

Devi Ahilya University, Indore, India Institute of Engineering & Technology				ME I Year Electronics (Sp. Digital Instrumentation) Semester- B			
Subject Code & Name	Instructions Hours per Week			Credits			
DIR2G1: Software Engineering	L	T	P	L	T	P	Total
Duration of Theory Paper: 3 Hours	3	1	0	3	1	0	4

Course Objectives: The main purpose of this course is to impart knowledge on the basic principles of software development life cycle.

Prerequisites: Knowledge of Basic Data Types - Lists, Stacks, Queues, Hash Tables, Trees - Binary Trees, Tree Traversal, Memory Management - Storage Allocation, Garbage Collection, Algorithms - Divide and Conquer, Backtracking, Iterative Techniques, Searching and Sorting, Complexity - O-Notation

COURSE CONTENTS

Unit I - Introduction

Software Engineering-Software Process- Generic process model-Prescriptive process model-specialized, unified process-Agile development-Agile Process- Extreme Programming- Other agile Process models-Software engineering Knowledge-core Principles-Principles that guide each framework Activity.

Unit II-Requirements

Requirements Engineering-Establishing the Groundwork-Eliciting Requirements- Developing use cases-Building the requirements model-Negotiating, validating Requirements-Requirements Analysis-Requirements Modeling Strategies.

Unit III-Design modeling with UML

Modeling Concepts and Diagrams - Use Case Diagrams - Class Diagrams - Interaction Diagrams - State chart Diagrams – Activity Diagrams - Package Diagrams - Component Diagrams – Deployment Diagrams - Diagram Organization- Diagram Extensions. Design Process- Design concepts: Abstraction, Architecture, patterns, Separation of Concerns, Modularity, Information Hiding, Functional Independence, Refinement, Aspects, Refactoring, Object Oriented Design Concepts, Design Classes- Design Model: Data, Architectural, Interface, Component, Deployment Level Design Elements .

Unit IV-Software implementation

Structured coding Techniques-Coding Styles-Standards and Guidelines- Documentation Guidelines-Modern Programming Language Features: Type checking-User defined data types-Data Abstraction-Exception Handling- Concurrency Mechanism.

Unit V-Testing and Maintenance

Testing: Software Quality- Software Quality Dilemma- Achieving Software Quality- Testing: Strategic Approach to software Testing- Strategic Issues- Testing: Strategies for Conventional Software, Object oriented software, Web Apps-Validating Testing- System Testing- Art of Debugging.

Maintenance: Software Maintenance-Software Supportability- Reengineering- Business Process Reengineering- Software Reengineering- Reverse Engineering- Restructuring- Forward Engineering- Economics of Reengineering

Text and Reference Books:

- [1] Roger S, “Software Engineering – A Practitioner’s Approach”, seventh edition, Pressman, 2010.
- [2] Pearson Edu, “Software Engineering by Ian Sommerville”, 9th edition, 2010.
- [3] Hans Van Vliet, “Software Engineering: Principles and Practices”, 2008.
- [4] Richard Fairley, “Software Engineering Concepts”, 2008.