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Credit Based Grading System Information Technology, VI-Semester IT-6002 Software Engineering

Unit I

Introduction, Software- problem and prospects Software development process: System Development Life Cycle, Waterfall Model, Spiral Model and other models, Unified process- Agile development-Agile Process- Extreme Programming- Other agile Process models.

Unit II

Measures, Metrics and Indicators, Metrics in the Process and Project Domains, Software Measurement, Metrics of Software Quality, S/W reliability, Software estimation techniques, LOC and FP estimation. Empirical models like COCOMO, project tracking and scheduling, reverse engineering.

Unit III

Software requirements and specification: feasibility study, Informal/formal specifications, pre/post conditions, algebraic specification and requirement analysis models, Specification design tools. Software design and implementation: Software design objectives and techniques, User interface design, Modularity, Functional decomposition, DFD, Data Dictionary, Object-oriented design, Design patterns implementation strategies like top- down, bottom-up.

Unit IV

Coding standard and guidelines, programming style, code sharing, code review, rapid prototyping, specialization, construction, class extensions, intelligent software agents, reuse performance improvement, debugging. Software Testing Strategies: Verification and Validation, Strategic Issues, test plan, white box, black-box testing, unit and integration testing, system testing test case design and acceptance testing, maintenance activities.

Unit V

Software Maintenance: Software Supportability, Reengineering, Business Process Reengineering, Reverse Engineering, Restructuring, Forward Engineering, Economics of Reengineering, project scheduling and tracking plan, project management plan, SQA and quality planning, SCM activities and plan, CMM, Software project management standards, Introduction to component based software engineering.

References:

1. P.S. Pressman, Software Engineering. A Practitioner's Approach, TMH.
2. Rajib Mall, Fundamental of Software Engineering, PHI.
3. Hans Van Vliet, Software Engineering, Wiley India Edition.
4. James S. Peters, Software Engineering, Wiley India Edition.
5. Pankaj Jalote, Software Engineering: A Precise Approach, Wiley India.
6. Kelkar, Software Project Management, PHI Learning

List of Experiments:**Sample Problems:**

- a. Library Management System
- b. Automated banking system
- c. Airline reservation system
- d. Employee management application
- e. Hospital management Application

Suggested Lab work for above given problems:

1. Develop requirements specification for sample problems (The requirements specification should include both functional and non-functional requirements).
2. Develop DFD Model (Level 0, Level 1 DFD and data dictionary) of the sample problems (Use of a CASE tool required).
3. Design Class diagram for sample problems.