ISE-1-01T: Introduction to Software Engineering

Total Marks: 100
External Marks: 70
Internal Marks: 30
Credits: 6
Pass Percentage: 40%

Course: Introduction to Software Engineering	
Course Code:ISE-1-01T	
Course Outcomes (COs) After the completion of this course, the students will be able to:	
CO1	Learn the basic knowledge of software engineering
CO2	Get basic knowledge of software process and project planning
CO3	Gain knowledge of software requirements analysis
CO4	Understands the detailed knowledge of software design and coding.
CO5	Understand the software testing and maintenance that is relevant to the industry.

Detailed Contents:

Module	Module Name	Module Contents
Module 1	**Introduction to Software Engineering**	The Problem Domain, Software Engineering, Challenges, Software Engineering Approach. Software development life cycle and its phases, Software development process models: Waterfall, Prototyping, Iterative.
Module II	**Software Process and Project Planning**	Characteristics of software process, Project management process, Software configuration management process. Project Planning: Activities, COCOMO model. Software Metrics – Definition, Importance, Categories of metrics. Software Quality – Attributes, Cyclomatic complexity metric.
Module III	**Software Requirements Analysis**	Need for SRS, Data flow diagrams, Data Dictionary, entity relationship diagram, Characteristics and components of SRS, validation, metrics.
Module IV	**Software Design and Coding**	Design principles, Module-level concepts, Structure Chart and Structured Design methodology, verification, metrics: network metrics, information flow metrics. Coding: Programming Principles and Guidelines, Verification- code inspections, static analysis.
Module V	**Software Testing**	Testing fundamentals, Black Box Testing: Equivalence class partitioning, Boundary value analysis, cause-effect graphing; White Box

		Testing: Control flow and Data flow based testing, mutation testing; levels of testing, test plan, test case specification, test case execution and analysis.
Module VI	**Software Maintenance**	Categories of maintenance. Software Reliability – Definition, uses of reliability studies

Books

1. Pankaj Jalote, "An Integrated approach to Software Engineering", 3rd Ed., Narosa Publications, 2005.
2. K.K. Aggarwal, Yogesh Singh, "Software Engineering", Revised 2nd Ed., New Age International Publishers.
3. Roger. S. Pressman, "Software Engineering – A Practitioner's Approach", 5th Ed., Tata McGraw Hill
4. Henry F. Korth, A. Silberschhatz, "Database Concepts", Tata McGraw Hill.
5. C. J. Date, "An Introduction to Database Systems", Pearson Education