



**B.E. COMPUTER SCIENCE AND ENGINEERING
 (SEVEN SEMESTER PART TIME)
 CURRICULUM 2008**

SEMESTER I

Code No.	Course Title	L	T	P	C
THEORY					
PCS101	Discrete Mathematics	3	1	0	4
PCS102	Digital Principles and System Design	3	1	0	4
PCS103	Data Structures	3	0	0	3
PCS104	Digital Signal Processing	3	1	0	4
PRACTICAL					
PCS105	Data Structures in C	0	0	3	2

Total Hours: 18

Total Credits: 17

SEMESTER II

Code No.	Course Title	L	T	P	C
THEORY					
PCS201	Computer Architecture	3	1	0	4
PCS202	Microprocessors and Micro controller	3	1	0	4
PCS203	Object Oriented Programming	3	0	0	3
PCS204	System Software	3	0	0	3
PRACTICAL					
PCS205	Object Oriented Programming Lab	0	0	3	2

Total Hours: 17

Total Credits: 16

SEMESTER III

Code No.	Course Title	L	T	P	C
THEORY					
PCS301	Probability and Queuing Theory	3	1	0	4
PCS302	Theory of Computation	3	1	0	3
PCS303	Operating System	3	1	0	4
PCS304	Database Management Systems	3	1	0	4
PRACTICAL					
PCS305	Database Management Systems Lab	0	0	3	2

Total Hours: 19

Total Credits: 17

SEMESTER IV

Code No.	Course Title	L	T	P	C
THEORY					
PCS401	Principles of Compiler Design	3	0	0	3
PCS402	Software Engineering Methodologies	3	0	0	3
PCS403	Visual Programming	3	0	0	3
PCS404	Design and Analysis of Algorithm	3	1	0	4
PRACTICAL					
PCS405	Compiler Design Lab	0	0	3	2

Total Hours: 16

Total Credits: 15

SEMESTER V

Code No.	Course Title	L	T	P	C
THEORY					
PCS501	Software Quality Management	3	0	0	3
PCS502	Web Technology	3	0	0	3
PCS503	Distributed Computing	3	0	0	3
PCS504	Computer Networks and Management	4	0	0	4
PRACTICAL					
PCS505	Web Technology and Network Programming Lab	0	0	3	2

Total Hours: 16

Total Credits: 15

SEMESTER VI

Code No.	Course Title	L	T	P	C
PCS601	Graphics and Multimedia	3	0	0	3
PCS602	Object Oriented Analysis and Design	3	0	0	3
PCS603	Network Security	3	1	0	4
PCS604	Component Based Technology	3	0	0	3
PRACTICAL					
PCS605	CASE TOOLS Lab	0	0	3	2

Total Hours: 16

Total Credits: 15

SEMESTER VII

Code No.	Course Title	L	T	P	C
PCS701	Mobile Computing	3	0	0	3
PCS702	Artificial Intelligence	3	0	0	3
PCS703*	Elective I	3	0	0	3
PCS704	Project Work	0	0	12	6

Total Hours: 21

Total Credits: 15

Overall Credits: 110

LIST OF ELECTIVES

Elective Code No *	Course Title	L	T	P	C
A	Embedded Systems	3	0	0	3
B	Data Warehousing and Mining	3	0	0	3
C	C# and .NET Framework	3	0	0	3
D	User Interface Design	3	0	0	3
E	Digital Image Processing	3	0	0	3

PCS101 DISCRETE MATHEMATICS 3 1 0 4

UNIT -I PROPOSITIONAL CALCULUS 9

Propositions – Logical connectives – Compound propositions – Conditional and biconditional propositions – Truth tables – Tautologies and contradictions – Contrapositive – Logical equivalences and implications – DeMorgan's Laws - Normal forms – Principal conjunctive and disjunctive normal forms – Rules of inference – Arguments - Validity of arguments.

UNIT -II PREDICATE CALCULUS 9

Predicates – Statement function – Variables – Free and bound variables – Quantifiers – Universe of discourse – Logical equivalences and implications for quantified statements – Theory of inference – The rules of universal specification and generalization – Validity of arguments.

UNIT -III SET THEORY 9

Basic concepts – Notations – Subset – Algebra of sets – The power set – Ordered pairs and Cartesian product – Relations on sets –Types of relations and their properties – Relational matrix and the graph of a relation – Partitions – Equivalence relations – Partial ordering – Poset – Hasse diagram – Lattices and their properties – Sublattices – Boolean algebra – Homomorphism.

UNIT-IV FUNCTIONS 9

Definitions of functions – Classification of functions –Type of functions - Examples – Composition of functions – Inverse functions – Binary and n-ary operations – Characteristic function of a set – Hashing functions – Recursive functions – Permutation functions

UNIT-V GROUPS 9

Algebraic systems – Definitions – Examples – Properties – Semigroups – Monoids – Homomorphism – Sub semigroups and Submonoids - Cosets and Lagrange's theorem –

Normal subgroups – Normal algebraic system with two binary operations - Codes and group codes – Basic notions of error correction - Error recovery in group codes.

L: 45; T: 15; Total: 60

TEXT BOOKS:

1. Trembly J.P and Manohar R, “Discrete Mathematical Structures with Applications to Computer Science”, Tata McGraw–Hill Pub. Co. Ltd, New Delhi, 2003.
2. Ralph. P. Grimaldi, “Discrete and Combinatorial Mathematics: An Applied Introduction”, Fourth Edition, Pearson Education Asia, Delhi, 2002.

REFERENCES:

1. Bernard Kolman, Robert C. Busby, Sharan Cutler Ross, “Discrete Mathematical Structures”, Fourth Indian reprint, Pearson Education Pvt Ltd., New Delhi, 2003.
2. Kenneth H.Rosen, “Discrete Mathematics and its Applications”, Fifth Edition, Tata McGraw – Hill Pub. Co. Ltd., New Delhi, 2003.

UNIT I BOOLEAN ALGEBRA AND LOGIC GATES 8

Review of binary number systems - Binary arithmetic – Binary codes – Boolean algebra and theorems - Boolean functions – Simplifications of Boolean functions using Karnaugh map and tabulation methods – Logic gates.

UNIT II COMBINATIONAL LOGIC 9

Combinational circuits – Analysis and design procedures - Circuits for arithmetic operations - Code conversion – Introduction to Hardware Description Language (HDL)

UNIT III DESIGN WITH MSI DEVICES 8

Decoders and encoders - Multiplexers and demultiplexers - Memory and programmable logic - HDL for combinational circuits

UNIT IV SYNCHRONOUS SEQUENTIAL LOGIC 10

Sequential circuits – Flip flops – Analysis and design procedures - State reduction and state assignment - Shift registers – Counters - HDL for sequential logic circuits, Shift registers and counters.

UNIT V ASYNCHRONOUS SEQUENTIAL LOGIC 10

Analysis and design of asynchronous sequential circuits - Reduction of state and flow tables – Race-free state assignment – Hazards.

L: 30; T: 45; Total: 75

TEXT BOOK

1. M.Morris Mano, “Digital Design”, 3rd edition, Pearson Education, 2002.

REFERENCES

1. Charles H.Roth, Jr. “Fundamentals of Logic Design”, 4th Edition, Jaico Publishing House, 2000.
2. Donald D.Givone, “Digital Principles and Design”, Tata McGraw-Hill, 2003.

PCS103

DATA STRUCTURES

3 0 0 3

UNIT I PROBLEM SOLVING

9

Problem solving – Top-down Design – Implementation – Verification – Efficiency – Analysis – Sample algorithms.

UNIT II LISTS, STACKS AND QUEUES

8

Abstract Data Type (ADT) – The List ADT – The Stack ADT – The Queue ADT

UNIT III TREES

10

Preliminaries – Binary Trees – The Search Tree ADT – Binary Search Trees – AVL Trees – Tree Traversals – Hashing – General Idea – Hash Function – Separate Chaining – Open Addressing – Linear Probing – Priority Queues (Heaps) – Model – Simple implementations – Binary Heap

UNIT IV SORTING

9

Preliminaries – Insertion Sort – Shellsort – Heapsort – Mergesort – Quicksort – External Sorting

UNIT V GRAPHS

9

Definitions – Topological Sort – Shortest-Path Algorithms – Unweighted Shortest Paths – Dijkstra's Algorithm – Minimum Spanning Tree – Prim's Algorithm – Applications of Depth-First Search – Undirected Graphs – Biconnectivity – Introduction to NP-Completeness

Total : 45

TEXT BOOKS:

1. R. G. Dromey, "How to Solve it by Computer" (Chaps 1-2), Prentice-Hall of India, 2002.
2. M. A. Weiss, "Data Structures and Algorithm Analysis in C", 2nd ed, Pearson Education Asia, 2002. (chaps 3, 4.1-4.4 (except 4.3.6), 4.6, 5.1-5.4.1, 6.1-6.3.3, 7.1-7.7 (except 7.2.2, 7.4.1, 7.5.1, 7.6.1, 7.7.5, 7.7.6), 7.11, 9.1-9.3.2, 9.5-9.5.1, 9.6-9.6.2, 9.7)

REFERENCES:

1. Y. Langsam, M. J. Augenstein and A. M. Tenenbaum, "Data Structures using C", Pearson Education Asia, 2004
2. Richard F. Gilberg, Behrouz A. Forouzan, "Data Structures – A Pseudocode Approach with C", Thomson Brooks / COLE, 1998.
3. Aho, J. E. Hopcroft and J. D. Ullman, "Data Structures and Algorithms", Pearson education Asia, 1983.

PCS104 DIGITAL SIGNAL PROCESSING 3 1 0 4

UNIT – I SIGNALS AND SYSTEMS 9

Basic elements of digital signal Processing –Concept of frequency in continuous time and discrete time signals – Sampling theorem –Discrete time signals. Discrete time systems – Analysis of Linear time invariant systems –Z transform –Convolution and correlation

UNIT – II Z-TRANSFORM AND SYSTEM ANALYSIS 9

DFT and properties - computation of DFT and IDFT using Fast Fourier Transform (FFT), radix-2 DIT and DIF algorithms

UNIT III IIR FILTER DESIGN 9

Structure of IIR – System Design of Discrete time IIR filter from continuous time filter – IIR filter design by Impulse Invariance. Bilinear transformation – Approximation derivatives – Design of IIR filter in the Frequency domain.

UNIT IV FIR FILTER DESIGN 9

Symmetric & Anti symmetric FIR filters – Linear phase filter – Windowing technique – Rectangular, Kaiser windows – Frequency sampling techniques – Structure for FIR systems.

UNIT – V POWER SPECTRUM ESTIMATION AND DSP 9

Discrete Random Signals- Mean, Variance, Co-variance and PSD – Periodiogram Computation.

Introduction to DSP architecture – Harvard architecture - Dedicated MAC unit - Multiple ALUs, Advanced addressing modes, Pipelining

T: 45; T: 15; Total : 60

TEXT BOOKS:

1. John G.Proakis and Dimitris G.Manolakis, "Digital Signal Processing Principles Algorithms and Applications, 3rd edition, Prentice Hall of India Pvt., Ltd. 2002.
2. 2.B.Venkataramani & M. Bhaskar, Digital Signal Processor Architecture, Programming and Application, TMH 2002. (UNIT – V)

REFERENCES:

1. Sanjit K. Mitra, "Digital Signal Processing – A Computer based Approach", Tata McGraw-Hill Edition, 2002
2. Alan Oppenheim V., Ronald Schafer W., "Discrete Time Signal Processing", Pearson Education India Pvt Ltd., New Delhi, 2002.
3. Avtar singh, S.Srinivasan DSP Implementation using DSP microprocessor with Examples from TMS32C54XX -Thamson / Brooks cole Publishers, 2003
4. S.Salivahanan, A.Vallavaraj, Gnanapriya, Digital Signal Processing, McGraw-Hill / TMH, 2000.
5. Johny R.Johnson :Introduction to Digital Signal Processing, Prentice Hall, 1984.

1. Queue implementation using arrays.
2. Stack implementation-using arrays.
3. Singly, doubly and circular linked list implementation and all possible operations on lists
4. Queue and Stack implementation using linked list.
5. Implement the application for checking 'Balanced Parenthesis' using array implementation of Stack ADT.
6. Implement the application for 'Evaluating Postfix Expressions' using array and linked list implementations of Stack ADT.
7. Binary search tree implementation using linked list and possible operations on binary search trees.
8. In-order, preorder and post order traversals.
9. Quick sort.
10. Heap Sort.
11. Binary Search implementation.
12. Depth first and Breadth first traversal in graphs.