

**Devi Ahilya University, Indore, India**  
**Institute of Engineering & Technology**  
**IV Year B.E. (Electronics & Instrumentation) (Full Time)**

<b>Devi Ahilya University, Indore, India</b> <b>Institute of Engineering &amp; Technology</b>	<b>IV Year B.E.</b> <b>(Electronics &amp; Instrumentation)</b> <b>(Full Time)</b>						
<b>Subject code &amp; Name</b> <b>7EIRE2: Software Engineering</b>	<b>Instruction</b> <b>Hours per week</b>			<b>Credits</b>			
	<b>L</b>	<b>T</b>	<b>P</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Total</b>
<b>Duration of Theory Paper :</b> <b>3 Hours</b>	<b>3</b>	<b>1</b>	<b>--</b>	<b>3</b>	<b>1</b>	<b>--</b>	<b>4</b>

**Course Learning Objectives:**

1. To Understand the Software Engineering Practice & Process Models.
- 2 Familiarize students with different software life cycle models.
3. Understand the importance of the software development process.
4. Understand the importance of modelling and modelling languages.
5. 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, safety critical software development process.

#### **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 Assignments:**

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

- 1 Prepare SRS for email or window explorer domain problem.
2. Draw E-R diagram, DFD for the project problem of your choice.
3. Draw Use Case diagram for facebook.

#### **Course Outcomes:**

CO.No.	CO
CO1	To Understand the Software Engineering Practice & Process Models.
CO2	Familiarize students with different software life cycle models.
CO3	Understand the importance of the software development process.
CO4	Understand the importance of modelling and modelling languages.
CO5	Design and develop correct and robust software products.

**CO-PO-PSO Relationship**

CO	PO 1	PO2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PS O1	PS O2	PS O3
CO1	3	2	2	2	1				1	1		1	2	1	1
CO2	2	3	2	3	1				1	1		1	2	2	2
CO3	3	3	3	2	2				1	1		1	3	2	1
CO4	2	2	3	3	3	1			2	2		1	2	2	2
CO5	1	2	3	2	3	1			3	3	1	1	2	3	3