SSM College of Engineering and Technology

SYLLABUS

REVISED-2011

For

B.E (Computer Science Engineering)

SSM College of Engineering and Technology
Scheme Of Course For B.E (Computer Science Engineering)

THIRD SEMESTER

			MARKS ALLOTED EXAMINATION		SESSIONAL			CONTACT HOURS PER WEEK			
S NO	**COURSE No.**	**Name of the Course**	**Theory**	**Practical**	**Theory**	**Practical**	**Total**	**L**	**T**	**P**	**Total**
1	CSE-301	Mathematics	100	-	50	-	150	3	1	-	4
2	CSE-302	Electronics – I	100	-	25	-	125	3	1	-	4
3	CSE-303	Principles of Electrical Engineering	100	-	25	-	125	3	1	-	4
4	CSE-304	Digital Electronics and Logic Design	100	-	25	-	125	3	1	-	4
5	CSE-305	C Programming	100	-	25	-	125	3	1	-	4
6	CSE-306	Numerical Methods	100	-	50	-	150	3	1	-	4
7	CSE-307	Electronics – I(Lab)	-	35	-	15	50	-	-	2	2
8	CSE-308	Principles of Electrical Engineering (Lab)	-	35	-	15	50	-	-	2	2
9	CSE-309	Digital Electronics and Logic Design (Lab)	-	35	-	15	50	-	-	2	2
10	CSE-310	C Programming (Lab)	-	35	-	15	50	-	-	2	2
		Total	600	140	200	60	1000	18	6	8	32

Subject: Mathematics **Semester: 3rd**

Course No: CSE-301

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 50	**3**	**1**	**-**

MATRICES

Unit I

Definition and algebra of matrices transpose of a matrix, symmetric and skew symmetric, hermitian and skew hermitian matrices, ad-joint and inverse of a matrix, orthogonal and unitary matrix, and solution of simultaneous equations by matrix method, rank of a matrix, Eigen values and Eigen vectors of a matrix, Caley Hamilton theorem.

COMPLEX VARIABLE

Unit II

Analytic function, Cauchy Riemann equation, harmonic function, complex integration, Cauchy's integral theorem, Cauchy integral formula, Cauchy inequality, Liouville's theorem.

Unit III

Fundamental theorem of algebra, gauss means value theorem, Taylors laurents expansion, maximum modulus theorem, the argument theorem, rouches theorem.

Unit IV

Zeros and poles of analytic functions, residues and Cauchy residues theorem, contour integration (round the unit circle & semi-circle).

LAPLACE TRANSFORMATION

Unit V

Laplace transforms, existence of Laplace transform, linear property shifting theorems, change of scalar property, laplace transform of integrals, multiplication division theorems, periodic functions.

The inverses Laplace transform convolution theorem and applications.

Books Recommended:

1. Complex Variable by CURCHILL.
2. Complex Variable by Dr. J.S BINDRA & K.S GILL
3. Matrices by SHANI NARAYAN.
4. Laplace & Fourier Transformation by GOYAL GUPTA.

Subject: Electronics-I **Semester: 3rd**

Course No: CSE 302

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 25	**3**	**1**	**-**

Unit I

Introduction to Diodes and Rectifiers: Intrinsic and extrinsic semiconductors, transport mechanism of charge carriers, electric properties, Hall Effect.

P-N junction diode: current components in p-n junction, characteristics piecewise linear approximation, temperature dependence, diode capacitance and switching times. Diode circuits half wave, full wave rectifiers. Basic operation of zener, avalanche, schottky, photo and tunnel diodes

Unit II

Transistor as an Amplifier: Transistor at low frequencies- h parameter model analysis- expression of voltage and current gain- input and output impedance- CE- CB and CC configurations- comparison- transistor parameters from static characteristics- FET: operation- characteristics- small signal model.

Unit III

Transistor Biasing: Operating point- DC and AC load lines- Q point selection- bias stability- definition of stability factors- derivation of stability factor for ICO variation- fixed bias- collector to base bias- self bias circuits- bias compensation- compensation for ICO and VBE.

Unit IV

RC Coupled amplifier: Working-analysis and design- phase and frequency response- FET amplifier: biasing- analysis and design.

Unit V

Wave shaping circuits: Clipping- clamping- RC integration - differentiation- transistor as a switch- stable multivibrator- working and design - UJT- working and applications- simple sweep circuit.

Text Books:

1. Electronic devices and circuits: Boylsted & Nashelsky- Pearson Edn.
2. Integrated Electronics: Millman & Halkias- Mc Graw Hill.
3. Electronic Principles: Malvino- Tata Mc Graw Hill.

Reference Books:

1. Electronic devices and circuits: Bogart- UBS.
2. Electronic devices and circuits: Allen Mottershed- PHI.
3. Electronic devices: Floyd- Pearson Edn.

Subject: Principles of Electrical Engineering **Semester: 3rd**

Course No: CSE-303

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 25	**3**	**1**	**-**

Unit I

Electric Circuit Laws: Basic electric circuit terminology, Ohm's law, Kirchhoff's current law (KCL) and Kirchhoff's voltage law (KVL), circuit parameters (Resistance, Inductance and capacitance). Series and Parallel combinations of resistance, Inductance and capacitance, Nodal analysis.

Unit II

Energy Source & Dependent Sources: Ideal and practical voltage and current sources and their transformation. Dependent voltage sources and dependent current sources

Unit III

D.C. Circuit Analysis: Power and energy relations, Analysis of series parallel D.C. circuits, Delta star (Y) Transformation, Loop and Nodal methods, Thevenin's theorem, Norton's theorem, Maximum Power transfer theorem, Superposition theorem.

Unit IV

A.C. Circuit Analysis: Basic terminology and definitions, Phasor and complex number representations, solutions of sinusoidal excited, RC circuits, power and energy relations in a c circuits, Applications of network theorems to a.c. circuits, Resonance in series and parallel circuits.

Unit V

Steady State A.C. Three phase Circuits: Concept of a 3 phase voltage, wye (Y -) circuits. Delta circuits, current and voltage relations in Y and △Circuits, characteristics of 3 phase systems.

Text Books:

1. Principles of Electrical Engg by B. L. Theraja

Reference Books:

1. Electrical Engg. Principles by Vincent Deltoro

Subject: Digital Electronics & Logic Design **Semester: 3rd**

Course No: CSE-304

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 25	**3**	**1**	**-**

Unit I

Number Systems and Codes: Digital Signals, Digital Waveforms, Number systems (Decimal, binary, octal, hexadecimal), and conversions. Binary Addition and Subtraction, Codes and parity in codes, error detection and correction codes

Logic gates and Boolean algebra: Definations,Symbols and Truth Tables of Gates, Theorems and Properties of Boolean Algebra, Boolean functions. Karnaugh Simplifications (2, 3, 4, 5, 6 variables), Don't-care Conditions, Product-of-sums Method, Sum-of-Products Method, Simplification by Quine-McClusky Method**.**

Unit II

Combinational Logic design: Adders, subtractors, Multiplexers, Demultiplexers, 1-of-16 Decoder, Encoders, Parity Generators and Checkers, Magnitude Comparator.

Unit III

Sequential Logic Design: Clock Waveforms, TTL Clock, Schmitt Trigger, RS FLIP_FLOP ,Clocked D FLIP-FLOP, Edge-triggered D FLIP-FLOP, Edge-triggered JK FLIP-FLOP, FLIP-FLOP Timing, JK Master-slave FLIP-FLOP, Various Representation of FLIP-FLOPs, Analysis of Sequential Circuits.

Registers: Types of Registers, Serial In - Serial Out, Serial In - Parallel out, Parallel In - Serial Out, Parallel In - Parallel Out, Universal Shift Register, and Applications of Shift Registers.

Unit IV

Counters: Binary Counters, Divide by N Ripple counter, Decade Counter, Preset table Counters, Synchronous Counters, Asynchronous counters, UP/DOWN Counters, Introduction to D/A Conversion and A/D Conversion.

UNIT V:

VHDL Programming: Introduction, Code Structure, Data Types Operators & Attributes, Concurrent Code, Sequential Code, Signals & Variables, State Machines, Circuit Designs

Text Books:

1. Donald P Leach, Albert Paul Malvino & Goutam Saha: Digital Principles and Applications, Tata McGraw Hill.
2. M Morris Mano: Digital Logic and Computer Design, Pearson Education.

Reference Books:

1. Stephen Brown, Zvonko Vranesic: Fundamentals of Digital Logic Design with VHDL, Tata McGraw Hill.
2. R D Sudhaker Samuel: Illustrative Approach to Logic Design, Sanguine-Pearson.
3. Ronald J. Tocci, Neal S. Widmer, Gregory L. Moss: Digital Systems Principles and Applications, Pearson Education.

Subject: C Programming **Semester: 3rd**

Course No: CSE-305

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 25	**3**	**1**	**-**

Unit I

Problem Solving: Problems Solving Techniques, Steps for Problem – Solving, Using Computer as a Problem-Solving Tool. Design of Algorithms, Definition, Features of Algorithm, Top Down Design, Analysis of Algorithm Efficiency, Analysis of Algorithm Complexity. Flowcharts, Basic Symbols used in Flowchart Design. Input-Output functions used in C, Introduction to the turbo-C IDE and command line compiler, Concept and use of code, data and stack segment.

Variables and Constants Character Set, Identifiers and Keywords, Rules for Forming Identifiers, Keywords.

Data Types, Data Type Qualifiers, Variables, Declaring Variables, Initializing Variables, Constants, Types of Constants, Preprocessors.

Unit II

Operators & Control Statements: Expressions and Operators Assignment Statements, Arithmetic Operators, Relational Operators, Logical Operators, Special Operators, Type Cast Operator, Size of Operator, C Shorthand, Priority of Operators.

Decision and Control Statements:-

Decision Control Statements, The if statement, Nested If, If-Else, The switch Statement, Loop Control Statements, The while Loop, The do-while Statement, the for Loop, The Nested Loop, The Goto Statement, The Break Statement, The Continue Statement.

Unit III

Arrays & Strings: Arrays: Syntax of Array Declaration, Size Specification, Array Initialization, and Character Array Initialization, Processing the Arrays, Multi-Dimensional Arrays, Multi-Dimensional Array Declaration, and Initialization of Two-Dimensional Arrays. Declaration and Initialization of Strings, Array of Strings, Built-in String Functions, Other String Functions.

Unit IV

Functions Structures and Union: Functions: Definition of functions, Advantages and disadvantages of using functions, Declaration of a Function, Function Prototypes, Calling a function, Passing parameters to function(call by value and call by reference),Returning values from function. Types of Variables and Storage Classes, Automatic Variables, External Variables, Static Variables, Register Variables. Declaration of Structures, array of object, Accessing the Members of a Structure using member access and indirection operator, Initializing Structures, Structures as Function Arguments, Structures and Arrays, Unions, Initializing an Union, Accessing the Members of an Union.

Unit V

Pointers : Pointers and their Characteristics, Address and Indirection Operators, Pointer Type Declaration and Assignment, Pointer Arithmetic, Passing Pointers to Functions, A Function Returning More than One Value, Function Returning a Pointer, Arrays and Pointers, Array of Pointers, Pointers and Strings.

Unit VI

Files : File Handling in C Using File Pointers, Open a file using the function fopen ( ), Close a file using the function fclose ( ), Input and Output using file pointers, Character Input and Output in Files, String Input / Output Functions, Formatted Input / Output

Text Books:

1. Balagurusamy. E, "Programming in ANSI C", Tata McGraw Hill
2. Let us C, Yashavant kanetkar, BPB Publications

Reference Books:

1. "The C Programming Language" by Kerninghan
2. Programming with C, Byron S. Gottfried, Tata McGraw
3. C How to Program, Deitel & Deitel, Prentice hall

Subject: Numerical Methods **Semester: 3rd**

Course No: CSE-306

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 50	**3**	**1**	**-**

UNIT I

Introduction: Representation of numbers, Fixed point numbers, Floating point numbers, Normalized floating point numbers.

Requirements for computer-oriented solutions to numerical problems. Approximations & Errors – Types of Programming Errors, Computer & Arithmetic Errors, Accuracy and Precision, Round Off and Truncation Errors.

UNIT II

Algorithms to Compute Roots of Equation: Graphical representation of iterative methods, Tabulation method or Brute Force Method, Bisection Method , Secant Method, Newton-Raphson Method, False Position method.

UNIT III

Numerical Solution to Linear Algebraic Equations: Gauss Elimination, Gauss Jordan, Gauss Seidel, L.U. Decomposition. Algorithms for Curve Fitting: Least Square Approximation, Langrange's Interpolated Polynomial, Newton Divided Differences Interpolating Polynomial. Algorithmic Implementations.

UNIT IV

Numerical solution of Ordinary Differential Equations: Numerical integration by Trapezoidal and Simpson's rules, algorithms, Numerical solution of differential equations, Euler method, Runge-Kutta second and fourth order method, Milne predictor corrector method, algorithms, comparison of Runge-Kutta and Predictor-Corrector methods

Text Books:

1. Computer Oriented Numerical methods by R.S Salaria.
2. Numerical methods by Balagurusamy

Reference Books:

1. V. Rajaraman" Computer oriented numerical methods." Prentice Hall of India.
2. S.C.Chapra&R.P.Canale : "Numerical methods for Engineering". Tata McGraw Hill.

SSM College of Engineering and Technology
Scheme Of Course For B.E (Computer Science Engineering)

FOURTH SEMESTER

			MARKS ALLOTED EXAMINATION		SESSIONAL			CONTACT HOURS PER WEEK			
S NO	**COURSE No.**	**Name of the Course**	**Theory**	**Practical**	**Theory**	**Practical**	**Total**	**L**	**T**	**P**	**Total**
1	CSE-401	Discrete Maths	100	-	50	-	150	3	1		4
2	CSE-402	Electronics – II	100	-	25	-	125	3	1		4
3	CSE-403	Signals and Systems	100	-	50	-	150	3	1		4
4	CSE-404	Microprocessors and Interfacing.	100	-	50	-	150	3	1		4
5	CSE-405	Object Oriented Programming with C++	100	-	25	-	125	3	1		4
6	CSE-406	System Software	100	-	50	-	150	3	1		4
7	CSE-407	Electronics – II (Lab)	-	35	-	15	50		-	2	2
8	CSE-408	Microprocessors 8086/8088 (Lab)	-	35	-	15	50			2	2
9	CSE-409	Object Oriented Programming with C++ (Lab)	-	35	-	15	50			2	2
		Total	600	105	250	45	1000	18	6	6	30

Subject: Discrete Mathematics **Semester: 4TH**

Course No: CSE-401

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 50	**3**	**1**	**-**

UNIT I

Sets:- Introduction, Set notations and description, sub-sets, Basis set operations, Venn diagrams, Combination of sets, Finite and infinite sets , Uncountable infinite sets, Mathematical induction, Principle of inclusion and exclusion.

Propositional Calculus: -Logical connectives, Truth tables, Rules of inferences, Normal forms Predicates and Quantifiers .

UNIT II

Permutations and Combinations:- Rules of sum and product, permutations and combinations, generation of Permutations and Combinations.

Discrete probability and Information Theory:- Introduction to discrete probability, Information and mutual information, Pigeon hole principle.

UNIT III

Relations:- Definition, Properties of binary relations, Equivalence relations and partitions, Partial ordering relations, Chains and Antichains .

Boolean Algebras: -Lattices and algebraic systems, Principle of Duality, Basic properties of algebraic systems defined by lattice, Distributed and complimented lattices, Boolean lattices and expressions.

UNIT IV

Graphs and Planar Graphs: - Basic terminology, Multi graphs and weighted graphs, Paths and circuits, shortest path in weighted graphs, Eulerian and Hamiltonian paths and circuits. Factors of a graph, Planar graphs.

Analysis of Algorithms: - The complexity of algorithms, A shortest path algorithm, Complexity of problems, Tractable and intractable problems.

UNIT V

Trees and Cut sets: - Trees, Rooted trees, Path lengths in rooted trees, Prefix codes, Binary search trees, Spanning trees and cut sets. Tree Traversals.

Text Books:

1. Elements of Discrete Mathematics C.L Liu, McGraw Hill
2. Discrete Mathematical Structures, B. Kolman and R.C. Busby, PHI
3. Kenneth H Rosen Discrete Mathematics and its applications, McGraw Hill.

Reference Books:

1. Discrete Mathematical Structures with Applications to Computers by Tembley & Manohar, Mc Graw Hill

Subject: ELECTRONICS-II **Semester: 4TH**

Course No: CSE-402

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 25	**3**	**1**	**-**

Unit I

Feedback Basics: Negative feedback, Effect of negative feedback on performance of amplifiers e.g. on bandwidth. Types of feedback amplifiers, Current shunt, Current series, Voltage shunt and Voltage series Feedback. Analysis of feedback amplifier circuits.

Unit II

Sinusoidal Oscillators: Basic operations, Analysis of general oscillator circuit, Barkhausen's criteria, various types of oscillator circuits and their analysis, Design of practical oscillator circuits.

Unit III

Power amplifier and Power supplies: Classification of power amplifiers, Class A, Class B, Class AB and Class C power amplifiers, analysis and design. Power supplies and IC regulators.

Unit IV

Operational Amplifiers: Operational amplifier stages, Differential amplifier, CMRR, Cascade amplifier, Ideal and practical operational amplifier characteristics and properties of operational amplifiers, Applications: Inverting and non-inverting amplifiers, difference amplifier, summer, differentiator and integrator, rectifiers. Op-amp in analog computation.

Unit V

Multivibrators and Wave form Generators: Bistable, Monostable and astable multivibrator circuits and their analysis. Wave form generators, triangular and square wave generators.

Text Books:

1. Integrated Electronics by J. Millman & C. Halkias
2. Electronic Devices & Circuits by R. Boylestad

Reference Books:

1. Integrated Electronics by Millman & Halkias.
2. Microelectronics by Sedra & Smith
3. Electronic Circuits by D. Schelling & Belove.

Subject: SIGNALS AND SYSTEMS **Semester: 4TH**

Course No: CSE-403

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 50	**3**	**1**	**-**

UNIT I

REPRESENTATION OF SIGNALS : Continuous and discrete time signals: Classification of Signals: Periodic and aperiodic signals , even and odd signals, energy and power signals ,Deterministic and nondeterministic signals , elementary signals; exponential, sinusoidal, impulse, step, ramp, pulse, square wave signals – Transformation of signals: time scaling, time shifting, time-inversions of signals.

UNIT II

ANALYSIS OF CONTINUOUS TIME SIGNALS AND SYSTEMS: Determination of Fourier series, Representation of continuous time periodic Signals, properties of the continuous time Fourier series. Continuous time Fourier Transform and Laplace Transform, analysis of step, ramp, impulse etc– properties of the Continuous time Fourier Transform and Laplace Transform basic properties, Parseval's relation, and convolution in time and frequency domains. **Basic properties of continuous time systems**: Linearity, Causality, time invariance, stability, Interconnection of systems, Linear time invariant systems, characterization, unit impulse response , convolution, properties of LTI systems, linear constant co-efficient differential equations and system description.

UNIT III

SAMPLING THEOREM AND Z-TRANSFORMS: Representation of continuous time signals by its sample, Sampling theorem, Reconstruction of a Signal from its samples, aliasing, discrete time processing of continuous time signals, sampling of band pass signals. **Basic principles of z-transform**: z-transform definition, region of convergence , properties of ROC, Properties of z-transform, Poles and Zero, inverse z-transform, Partial fraction expansion, Relationship between z-transform and Fourier transform.

UNIT IV

DISCRETE TIME SYSTEMS: Computation of Impulse, response and Transfer function using Z Transform. DTFT Properties and examples – LTI-DT systems -Characterization using difference equation, Block diagram representation, Properties of convolution and the interconnection of LTI Systems, Causality and stability of LTI Systems.

Text Books:

1. AlanV.Oppenheim, Alan S.Willsky with S.Hamid Nawab, Signals & Systems, Pearson Education.

Reference Books:

1. John G.Proakis and Dimitris G.Manolakis, Digital Signal Processing, Principles, Algorithms and Applications.
2. K.Lindner, “Signals and Systems”, McGraw Hill International.
3. Simon Haykin and Barry Van Veen, Signals and Systems, John Wiley.

Subject: MICROPROCESSORS AND INTERFACING **Semester: 4TH**

Course No: CSE-404

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 50	**3**	**1**	**-**

Unit I

Introduction to microprocessor, Evolution and Applications of microprocessors. 8085 microprocessor: Architecture, Block diagram, Pin diagram of 8085 microprocessor.

Unit II

The 8086 Microprocessor Architecture: Introduction to 8086 microprocessor, Internal architecture of 8086, Memory segmentation, 8086 flags, Internal registers, physical address generation, Pin description in maximum & minimum modes.

Unit III

Addressing modes of 8086, Instruction execution timing, assembler instruction format, data transfer instructions, arithmetic instructions, branch instructions, looping instructions, NOP and HLT instructions, flag manipulation instructions, logical instructions, shift and rotate instructions, directives and operators, programming examples.

Unit IV

Interrupt definition, Maskable and non maskable interrupts, vectored interrupts, 8086 interrupts, hardware, special instruction and condition produced by instruction Interrupt types, dedicated interrupts and software interrupts, Interrupt acknowledgement cycle, Interrupt priorities.

I/O interfacing, Isolated I/O & memory mapped I/O, Memory interfacing.

Unit V

Interfacing of microprocessors with interfacing chips like 8255 Programmable peripheral interface, 8259 programmable interrupt controller, 8237 DMA controller, 8251 programmable communication interface

Text Books:

1. Microprocessor Architecture, Programming & Applications with 8085: Ramesh S Gaonkar; Wiley Eastern Ltd.
2. Microprocessors and interfacing: Hall; TMH

Reference Books:

1. The Intel Microprocessors 8086- Pentium processor: Brey; PHI
2. The 8088 & 8086 Microprocessors-Programming, interfacing, Hardware & Applications: Triebel & Singh; PHI
3. Microcomputer systems: the 8086/8088 Family: architecture, Programming & Design: Yu-Chang Liu & Glenn A Gibson; PHI.
4. Advanced Microprocessors and Interfacing: Badri Ram; TMH

Subject: Object Oriented Programming with C++ **Semester: 4TH**

Course No: CSE-405

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 25	**3**	**1**	**-**

Unit I

Concepts of Object-Oriented Programming: Object Oriented Programming Paradigm, Basic concepts of OOP's, Benefits of OOPS, and Features of OOPS. Introduction to object oriented design and development, Design steps, Design example, Object oriented languages, Comparison of structured and object-oriented programming languages. Elements of programming language: control statements, input/output functions, pointers, structures, scope resolution operator and class members with access specifiers.

Unit II

Constructor and Destructors: parameterized and un-parameterized constructors, copy constructor. Destructor and its application.

Friend function, Friend class, Inline functions. Overloading of operators and functions.

Unit III

Inheritance: Single and Multiple Inheritance, Concept of Derived and Base class, access specifier under Inheritance, public and private inheritance.Concept of Ambiguity in multiple inheritance.

Unit IV

Polymorphism: Early and Late binding. Virtual functions and Abstract class.

Streams: I/O streams and files streams, I/O Manipulators.

Text Books:

1. Balagurusamy, Object Oriented programming with C++, Tata McGraw Hill.

Reference Books:

1. Robert Lafore, Object Oriented Programming in Turbo C++, Galgotia Publications.
2. BjarneStrustrup, The C++ programming Language, Addison Wesley.
3. Booch, Object Oriented Analysis and Design with Applications, Addison Wesley.

Chair H. Pappas & William H. Murray, "The Complete Reference Visual C++", TMH.

Subject: System Software **Semester: 4TH**

Course No: CSE-406

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 50	**3**	**1**	**-**

UNIT I

INTRODUCTION: System software and machine architecture , The Simplified Instructional computer (SIC) , Machine architecture , Data and instruction formats , addressing modes , instruction sets, I/O and programming.

UNIT II

ASSEMBLERS: Basic assembler functions , A simple SIC assembler, Assembler algorithm and data structures, Machine dependent assembler features, Instruction formats and addressing modes, Program relocation, Machine independent assembler features, Literals, Symbol, defining statements, Expressions, One pass assemblers and Multi pass assemblers .

UNIT III

LOADERS AND LINKERS: Basic loader functions, Design of an Absolute Loader, A Simple Bootstrap Loader, Machine dependent loader feature, Relocation, Program Linking, Algorithm and Data Structures for Linking Loader, Machine-independent loader features, Automatic Library Search, Loader Options, Loader design options, Linkage Editors, Dynamic Linking.

UNIT IV

MACRO PROCESSORS: Basic macro processor functions, Macro Definition and expansion Macro Processor Algorithm and data structures, Machine-independent macro processor features , Conditional Macro Expansion, Keyword Macro Parameters, Macro processor design options.

UNIT V

SYSTEM SOFTWARE TOOLS: Text editors, Overview of the Editing Process, User Interface, Editor Structure. Interactive debugging systems, Debugging functions and capabilities, Relationship with other parts of the system. User-Interface Criteria.

Text Books:

1. Leland L. Beck, "System Software – An Introduction to Systems Programming", Pearson Education.

Reference Books:

1. D. M. Dhamdhere, "Systems Programming and Operating Systems", Tata McGraw-Hill.
2. John J. Donovan "Systems Programming", Tata McGraw-Hill Edition.

SSM College of Engineering and Technology
Scheme Of Course For B.E (Computer Science Engineering)

FIFTH SEMESTER

			MARKS ALLOTED EXAMINATION		SESSIONAL			CONTACT HOURS PER WEEK			
S NO	**COURSE No.**	**Name of the Course**	**Theory**	**Practical**	**Theory**	**Practical**	**Total**	**L**	**T**	**P**	**Total**
1	CSE-501	Principles of Communication Engineering	100	-	25	-	125	3	1		4
2	CSE-502	Theory of Automata	100	-	50	-	150	3	1		4
3	CSE-503	Computer Organization and Architecture	100	-	50	-	150	3	1		4
4	CSE-504	Data Structures with C++	100	-	25	-	125	3	1		4
5	CSE-505	Database Management System (DBMS)	100	-	50	-	150	3	1		4
6	CSE-506	Analysis and Design of Algorithms	100	-	50	-	150	3	1		4
7	CSE-507	Principles of Communication Engineering (Lab)	-	35	-	15	50			2	2
8	CSE-508	Data Structures with C++ (Lab)	-	35	-	15	50			2	2
9	CSE-509	DBMS (Lab)	-	35	-	15	50			2	2
		Total	600	105	250	45	1000	18	6	6	30

Subject: Principles of Communication Engineering **Semester: 5TH**

Course No: CSE-501

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 25	**3**	**1**	**-**

UNIT I

Basic Communication Systems: Basic block diagram of communication systems. Types of communication channels and their characteristics, Frequency / Spectrum allocations and their application areas, International standards for communication systems and frequency assignment, Wireless communication systems, Satellite communication systems, Optical fiber communication systems.

UNIT II

Spectrum and Noise : Fourier transforms and its properties, energy and power density spectrum and applications, Sources of noise – Active and passive device noise, Noise parameters like S/N ratio, Noise factor, Noise figure, Noise factor of cascaded network, Noise temperature, and Noise bandwidth of system.

UNIT III

Amplitude and Frequency Modulation: AM, DSB/SC, SSB, VSB, Angle modulation, NBFM, WBFM, Diode detector, Frequency discriminator, AM & FM, Transmitter.

Demodulation: AM and FM signals, Radio Receivers – AM & FM (Block diagram)

UNIT IV

Pulse Modulation Techniques: Sampling and quantization of band-limited signals, PAM, PWM, PPM and PCM and their generation and detection. Digital Modulation: ASK, FSK, PSK performance evaluation with block diagram and waveforms.

UNIT V

Multiplexing Techniques: FDM and FDMA, TDM and TDMA, Standard FDM and TDM systems (only block diagrams and waveforms), Applications in satellite communication, optical communication and wireless communication.

Text Books:

1. Taub H. and Shilling D. L., Principles of Communication Systems, TMH.
2. Carlson R. B., Communication Systems, Mc.Graw Hill.

Reference Books:

1. Haykin S. S., An Introduction to Analog and Digital Communication Systems, Wiley Eastern.
2. Lathi B. P., Modern Digital and Analog Communication Systems, Oxford University press.
3. Kennedy, Electronic Communication Systems, TMH.

Subject: Theory of Automata **Semester: 5TH**

Course No: CSE-502

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 50	**3**	**1**	**-**

Unit I

Automata Theory: Introduction to Finite state systems, Deterministic Finite Automaton (DFA), Non-deterministic Finite Automaton (NFA), Equivalence of NFA and DFA, NFA with e-transitions: e-closures, Eliminating €-transitions, Conversion of NFA with e to NFA without e, Conversion of NFA without e to DFA, Two way Finite Automata(2DFA), FA with output: Moore and Mealy machines: Definition, models, inter-conversion.

Unit II

Regular Expressions (RE) and Languages: Regular Expressions , Operators of RE, Building RE, Precedence of operators, Algebraic laws for RE, Arden's Theorem, Equivalence of Regular Expressions, RE and FA: Conversion of RE to e-NFA, Conversion of NFA to RE, Conversion of DFA to RE, FA limitations, Properties of Regular Languages: pumping lemma for regular languages, closure and decision properties of regular languages.

Unit III

Context Free Grammars (CFG) and Languages : Context Free Grammar: Definition, Derivation or parse tree, Ambiguity in grammars and languages: removal of ambiguity, Properties of CFL, Normal forms: Chomsky Normal Form and Greibach Normal Form, Eliminating unit productions, useless production, useless symbols, and e-productions, Regular Grammar - definition, left linear and right linear Regular Grammar, Regular Grammar and Finite Automata, FA to RG and RG to FA, Inter-conversion between left linear and right linear regular grammar.

Unit IV

Push Down Automata (PDA) : Definition, The Language of PDA, Equivalence of PDA's and CFG-CFG to PDA, PDA to CFG, The pumping lemma for CFL, Closure properties of CFL, Decision properties of CFL, Chomsky Hierarchy: Unrestricted grammars, Context sensitive grammars, Context Free Grammar and Regular Grammar .

Unit V

Turing Machine : The Turing Machine(TM)-Notation, Recursive and recursive enumerable language, Extensions to basic TM, Composite TM, Iterated TM, Universal TM, Solvability, Semi-Solvability, Unsolvability, The halting problem.

Text Books:

1. Hopcroft J., Mptwani R., Ullman J., "Introduction to Automata Theory, Languages and Computations“.

Reference Books:

1. Martin J., "Introduction to Language and Theory of Computation", Third edition, Tata McGraw-Hill
2. Lewis H., Papadimitriou C., "Elements of Theory of Computation“, Pearson
3. Theory of computer science by Sahni

Subject: Computer Organization and Architecture **Semester: 5TH**

Course No: CSE-503

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 50	**3**	**1**	**-**

Unit I

Introduction: Brief History of computers, Von Neumann Architecture, Functional Units, Bus structures and Interconnection networks, Performance.

Data Types and Computer Arithmetic: Fixed point representation, Signed numbers, Integer Arithmetic, Booths Algorithm for multiplication. Division: Restoring and Non Restoring algorithms, Floating point representations, Floating point arithmetic operations.

Unit II:

Processor and Control Unit Design: Register Organization, Stack Organization, Instruction Set, Instruction formats, Instruction cycle, Types of operands, Addressing Modes.

CPU Organization, Single bus organization, Control step sequence, Control unit functions, Hardwired control unit Design, Micro programmed control unit design.

Unit III

Memory Organization: Characteristics and hierarchy of memory systems. Main Memory- ROM, PROM, EPROM, EEPROM, and RAM: SRAM, DRAM, SDRAM, RDRAM. High-Speed Memories: Cache Memory, organization and Mapping, Replacement Algorithms. Associative Memories, Virtual Memory: Main Memory allocation, Segmentation, Paging.

Secondary Storage: Magnetic Hard Disk, RAID, Optical memory, CDROM, DVD.

Unit IV

I/O Organization: Input /Output Systems, Programmed I/O, Interrupt Driven I/O, I/O channels, Direct Memory Access (DMA), Buses and standard Interfaces: Synchronous, Asynchronous, Parallel, Serial, PCI, SCSI, USB Ports Peripherals: Keyboard, Mouse, Scanners, Video Displays and Laser Printers

Unit V

Multiprocessor Configurations: Flynn's classifications, Parallel processing concepts, Introduction to pipeline processing and pipeline hazard, design issues of pipeline architecture, Instruction pipelining. Introduction to RISC & CISC Architectures.

Text Books:

1. C. Hamacher, V. Zvonko, S. Zaky, "Computer Organization", McGraw Hill.
2. W. Stallings, "Computer Organization and Architecture: Designing for performance", Prentice Hall of India.
3. J. Hays, "Computer Architecture and Organization", McGraw-Hill

Reference Books:

1. A. Tanenbaum, "Structured Computer Organization",Prentice Hall of India.
2. G. George, "Computer Organization: Hardware and Software", Prentice Hall of India.

Subject: Data Structures Using C++ **Semester: 5TH**

Course No: CSE-504

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 25	**3**	**1**	**-**

UNIT I

Introduction to data structures: Data structures Basic: Basic terminology, Built in data structures in C++, Abstract data types: ADT of Array, Stack and Queue. Stacks - Introduction to stack & primitive operation on stack, Stack's applications – Polish Notation: Infix, postfix & Prefix expressions and their evaluation, Recursion. Queues -Introduction to queues, Primitive Operations on the Queues, Circular queue, Dequeue, Priority queue, Application of Queues.

UNIT II

Linked List: Introduction to the Linked List, Memory representation of linked list, Operation on Linked List, Linked List representation of stack and Queue. Types of Linked List – Doubly Linked List, Circular Linked List, Application of Linked List. Adding and deletion of new node at any position in existing linked list.

UNIT III

Trees: Basic Terminology of Trees, Binary Trees, Threaded binary Tree, height balanced tree, AVL tree, B-tree, B+ and B* trees. Tree representations as Linked List. Binary tree representation, Traversal of binary trees - In order, Preorder & post order, Application of Binary tree.

UNIT IV

Searching & Sorting Techniques: Sequential Searching, Binary search and their Comparison. Sorting - External & Internal sorting, Insertion sort, Selection sort, Quick sort, Bubble sort, Heap sort, Merge sort,

Tables - Hash table & Hashing Techniques.

UNIT V

Graphs : Introduction to graphs, Basic Terminology, Directed, Undirected & Weighted graph, Representation of graphs, Warshall's algorithm for path matrix and shortest path, Graph Traversals: Depth first & Breadth first search. Spanning Trees, minimum spanning Tree, The basic Greedy Strategy for computing Algorithm of Kruskal, and Prim Applications of Graphs: Shortest path and Longest Path Problems.

Text Books:

1. Fundamentals of data structure by S. Sawhney & E.Horowitch
2. Data structure Schaum's outline series, Mcgraw Hillpublication

Reference Books:

1. Data structure by Tremblay & sorrenson

Subject: Database Management System **Semester: 5TH**

Course No: CSE-505

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 50	**3**	**1**	**-**

UNIT I

Introduction to DBMS: Basic concepts, Advantages of a DBMS over file-processing systems, Data abstraction and data independence. Components of a DBMS and overall structure of a DBMS. Database terminology.

UNIT II

Data Modeling & Relational Model: Basic Concepts, Types of data models, E-R data model and Object-oriented data model. Relational, Network and Hierarchical data models and their comparison. E-R and EER diagramming.

Basic concepts of relational model: Attributes, Tuples, domains and Relations. concept of integrity and referential constraints. Relational Query Languages (Relational Algebra and relational Calculus).

UNIT III

SQL: Structure of a SQL query, DDL and DML, SQL queries, Set Operations. Set membership, Tuple variables, set comparison, ordering of tuples, aggregate functions, Nested Sub queries, Database modification using SQL, Introduction to P/L SQL , Concept of stored procedures.

UNIT IV

Relational Database Design & Transaction management: Notion of normalized relations. Normalization using functional dependency, Multi-valued dependency and Join dependency. Basic concept of a transaction, Components of transaction management (Concurrency and recovery system).

UNIT V

Object-oriented DBMS: Object-oriented concepts: objects, classes, attributes, messages, inheritance and polymorphism etc., object schemes, class-subclass relationships, inter-object relationship, features of object-oriented DBMS and ORDBMS.

Text Books:

1. Henry Korth, Abraham Silberchatz: "Database System Concepts,McGraw Hill, Inc, New York.
2. C. J. Date, "Introduction to database Management systems".

Reference Books:

1. Groff James R., Paul Weinberg, "LAN times guide to SQL"
2. Bipin Desai, "Introduction to database management systems".

Subject: Analysis and Design of Algorithms **Semester: 5TH**

Course No: CSE-506

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 50	**3**	**1**	**-**

UNIT I

Algorithms: Definitions and notations: standard notations - asymptotic notations – worst case, best case and average case analysis; big oh, omega and theta notations; Recursive algorithms, Mathematical Analysis of Non-recursive Algorithm, Mathematical Analysis of Recursive Algorithm, solving recurrence equations, Analysis of Sorting and Searching: insertion, selection and bubble sort ; sequential, binary and Fibonacci search.

UNIT II

Divide and Conquer/ Greedy Method: General Method, binary search, finding maximum and minimum merge sort and quick sort, Strassen's Matrix multiplication.

Greedy Method: General method – knapsack problem – minimum spanning tree algorithms single source shortest path algorithm – scheduling, optimal storage on tapes, optimal merge patterns

UNIT III

Dynamic Programming: General method – multi-stage graphs – all pair shortest path algorithm 0/1 Knapsack and Traveling salesman problem – chained matrix multiplication – approaches using recursion – memory functions.

Basic Search and Traversal technique

UNIT IV

Backtracking & Parallel Algorithms: The general method – 8-queens problem – sum of subsets – graph coloring Hamiltonian cycle – Knapsack problem.

Branch and Bound Method: Least Cost (LC) search – the 15-puzzle problem control abstractions for LC-Search – Bounding – FIFO Branch-and-Bound traveling salesman problem.

Computational Model, Basic Techniques and Algorithms (Complete Binary Tree, Pointer Doubling, Prefix Computation), Selection, Merging, Sorting Networks, Parallel Sorting, Graph Problems (Alternate Algorithm for Transitive Closure, All pairs shortest path)

UNIT V

NP-Hard And NP-Complete Problems: Algorithms, Complexity-intractability, Non-Deterministic Polynomial time (NP) Decision problems, Cooks Theorem.

NP-Complete problems- Statisfiability problem, vertex cover problem.NP-Hard problems-graph, scheduling, code generation problems, Simplified NP Hard Problems.

Text Books:

1. A. V. Aho and J.D. Ullman, "Design and Analysis of Algorithms", Addison Wesley
2. Horowitz and Sahani, "Fundamentals of computer Algorithms", Galgotia.

Reference Books:

1.Thomas H Connen and Charles E.L Leiserson, "Introduction to Algorithm" PHI
2. Bressard, "Fundamental of Algorithm." , PHI

SSM College of Engineering and Technology
Scheme Of Course For B.E (Computer Science Engineering)

SIXTH SEMESTER

			MARKS ALLOTED EXAMINATION		SESSIONAL			CONTACT HOURS PER WEEK			
S NO	**COURSE No.**	**Name of the Course**	**Theory**	**Practical**	**Theory**	**Practical**	**Total**	**L**	**T**	**P**	**Total**
1	CSE-601	Data Communication	100	-	25	-	125	3	1	-	4
2	CSE-602	Software Engineering	100	-	50	-	150	3	1	-	4
3	CSE-603	Computer Graphics	100	-	50	-	150	3	1	-	4
4	CSE-604	Web Programming	100	-	25	-	125	3	1	-	4
5	CSE-605	Operating Systems	100	-	50	-	150	3	1	-	4
6	CSE-606	Compiler Design	100	-	50	-	150	3	1	-	4
7	CSE-607	Computer Graphics (Lab)	-	35	-	15	50	-		2	2
8	CSE-608	Web Programming (Lab)	-	35	-	15	50	-		2	2
9	CSE-609	Data Communication (Lab)	-	35	-	15	50	-		2	2
		Total	600	105	250	45	1000	18	6	6	30

Subject: Data Communication **Semester: 6TH**

Course No: CSE-601

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 25	**3**	**1**	**-**

UNIT I

Data and Signals: Types of data and their representation, Signals, Types of Signals, Bandwidth, spectrum, Digitization of analog signals, sampling, Nyquist sampling theorem, quantization, quantization noise, Pulse code modulation

UNIT II

Digital modulation Techniques and Line coding techniques: ASK, FSK, PSK, DPSK, M-ary PSK, and QAM. Signal constellation. Digital Encoding Techniques, Scrambling and Block Encoding.

UNIT III

Transmission media and Data transmission: Guided and un-guided media, twisted wire pair, co-axial cable, optical fibre , microwave links, satellite microwave link, Characteristic features and applications for data transmission. Simplex, half duplex and full duplex, Asynchronous and synchronous data transmission. Carrier, bit and frame synchronization techniques, Phase lock loop.

UNIT IV

Multiplexing Techniques and Error Detection and correction techniques: Frequency Division Multiplexing, Time Division Multiplexing, Wavelength division Multiplexing and Code Division Multiplexing. Spread Spectrum.

Errors, Types of Errors, Types of Codes, Linear Block Codes: Matrix Description of Linear Block Codes, Error detection and correction capabilities, Hamming Distance, Hamming Bound, Hamming Codes, CRC Block Codes, Syndrome Calculation, Handshaking Techniques, FEC, ARQ - Stop and Wait, Go Back N, Selective Repeat, Channel Throughput and Efficiency

UNIT V

Switching Techniques and Digital Communications Technologies: Circuit switching, Packet switching and message switching, Telephone network, High-Speed Digital Access: DSL, Cable Modems and Sonets

SF, ESF Framing, DS1/T1, DSU, CSU, HDSL, Digital Hierarchy, Digital Services, ISDN, Frame Relay, SONET, ATM, BISDN, Video on Demand, ADSL

Text Books:

1. William Stallings: Data & Computer Communications, PHI
2. Fourauzan B., "Data Communications and Networking", Tata McGraw-Hill Publications.
3. Godbole A., "Data Communications and Networks", Tata McGraw-Hill Publications,
4. Andrew Tanenbaum, “Computer Networks” PHI

Reference Books:

1. Sklar, “Digital Communications fundamentals & Applications”, Pearson Pub.
2. Keizer, “ Local Area Networks” McGraw Hill.

Subject: Software Engineering **Semester: 6TH**

Course No: CSE-602

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 50	**3**	**1**	**-**

UNIT I

Introduction: Software and software engineering, evolution of software engineering, software life cycle models, Software Characteristics, software myths, software Applications, Software crisis, Software process, characteristics of software process, software products, characteristics of software products.

UNIT II

Software project management: Project management concepts, software metrics software process and project metrics Project planning and control scheduling, Software quality assurance, Software configuration management, Software cost estimation, decomposition techniques, empirical estimation techniques, COCOMO, Software equation.

UNIT III

Requirements Analysis and specification: Requirements engineering, system modeling, partitioning, Software prototyping: Prototyping methods and tools, software requirement Specification, components of SRS document, characteristics of SRS, Formal specification Technique, The data dictionary, state transaction diagram, entity/ relationship diagram, cardinality and modality, Data flow diagrams, the control and process specification.

UNIT IV

System Design: Software design, design concepts and principles and notations, design concepts: Abstraction, refinement, modularity, software architecture, control hierarchy, structural partitioning, data structure, software procedure, information hiding, Architectural design, architectural styles, data centered architectures, data flow architectures, call and return architectures, object oriented architectures, layered architectures, User interface design, Component design, Graphical design notation, tabular design notation, program design language, Effective modular design: Functional independence, Cohesion, Coupling.

UNIT V

Testing: Software testing fundamentals: objectives, principles, testability, white box testing, basis path testing, Control structure testing: Black box testing, Software Testing Strategies: Verification and validation, Unit testing, Integration testing,; Validation testing, alpha and beta testing.

UNIT VI

Object oriented software engineering: Object oriented concepts classes and objects, Inheritance, Polymorphism, Object oriented system design pyramid, Conventional vs OO approaches, design issue, software reuse, reengineering, reverse engineering, restructuring, computer aided software engineering.

Text Books:

1. Software Engineering – A Practitioner's Approach, Roger S. Pressman, MGH.
2. An integrated approach to S/W Engg by JALOTE
3. Software Engineering by Nasib Singh Gill

Reference Books:

1. Fundamentals of software Engineering, Rajib Mall, PHI
2. Software Engineering by Ian sommerville, Pearson Edu, AW

Subject: Computer Graphics **Semester: 6TH**

Course No: CSE-603

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 50	**3**	**1**	**-**

Unit I

Introduction to Computer Graphics: Applications of Computer Graphics. Graphic Display Devices_ Raster and Random. Flat panel display devices, Display Processor, Display Buffer, Concept of Double Buffering and Segmentation of Display Buffer. Color Displays: Shadow Masking and Beam Penetration methods, Use of Lookup tables. Graphics Input and Output Devices_ Description and Applications. Graphic Kernel System, Introduction to GKS, GKS primitives.

Unit II

2-D Graphics: Cartesian and Homogeneous Coordinate Systems. Line drawing algorithms (Bresenhams and DDA). Bresenhams Circle and Ellipse Drawing Algorithms. Character generation, 2-Dimensional Transformations. Concepts of Window & Viewport, Window to Viewport Transformations. Filling, Boundary and Floodfill algorithms.

Unit III:

Clipping: Line Clipping Algorithms (Cohen-Sutherland Algorithm), Sutherland Hodgeman Polygon Clipping, Text Clipping, 3-D Graphics, Projections: perspective and parallel projection transformations. 3-Dimensional Transformations. Hidden Surface Removal Techniques, Z-Buffer Algorithm, Back Face Detection. Scan Line Algorithm. Painter's Algorithm.

Unit IV

Curves and Surfaces:

Interpolation, Spline representation, Interpolation & Approximation Splines, Spline Specifications, Hermite Interpolation. Beizer-Curves & Surfaces, B-Spline Curves surfaces.

Text Books:

1 .Hearn and Baker " Computer Graphics", Pearson Education.
2. W.M.Newman and Sproull. "Principles of interactive Computer Graphics" ,TMH
3 .Steven Harrington." Computer Graphics a Programming Approach" McGraw Hill.
4. James. D. Foley, A Vandam etal "Computer Graphics" Pearson

Reference Books:

1. David F Frogers and J Alan Adams. "Procedural Elements of Computer Graphics" McGraw Hill
2. David F Rogers and J Alan Adams. "Mathematical Elements of Computer Graphics" McGraw Hill

Subject: Web Programming **Semester: 6TH**

Course No: CSE-604

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 25	**3**	**1**	**-**

UNIT I

HTML - Concepts of Hypertext, Versions of HTML, Elements of HTML syntax, Head & Body Sections, Building HTML documents, Inserting texts, Images, Hyperlinks, Backgrounds and Colour controls, Different HTML tags, Table layout and presentation, Use of front size& Attributes. List types and its tags, Use of Frames and Forms in web pages, ASP& HTML Forms.

UNIT II

Overview of Dynamic Web page, introduction & features of ASP.NET, Understanding ASP.NET Controls, Applications, Web servers, installation of IIS. Web forms, web form controls -server controls, client controls, user controls styles, themes and master pages. User control styles, themes and master pages. Adding controls to a web form, Buttons, Text Box, Labels, Checkbox, Radio Buttons, List Box. Adding controls at runtime. Running a web Application, creating a multiform web project.

UNIT III

Form Validation: Client side validation, server Side validation, Validation Controls, Rich Controls.

UNIT IV

Overview of ADO.NET, from ADO to ADO .NET. ADO.NETarchitecture, Accessing Data using Data Adapters and Datasets, using Command & Data Reader, binding data to data bind Controls, displaying data in data grid.XML in .NET, XML basics, attributes, fundamental XML classes: Document, text writer, text reader. XML validations, XML in ADO.NET, The XML DataDucument.

Text Books:

1. The Complete Reference ASP.NET by Mathew Macdonald - TMH
2. Professional ASP.NET- Wrox publication
3. VB.NET Programming Black Book by stevenholzner –dreamtech publications

Reference Books:

1 . Introduction to .NET framework-Worx publication
2. ASP.NET Unleashed
3. C# programming – wrox publication

Subject: Operating System **Semester: 6TH**

Course No: CSE-605

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 50	**3**	**1**	**-**

UNIT I

Introduction: Introduction to Operating System Concepts (including Multitasking, multiprogramming, multi user, Multithreading). Types of Operating Systems: Batch operating system, Time-sharing systems, Distributed OS, Network OS, Real Time OS; Various Operating system services.

UNIT II

Process Management: Process concept, process scheduling, operation on processes; CPU scheduling, scheduling criteria, scheduling algorithms -First Come First Serve (FCFS), Shortest-Job-First (SJF), Priority Scheduling, Round Robin(RR), Multilevel Queue Scheduling. System calls, System programmes.

Threads: Overview, Thread issues, Synchronization Hardware, Semaphores, Critical region.

UNIT III

Memory Management: Logical & Physical Address Space, swapping, contiguous memory allocation, non-contiguous memory allocation paging and segmentation techniques, segmentation with paging, virtual memory management.

UNIT IV

I/O management and File System: I/0 Interfaces, Buffer register, Buffer commands, Operating system design issue.

Different types of files and their access methods, directory structures, various allocation methods, disk scheduling and management.

UNIT V

Deadlocks: Introduction, Dead lock resource allocation graph, wait for graph Methods for handling deadlocks-deadlock prevention, avoidance & detection, Deadlock recovery.

Unit VI

Unix and shell programming: Introduction to Unix, Architecture of Unix, Features of Unix , Unix File System, Unix Commands, Introduction to shell Programming.

Text Books:

1. Operating System Concepts by Silberchatz et al, Addison-Wesley.
2. Modern Operating Systems by A. Tanenbaum, Prentice-Hall.
3. Operating Systems Internals and Design Principles by William Stallings Prentice-Hall.

Reference Books:

1. Operating System By Peterson , AW.
2. Operating System Incorporating With Unix & Windows By Colin Ritche, TMH.
3. Operating Systems By Deitel, AWL.

Subject: Compiler Design **Semester: 6TH**

Course No: CSE-606

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 50	**3**	**1**	**-**

Unit I

Introduction to Compiler: Translator issues, why to write compiler, Structure of compiler, Interpreter and the related issues, Programming language basics.

Unit II

Lexical Analysis: Introduction of lexical analysis: alphabet, token, lexical error, Block schematic of lexical analyser, explanation of NFA, DFA, Conversion from NFA to DFA, R.E. to optimized DFA. Construction of Lexical analysis: Hand coding of Lexical analyser, I/O buffering, Lexical look ahead issue, removal of white spaces and comments, Automatic construction of lexical analyser (LEX), LEX specification details.

Unit III

Syntax Analysis: Introduction: Role of parsers & issues of separating lexical & syntax analysis. Types of grammar, CFG introduction, expressing language through CFG. Basic concepts in parsing-leftmost derivation, rightmost derivation, derivation tree, sentence, sentential form, language, derivation, parse tree, Ambiguous grammar, and disambiguating grammar. Parsing technique: Top down-RD parser, Predictive LL (k) parser, Bottom up-shift-Reduce, SLR, LR (k). Error detection and recovery . Automatic construction of parser (YACC), YACC specification files details-error detection and recovery in YACC.

Unit IV

Static Semantics and Intermediate code Generation: Syntax directed translation, schemes, implementation, intermediate code, postfix notation, parse and syntax tree, three address code, quadruples and triple.

Unit V

Code Generation and Code Optimization: Introduction: Issues in code generation, Target language, target Addresses, Register description, local and global register allocation and assignment.

Code Optimization: Introduction, Principle sources Of Optimization, code optimization, loop optimization, dominators, basic blocks and flow graphs, optimization of basic blocks: DAG representation. A simple code generation.

Unit VI

Run Time Storage Organization: Storage allocation strategies, static, dynamic storage allocation (stack and heap allocation of memory) symbol table management.

Text Books:

1. Aho, A. V., R. Sethi and J. D. Ulman, Compiler principle, techniques and tools-, Addison wesley.

2. Barrent W. A., J. D. Couch, Compiler construction theory and practice-, Computer science series.

Reference Books:

1. Dhamdhere D. M., Compiler construction principle and practice-, Mac. Millan India, New Delhi.

2. Gress D.. Compiler construction for digital computer, Wiley New York.

3. Holub A. J., Compiler design in C-Printice Hall.

4. Tremblay J. P. and R G. Sorenson Theory and Practice of compilers.

SSM College of Engineering and Technology
Scheme Of Course For B.E (Computer Science Engineering)

SEVENTH SEMESTER

			MARKS ALLOTED EXAMINATION		SESSIONAL		CONTACT HOURS PER WEEK				
S NO	**COURSE No.**	**Name of the Course**	**Theory**	**Practical**	**Theory**	**Practical**	**Total**	**L**	**T**	**P**	**Total**
1	CSE-701	JAVA	100	-	50	-	150	3	1	-	4
2	CSE-702	Computer Networks	100	-	50	-	150	3	1	-	4
3	CSE-703	Artificial Intelligence	100	-	50	-	150	3	1	-	4
4	CSE-704	Wireless Communication	100	-	25	-	125	3	1	-	4
5	CSE-705	Elective –I	100	-	25	-	125	3	1		4
6	CSE-706	JAVA (Lab)		35	-	15	50	-	-	2	2
7	CSE-707	Wireless Communication (Lab)	-	35	-	15	50	-	-	2	2
8	CSE-708	Elective –I (Lab)	-	35	-	15	50	-	-	2	2
9		Seminar	-	-	50	-	50	-	-	2	2
10		Minor Project	-	-		100	100	-	-	2	2
		Total	500	105	250	145	1000	15	5	10	30

ELECTIVE- I :

1. Windows Programming with V.B .NET.
2. Multimedia Applications.
3. Embedded Systems.

Subject: Java Programming **Semester: 7TH**

Course No: CSE-701

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 50	**3**	**1**	**-**

Unit I

Evolution of java, Key concepts, platform independence, Compile and interpret architecture, concept of java virtual machine and byte-code. Suitability for distribution via internet. Comparison with C++ (inheritance, garbage collection). Introduction to basic java development environment, JDK and tools.

Unit II

Overview of java language syntax, basic program structure, statements, variables, constants, and supported data types, operators and expressions .Control constructs-branching and looping. Classes, objects and methods, arrays, strings, command line arguments, Constructors, Finalizers, Garbage Collection, Access specifier.

Unit III

Single inheritance, use of extends, super and final primitives. Concept of interfaces and its use in implementing multiple inheritance.Concept of package. Import and use of standard java API packages. User-defined packages and naming conventions.

Unit VI

Exception handling mechanisms use of try, catch and finally blocks.Throughing user defined exceptions. File I/O-support and mechanisms in java. Multi –threaded programming, concepts and supporting mechanisms in java. Thread control methods, thread life cycle and synchronization.

Unit V

Using Java for web-based applications via applets. Comparison and limitations w.r.t full fledged java applications. Use of APPLET tag and its attributes for integration into HTML. Basic structure of an APPLET, its life-cycle, states, passing parameters. Handling user inputs. Introduction to JDBC

Text Books:

1. Balagurusamy,”Programming with java -A primer”,TMH
2. Herbert schildt,”java2-The complete refrences’,TMH

Reference Books:

1. Arnold, Gosling,”The java programming languagw”.Addison-wesley.
2. Deitel &Deitel, “JAVA-how to program”,PHI(EEE).

Subject: Computer Networks **Semester: 7TH**

Course No: CSE-702

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 50	**3**	**1**	**-**

Unit I

Introduction: Review of Applications of Computer Networks, Network hardware and software, Reference Models: OSI and TCP/IP, Example Networks: Internet, X.25, Frame Relay, ATM, Ethernet, Wireless LANs, Network standardization, Switching, Buffering and Multicasting

Unit II

Data Link Layer: Design issues: Services, Framing, Error and flow control. HDLC .Data link layer in Internet and ATM

Point-to-Point-Access (**PPP**): Frame format, Transition states, PPP. **Stack**: LCP, NCP Network **Hardware Components**: Connectors, Transceivers and Media Converters, Repeaters, NICs, Bridges and Switches

Unit III

Medium Access Control sub-layer : Channel allocation: Static and Dynamic allocation, Multiple Access Protocols: ALOHA, CSMA, Collision-free and limited-contention protocols, WCDMA, Wireless LAN Protocols, **Ethernet:** Cabling, encoding, MAC sub-layer protocol, Switched, fast and Gigabit Ethernet, Logical link control, Wireless LANs and Digital Cellular Radio, Broadband Wireless, Virtual LANs, Bluetooth. **Virtual Circuit Switching**: Frame Relay and ATM

Unit IV

Network Layer: Design Issues, Packet switching, Connectionless and Connection-oriented Services, Virtual Circuit and Datagram Subnets, Routing Algorithms, Internetworking, Firewalls

Congestion Control and QOS: General Principals, Congestion prevention policies, Load shading, Jitter Control, Quality of Service, Internetworking

Network layer Protocols: ARP, IP protocol, IP Addresses, IPV6, and ICMP.

Unicast Routing Algorithms: RIP, OSPF, BGP. **Multicast Routing**: IGMP, Mobile IP

Unit V

Transport Layer: Services and service primitives, Sockets and Socket programming.

Elements of Transport protocol: Addressing, Connection establishment and release, flow control and buffering, Multiplexing, Crash recovery, Simple Transport Protocol.

UDP: Introduction, RPC **TCP**: Introduction, Model, protocol, header, connection establishment and release, connection management, Transmission policy, congestion control, timer management.

Unit VI

Application Layer: Domain Name Systems (DNS),and DNS server, Electronic Mail Architecture and services, Message Formats, MIME, message transfer ,SMTP, Mail Gateways, Relays, Configuration Mail Servers, File Transfer Protocol, General Model commands, TFTP.

World Wide Web: Introduction, Architecture overview, static and dynamic web pages, WWW pages and browsing UTTP, LDAP, Browser Architecture, Caching in Web Browser remote login, Wireless web

Text Books:

1. Tanenbaum A "Computer Networks".
2. Fourauzan B., "Data Communications and Networking, Tata McGraw Hill Publications.

Reference Books:

1. Keshav S., "An Engineering Approach to Computer Networking", Perason Education.
2. Comer D., "Computer Networks and Internet".
3. Gallo M., Hancock W., "Computer Communications and networking Technologies", Thomson Brooks/Cole.

Subject: Artificial Intelligence **Semester: 7TH**

Course No: CSE-703

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 50	**3**	**1**	**-**

Unit I

Introduction to Artificial Intelligence: Definition. A.I Applications, A.I Representation, Properties of internal Representation, Heuristic search techniques. Best first search, mean and ends analysis, A* and AO* Algorithm.

Game Playing: Minimize search procedure, Alpha-beta cut offs. Waiting for Quiescence, Secondary search.

Unit II

Knowledge representation using predicate logic and non-monotonic logic: Predicate calculus, Predicate and arguments, ISA hierarchy, Frame notation, Resolution, Natural deduction.

TMS (Truth maintenance system), Statistical and probabilistic reasoning, Fuzzy-logic, Structure knowledge representation, Semantic-net, Frames, Script, Conceptual dependency.

Unit III

Planning, Perception and Learning: Block world, strips, implementation using goal stack, Non-linear planning with goal stacks, Hierarchical planning, List commitment strategy. Action, Robot architecture, Vision, Texture and images, Representing and recognizing scenes, Waltz algorithm, Constraint determination, Trihedral and Non Trihedral figures labeling.

Learning as induction-matching algorithms. Failure driver learning, learning in general problem solving concept learning.

Unit IV

Neural Networks: Introduction to neural networks and perception-qualitative Analysis only, neural net architecture and applications.

Natural language processing and understanding and pragmatic, syntactic, semantic, analysis, RTN, ATN, understanding sentences.

Unit V

Expert system: Utilization and functionality, Architecture of expert system Knowledge - representation, two case studies on expert systems.

Text Books:

1. Elaine Rich and Kerin Knight; Artificial Intelligence.

Reference Books:

1. Eugene, Chamiak, Drew McDerinott; Introduction to artificial intelligence.'
2. Kishan Mehrotra, Sanjay Rawikd, K. mohan; Artificial Neural Network.

Subject: Wireless Communication **Semester: 7TH**

Course No: CSE-704

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 25	**3**	**1**	**-**

Unit I

Introduction to cellular mobile system: A basic cellular system, performance criteria, Uniqueness of mobile radio environment, Operation of cellular systems, mobile phone generations issues in previous generations planning of cellular system. Elements and technique of Cellular Radio System Design:

General description of problem, Concept of frequency reuse, channels, Co channel interference, reduction Hand off mechanisms, Cell splitting, cell sectorization. Technique for establishing mobile phone infrastructure RF survey transmission drive test RF planning EMF survey.

Unit II

Co-Channel Interference: Real time co-channel interference measurement at mobile radio transceivers, Design of antenna system - Omni directional and directional, Lowering the antenna height, antenna tilting

Types of Non co-channel interference- adjacent channel Interference, Near-End-Far-End interference, Effects on Near-End mobile units, Cross-Talk, Effects on coverage and interference by applying power decrease, antenna height decrease, Beam Tilting, Effects of cell site Components,Interference-between-systems.

Unit III

Cell coverage for signal and traffic: General introduction, obtaining the mobile point-to-point model, multiplexing techniques FDMA ,TDMA ,CDMA Propagation over water or flat open area, signal propagation and its effects multiple path propagation.

Unit IV

Frequency management and Channel Assignment: Frequency management, Frequency spectrum utilization, Handoffs and Dropped Calls: Types of Handoff, soft hard inter cellular intra cellular, Mobile Assisted Handoff and Soft Handoff, Cell-site Handoff and Intersystem handoff

Unit V

Digital Cellular System: GSM, Architecture, Layer Modeling, Transmission, GSM channels and Channel Modes, various elements of GSM like BSS ,BTS, MSC, VLR, HLR and their interpretation.

Text Books:

1. Lee: Cellular and Mobile Communication McGraw Hill.
2. D. P. Agrawal and Q. An Zeng: Wireless and Mobile Systems, Cengage Learning.

Reference Books:

1. Faher Kamilo: Wireless Digital Communication, Prentice Hall of India, New Delhi.
2. G. J. Mullet: Introduction to Wireless Telecommunication Systems and Networks, Cengage Learning.
3. Raj Kamal: Mobile Computing, Oxford University Press.
4. Mobile Communication by SHILLER

ELECTIVE-I

Subject: Windows Programming with V.B .NET **Semester: 7TH**

Course No: CSE-705

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 25	**3**	**1**	**-**

UNIT I

Introduction to .NET: .NET Framework features & architecture, CLR, Common Type System, MSIL, Assemblies and class libraries. Introduction to visual studio .NET, Project basics, types of project in .Net, IDE of VB.NET- Menu bar, Toolbar, Solution Explorer, Toolbox, Properties Window, Form Designer, Output Window, and Object Browser. The environment: Editor tab, format tab, general tab, docking tab. visual development & event drive Programming -Methods and events.

UNIT II

The VB.NET Language: Variables -Declaring variables, Data Type of variables, Forcing variables declarations, Scope & lifetime of a variable, Constants, Arrays, types of array, control array, Collections, Subroutines, Functions, Passing variable Number of Argument Optional Argument, Returning value from function. Control flow statements: conditional statement, loop statement. Message box &Input box.

UNIT III

Working with Forms: Loading, showing and hiding forms, controlling one form within another. GUI Programming with Windows Form: Textbox, Label, Button, List box, Combo box, Checkbox, Picture Box, Radio Button, Panel, scrollbar, Timer, List View, Tree View, toolbar, Status Bar. There Properties, Methods and events. OpenFileDilog, SaveFileDialog, FontDialog, ColorDialog, Print Dialog. Link Label.Designingmenues: Context Menu, access & shortcut keys.

UNIT IV

Object Oriented Programming: Classes & objects, fields Properties, Methods & Events, constructor, inheritance. Access Specifiers: PublicPrivate, Projected. Overloading, My Base & My class keywords. Overview of OLE, Accessing the WIN32 API from VB. Create User control, register User Control.

UNIT V

Database programming with ADO.NET: Overview of ADO, from ADO to ADO.NET, Accessing Data using Server Explorer. Creating Connection, Command, Data Adapter and Data Set with OLEDB and SQLDB. Display Data on data bound controls, display data on datagrid. Generate Reports Using CrystalReportViwer.

Reference Books:

1. Pro VB 2008 and the .NET 3.5 Platform by Andrew Troelsen – Apress publications
2. VB.NET Programming Black Book by stevenholzner –dreamtechpublications
3. Mastering VB.NET by Evangelospetroutsos- BPB publications
4. Introduction to .NET framework-Worx publication

ELECTIVE-I

Subject: Multimedia Applications **Semester: 7TH**

Course No: CSE-705

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 25	**3**	**1**	**-**

UNIT I

Introduction: What is multimedia, Multimedia Applications, Goal and Objectives, Multimedia Building Blocks, Multimedia and Internet.

UNIT II

Multimedia Configuration: Multimedia PC Workstation Components, Multimedia Platform, Multimedia Development Tool, Authoring Tool, Interactivity, High End Multimedia Architecture, Multimedia O.S.: File System (File Formats: TIFF, BMP, PCX, GIF etc), Process Management, Multimedia Communication System, Multimedia DBMS, Multimedia Audio ,Basic Sound Concepts, Audio Capture, Speech and Sound Processor, Sound Recovery Techniques, WAV-File-Formats-for-Sound.

UNIT III

Multimedia Graphics: 2D/3D animation fundamentals, Color modules, Digital Imaging: Still and Moving Images: Video Capture, Animation, Video Processing, Video recovery Techniques, AVO File Format, AVI File Format, NTSC, PAL, SCAM, HDTV System, Video/Audio Conferencing Techniques, Video/Audio Conferencing Standards, Video Streaming, Motion Synchronization

UNIT IV

Image Compression techniques: LZW, DCT, Run Length Coding, JPEG, MPEG, Hypertext and Hypermedia, MHEG, Document Architecture, ODA, SGML.

Augmented and Virtual Reality and Multimedia: Concepts, VR Devices: Hand Gloves, Head Mounted tracking System, VR Chair, CCD, VCR, 3D Sound System, Head Mounted Displays, Rendering Software Setup, Virtual Objects, VRML.

UNIT V

Multimedia devices : Mass Storage Systems for Multimedia Requirements, Magnetic Devices, Optical Devices, CD ROM, DVD, Scanners: Types and Specifications.

Text Books:

1. Ralf Steinmetz, Llara Nahrstedt, Multimedia: Computing,communication and applications PH-PTR Inovative Technology series.
2. Judith Jefcoate, Multimedia in practice: Technology and Application.
3. Durano R. Begault , Virtual Reality and multimedia, AP Professionals.

Reference Books:

1.Micheal J. Young,Windowws Multimedia and Animation with C++ Programming for WIN95, NAP professionals.

2. Kris Jama, Phil Schmauder,Nelson Yee,VRML programmer's Library, Galgotia.

ELECTIVE-I

Subject: Embedded Systems **Semester: 7TH**

Course No: CSE-705

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 100 Sessional: 25	**3**	**1**	**-**

UNIT-I

Embedded systems: Definition, examples, classification – w.r.t. size and real time requirements, software tools required for development – cross assemblers, cross compilers, locators, loaders, simulators, emulators.

UNIT II

8051 microcontroller block diagram: (Registers, Flags, PSW, PC, Input/output Pins, Ports, Internal memory. External memory Oscillator & Clock, counters and Timers, Serial Data IO Transfer, Interrupts). Instruction set (To be covered quickly with no questions directed towards syntax of Instructions)

UNIT III

I/O port programming: sensor and indicators interface: 8051 I/O programming, I/O bit manipulation programming.

UNIT-IV

Timer and counter programming: Programming 8051 timers, counter programming, programming timers 0 and 1 in 8051 C.

UNIT V

Serial port programming with and without interrupt : 8051 interrupts, programming timer interrupts, programming external hardware interrupts, IO-programming the serial communication interrupt, interrupt priority in the 8051

UNIT VI

Real world interfacing: Parallel and serial ADC, DAC interfacing, LCD interfacing

Text Books:

1. Rajkamal, Embedded Systems Architecture, Programming and Design, TATA McGraw-Hill,

Reference Books:

1. Steve Heath, Embedded Systems Design, Newnes.
2. David E.Simon, An Embedded Software Primer, Pearson Education Asia .
3. Wayne Wolf, Computers as Components; Principles of Embedded Computing System Design – Harcourt India, Morgan Kaufman Publishers.

SSM College of Engineering and Technology
Scheme Of Course For B.E (Computer Science Engineering)

EIGHTH SEMESTER

			MARKS ALLOTED EXAMINATION		SESSIONAL		CONTACT HOURS PER WEEK				
S NO	**COURSE No.**	**Name of the Course**	**Theory**	**Practical**	**Theory**	**Practical**	**Total**	**L**	**T**	**P**	**Total**
1	CSE-801	Industrial Management	125	-	50	-	175	3	1	-	4
2	CSE-802	OOAD	125	-	50	-	175	3	1	-	4
3	CSE-803	Image Processing	125	-	50	-	175	3	1	-	4
4	CSE-804	Elective –II	125	-	50	-	175	3	1	-	4
5	CSE-805	Image Processing(Lab)	-	35	-	15	50	-		2	2
6		Practical Tour & Training	-		-	50	50	-		2	2
7		Major Project	-	150	-	250	400	-		2	2
		Total	500	185	200	315	1200	12	4	6	22

ELECTIVE- II :

1. Operational Research.
2. Network Security.
3. Advance Computer Architecture.
4. Real Time Operating System.

Subject: Industrial Management **Semester: 8TH**

Course No: CSE-801

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 125 Sessional: 50	**3**	**1**	**-**

UNIT I

Basic Concepts of Management: Management, Administration and Organization Concepts. Management Principles. Management and Engineering Studies. Meaning and Types of Management. Functions of Management. The concept of Scientific Management - F.W.Taylor and Henry Fayol's contribution to Management. Role and importance of Management in Modern Society

Business Organization: Forms of Business Organization - Individual Proprietorship, Partnership, Joint Stock Company, Co-operative Enterprise and Public Sector Undertakings. Organisation Structures in Industry. Line organisation, functional organisation. Line and Staff organisation. Committee Organisation, Project Organisation, Matrix Organisation.

UNIT II

Nature and Significance of Economics: Science, Engineering, and Technology, their relationship with economic development. Basic economic concepts, Human Wants - Economic goods, Utility, Value, Price, Cost, Wealth and Capital. Demand, supply, elasticity of demand and supply. Concept of Profit and Revenue.

Economic Development of India: Structure and features of Indian Economy. Industrialization of India. Economics of small and large-scale industries. Growth of public sector in India. Recent trend in labour movement in India. Role of agriculture in Indian Economy. Problems of Indian agriculture and modernization of Indian Agriculture.

UNIT III

Financial Management: Concept of Management Accounting Systems. Financial accounting and cost accounting, System Sources of Industrial finance. Sales organisation of a firm. Management of Sales and Advertisement. Market Research. Management and Productivity.

UNIT IV

Personnel Management: Manpower planning sources of recruitment, Selection & training Job evaluation, Performance appraisal, Wags and Incentives, Self & Time Management. Communication: Definition, Elements, Principles of Communication, and Barriers in Communication, Oral and Written Communication.

UNIT V

Industrial Act: Introduction, Factories Act, Pollution Control. Industrial Safety Introduction, Causes of accidents, Safety, Accident Prevention Techniques & related legal provisions

Quality Management: Concept and importance of quality circles and Total quality management (TQM), ISO 9000. Patents, Patent Procedure.

Text Books:

1. OP. Khanna, - Industrial and Management.

Reference Books:

1. C. S. George Jr., - Management for Business and Industry.
2. Kootz & O'Donnell, - Principles of Management.

Subject: OOAD **Semester: 8TH**

Course No: CSE-802

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 125 Sessional: 50	**3**	**1**	**-**

UNIT I

OOAD-Introduction, Review of object modelling ; New Paradigm, Object oriented thinking - rethinking, Objects and classes, Links and association, Generalization and specialization, Inheritance, Grouping Concepts, aggregation, abstracts classes, Polymorphism, Metadata, Constraints, Dynamic Modelling events states, Operations, Concurrency.

UNIT II

Importance of modelling, brief overview of object Modelling Technology(OMT) by Rambaugh, Booch Methodology, USE CASE drive approach (OOSE) by Jackobson.

UNIT-III

Overview of UML: Efforts of standardization/Integration, OMG approval for UML, scope of UML, Conceptual model of UML, architecture - Metamodel, mechanisms, unified software Development lifecycle.

UNIT IV

UML diagrams: terms and concepts, relation ship, diagrams. Advanced class diagram: Advanced relationship, interface types and rules, packages common modelling techniques, modelling groups elements, modelling architectural views. - Instances and object diagrams: Modelling concrete/prototypical instances. Links, Objects interation. -Collaborations, Use cases, Interaction diagrams, state transition diagrams. – Architectural modelling: Component Diagram, Deployment Diagram, pattern and frame work.

UNIT V

Use- case Model: Drawing system sequence diagrams, example of an SSD, inter system SSDs, SSDs and Use Cases, System events and system boundary, Name system events and operations, showing Use Case text. Introduction to Component technology, Introduction to Object oriented databases.

Text Books:

1. Booch/rambaugh, Jachobson-UML User guide, Addison Wesley.
2. Sinonalhair: UML In a Shell

Reference Books:

1. Rambaugh: Object Oriented modeling and design PHI
2. Booch, Object Oriented analysis and design with applications, Addison Wesley.
3. B Meyer, Object Oriented software Constructions, PHI.

Subject: Image Processing **Semester: 8TH**

Course No: CSE-803

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 125 Sessional: 50	**3**	**1**	**-**

UNIT I

Digital Image Processing- Origin, usage and application of image processing. Fundamental steps and component of image processing system. Introduction to Human Visual System. Digital representation of images (monochrome & color). Elements of matrix theory, Digital Imaging Hardware & Software.

UNIT II

Basic image preprocessing (contrast enhancement, simple noise reduction, color balancing), spatial transformation Gray Level linear and non-linear transformation, Histogram Processing, Hadamard and Walsh transformation. Image enhancement in spatial and frequency domain: basic fundamental, smoothing and sharpening domain filters. Sampling & Quantization.

UNIT III

Image Processing filters, Image Segmentation & Analysis, Implementation Feature extraction: Edges, Lines & corners detection, Texture & shape measures.

Segmentation & thresholding, region extraction, edge (Canny) & region based approach, use of motion in segmentation. Feature extraction- Edges, Lines & corners detection, Texture & shape measures

UNIT IV

Image Restoration & Reconstruction. Introduction, Model of Image degradation, Noise Models, Classification of image restoration techniques, Blind-deconvolution techniques, Lucy Richardson Filtering, Wiener Filtering. Image Compression & Object Recognition.

UNIT V

Introduction to Image Compression and its need, Coding Redundancy, Classification of Compression Techniques (Lossy and Lossless - JPEG, RLE, Huffman, Shannon fano), Scalar & Vector Quantization. Introduction to Object Recognition, Object Representation (Signatures, Boundary Skeleton), Simple Boundary Descriptors, Regional descriptors(Texture).

Text Books:

1. Digital Image Processing and Computer Vision, Sonka, lavac, Boyle, Cenage Learning.
2. Digital Image Processing, R.C. Gonzalez, R.R. Woods(TMH)
3. Digital Image Processing And Analysis, PHI, B. Chanda, D.Datta Mujumdar.

Reference Books:

1. Anil Jain, "Fundamentals Of Digital Image Processing", Anil Jain PHI
2. Digital Image Processing using MATLAB, R.C. Gonzalez, R.R. Woods(Person),
3. Digital Image Processing, S.Jayaraman, T. Veerakumar (Mc Graw Hill).
4. Introduction to Digital Image Processing with MATLAB, Alasdair McAndrew, Cenage Learning

ELECTIVE-II

Subject: Operational Research **Semester: 8TH**

Course No: CSE-804

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 125 Sessional: 50	**3**	**1**	**-**

Unit I

Linear Programming Problem (LPP): Formulating LPPs, Simplex Algorithm, Big-M Method, Two-Phase Method, Sensitivity Problems. Duality in LPP: Duality Theorems, Dual Simplex Method

Unit II

Transportation Problems: Mathematical Formulation of Transportation problem, Methods of selecting initial basic feasible solution: Matrix minima method, North-West Corner Rule, Vogel's Approximation Method; Unbalanced Transportation Problem; Degeneracy in Transportation Problem and its resolution through MODI Method (U-V Method). Assignment problems: Algorithm, Unbalanced Assignment Problem, Hungarian Method

Unit III

Inventory Models: Inventory problems and their analytical structures, deterministic economical lot size model, Stochastic and deterministic order level system. Game theory: Definition and Terminologies; Pure Strategy: saddle point, Game with two saddle points; mixed strategies: games without saddle points, 2Xn games, Dominance Property.

Unit IV

Replacement Theory: Replacement of items that fail completely, Replacement of items that deteriorate with time. Sequencing models: Sequencing of n jobs on two machines and three machines with no passing. CPM- Determination of critical tasks. PERT- probability of completing the project on schedule.

Text Books:

1. S.S. Raw," Optimization Methodologies".
2. H.A.TAHA," Operations Research". Pearson Education
3. N.D Vohra- " Qualitative Techniques in Management".

Reference Books:

1. S.D. Sharma," Operations Research & Optimization".
2. Kanti Swaroop, " Operations Research and Applications.

ELECTIVE-II

Subject: Network Security **Semester: 8TH**

Course No: CSE-804

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 125 Sessional: 50	**3**	**1**	**-**

Unit I

Introduction: Motivating examples, Basic concepts: confidentiality, integrity, availability, security policies, security mechanisms, assurance

Unit II

Basic Cryptography: Historical background, Transposition/Substitution, Caesar Cipher
Introduction to Symmetric crypto primitives, Asymmetric crypto primitives, and Hash functions
Secret Key Cryptography: Applications, Data Encryption Standard (DES), Encrypting large messages (ECB, CBC, OFB, CFB, CTR). Multiple Encryptions DES (EDE)

Unit III

Message Digests and Public Key Cryptography : Applications, Strong and weak collision resistance, The Birthday Paradox, MD5, SHA-1 Public Key Cryptography: Applications, Theory: Euclidean algorithm, Euler Theorem, Fermat Theorem, Totent functions, multiplicative and additive inverse, RSA, Selection of public and private keys.

Unit IV

Real-time Communication Security and Electronic Mail Security: Introduction to TCP/IP protocol stack, Implementation layers for security protocols and implications, IPSec: AH and ESP,IPsec: IKE,SSL/TLS,Distribution lists, Establishing keys, Privacy, source authentication, message integrity, non-repudiation, proofof submission, proof of delivery, message flow confidentiality, anonymity, Pretty Good Privacy (PGP)

Unit V

Authentication and Trusted Intermediaries: Per-session keys and authentication tickets, Key distribution centers and certificate authorities, Public Key infrastructures, Certification authorities and key distribution centers, Kerberos.
Firewalls and Web Security: Packet filters, Application level gateways, Encrypted tunnels, Cookies, Web security problems.

Text Books:

1. Cryptography-Network-Security-Principles- by William stallings
2. Computer Security: Principles and Practice William stallings

Reference Books:

1. Practical Cryptography by Ferguson & Schneier
2. Applied Cryptography by Bruce Schneier

ELECTIVE-II

Subject: Advance Computer Architecture **Semester: 8TH**

Course No: CSE-804

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 125 Sessional: 50	**3**	**1**	**-**

Unit I

Introduction to parallel processing: Necessity of high performance, Constraints of conventional architecture, Parallelism in uni processor system, Evolution of parallel processors, Future trends, Architectural classification, Applications of parallel processing, Programming and networking properties, Principles of scalable performance.

Unit II

Pipeline processing: Principles and implementation, Classification of pipeline processors, General pipeline and reservation table, Design aspects of arithmetic, and instruction pipelines, Pipeline hazards and resolving techniques, Data buffering techniques, Advanced pipeline techniques: Loop unrolling technique, Out of order execution, Software scheduling, Trace scheduling, Software pipeline, VLIW processor.

Unit III

Vector Processors & Array Processor: Basic architecture, Issues in Vector processing, Vector instruction formats, Vector performance modeling, Vectorizer and Optimizers SIMD computer organization, Masking and data network mechanism, Inter PE communication, Interconnection network of SIMD, Static Vs Dynamic network, Cube, Hyper cube network

Unit IV

Parallel-algorithms: Multiprocessor Architecture & Multi threaded architecture. SIMD matrix multiplication, Parallelsort, FFT. Loosely coupled, Tightly coupled, Processor characteristics, Inter processor communication networks: Time shared bus, PCI bus, Crossbar switch, Multi port switch Memory contention and arbitration techniques, Cache coherence and snooping, Issues towards cluster computing, Latency hiding techniques, Principles of multithreading, Issues and solutions, Message passing program development, Synchronous message passing, Asynchronous message passing .

Text Books:

1. Kai Hwang, Advanced Computer architecture.

Reference Books:

1. Harrold Stone,High performance computer architecture.
2. Richard Y. Kain, Advanced Computer architecture.

ELECTIVE-II

Subject: Real Time Operating System **Semester: 8TH**

Course No: CSE-804

Marks Allotted	**L**	**T**	**P**
Examination: Theory: 125 Sessional: 50	**3**	**1**	**-**

Introduction: Examples for embedded systems, Design issues and trends, Architectures of embedded systems, Software and operating systems. Comparison of general OS and RTOS.

Operating system and function, Evolution of operating system, Batch, Interactive, Time Sharing and Real Time System, System protection. Operating Systems types, Process Concept. Concurrency and Synchronization, Mutual Exclusion and Deadlock Problems. Process Management. Process States, Process scheduling Algorithms and Implementation. Storage Management. Concepts and implementation of Real and Virtual Storage. File Management, File Organization, File Systems, Protection and security Performance Evaluation, Case study of the UNIX Operating Systems, Basic issues in Multiprocessor and Distributed Operating Systems.

Text Books:

1. Simple Real-time Operating System -Chowdary Venkateswara Penumuchu

Reference Books:

1. Real-Time Concepts for Embedded Systems by Qing Li
2. Real Time systems: Design principles for Distributed Embedded Applications by Hermann Kopetz.