** **Theoretical Background: Working of seven segment display** **Experimentation: Build interface for counter circuit and seven segment display** **Results and Discussions: Observation of output on seven segment display** **Conclusion: Built interface for counter circuit and seven segment display**	**2 Hours**

Experiment 8	**Study of 8085 microprocessor** **Aim and Objectives: Understand working of 8085 microprocessor** **Outcomes: Students will be able to explain instructions of 8085 microprocessor** **Theoretical Background: Architecture & Instruction Set of 8085 microprocessor** **Experimentation: Use various instructions of 8085 microprocessor in simulator** **Results and Discussions: Table of Instructions with purpose, mnemonic & size** **Conclusion: Demonstrated instructions using simulator**	**2 Hours**
Experiment 9	**Assembly language programming for 8085** **Aim and Objectives: Writing simple assembly language programs (4 to 6)** **Outcomes: Students will be able to develop simple assembly language programs** **Theoretical Background: Instruction Set of 8085 microprocessor** **Experimentation: Develop algorithm and program for given problem statements** **Results and Discussions: Execute developed programs and note the results** **Conclusion:**	**2 Hours**
Experiment 10	**Study of 8086 microprocessor** **Aim and Objectives: Understand working of 8086 microprocessor** **Outcomes: Students will be able to explain instructions of 8086 microprocessor** **Theoretical Background: Architecture & Instruction Set of 8086 microprocessor** **Experimentation: Use various instructions of 8086 microprocessor in simulator** **Results and Discussions: Table of Instructions with purpose, mnemonic & size** **Conclusion: Demonstrated instructions using simulator**	**2 Hours**

Experiment 11	**Assembly language programming for 8086** **Aim and Objectives: Writing simple assembly language programs (4 to 6)** **Outcomes: Students will be able to develop simple assembly language programs** **Theoretical Background: Instruction Set of 8086 microprocessor** **Experimentation: Develop algorithm and program for given problem statements** **Results and Discussions: Execute developed programs and note the results** **Conclusion:**	**2 Hours**

Text Books:

1. Fundamental of Digital Circuits –A. Anand Kumar, 2 nd Edition, PHI Private Limited.
2. Microprocessor architecture, programming & applications¬Ramesh S. Gaonkar, New Age International publication.
3. Microprocessors & Interfacing: Programming & Hardware, Douglas V. Hall, Tata

Reference Books:

1. Digital fundamentals ¬Floyd & Jain, , Pearson education, eighth edition, 2007
2. Digital Design –Morris Mano, Pearson Education
3. Modern Digital Electronics, R.P.Jain, 3rd Edition, Tata McGraw¬Hill, 2003
4. Digital systems, principles and applications – Ronald Tocci, Neal S. Widmer, Gregory Moss (Pearson Education) 9 th Edition.

Course Code:	UCSC0308
Course Name:	Computer Network Lab

L	T	P	Credit
		2	1

Course Prerequsites:

Must have basic knowledge of computers and Computer Network

Course Description:

This course provides a solid understanding of implementation of different framing, error control, flow control and routing algorithms. Help students to design network as per the requirement. Students can develop client server application using socket API and make them understand different application layer protocol with help of simulation and demonstration.

Course Outcomes:

CO1	Build sample network and VLAN as per the organization requirements
CO2	Develop software programs for framing, error control, flow control and routing algorithms
CO3	Make use of socket API to develop client-server programs
CO4	Inspect working of different types of application layer protocols from TCP/IP protocol suite
CO5	Develop FOSS server to configure different types of network services

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1			2			1								1
CO2			2											
CO3			2											
CO4					2								2	
CO5					2								2	

Assessment Scheme:

SN	Assessment	Weightage	Remark
1	In Semester Evaluation (ISE)	100%	Experiment, Practical Performance and Oral Exam
2	Practical Oral and Exam (POE)	100%	Practical Performance and Oral Exam

Course Contents:

Experiment 1	**Design and simulation of sample network**	**2 Hours**
Experiment 2	**Demonstration of network testing tools**	**2 Hours**
Experiment 3	**Implementation of framing techniques** **A) Character count** **B) Bit stuffing**	**2 Hours**
Experiment 4	**Implementation of Error control mechanisms** **A) CRC** **B) Hamming Code**	**2 Hours**
Experiment 5	**Implementation of Flow control mechanisms** **A) Stop and wait ARQ** **B) Go Back N** **C) Selective repeat**	**2 Hours**

Experiment 6	**Design and simulate working of Virtual LAN**	**2 Hours**
Experiment 7	**Implementation of Routing algorithm** **A) Shortest path routing** **B) Distance vector routing**	**2 Hours**
Experiment 8	**Implementation of Client-Server model** **A) Simple client-server model** **B) Iterative client-server model** **C) Concurrent client-server model**	**2 Hours**
Experiment 9	**Simulation of application layer protocol**	**2 Hours**
Experiment 10	**Installation and Configuration of FOSS server**	**2 Hours**

Text Books:

1. Data Communications and Networking – Behrouz A Forouzan (The McGraw Hill)
(Unit 1,2,3)
2. Computer Networks – Andrew S. Tanenbaum- (Prentice Hall) 5th Edition (Unit 3, 4)
3. TCP/IP Protocol Suite- Behrouz Forouzan-(The McGraw Hill) (4,5,6)

Reference Books:

1. Computer Networking with Internet Protocols and Technology, William Stallings (Prentice Hall)

Course Code:	UCSC0309
Course Name:	Fundamentals of Web

L	T	P	Credit
1		1	2

Course Prerequsites:

Basics of C Language for JQuery and Javascript

Course Description:

Design, Develop and host website on the webserver

Course Outcomes:

CO1	Design web pages using HTML and CSS
CO2	Develop responsive website using bootstrap
CO3	Developing interactive website using Jquery and Javascript

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2			3								1	2
CO2	3		3		3									2
CO3	2		3		3									2
CO4	2	3	3		3				3	3	3	3	2	2

Assessment Scheme:

SN	Assessment	Weightage	Remark
1	In Semester Evaluation 1 (ISE1)	10%	Assignment, Test, Quiz, Seminar, Presentation, etc.
2	Mid Semester Examination (MSE)	30%	50% of course contents
3	In Semester Evaluation 2 (ISE2)	10%	Assignment, Test, Quiz, Seminar, Presentation, etc.
4	End Semester Examination (ESE)	50%	100% course contents

Course Contents:

Unit 1	HTML 5.0	3 Hours

Introduction to HTML5, Features of HTML5, HTML5 DocType, New Structure Tags, Section, Nav, Article, Aside, Header, Footer, Designing a HTML Structure of Page, New Media Tags, Audio Tag, Video Tag, Canvas and Svg Tag, Introduction to HTML5 Forms, New Attributes, Placeholder Attribute, Require Attribute, Pattern Attribute, Autofocus Attribute, email , tel, url types, number type, date type, range type, voice search, Examples of Form

Unit 2	CSS 3.0	3 Hours

Introduction to CSS 3, New CSS 3 Selectors, Attribute Selectors, First-of-type, Last- of-type, Nth-child, Element:empty, New CSS3 Properties, Custom Fonts, Text- Shadow Property, Text-Stroke Property, Rounded Corners, Box Shadows, CSS Gradients, CSS Multiple backgrounds, Opacity Property, Transition effect, Transform effect, Animation effects, Css Media Queries, Using CSS3 in Practical Layout

Unit 3	BootStrap	3 Hours

Introduction to Responsive Design, Mobile first design concepts, Common device dimensions, View-port tag, Using css media queries, Menu conversion script, Basic Custom Layout, Introduction to Bootstrap, Installation of Bootstrap, Grid System, Forms, Buttons, Icons Integration, Using CSS3 in Practical Layout

Unit 4	**JavaScript**	**3 Hours**

Introduction to Client Side Scripting, Introduction to Java Script, Javascript Types, Variables in JS, Operators in JS, Conditions Statements, Java Script Loops, JS Popup Boxes, JS Events, JS Arrays, Working with Arrays, JS Objects, JS Functions, Using Java Script in Realtime, Validation of Forms, Related Examples, Frameworks of js.

Unit 5	**jQuery and jQuery UI**	**3 Hours**

Introduction to jQuery, jQuery Features, Installing jQuery, jQuery Syntax, jQuery Ready Function, jQuery Selectors, jQuery Actions, jQuery plugins, jQuery Validation plugin, jQuery Slideshow, jQuery Dropdown, jQuery UI, Working with jQueryUI, jQuery Accordions, jQuery Tabs, jQuery Tooltips, jQuery Autocomplete

Unit 6	**Web Hosting**	**3 Hours**

Web Hosting Basics, Types of Hosting Packages, Registering domains, Defining Name Servers, Using Control Panel, Creating Emails in Cpanel, Using FTP Client, Maintaining a Website, Introduction to Joomla & Wordpress CMS

Text Books:

1. HTML & CSS: The Complete Reference, Fifth Edition by ThomasPowell
2. JavaScript: The Definitive Guide, 6th Edition ByDavid Flanagan
3. Learning jQuery Fourth Edition byJonathan Chaffer,KarlSwedberg

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