



# **C. U. SHAH UNIVERSITY – WADHWAN CITY**

## **FACULTY OF TECHNOLOGY AND ENGINEERING DEPARTMENT OF COMPUTER ENGINEERING B. TECH. SEMESTER: - V**

**Subject Name: Software Engineering (SWE)**

**Subject Code: 4TE05SWE1**

**Teaching & Evaluation Scheme: -**

Subject Code	Subject Name	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
		Th	Tu	Pr	Total		Theory				Practical (Marks)			Total
							Sessional Exam		University Exam		Internal		University	
							Marks	Hours	Marks	Hours	Pr/Viva	TW	Pr	
4TE05SWE1	Software Engineering (SWE)	3	0	0	3	3	30	1.5	70	3.0	-	-	-	100

### **Objectives:**

- To be familiar with the notion of software engineering and why it is important
- To appreciate the technical (engineering), managerial, and psychological aspects of software engineering
- To comprehend the similarities and differences between software engineering and other engineering disciplines
- To be acquainted with the major phases in a software development project
- To understand ethical dimensions in software engineering
- To be aware of the time frame and extent to which new developments impact software engineering practice

### **Prerequisites:**

- Basic knowledge of software development process.
- Basic knowledge of UML.
- Basic knowledge of various tools of designing

### **Course outline:**

Sr. No.	Course Contents	Total Hrs.
1	<b>Introduction to Software Engineering:</b> Study of Different Models, Software Characteristics, Components, Applications, Layered Technologies, Processes, Methods And Tools, Generic View Of Software Engineering, Process Models- Waterfall model, Incremental, Evolutionary process models- Prototype, Spiral And	06

	Concurrent Development Model.	
2	<b>Requirements Engineering:</b> Problem Recognition, Requirement Engineering tasks, Processes, Requirements Specification, Use cases and Functional specification, Requirements validation, Requirements Analysis, Modeling – different types.	06
3	<b>Structured System Design:</b> Design Concepts, Design Model, Software Architecture, Data Design, Architectural Styles and Patterns, Architectural Design, Alternative architectural designs, Modeling Component level design and its modeling, Procedural Design, Object Oriented Design.	06
4	<b>Data Oriented Analysis &amp; Design:</b> E-R Diagram, Dataflow Model, Control Flow Model, Data Dictionary, Sequence Diagram.	04
5	<b>Planning and Software Project:</b> Scope and Feasibility, Effort Estimation, Schedule and staffing, Risk management, project monitoring plan, Detailed Scheduling.	05
6	<b>Coding and Unit Testing:</b> Programming principles and guidelines, Programming practices, Coding standards, Unit testing- procedural units, classes, Integration Testing, Code Inspection, Metrics – size measure, Halstead measure.	06
7	<b>Testing:</b> Concepts, Psychology of testing, Levels of testing, Testing Process - test plan, test case design, Execution, Black-Box testing, Boundary value analysis, Pair wise testing- state based testing, White-Box testing, criteria and test case generation and tool support.	06
8	<b>Software Project Management and Maintenance:</b> Management Spectrum, People – Product – Process - Project, W5HH Principle, Importance of Team Management.	06
	<b>Total</b>	<b>45</b>

#### Learning Outcomes:

- This subject shall offer the skills for analysis, design, development testing & maintenance of software towards beneficial for the student in respected profession.
- Students will get acquainted with systematic and organized approach for developing the software fulfilling the needs of Industries.
- Student will learn an individual as well as teamwork approach for project development which is essential for their career.
- By upholding the skills of all aspects of system & software production, student's level of competence will be enhanced.

#### Books Recommended:

1. Software Engineering: A Practitioner's Approach, 5<sup>th</sup> Edition, **Pressman R.S**, TMH(2001).
2. Software Engineering, 7<sup>th</sup> Edition, **Ian Somerville**, Addison – Wesley(2004).
3. Software Engineering: Principles and Practices, 3<sup>rd</sup> Edition, **Hans Van Vlie**, Wiley Publication(2006).
4. Fundamentals of Software Engineering, 3<sup>rd</sup> Edition, **Rajiv Mall**, PHI(2009).
5. Software Engineering –A Precise Approach, Indian Edition, **Pankaj Jalote**, Wiley India(2010).