

Devi Ahilya University, Indore, India Institute of Engineering & Technology			II Year B.E. (Information Technology) (Full Time)				
Subject Code & Name	Instructions Hours per Week			Credits			
ITR4C3 Software Engineering	L	T	P	L	T	P	Total
	3	1	2	3	1	1	5
Duration of Theory Paper:3 Hours							

### Learning Objectives:

- To Understand the Software Engineering Practice & Process Models.
- Familiarize students with different software life cycle models.
- Understand the importance of the software development process.
- Understand the importance of modeling and modeling languages.
- Design and develop correct and robust software products.

**Pre requisites:** Nil

### COURSE CONTENTS

#### UNIT-I

**Software Engineering process:** Basic concepts of System Design, Software life cycle, Software process models: Linear Sequential model, Prototyping Model, RAD Model, Evolutionary Process Models like Incremental Model, Spiral Model, Component Assembly Model, RUP and Agile processes, CMM.

#### UNIT-II

**Requirement Analysis and Specification:** Function and Non-functional requirements. Requirement Sources and Elicitation Techniques, Initiating the Requirements Engineering Process, Eliciting Requirements, Developing Use Cases building the Analysis Model, Negotiating Requirements, Validating Requirements.

#### UNIT-III

**Software Design:** Overview of System Design, Decomposing the system, System Design Concepts, System Design Activities, Addressing Design Goals, Managing System Design, Design for Web Apps, Design Issues for Web Engineering, Web E Design Pyramid, Interface Design, Architecture Design – Navigation Design – Component Level Design

#### UNIT-IV

**Testing:** Testing Strategies, Strategic Approach to Software Testing, Strategic Issues, Test Strategies for Object Oriented Software, Validation Testing, System Testing, The Art of Debugging, Software quality Assurance, Software Reliability.

#### **UNIT-V**

**Software Maintenance:** Software Supportability, Reengineering, Business Process Reengineering, Software Reengineering, Reverse Engineering, Restructuring, Forward Engineering, Economics of Reengineering, Project Metrics

#### **Learning Outcomes:**

Upon completing the course, students will be able to:

- A clear understanding of Software Engineering concepts.
- Knowledge gained of Analysis and System Design concepts.
- Ability to manage change during development.
- Basic idea of the SOA and AOP concepts

#### **BOOKS RECOMMENDED:**

1. Roger S. Pressman, Software Engineering: A Practitioner's Approach, McGraw – Hill, Sixth Edition
2. Ian Sommerville "Software Engineering", Pearson Edu, 9th edition, 2010.
3. Hans Van Vliet, "Software Engineering: Principles and Practices", 2008.
4. Richard Fairley, "Software Engineering Concepts", 2008

#### **List of Practical Assignment:**

#### **During the learning of course, students need to do assignments:**

- 1 Prepare SRS for email or window explorer domain problem.
2. Using COCOMO model estimate effort for email or window explorer domain problem.
3. Draw E-R diagram, DFD for the project problem of your choice.
4. Draw Use Case diagram for facebook.
- 5 Design of the test cases for facebook.