

2nd YEAR ODD SEMESTER

CSE 2100

Software Development Project-I

Prerequisite: None

Students will Develop one or more Programs / Projects on some Practical Problems with Sound Software Engineering Practices as Assigned by Teacher.

Contact hours/week: 3/2

Credits:0.75

CSE 2101

Discrete Mathematics

Prerequisite: None

Set: Operations on Sets, Algebraic Properties of Set, Computer Representation of Set, Cantor's Diagonal Argument and the Power Set Theorem, Schroeder-Bernstein Theorem.

Relation: Property of Relation, Binary Relations, Partial Ordering Relations, Equivalence Relations.

Function: Type of Functions, Growth of Function.

Propositional Logic: Syntax, Semantics, Valid, Satisfiable and Unsatisfiable Formulas, Encoding and Examining the Validity of Some Logical Arguments, Predicate and Quantifier, Universal and Existential Quantification; Modus Ponens and Modus Tollens.

Proof Techniques: The Structure of Formal Proofs, Direct Proofs, Proof by Counter, Proof by Contraposition, Proof by Contradiction, Mathematical Induction, Proof of Necessity and Sufficiency.

Number Theory: Theorem of Arithmetic, Modular Arithmetic, GCD, LCM, Prime Number, Congruence, Application of Congruence, Application of Number Theory, Chinese Remainder Theory.

Introduction to Counting: Basic Counting Techniques - Inclusion and Exclusion, Pigeon-Hole Principle, Permutation, Combination, Sequence and Summations, Introduction to Recurrence Relation and Generating Function.

Introduction to Graphs: Graphs and their Basic Properties - Degree, Path, Cycle, Sub-Graphs, Isomorphism, Euclidian and Hamiltonian Walks, Graph Coloring, Planar Graphs.

Contact hours/week: 3

Credits:3.00

CSE 2102

Sessional based on CSE 2101

Prerequisite: None

Sessional based on the theory of course CSE 2101.

Contact hours/week: 3

Credits: 1.50

CSE 2103**Numerical Methods****Contact hours/week: 3****Credits: 3.00****Prerequisite: None**

Modeling, Computers and Error Analysis: Mathematical Modeling and Engineering Problem Solving, Programming and Software, Approximations and Round-Off Errors, Truncation Errors and the Taylor Series.

Roots of Equations: Bracketing Methods, Open Methods, Roots of Polynomials,

Linear Algebraic Equations: Gauss Elimination, LU Decomposition and Matrix Inversion, Gauss-Seidel.

Optimization: One-dimensional Unconstrained optimization.

Curve Fitting: Least-square Regression

Interpolation: Interpolation with one and two Independent Variables, Formation of Different Difference Table, Newton's Forward and Backward Difference, Lagrange's Interpolation.

Numerical Differentiation and Integration: Newton-Cotes Integration Formulas, Integration of Equations, Numerical Differentiation.

Ordinary Differential Equations: Runge-Kutta Methods, Boundary-Value and Eigenvalue Problems, Numerical Solution of Partial Differential Equations.

CSE 2104**Contact hours/week: 3****Sessional based on CSE 2103 Credits: 1.50****Prerequisite: None**

Sessional based on the theory of course CSE2103.

EEE 2151**Contact hours/week: 3****Analog Electronics****Credits: 3.00****Prerequisite: None**

Semiconductor Diodes: Semiconductor, n-and p-Type Semiconductors, p-n Junction as a Diodes and their V-I Characteristics, Zener Diode, Half-and Full Wave Rectifiers, Voltage Regulation using Zener Diodes.

Filters: Properties of Symmetrical Networks, Characteristics Impedance, Filter Fundamentals, Different Types of Filters, High Pass, Low Pass, Band Pass and Band Elimination Filter, Active Filters.

Linear Wave Shaping: Diode Wave Shaping Techniques, Clipping and Clamping Circuits, Comparator Circuits, Switching Circuits; Schmitt Trigger.

555 Timer: Architecture of 555 Timer, Different Application of 555 Timer, 555 as Monostable, Bistable and Astable Multivibrators.

Transistor: Transistor Action, Transistor Biasing, DC Characteristics of CE, CB and CC Configurations.

Transistor Amplifiers and Oscillators: CE, CB and CC Amplifiers, Current, Voltage and Power Gains, Frequency Responses, Principles of Feedback, Positive and Negative Feedback, and Oscillators.

EEE 2152**Sessional based on EEE 2151****Prerequisite: None**

Sessional based on the theory of course EEE 2111.

Contact hours/week: 3**Credits: 1.50****Math 2113****Vector Analysis and Linear Algebra****Prerequisite: None**

Vector Analysis: Vectors, Differentiation and Integration, Line, Surface and Volume Integrals, Gradient of a Function, Divergence and Curl of Vector and their Applications, Physical Significance of Gradient, Divergence and Curl, Vector Identities, Integral Forms of Gradient, Divergence and Curl, Green's Theorem, Stock's Theorem, Gauss's Divergence Theorem.

Matrix: Definition of Matrices, Equality of two Matrices, Addition, Subtraction and Multiplication of Matrices, Equivalence of Matrices, Positive and Negative Matrices, Adjoint of Matrices, Transpose and Inverse of Matrices, Rank and Normal form of Matrices, System of Linear Equations, Solution of Homogeneous and Non-Homogeneous Systems, Determination of Eigen Values and Eigen Vectors, Solutions of Matrix Differential Equations.

Linear Algebra: Vector Space, Subspace, Sum and Direct Sum, Hilbert Space, Normed Linear Space, Branch Space, Basis and Dimension. Linear Transformation: Range, Kernel, Nullity, Singular and Non-Singular Transformation. Linear Operations: Matrix Representation of a Linear Operator. Change of Basis, Similarity and Linear Mapping.

Contact hours/week: 3**Credits: 3.00****Hum 2113****Industrial Management and Accountancy****Prerequisite: None**

Industrial Management: Management: Principle of Management, Management Functions, Management Skills, Authority & Responsibility, Span of Control, Management by Objective, Consultative Management, Participative Management, Decision Making, Manpower Motivation. Human Resources Management: Manpower Planning, Recruitment & Selection, Employee Training & Development, Performance Appraisal, Wages & Salary Administration. Production Management: Plant Layout: Definition, Basic Layout Types, Problem Solving, Problem Solving, Linear Programming. EOQ, Lead Time, Safety Stock, Re-Order Point.

Accountancy: Basic Accounting Principles, Objectives of Accounting, Transaction, Double Entry Systems, Accounts and its Classification, Journals Cash Book, Ledger, Trial Balance, Financial Statement. Cost Accounts & Objectives; Costs; Classification, Preparation of Cost Sheet, Cost Volume Profit (CVP) Analysis, Standard Costing, Process Costing.

Contact hours/week: 3**Credits: 3.00**