5th Semester

CSE-3101: Peripherals and Interfacing [3.0 credits, 45 Hours Lecture]

Design and operation of interface between computer and the outside world; sensors, transducers and signal conditioning circuits, interfacing memory, and I/O devices such as monitors, printers, disk drivers, optical displays, some special interface cards, stepper motors and other peripheral devices, IEEE-488, RS-232 and other buses, Study and applications of peripheral chips including 8212,8155, 8255, 8251. Character peripherals: Key boards, printers (dot-matrix, laser, ink-jet), computer graphics hardware, plotters, disk-drivers, CD-ROM.

CSE-3102: Peripherals and Interfacing [1.5 credits, 45 Hours Lecture]

Lab works based on CSE-3102.

CSE-3103: Software Engineering and Information System Design [3.0 credits, 45 Hours Lecture]

Concepts of Software Engineering, Software Engineering paradigms, Different phases of software System Development, Different types of information, qualities of information. Project Management Concepts, Software process and project Metrics, Software Project Planning, Risk Analysis and management, Project Scheduling and Tracking. Analysis Concepts and principles: requirement analysis, Analysis modeling, data modeling. Design concepts and principles, Architectural design, User Interface design, Object Oriented software development and design: Iterative Development and the Unified Process. Sequential waterfall life

cycles, Inception. Use case model for requirement writing, Elaboration using System Sequence Diagram, Domain Model. Visualizing concept classes. UML diagrams, Interaction and Collaboration Diagram for designing Software. Designing Objects with responsibilities. GRASP patterns with General Principles in assigning responsibilities: Information expert, Creator, Low Coupling and High Cohesion, Creating design class diagrams and mapping design to codes. Advanced GRASP patterns: Polymorphism, Pure Fabrication, Indirection, Project Variation. GoF Design Patterns: Adapter, Factory, Singleton, Strategy, Composite, FaÃ§ade, and Observer. Software Testing: White Box and Black Box testing. Basis Path Testing. Testing for specialized environment. Software testing strategies: Unit Testing, Integration Testing, Validation Testing, System Testing, Art of debugging. Analysis of System Maintenance and upgrading: Software repair, downtime, error and faults, specification and correction, Maintenance cost models, documentation. Software Quality Assurance, Quality factors. Software quality measures. Cost impact of Software defects. Concepts of Software reliability, availability and safety. Function based metrics and bang metrics. Metrics for analysis and design model. Metrics for source code, testing and maintenance.

CSE-3104: Software Engineering and Information System Design Lab. [1.5 credits, 45 Hours Lecture]

Lab works based on CSE-3103 and a term project.

CSE-3105: Operating System [3.0 credits, 45 Hours Lecture]

Operating System: its role in computer systems; Operating system concepts; Operating system structure; Process: process model and implementation, Inter-Process Communication (IPC), classical IPC problems, process scheduling, multiprocessing and time-sharing;

Memory management: swapping, paging, segmentation, virtual memory; Input/Output: hardware, software, disk, terminals, clocks; Deadlock: resource allocation and deadlock, deadlock detection, prevention and recovery; File Systems: files, directories, security, protection; Case study of some operating systems.

CSE-3106: Operating System Lab. [1.5 credits, 45 Hours Lecture]

Laboratory works based on CSE 3105.

CSE-3107: Numerical Methods [3.0 credits, 45 Hours Lecture]

Introduction; Solution of algebraic and transcendental equations: method of iteration, False Position method, Newton-Rhapson method; Solution of simultaneous linear equations: Cramer's rule, Iteration method, Gauss-Jordan Elimination method, Choleski's process; Interpolation: diagonal and horizontal difference, differences of a polynomial, Newton's formula for forward and backward interpolation, Spline interpolation; Numerical differentiation and integration; Solution of ordinary differential equations: Euler's method, Picard's method, Milne's method, Taylor's series method, Runge-Kutta method; Least squares approximation of functions: linear and polynomial regression, fitting exponential and trigonometric functions.

HUM-3109: Financial and Managerial Accounting [2.0 credits, 30 Hours Lecture]

Financial Accounting: Objectives and importance of accounting; Accounting as an information system; computerized system and

applications in accounting; Recording system: double entry mechanism; Accounts and their classification; Accounting equation; Accounting cycle: journal, ledger, trial balance; Preparation of financial statements considering adjusting and closing entries; Accounting concepts (principles) and conventions.
Financial statement analysis and interpretation: ratio analysis.
Cost and Management Accounting: Cost concepts and classification; Overhead cost: meaning and classification; Distribution of overhead cost; Overhead recovery method/rate; Job order costing: preparation of job cost sheet and quotation price; Inventory valuation: absorption costing and marginal/variable costing technique; Cost-Volume-Profit analysis: meaning, breakeven analysis, contribution margin approach, sensitivity analysis.
Short-term investment decisions: relevant and differential cost analysis.
Long-term investment decisions: capital budgeting, various techniques of evaluation of capital investments.

CSE-3110: Technical Writing and Presentation [1.0 credits, 30 Hours Lecture]

Issues of technical writing and effective oral presentation in Computer Science and Engineering; Writing styles of definitions, propositions, theorems and proofs; Preparation of reports, research papers, theses and books: abstract, preface, contents, bibliography and index; Writing of book reviews and referee reports; Writing tools: LATEX; Diagram drawing software; presentation tools.