

First Year / First Semester

CSE 111 Introduction to Computer System

Introduction: Data & Information, History, Basic organization of Computer, Computer generations, Types of Computer Main Frame, Mini and Micro computer; Different types of micro computer, Simplest & Expanded Computer System, Number Systems: Binary, Hexadecimal and Octal numbers; A Modern Overview of Computers, Some Modern Computing Ideas, Types of Computer buses.

Hardware & Software : Hardware, Classification of hardware, Types of software, Systems software: Operation system, Editors, Assemblers, Compiler, Interpreters, System Utilities, Application packages.

Input Device Techniques: Keyboard, Touch Screen, Light pen, Mouse, Pen Input Method, Graphics Tablet, Joysticks, Barcodes, OCR System, Scanner, Mark Sense Reader, Magnetic Ink character recognition, digital Camera, Speech Input.

Out Device Techniques: Monitor, Printer, Graphics output devices.

Storage Techniques: Primary Storage Device and techniques, Secondary storage device and techniques.

Operating System: Basic concept Types of operating system: Batch, Multi tasking, multiprocessing, time sharing & real time operating system.

Modern Communication Systems: Computer Networks, types of computer network, network topology, International Network Standards.

Programming Concept: Problem analysis Algorithm build- up Flowcharts, High Level Language Features, Function and Procedure.

Reference Books:

1. Understanding Computer Science for Advance Level (4th Edition) – Ray Bradley
2. Computer Fundamentals (4th Edition) Pradeep K.Sinha
3. Computers and Information Systems (5th Edition), - Sarah E. Hutchinson and Stacey C. Sawyer.
Computer Fundamental M.Lutfar Rahman and M. Alamgir Hossain.

CSE 112 Programming Language

Overview of C; Constants, Variables and data types; Operator & Expression Managing Input and Output Operator; Decision making and branching; Decision making and looping; Arrays; Handling of character strings; User- defined functions; structure and union; Pointers; File management.

Reference Books:

1. E. Balagurusamy, “Programming in ANSI C”
2. Yamath Kanathkar, “Let US C”
3. Yamath Kanathkar, “Pointer in C”
4. Herbert Schildt, “Turbo C”

CSE 113 Programming Language Practical

Laboratory Works Based on CSE 112

Overview of C; Constants variables and data types; Operator & Expression; Managing Input & Output Operators; Decision making and branching; Decision making and looping; Arrays; handling of character strings; User-defined functions; Structure ad union; Pointers; File management.

CSE 114 Physics (Electricity and Magnetism)

Charge, Electric Field & Gauss's Law: Simple phenomena in Electrostatics; Electrostatic induction and charge density; Coulomb's law; Electric field & Field strength; Point Charge in an electric field; dipole in an electric field; Electric flux; Gauss's law and some applications; electric potential; Potential due to a point charge; Equipotential surfaces; Potential energy; Potential gradient; Capacitance and its calculation; Parallel plate capacitor with dielectric & Gauss's law; Electric vectors; Energy stored in an electric field.

Electric Current, Simple Circuits and Electrical Managements: Current and Ohm's law; E.M.F. and potential difference; Whetstone bridge; Simple RC and RL circuits, The potentiometer; Moving coil galvanometer; ammeter; Voltmeter; Multimeter; Wattmeter & Energy meter; Measurements of Voltage, Current, Resistance, Inductance, Capacitance, Power and Energy.

Magnetic Field & Force on Current: Coulomb's law; Magnetic field and field strength; Magnetic force on current; Directions of current and field; Maxwell's screw rule; Fleming's left hand rule; Magnetic field near long wire; Magnetic field for solenoid; Fleming's right hand rule;

Magnetic properties of matter: Poles and dipoles; Coulomb's law for magnets & Gauss's theorem of magnetism; Dia-magnetism, Para-Magnetism and Ferro-Magnetism. Magnetomotive force and field intensity; concept of self and mutual inductance; The coefficient of magnetic coupling; Rise of current and decay of current in inductive circuit; Energy in magnetic field; Inductance in series and parallel; Hysteresis and eddy current losses.

Reference Books:

1. David Haliday and Robert Resin, Physics Part - II
2. Boylested, Introductory Circuit Analysis
3. B.L. Theraja, A Text book of Electrical Technology.

CSE – 115 Differential Calculus and Co-Ordinate Geometry

Differential Calculus; Limits, continuity and differentiability; successive differentiation of various types of functions; leivniz's theorem; Rolle's Theorem: Mean value Theorem in finite and infinite forms; Lagrange's form of remainders; Cauchys of reainders; Expansion of functions; Evaluation indeterminate forms by L Hospitals Rule: Partial Differentiation; Fuler's Theorem; Tangent and Normal, Subtangent and subnormal in Cartesian and polar Co-ordinates; Maximum and minimum values of functions of Single variable; points of inflexion; curvature, radios of curvature, center of curvature Asymptotes, Curve tracing.

Co-ordinate Geometry: Transformation of Co-ordinates axes and it uses; Equation of conics and its reduction to standard forms; Pair of straight lines; Homogeneous equations of second degree; Angle between a pair of straight lines; Pair of lines joining the origin to the point of intersection of two given curves, circles; system of circles; orthogonal circles; radical axis, radical center, properties of radical axes; Coaxial circles; and limiting points; Equation of parabola, ellipse and hyperbola in Cartesian and polar co-ordinates; Tangents and normal, pair of tangents; Chord of contact; Chord in term of its middle points; Pole and polar parametric co-ordinates; diameters; Conjugate diameters and their properties; Director circles and asymptotes.

Reference Books:

1. Dr. Abdul Matin, Differential Calculus
2. Abu Yusuf, Differential Calculus Integral Calculus.
3. B.C. Das & B.N. Mukherjee, Differential Calculus.
4. A Textbook of Co-ordinate Geometry (two and three dimensions)
5. Rahman and Bhattacharja, Co-ordinate Geometry and Vector analysis.

CSE – 116 English

The Works should concentrated at the higher levels on technical and IT usage to include:

Accuracy and conciseness in technical English structure, format, etc for technical reports and theses comparing and contrasting other aspects of short reports (such as for assignments) and long dissertations (such as for projects)

1. READING AND COMPREHENSION:

Thematic structures, vocabulary, cohesive and rhetorical devices, grammatical items, intention / attitude of the writer, précis (i) comprehension; (ii) paragraph; (iii) précis; (iv) essay; (v) amplification; (vi) dialogue – writing.

2. STRUCTURE

The Sentence:

- A i) Normal group – a) determiners, b) Adverb, c) Adjective, d) Noun-adjective, e) Headword, f) Prepositional phrase g) infinitive phrase h) participle phrase i) appositive
- ii) Verbal Group: a) the tenses b) the modal auxiliaries c) phrasal verbs
- iii) Verb Modifiers; a) Adverbials of time b) adverbials of place c) Adverbials of manner d) adverbials of duration, completing sentences, correction of sentences, transformation of sentences, combination of sentences, framing of which questions

G. NOTIONS AND FUNCTIONS:

- i) Emotional attitudes e.g. liking
- ii) Moral attitudes: apology, regret, etc
- iii) Suasion (utterance, designed to influence the behavior of other)
- iv) Intellectual attitudes e.g. agreement, disagreement, permission, obligation, etc.
- v) Socializing e.g. greeting, farewell, etc.

3. LETTERS:

Application – request—Enquiries – Quotations – Complaints – Tender --- to Newspapers – Formal and Informal --- Advertisements, etc.

4. TRANSLATION:

English to Bangla and Bangla to English

5. TECHNICAL WRITING:

Writing Projects, Reports and theses.

Reference Books.

1. Chowdhury & Hossain, Advanced Learner Functional English.
2. Boeckner, Keith and Brown, Charles P, Oxford English for Computing.
3. Wren and Martin, High School English Grammar & Composition.
4. Thomson & Martin, A practical English Grammar.

1st Year 2nd Semester

CSE-121 Data Structure

3 hours in a week, 3.00Cr.

Introduction: Basic Terminology; Elementary Data Organization; Data Structures; Data structure Operations; Control Structures; Algorithms; Complexity, Time-Space Tradeoff, Mathematical Notation and function, String Processing; String Operations; word processing, and Pattern Matching Algorithms.

Arrays, Records and Pointers: Linear Arrays, Representation of linear array in memory; Traversing liner arrays, Inserting and Deleting; Sorting, (Bubble sort) Searching (linear, binary), Multidimensional Arrays; Pointer Arrays; Record Structures; Matrices

Linked lists: Representation of Linked lists in memory, Traversing a linked list, Searching a linked list, insertion, deletion; Header and two-way lists.

Stacks, Queues, Recursion: Array Representation of stacks. Polish Notation; Quick sort, Recursive definition; Towers of Hanoi, Implementation of Recursive procedures, Queue Dequeue, Priority Queues.

Trees: Binary Tress; Representing Binary Trees in memory, Traversing binary tree, Header Nodes. Threads, binary search trees, Heap tree, Heap sort, Huffman's Algorithm.

Graphs: Sequential Representation of Graph, Adjacency Matrix; Path Matrix, Warshall's Algorithm, Linked representation of Graphs.

Reference book:

1. Seymour Lipschutz (Schaum's outline series) Data Structure (International Edition)
2. Ellis Horowitz & Sartaj Sahni, Data structure and Algorithm.
3. Robers L Kruse, Data Structure & Programming Design, 2nd Ed.

CSE-122 Data Structure Practical

3 hours in a week, 15 Cr.

Laboratory works based on CSE-121

Operation on array of character (Single character, substring insertion, deletion, counting, find etc) Usage of built-in string function declared in STRING.H file, declaration and use of single/multiple structure/ record type variables, Searching algorithms (Linear, Binary), Sorting Algorithms (Bubble, insertion, merge, Quick), Usage of call by reference variable, Usage of pointer in structure variables and implementation as link list, Operation of one way link list (Creation, display, insertion, deletion, append etc.) Declaration and operation on stack (Push, pop) and queue (Dequeue), Recursive function (Towers Hanoi) Binary tree implementation, Infix, prefix, postfix transformation using array. Traversing techniques (In-order, preorder, post-order), Calculation of paths and nodes as well as height of a graph and tree, Advanced sorting technique (Heap sort).

CSE -127 Discrete Mathematics

3 hours in a week, 3.00 Cr.

Set Theory, Relations, Functions, Graph Theory, Planer Graph and Trees, Direct graphs and Binary Trees, Algebraic System, Ordered sets and lattices, Propositional Calculus, Boolean Algebra, Lattices, group theory, cycle groups, permutation groups, symmetry groups, quotient, homomorphism, Basic structure theory, Prepositional and Predicate logic, Mathematical reasoning and program techniques, Theories with induction, Counting and count ability, Graph and trees. Morphisms, Algebraic structures.

Reference Books:

1. K.H. Rosen, Discrete Mathematics and Its Applications McGraw Hill. 4th ED 2000
2. O, Nicodemi, Discrete Mathematics CBS, 1989
3. J.C Molluzzo and F. Buckley (Waveland Press, reprinted 1997) ISBN 0-8833-9407

CSE -126 Statistics and Probability

3 hours in a week 3.00 Cr.

Elements of Statistics: Nature of statistics, Nature & representation of statistical data; Attributes and variables; discrete and continuous variables; Method of data collection;

Measures of location: Characteristic of an ideal measure, Arithmetic mean; Geometric mean; Harmonic mean; Median; Mode; Quartiles; Deciles; Percentiles.

Measure of dispersion: Characteristics of an ideal measure; Absolute & Relative measures; Range; Standard deviation; Mean deviation; Quartile deviation; Coefficient of function; Coefficient of variation; Skewness and kurtosis.

Elements of Probability: Meaning and definition of probability; A priori and a posteriori probability; Basic terminology of probability; Random variables; Probability function; Expectation of sum and products.

Regression and correlation: Relationship between variables; Fitting of regression lines; Simple correlation; multiple correlation and regression.

Sampling: Sampling Techniques & its role different types of sampling & its merits & Demerits.

Tests of Significance: Tests of means, Variance, Correlation coefficient and regression coefficient.

Probability Distribution: Binomial Distribution, its uses and properties, Poisson distribution, its uses and properties, Normal Distribution, its uses and properties.

Reference Books:

1. M.Nurul Islam, An introduction to Statistics.
2. M.G. Mostafa, Methods of statistics.
3. Md. Abdul Aziz, Business statistics.

CSE-123 Introduction to Electrical Engineering

3 hours in a week, 3.00 Cr.

Ohm's law, power and Energy: Conductance and conductivity, Ohm's Law, Power wattmeter, Efficiency, Energy, Circuit Breaker's GFCIS and Fuses, Effect of Temperature on resistance

Series Circuits: Introduction, Voltage Sources in series, Kirchhoff's Voltage Law, Resistances in Series, Voltage Divider rule, Voltage regulation

Parallel circuits: Introduction, Kirchhoff's current law, Current divider rule, Voltage source in parallel, Open and short circuits, Voltmeter.

Method of analysis: Source conversion, Maxwell's loop Current method, Mesh Analysis with matrix form, Nodal analysis with voltage source, Nodal analysis with current source

Network theorem: Delta star conversion, Superposition theorem, Thevenin's theorem, Norton's theorem, Maximum power transfer theorem.

Laws: Ampere's law, Biot-Savart law, Induction and Inductance, Magnetic properties of matter, Inductors and transformers, AC and DC networks, DC and AC power instantaneous and r.m.s value; Current, voltage and power, average power for various combinations R.L and C circuits, phasor representation.

Reference Books:

1. Boylested, Introductory Circuit and Analysis
2. B.I. Theraja, A Text book of Electrical Technology
3. David Halliday and Robert Resin, Physics Part-II

CSE-124 Introduction to Electrical Engineering Practical

3 hours in a week, 1.5 Cr.

Laboratory works based of CSE-123

Verification of ohm's law and measurement of Resistivity of a Metallic wire, To verify Kirchhoff's Current law and Kirchhoff's Voltage law. To verify Thevenin's theorem, To verify Norton's theorem, To verify Superposition theorem. To study R-C circuit and to find out the time constant, to study the R-L-C series Resonance circuit.

CSE-125 Integral Calculus and Differential Equation

3 hours in a week, 3.00Cr.

Indefinite Integrals as Inverse of Derivatives: Technical of integration; Define integral as limit of a sum; Interpretation as area; Fundamental theorem of integral calculus (for continuous functions); Determination of length and area of plain curve; Volume and surface area of revolution.

Introduction to linear, Nonlinear and Inhomogeneous Differential Equations:

Solutions of ordinary differential equations; Solutions by the method of variation of parameters and undetermined coefficients.

Differential Equations: Power series solutions about points; Solutions of partial differential equations by the method of separation of variables.

Reference Books:

1. Dr. Abdul Matin, Integral Calculus.
2. B.C Das & B.N Mukherjee, Integral Calculus.
3. Abu Yousuf , Differential Equations.
4. Dr.Abdul Matin, Differential Equations.

2nd YEAR 3rd SEMESTER

CSE – 211 Object Oriented Programming

Principles of Object-Oriented Programming: Beginning with C++; Tokens, Expressions and Control Structure; Functions in C++; Classes and objects; Constructors and Destruction; Operator Overloading and Type conversions; Inheritance; Extending classes; Pointers, Virtual Functions and Polymorphism; Managing console I/O operations; Working with files; Exception Handling; Template functions and classes; Multi-threaded Programming. Introduction to java, comparison between java and C++

Reference books:

1. E. Balagrusamy “Object-oriented programming with C++”
2. Robert Lafore “ Turbo C++”
3. Herbert Schildt “ Turbo C++, The complete Reference”
4. Herbert Schildt “ Teach Yourself C++”

CSE-212 Object Oriented Programming Language Practical Laboratory Based on CSE 211

Review of C Programming ; use of C++ Editors / Compilers; Basic C++ input and output statements; Functions (Call by Reference, Function Overloading Friend and virtual function, inline function, default arguments etc); Classes and Objects (Built – in user-defined) private, public, protected members); Constructor and Destructor (With multiple constructor); Arrays of objects and within class; Static data members and member functions; Dynamic and copy constructor; Operator overloading (Unary, binary, string); Different types of inheritance (with access specifies); Virtual base class; Pointers (this, reference ...) Polymorphism, Dynamic binding; File processing (create, read, write and update files sequential access and random access file processing); Development of integrated software using multiple c++ feature; Some problems on Numerical Analysis (Solution of Linear equation, Iterative method of root finding, Least –Square curve fitting, etc.)

CSE – 213 Operating System

Introduction: Def OS, Mainframe, desktop systems, multiprocessor systems, distributed systems, clustered systems, real-time systems, handheld systems computing environments.

OS Structures: System components, OS services, system calls, system programs, system structure, virtual machines, system design and implementation

Processes: Process concept, Process state, Process control block, threads, Process scheduling, operation on processes, cooperating Processes, inter processes communication, Communication in client-server system, Threads.

CPU scheduling: Basic concepts, CPU-I/O bust cycle, CPU scheduler, preemptive scheduling, dispatcher, scheduling criteria. Scheduling algorithms, multiple-processor scheduling, real-time scheduling algorithm evaluation, process scheduling models; ex-windows 2000, Linux

Process Synchronization: Background Process Synchronization, critical section problem, semaphore, classical problems of synchronization, critical regions, OS Synchronization, Atomic transaction.

Deadlocks: System model, dead lock characterization, Methods for handling Deadlock, Deadlock Avoidance, Dead Lock Detection, Recovery from Dead lock.

Memory Management: Background: Address binding, Logical vs Physical Address Space, Dynamic Loading, Paging, Segmentation, Segmentation with paging.

Virtual Memory: Background of Virtual Memory (VM), Demand Paging Process Creation, Page Replacement: Diffeent Page, Replacement Algorithms, Thrashing: Working Set Model, Page-Fault Frequency.

File Concept: File Attributes, File Operations, File Types, File Structure, File Access Methods, Directory Structure, file system Mounting, file system structure, file system Implementation, Overview, Partitions and Mounting Virtual File Systems, Directory Implementation, Allocation Methods, Free-space Management, Recovery: Consistency Checking, Backup and Restore Log-structure File System.

Reference Books:

1. Silberschitz, Galvim, Peterson,m Operating system Concepts, sixth Edition.
2. A.S. Tanenbaum, OS, Prentice Hall
3. P.B. Hausen, OS Concepts, Prentice Hall
4. S.Madnic, and J. Donovan, OS, McGraw Hill

CSE-214 Digital Logic Design

Introductory concepts, number systems and codes, Boolean algebra, De Morgan's theorems, logic gates and their truth tables, combinational logic circuits, karnaugh map method, digital arithmetic, operations, and circuits, decoder, encoder, multiplexer, and demultiplexer, and demultiplexer, Flip flop and related devices, race around problems, Asynchronous and synchronous counters and their applications, MSI logic circuits, interfacing with analog world: D/A converter circuitry, A/D converter circuitry.

Reference Books:

1. Ronald J. Tocci & Neal S. Widmer, Digital Systems Principal and Application
2. R P Jain, Modern Digital Electronics
3. Willian I. Fletcher, An Engineering Approach to Digital Design
4. M. Morris Mano, Digital Logic and Computer Design.

CSE- 215 Digital Logic Design Practical

Laboratory works based on CSE – 214

Minimized and Implementation of Boolean Functions Using Logic Gates Design Half Adder and Full Adder, Design Half Subtractor and Full subtractor, Verify the Truth Table of S-R, T,D Flip-Flop, Verify the Truth Table of J-K, Prepare Different Type Shift Resister and Check Its Operation, Design Synchronous Counter, Design Asynchronous Counter, Design Ripple Counter, Design Johnson and Ring counter, Verify the Operation of Encoder and Decoder, Verify the Operation of Multiplexer, De-Multiplexer, Verify the Operation of D/A and A/D Converter.

CSE – 216 Mathematics for CSE

Theory of Matrices: Types of matrices (creditary, hermitian symmetric etc) Determinant of a square matrix; Equivalence, Adjoint and inverse of a square matrix; Linear equations; The Characteristic roots and the characteristic equation of a matrices; Linear transformation. Similarity transformations.

Vector Algebra: Scalars and vectors, equality of vectors; addition and subtraction of vectors; Multiplication of vectors by scalars; scalar and vector product of two vectors and their geometrical interpretations; triple products and multiple products; liner dependence and independence of vectors.

Vector Calculus: Differentiations and integration of vectors together with elementary applications; Definition of line, surface and volume integrals: gradient, divergence and curl of point functions, various formulae, Gauss's theorem, Stoke's theorem, Green's theorem.

Fourier Analysis: Real and complex form of fourier series; Finite transform: Fourier Integral; Fourier transforms and their uses in solving boundary value problems of wave equations.

Laplace Transform: Definition; Laplace transforms of some elementary functions; sufficient conditions for existence of Laplace transform; Inverse Laplace transforms. Laplace transforms of derivatives. The unit step function; Periodic function; Some special theorems on Laplace transforms: Partial fraction; Solutions of Differential equations by Laplace transforms; Evaluation of improper integrals.

Reference Books:

1. Md. Abdur Rahman, Mathematical Methods
2. Matrices, A.R. Vasishtha.
3. Khosh Mohammad, Vector analysis.

CSE – 217 Electronic Device and Circuits

Semiconductor Diodes; Semiconductor Materials, Energy levels, Intrinsic Materials-n-Type and p- Type, Semiconductor Diode, Ideal Diode, Diode Equivalent Circuit, Transition and Diffusion Capacitance.

Diode Application: Sinusoidal Inputs: Half Wave Rectification, Full Wave Rectification, Clippers, Clampers, Zener Diode, LED.

Bipolar Junction Transistor (BJT): Transistor Construction, Transistor Operation, Common-Base Configuration, Transistor Amplifying Action, common Emitter Configuration, Common Collectro Configuration, Limits of Operation

DC Biasing – BJTs: Operating Point, Fixed Biased Circuit, Voltage – Divider Bias DC Bias with Voltage Feedback, Miscellaneous Bias Configuration, Bias Stabilization.

Field Effect Transistor (FET): Construction and Characteristics of JEFT Transfer Characteristics, Depletion Type MOSFET, Enhancement Type MOSFET

FET Biasing : Fixed – Biased Configuration, Self - Bias configuration, Voltage – Divider Biasing.

BJT Transistor Modeling : Amplification in the Ac Domain, The Hybrid Equivalent Model, Graphical Determination of h-parameters

Operational Amplifiers: Differential and Common-Mode Operation, Op-amp Basics, Specifications – Frequency Parameters, Op-amp Unit Specifications.

Op-amp Applications: Voltage Summing, Voltage Buffer, Instrumentations Circuit, Active filters.

Feedback and Oscillator Circuits: Feedback concepts, Feedback Connection Type. Practical feedback circuit, feedback Amplifier – phase and frequency consideration, Oscillator Operation, Phase-Shift Oscillator, Wien – Bridge Oscillator, Crystal Oscillator

Other semi-conductor devices: Thermistors, Tunnel diode, LED, LED & GUNN diode, Photodetectors.

Integrated Circuits: Integrated-circuit technology, Basic monolithic integrated circuits, Epitaxial Growth, Masking and Etching, Diffusion of Impurities, Transistors for monolithic circuits, Monolithic diodes, Integrated resistors, integrated capacitors and inductors.

Reference Books:

1. Robert Boylestad and Louis Nashelsky, Electronic Device And Circuit Theory, Sixth Edition.
2. Albert Paul Malvino, Electronic And Circuits
3. Abraham Bell, Electronic Devices and Circuit.

CSE – 218 Electronic Devices and Circuits Practical

Laboratory works based on CSE – 217

I-V Characteristics of diode, Input and Output Characteristics of BJT; Common-base Configuration (CB), Common – Emitter Configuration (CE), Common – Collector Configuration (CC), I-V Characteristic of Zener diode.

CSE-219 Basic Accounting

Introduction: Definition of Accounting, its role and functions, various images of Accounting, users of Accounting information, history of Accounting, generally accepted accounting principles, distinction between Bookkeeping and Accounting, relationship of Accounting with other disciplines, ethical issues, and the accounting profession.

The Recording Process: Business transactions, steps in the recording process, the accounting equation, the account, the rules of debit and credit, the journal and the ledger, subsidiary ledgers and special journals, the trial balance.

Accounting for Merchandising Operations: Merchandising operations, merchandising transactions, recording of merchandising purchases and sales under perpetual and periodic inventory systems.

The Adjustment Process: Accounting period, accrual vs, cash basis of accounting, revenues (income) and expenses, types of adjusting entries, preparing and posting of closing entries, preparing the adjusted trial balance, preparation of classified income statement and the balance sheet.

Worksheet: Meaning, objects, nature, rule for the preparation of worksheet and preparation of worksheet – 8- column and 10-column

Preparation of Financial Statements: Single and multiple – step income statements, Owner's equity statement, classified balance sheet, Cash flow statement.

Rectification of Errors: Meaning; Types of Errors: Rectification of Errors before preparation of trial balance; after preparation of trial balance; after preparation of financial statements and errors detected in the next accounting year.

Control of cash: Internal control; controlling cash; the bank checking account, petty cash funds; bank reconciliation statement.

Accounting Information System: Basic concepts, principles of accounting information systems, developing and Accounting system, mechanized accounting systems.

Reference Books:

1. Harman, Edwards and Maher, Accounting A business perspective Lates edition.
- Md. Hafiz Uddin, Basic Accounting (English version), Latest edition the Angel Publications.

Second Year / Fourth Semester

CSE-221 Algorithm Design

3 hours in a week, 3.00 Cr.

Introduction to algorithm: Analysis of algorithm design of algorithm, mathematical foundation of algorithm, asymptotic notations, summations, recurrences sets etc.

Divide and Conquer: General method, Binary Search finding the Maximum and Minimum, Quick Sort, Selection.

The Greedy method: general method, Knapsack problem, Minimum cost spanning trees, Single Source Shortest path.

Dynamic Programming: General method, Multistage Graphs, All pair's shortest paths, Single Source Shortest path, Knapsack problem, Optimal Binary search Tree, Traveling salesperson.

Basic Traversal & Search technique: Techniques for Binary trees, Techniques for Graphs

Backtracking: General method, The 8-Queens problem, Sum of subsets, Graph Coloring

Branch and Bound: The method, 0/1 Knapsack problem, Traveling salesperson

Reference books:

1. Fundamentals of Computer Algorithm, Sartaj Sahni
2. How to Solve it by Computer, R.G.Dromey.
3. Data Structure & Programming Design, Robert L.Kruse.

CSE-222 Algorithm Design Practical

3 hours in a week, 1.5 Cr.

Laboratory works based on CSE-221

Divide and conquer: Binary Search, finding the maximum and minimum.

Performance measurement using time Function: quick sort and marge sort, marge sort and Bubble sort, Quick sort and Heap sort.

Greedy Method: Knapsack problem, Minimum cost spanning tree. Prim's algorithm. Single source shortest path.

Dynamic Programming: All pair shortest path, 0/1 knapsack problem, the 3 traveling

Backtracking: the 8 Queens problem, Graph coloring problem.

CSE-223 Database Management System

3 hours in a week, 3.00 Cr

Introduction : Database system concept, Purpose of Database system: View of data: Data abstraction: Data models: Relational model. Network model. Hierarchical model: Database languages: DDL, MML: Conventional file processing: Transaction management: Storage management: Database Administrator; Database users: Overall system structure.

Database model: Entity- Relationship model: Attributes; Mapping Cardinalities; Existence Dependencies; Weak entity set & Strong entity set; Relational model and its language (Relational algebra and SQL)

Database design: Decomposition: Normalization: Object-oriented Databases: Centralized system: Distributed Databases: Data Fragmentation: Parallel Database.

Integrity Constraints: Domain constraints, referential constraints. Functional Dependencies.

Indexing: Basic concept: Ordered index: Primary index; Dense index and Sparse index; Multilevel index; Secondary index.

Reference Book :

Database System Concepts (4th Edition)- Abraham Silberschatz Henry F. Korth S.Sudarshan.

CSE-224 Database Management System Practical

3 hours in a week, 1.5 Cr

Laboratory works based on CSE-223

Design and Create Database. Insert/Delete records in each table. Design MASTE FROM with menus. Do the different queries, Report design. Different PL / SQL problems.

CSE-225 Computer Organization and Architecture

3 hours in a week, 3.00 Cr

Introduction : Organization and Architecture, instruction sets-formats, cycle, timing etc; Addressing modes; Types of Instruction; RISC characteristics; CISC characteristics.

Computer System: System Buses. Components. Functions. Bus Interconn

Third Year / Fifth Semester

CSE- 311 Theory of Computation

3 hours in a week. 3.00 Cr

Language theory: Finite automatic deterministic finite automata nondeterministic finite automata, equivalence and conversion of deterministic and nondeterministic finite automata. pushdown automata; Context free grammars: Turing Machines; basic machines, configuration, computing with Turing Machines combining Turing machines; Undesirability.

Reference Books:

1. Hopcroft and Ullman Introduction to Automata theory; Languages and Computations.
2. Adamek, Automata and Algebras

CSE- 312 Microprocessor and Assembly Language

3 hours in a week. 3.00 Cr

Microprocessors: Evolution of microprocessors register base and accumulator based microprocessor, programmable logic devices: main memory array design memory management concepts, input/ out techniques. internal architecture of microprocessor: 8085, 8086 addressing mode, instruction format. instruction set. pin configuration and function. maximum/minimum mode read/write cycle, memory bank interrupt and interrupt handling interrupt controller. DMA

Advanced microprocessors: Internal architecture, memory management protection an overview of Intel 80186, 80286, 80386. Pentium microprocessors RISC processor. Coprocessor, Alpha processor.

Assembly Language: Programming with 8086 instruction conditional and unconditional jump. string instruction. stacks operation, procedure reentrant and recursive procedure, macro.

Book References:

1. D. V. Hall, Microprocessors and Interfacing McGraw-Hill, 1987
2. M. Rafiquzzaman, Microprocessors and Microprocessor based system design
3. Y. Liu and G A Ginson Microcomputer system 8086/ 8088 family

CSE- 313 Assembly Language Practical

3 hours in a week 1.5 Cr

Laboratory works based on CSE-312

Display message (n) times in different time; simple arithmetic operation; Convert a lowercase letter to an uppercase letter and vice versa; Display all alphabetic characters; Input two numbers compare them and display the smaller one and vice versa; Accept a string from keyboard and display the string in reverse order. Find the largest element form an array and vice versa; perform bubbly sort; display first ten numbers by Fibonacci Series; Calculate sum and average of few numbers ; Convert hexadecimal number to binary equivalent; If a character is “y” or “Y” , Display it. otherwise terminate; Calculate the following expression =M+N+P+I (Using Subroutine); Calculate following operation; if $x > y$ then $(M/N) + P$ else $(M+N) = P$; (IF-ELSE Statement)

Book References:

1. Assembly Language Programming, Marut
2. Assembly Language Programming, Richard C. Detmer
3. Assembly Language Programming, Vanugopal
4. Techniques for the IBM PC, Alan R Miller

CSE- 314 Engineering Mathematics

3 hours in a week, 3.00 Cr

Series Solutions of Differential Equation Power series method, theory of power series method, Legendre's equation, Legendre's polynomials. Bessel' equation and Bessel's functions. Sturm-Liouville problems. Liouville problems Orthogonal function. Orthogonal Eigen function Expansions.

Complex Numbers and function: Complex plane, Polar form of complex numbers, power and roots. Derivative Analytic function Cauchy-Riemann equations Geometry of analytical functions; Conformal mapping; Exponential function, Trigonometric functions Hyperbolic functions Linear fractional transformational.

Complex Integration: Line integral in the complex plane, Cauchy's integral theorem. Cauchy's integral formula, derivatives of analytic functions.

Power series, Taylor series: Sequence, Series, Convergence tests, power series, function given by power series, Taylor series and maclaurin series uniform convergence, Optional.

Laurent Series, Residue Integration: Laurent Series, Singularities and Zeros infinity, Residue Integration method, Evaluation of real integrals.

Book References: Erwin Kreyszig, Advanced Engineering Mathematics.

CSE/ GED-315 Sociology

3 hours in a week, 3.00 Cr

Sociological perspective: definition, nature, scope and importance of sociology. Sociology and scientific approaches; methods of social research, stages of social research.

Primary concepts of sociology: society community, association, institution, group.

Social evaluation: stages in the evolution of human civilization.

Culture: definition, characteristics, culture content (material and non-material) cultural lag. culture and civilization.

Industrial revolution: The growth of capitalism, features and social consequences. socialism.

Social organization: family, forms and function of family, functions of family in modern industrial society, marriage, forms of marriage, functions of marriage.

Social control: religion and morality, custom and public opinion, taboo-low, state and education.

Social change: change evolution-progress-development, factors in social change.

Society and population: crime, deviance, juvenile delinquency, youth unrest.

Technology and society: events of technological factors on social life.

Book References:

1. Metta Spencer and Alex Inkeles, Foundation of modern sociology
2. Young P.V Scientific social survey and research
3. Ogburn and Nimkoff. A Hand book of sociology.
4. Fairchild Little Field, Henry Pratt-Dictionary of sociology and related sciences.
5. Giddings F.H Elements of sociology.

GED-316 Technical Writing & Communications

3 hours in a week, 3.00 Cr

Communication in the workplace: Definition, Scope, role principles, function and objective.

The processes of human communication: Definition, steps, feedback

Adaptation and the selection of words: the basics need for adaptation, suggestion for selecting words. Suggestion for nondiscriminatory writing.

Construction of clear sentences and paragraph: The basic need for adaptation, suggestion for selecting word, suggestion for nondiscriminatory writing.

Writing for effect: Business etiquette and the need for effect conversational style you-viewpoint, accent on positive courtesy, the role of emphasis. Coherence.

Directness in Good news: the process of writing Routine Inquiries.

Indirectness in Bad-News Message: Situations report indirectness, Refused request, Adjustment refusal. Other indirect messages.

Categories in the job search process: the job search, preparing the application documents. Construction the traditional resume, constructing the electronic resume. Writing the application letter. Handling the interview.

Modern derives in communication/electronic communication/Technology in modern communication: meaning, media, advantage, disadvantage, Internet. E-mail. Teleconferencing, multimedia.

Basics of Report writing: Defining reports, determining the report purpose, determining the factors, gathering the information needed. Interpreting the findings, organizing the report information, writing the report, collaborative report writing.

Long, Formal reports: Organization and content of the longer report, the prefatory parts the report proper structural coherence helper.

Reference Book:

1. Lesiker, Pettit, Flateley Business Communication.
2. Betty & Key, Business communication system and application.
3. Raymond V. Lesiker, Bain computer.

CSE – 321 Software Engineering

3 hours in week, 3.00 Cr.

Software Engineering Paradigms: Definition of S/W Eng. The classical life cycle prototyping fourth generation technique; the product and the process model, generic view of software engineering, Boehm's spiral model, Measurement and Matrices.

Requirements Analysis Fundamentals: Analysis principle; Feasibility study, software prototyping specification, Requirement, Analysis Methodologies; Structured and object oriented analysis; Data Flow –oriented analysis methods.

Software Design Fundamentals: Design process: Design Fundamentals: S/W architecture. Program structure, data structure, S/W procedure, Modularity, abstractions; Effective modular design, Procedural Design, Data flow-oriented Design; Top-down and bottom-up design, Design process Considerations; Transform analysis; Transaction analysis; Data structure oriented design; logical construction of programs, and systems, data structured systems development. Object-oriented design; Design concepts; Method strategy, Real-time Design, Coding style; code documentation, Data declaration, statement construction, input/output, software reliability.

Software Testing Techniques and Strategies: Software testing method testing fundamentals & strategies; White box testing; Basis path testing; Loop testing black box testing. Verification and validation; Organization for software testing; defect testing integration testing; validation testing; system testing; the art of debugging.

Software Management and Maintenance Technique: Maintenance Process, system documentation, maintenance cost, configuration management & planning, Change management, person & release management, software cost estimation technique, Algorithmic cost modeling, The COCOMO model, software quality assurance and activities, McCall's quality factor, software reuse, software re-engineering, Computer aided software, Engineering (CASE) tool.

Reference:

1. Software Engineering by Ian Sommerville
2. Software Engineering by Roger S. Pressman
3. Software Engineering by Martin L. Shooman

CSE – 322 Software Engineering Practical

3 hours in week, 1.5 Cr.

Laboratory works based on CSE-321

A student has to perform one of the following computer based systems: student information system, Admission processing system, Employee information system, Payroll management system, Result processing system, Library management system.

It is further mentioned that a student can propose any other system, which is relevant with this subject/field.

CSE – 323 Numerical Analysis

3 hours in week, 1.5 Cr.

Numerical Solution

CSE – 324 Computer Graphics and Multimedia

3 hours in week, 3.00 Cr.

Graphics Input, storage, output and communications: Graphics input, Storage, Communication Devices, Common Display devices, Raster Scan CRT.

Scan Conversion: Scan converting a point, line, circle, Ellipse, Arcs, Rectangle, Region filling, side effects of Scan Conversion.

Two-dimensional and three-dimensional Graphics Transformation; Geometric Transformations, Co-ordinate Transformations, Composite Transformations and instance Transformation.

Two-dimensional and three-dimensional viewing and clipping: viewing transformations, clipping algorithms.

Mathematics of Projections: Wire frame model, curve design, interpolation and Approximation.

Hidden Surfaces: Depth comparisons, Z-Buffer algorithm, The Painter's algorithm, Scan line algorithm

Introduction to Multimedia Systems: Interactive and non –interactive multimedia, temporal media and Non – Temporal media, Hypertext, Hypermedia, MPC Level 1, MPC Level 2, Quick Time.

Image: Image, types and applications, image Capture, Text conversion, Victimization, Image compression, Encoding, Standards for encoding images, JPEG.

Audio: Audio capture, Compression methods, MIDI, Digital audio, Sampling Rate, Sampling, Size, MPEG-1, MPEG-2

Video: TV screen, Monitor, Video capturing technique, Broadcast TV standards, Video standards, video compression, coding of real-time video, analog video signal formats, Animation classification and techniques.

Storage for multimedia: Choice of storage, storage types, compact Disk specification, CD –DA, CD-ROM, CD-I

Multimedia project: Project design concept, media content design and development, interface design and development process, multimedia team.

Reference books

1. Computer Graphics Schism's outline series.
2. Computer Graphics principal and practice, Foley, Vandam
3. Computer graphics; a programming approach. Steven and Harrington
4. Multimedia in practice, Judith Jeffcott
5. Multimedia Magic, S. Gokul
6. Multimedia Programming Objects, Environments and framework, Simon J. Gibbs
7. Multimedia computers and Communications, N. Sessagiri and Aram Akopov.
8. Open GL (r) 1.2 Programming Guide, Mason woo, Jakie Neider, Tom David Dave Shriner.

CSE – 325 Computer Graphics and Multimedia Practice

3 hours in week, 1.5 Cr.

Laboratory works based on CSE-324

Scan convention lines, scan converting circles, scan converting Ellipse, Filling Rectangles, Filling Polygons, Fillings Ellipse Arcs, Pattern Filling, Clipping Lines, Clipping Circles and Ellipses, Clipping Polygons 2D Transformation, the window to view port Transformation

Computer Graphics Programming Open GL

CSE – 326 Compiler Design

3 hours in week, 3.00 Cr.

Introduction to compiler Design: Compiler, Analysis of the source program, the phase of compiler, of the compiler, compiler construction tools.

A simple one pass compiler: syntax definition, CFG, parse tree, ambiguity, associativity of operation, lexical analysis.

Lexical analysis: the role of the lexical analyzer input buffering, and specification tokens finite automation, Thompson's construction, conversion of regular expression to DFA.

Basic parsing technique: Parser Bottom-up parsing, operator precedence parsing, operator precedence grammar, top down parsing, Predictive parsing, LL(4) Grammar, LR Parser (SLR, LALR)

Syntax directed translation: syntax directed definition, construction of syntax tree L-Attributed definition.

Runtime Environment: Activation tree, storage organization, storage allocation strategies, parameter passing, symbol table.

Intermediate code generation: Intermediate languages, three address code, Boolean expression, back patching.

Code generation: issues in the design of a code generator, target machine, basic block flow graph, code generator algorithm, DAG, peephole optimization.

Code optimization: Function preserving optimization, optimization of basic block loop optimization.

Error detection: Reporting errors, sources of error, syntactic error, semantic error, dynamic error, plan of error detection.

Reference Books:

1. Alfred V. Aho, Ravi Sethi, Jeffery D. Ullman, Compilers, Techniques and tools.
2. Alfred V. Aho, Jeffery D. Ullman, Principles of compiler Design.
3. A.J.Holub, Compiler Design in C.

CSE – 327 Compiler Design Practical

3 hours in a week, 1.5 Cr.

Laboratory works based on CSE -316

Lex specification to recognize the following verb is, am are were, was, be, being, been, do, does, did, will, would, should, can, could, has, have, had, go, Lex specification to recognize the following words as different parts of speech: is, am, are were, go, very, simply, quickly, gently, to from, behind, between, if, then. Lex specification to recognize real numbers, Lex specification to recognize integer. Lex specification to recognize float, Lex Specification to recognize for the positive and negative integer and float number. Lex specification to recognize different punctuation symbol. Lex specification to recognize digit, Lex program to eat up comments. Lex program to find out user name, Lex program to recognize different types of operator, Checking the validity of an arithmetic Expression using CFG, Converting Regular Grammar into Regular expression, Parsing any string using a CFG.

CSE – 328 System Analysis and Design

3 hours in a week, 3.00 Cr.

The Systems Development Environment: Introduction A modern approach to systems analysis and design, your role and other organizational responsibilities in systems development types of information systems and systems development, Developing information systems and the systems development life cycle.

Forth Year / Seventh Semester

CSE-411 Computer Networking

3 hours in a week, 3,00 Cr.

Introduction: Basic computer network concept; Network structure; Network software; Reference model; Example networks; OSI Model, TCP/IP Model,X.25 Networks.

Frame Relay: Introduction to frame relay, advantages and disadvantages, role of frame relay, frame relay operations, virtual circuits, DLCIs inside the network, frame relay layers; physical layer, data link layer.

ATM Network: Packet networks, mixed network traffic, cell networks, asynchronous TDM, virtual connection, identifiers, cell, connection establishment and release, Application Adoptions Layer (AAL),ATM layers, Physical layer, ATM WANs, ATM LANs.

Medium Access sub-layer: Multiple Access Protocols: ALOHA; CSMA/CD Protocol; collision-free protocols; CDMA Limited contention protocol; Wavelength division multiple access protocols; Wireless LAN protocols; IEEE standard 802 for LANs and MANs Bridges; High-speed LANs; Wireless LANs Mobile telephony and Satellite Networks.

Network Layer: Network layer design issues; Routing algorithms; Congestion control Algorithms; Inter networking; Network layer in the internet; IPv4 and introduction to IPv6.

Transport Layer: The transport service; Elements of transport protocols; The internet transport protocols; The ATM AAL layer protocols;

Optical Fiber Network: SONET and SDH.

Application Layer: Network security; DNS-Domain Name System: SNMP; Simple Network Management protocol; Electronic Mail; The World Wide Web: Multimedia.

Reference Books:

1. Tannenbaum, Computer Networks.
2. W. Stallings, Data & Computer Communication
3. Behrouz & Forouzen, Data Communication & Networking.

CSE-412 Computer Networking Practical

3 hours in a week, 1.5 Cr.

Laboratory works based on CSE-411

Overall Concept about network, Configure TCP/IP, Different protocol and net card, DHCP server/client configuration, Introduction to DNS, DNS server configuration, use of DNS testing utility, Caching only DNS server configuration, canonical name implementation, Introduction to electronic mail system, configuration, use of DNS testing utility, Caching only DNS server configuration, Canonical name implementation, introduction to electronic mail system, configure to ISP online mail, configure SMTP, POP, testing and debugging email account splitting, virtual hosting, IMP and POP setup, WINS configuration, apache web server configuration, apache core active and apache module, web based mail configuration, apache core active and apache module, web based mail configuration using open web mail, IP based virtual web hosting, name based virtual web hosting, testing and debugging and log file analysis, squid proxy server configuration, understanding of different squid tag FTP configuration.

CSE-413 Artificial Intelligence and Neural Network

3 hours in a week, 3,00 Cr.

Introduction: What is AI, Intelligent agents

Problem Solving by Searching: Blind search, Informed search, Depth first, breadth first depth limited, iterative deepening, bi-directional, best first, heuristics search, A search, Hill climbing search, Simulated annealing search, Genetic Algorithm.

Knowledge: Knowledge representation, First-order Logic, PL, WFFs, Fuzzy Logic,
Neural Network: ANN, Perception, Learning, Supervised, Unsupervised, Reinforcement learning, Back Propagation.

Reference Books:

1. Stuart Russel & Peter Norvig, Artificial Intelligences: A Modern Approach.
2. Stamations V. Katalopoulos, Understanding Neural Networks and Fuzzy Logic
3. Barr and Feigenbaum, Handbook of Artificial Intelligence Vol. I, William Kaufmann
4. Iven Bratko, programming for Artificial Intelligence.

CSE-414 Parallel and Distribution Processing

3 hours in a week, 3,00 Cr.

Parallel Processing: Overview- Importance, architecture, hardware and software issues, Architecture for parallel processing classification, comparative study of different architectures, issues in parallel processing, Parallel Algorithm – Pointer Jumping, Work-efficient, Sorting Networks, Graph problems Connected components, Shortest Paths Spanning Trees.

Distributed Processing: Overview Definition, impact of distributed processing on organizations, pitfalls in distributed processing. Forms of distributed processing Function distribution, hierarchical distributed systems, Horizontal distributed system. Strategy- Strategies for distributed data processing, control of complicity, problem of incompatibility, centralization Vs decentralization, cost and benefit analysis.

Design of distributed data Distributed data Distributed data, location of data, multiple copies data, conflict analysis, database management, distributed database analysis.

Fault Tolerance – Forward and Backward Error Recovery, Voting Protocol, Redundancy Approaches, Operation based and State Based Approach, Commit Protocols.

Reference Books:

1. Advance Computer Architecture – Hwang kai
2. Distributed Operating System – P.K. Sinha
3. Distributed Operating System – Tanenbaum
4. Algorithm- Coreman

CSE-415 Peripheral and Interfacing

3 hours in a week, 3,00 Cr.

Interfacing techniques: Interfacing for Memory; Communication system; System overhead (DMA and Programmed data transfer); I/O ports and Control: Parallel and Serial Interfacing devices: Timing considerations: Noise considerations: Application of PPI, PIC, DMAC, PCI etc.

Digital Interfacing: Programmable parallel ports and handshake input/output (IC 8255), Interfacing a Microprocessor to keyboards, X-lat, Display – Alphanumeric and Multiplexed LED (Interfacing with IC 7447), Relay, Stepper motor, Incremental Encoder, Optical motor shaft encoder.

Modern data-entry devices: Scanners overview: Bar code reader; Optical mark reader (OMR); Optical Character Reader (OCR); Tape Reader; Digitizer; Reading technique, Capacitive Electrostatic scanning digitizer.

Display devices: CRT, Basic CRT operations; Timing and frequencies; CRT controller ICs; LCD technologies; Passive and active matrix; LCD reliability; Electroluminescent display.

Printers: Impact printers; Serial and line printing: Laser printing: Ink-Jet Printing; Color printing, Plotters.

Storage devices: Floppy disk; Floppy disk controller (IC 8272); Magnetic hard disk and controller; Compact disk, magnetic tape storage.

Data Communication and Network: Introduction to asynchronous serial data communication, RS-232 C serial daa standard, USART(IC 8251A) word format, Null Modem configuration, The GPIB, HPIB, IEEE 488 Bus.

Reference Books:

1. Microprocessor and Interfacing by Andrew Hall
2. Computer Peripherals (Part B) by Barry Wilkinson
- 3.

CSE-416 Peripheral and Interfacing Practical

3 hours in a week, 1,00 Cr.

Laboratory works based on CSE-415

Understand SDK 86 board, write and execute a program in an SDK 86

Understand RS-232 Standard, Connections and Cabling

Observe and manipulate Null modem Configuration

Communicate between two Computers using serial ports

Drive a single 7 segment LED display with 7447

Understand the basic characteristics of IC 8225

CSE-417 Digital Signal Processing

3 hours in a week, 3,00 Cr.

Introduction to Digital Signal Processing (DSP): Introduction; Digital Signal Processing; sampling and Analog-to-Digital Conversion; Discrete Time Signals: Ambiguity in Digital signals; Discrete Time Systems: Application areas for DSP; Keys of DSP operations; Convolution, Correlation, Digital Filtering, Discrete Transformation, Modulation; System Design; Methodology & Implementation Methodology.

Discrete Fourier Transform: Fourier series, one dimensional Fourier transforms, discrete Fourier Transform (DFT) and its properties, Fast Fourier Transform (FFT) and its algorithm, Inverse discrete Fourier transformation.

The Z-Transform: Introduction to z-Transform: general Results of z-transform; inverse z-Transform: Partial Fraction Expansion, Power Series Expansion, Contour Integration; Comparison of inverse z-transform method; Properties of z-transform; Complex Convolution Theorem and Parseval's Relation.

Implementation of Discrete-Time Systems: Introduction. Block Diagram and Signal Flow Graph Representation of Digital Networks; Matrix Representation of Digital Networks Basic Structures of IIR systems; Finite precision Effects.

Design of Digital Filters: Introduction to Digital Filters: Types of Digital Filters; FIR and IIR: Choosing between FIR and IIR Filters; Digital Filter Design Steps; Design of FIR Filters: Design of FIR Filters by Windowing, Design of Optimum Equiripple Linear-Phase FIR Filters, Design of IIR Filters; Classical Continuous – Time Low-Pass Filter Approximations, Conversion of Transfer Functions from Continuous to Discrete Time, Frequency Transformations of Low pass Filters, Adaptive digital filters; concepts of adaptive filtering , basic wiener filter theory, the basic LMS adaptive algorithm, recursive least square algorithm.

Reference books:

1. Emmanuel C. Ifeachor, Barrie W. jervis. Digital Signal Processing.
2. John G. Proakis, Dimitris G. Manolakis, Digital Sigal Processing – Principles, Algorithms, and applications.
3. Alan V. Oppenheim, Ronald W.Schafer. John R. Buck, Dicrete – Time signal Processign.

Forth Year / Eight Semester

CSE -421 Web Engineering

3 hours in a week, 3.00 Cr

Introduction to Web application technology, basic concepts, Client Server architecture. Web browser and Web servers, WWW. structure of a website, popular websites and their specially, basic concepts static and dynamic web sectors, different web problems like Hoaxes, Spyware, Viruses and pop-ups etc.

Brief history of Mark-up languages. HTML and introduction to HTML basic HTML tags. adding links to different pages inserting image back ground sounds GIF animations, form and from components, Contact/Feedback forms (Text box, test fields, pull-down menu, submit/reset Button, redireetion between Web pages

CSS basic concepts of CSS, CSS handlers creating text styles using CSS using/calling CSS functions in forms changing links.

Introduction to java scripts, Using Basic Java Scripts functions like write line, time, date etc. Using simple scripts on different mouse events, changing page Title Using Java Scripts to design multi-state image links, pull-down means, embedding dynamic elements with Java Scripts, advanced custom tags.

Basic Concepts of Java applet, building simple applets with images, text and links, supported platform and browsers, common problems and trouble shooting, Basic concepts of DHTML, How it uses HTML. Java Scripts and CSS components, Texts, links and Image array.

PHP, Supported platforms, basic programming concepts and its dynamism, Simple PHP scripts to write/read inputs in forms and using in Dynamic forms, Integrating PHP and My SQL, Using PHP Forms to manipulate data in the database, Data Validation, Session security, Web application development.

Reference Book:

1. Chris Lea, Wankyu Choi, Allan Kent.Gonesh Prasad, Chris Ullman, Beginning Php 4(Programmer to Programmer)
2. Surid Sharkar, CSS/Java Script.
3. Web Design Complete Reference by Thomas A Powell
4. Creating Web Pages with HTML Simplified
5. Web Design in Nutshell (O'RELLY) Jennifer Niederst.

CSE-422 Web Engineering Practical

3 hours in a week, 1.5 Cr

Laboratory works based on CWE-421

1. Designing simple HTML Document to show text (Introduction to <HTML>, <Body><Head>/<Title> <Meta Content>, Using Different HTML tags to format Body contents.
2. Text alignment in table introduction to Form elements (textbox, checkbox, combo box etc) and designing simple Feedback/Contact forms.
3. Using Java Scripts to create web pages containing custom Welcome message(Date-time)
4. Using text Links to navigate between different pages, inserting Images and background sounds and using Images as Link.
5. Using page frames and mousover links and implementing them in a HTML Document.
6. Using CSS to apply formatting text, forms tables and link styles.
7. Using different control statements in Java Scripts to execute simple mathematical expressions (if-else, Switch-case, for, while, do-while)
8. Installing Apache, PHP 4/5 and integrating into windows platform, creating PHP documents with simple tags, installing My-SQL and connection between PHP and My-SQL database using PHP forms.

Project: Design and develop a Complete Dynamic website with HTML, PHP and MySQL having forms and also a flexible navigation menu which has links to all available section on the site.

CSE-423 Computer and Network Security

3 hours in a week, 3.00 Cr.

Cryptography and cryptographic algorithms: Traditional cryptographic algorithms traditional cryptography, cryptanalysis, Private key (symmetric-key) and public-key (asymmetric-key) cryptographic algorithms, DES and block cipher modes advanced encryption standard RSA and other public key cryptosystems, key management Define-Hellman key exchange, Elliptic curve cryptography, cryptography hash functions secure hash algorithm, message authentication codes, Digital signatures and digital signature standard.

Cryptography and network security: Data origin authentication and data integrity. Key distribution, Kerberos and X.509 authentication service certificate authority and public key infrastructure, Email security, PGP and S/MIME, IP Security authentication header and ESP, Security associations, Key management, eb security considerations, secure socket layer and transport layer security, secure electronic transactions (SET)

Cryptography for antivirus software and Password management: generic decryption, digital immune system and (UNIX) password scheme.

Reference Book:

1. Cryptography and Network Security, Witham Stallings
2. Hand book of applied cryptography by A Menezes. P.van Oorschot, and SAZZAT Vanstone, CRC press, 1996 (www.cacr.math.invaterloo.ca/hac)

CSE-42X Elective Course

3 hours in a week, 3.00 Cr.

This is an elective course the student should choose one of the elective courses in consultation with head of the department.

CSE- 499 Project Work (Continued from 7th Sem.)

12 hours in a week, 6.00 Cr.

CSE- 424 Image Processing

3 hours in a week, 3.00 Cr.

Introduction to image processing: Representation of image, A basic image processing system Relationship to human visual system. Example of fields that use digital image processing.

Digital Image Fundamentals: Image in the eye, Light and electromagnetic spectrum, Image sensing and acquisition, Image sampling, Image quantization, Some basic relationships between pixels Neighbors of a pixel, Adjacency, connectivity region Boundaries, Distance measures.

Image enhancement: Some basic gray level transformations. Histogram processing Histogram equalization, Histogram matching, Image negatives, log transformation, Power.