

GUJARAT TECHNOLOGICAL UNIVERSITY

MECHANICAL ENGINEERING

B. E. SEMESTER: VII

Subject Name: **Software Engineering**

Subject Code: **171908**

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	University Exam (E)		Mid Sem Exam (Theory) (M)	Practical (Internal)
				Theory	Practical		
3	2	0	5	70	30	30	20

Sr. No	Course Content
1.	Introduction: FAQs about software engineering, Professional and ethical responsibility
2.	Computer-based System Engineering: Emergent system properties, Systems and their environment, System modelling, The system engineering process, System procurement
3.	Project Management: Management activities, Project planning, Project scheduling, Risk management
4.	Software Requirements: Functional and non-functional requirements, User requirements, System requirements, The software requirements document
5.	Requirements Engineering Processes: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management
6.	System Models: Context models, Behavioural models, Data models, Object models, CASE workbenches
7.	Distributed Systems Architectures: Multiprocessor architectures, Client-server architectures, Distributed object architectures, CORBA

8.	Real-time Software Design: System design,. Real-time executives, Monitoring and control systems, Data acquisition systems
9.	Real-time Software Design: System design, Real-time executives, Monitoring and control systems, Data acquisition systems
10.	Dependability: Critical systems, Availability and reliability, Safety, Security
11.	Critical Systems Specification: Software reliability specification, Safety specification, Security specification
12.	Critical Systems Development: Fault minimisation, Fault tolerance, Fault tolerant architectures, Safe system design
13.	Verification and Validation: Verification and validation planning, Software inspections, Automated static analysis, Cleanroom software development
14.	Critical Systems Validation: Formal methods and critical systems, Reliability validation, Safety assurance, Security assessment
15.	Managing People: Limits to thinking, Group working, Choosing and keeping people, The people capability maturity model
16.	Software Cost Estimation: Productivity, Estimation techniques, Algorithmic cost modelling, Project duration and staffing
17.	Software Change: Program evolution dynamics, Software maintenance, Architectural evolution
18.	Software Re-engineering: Source code translation, Reverse engineering, Program structure improvement, Program modularisation, Data re-engineering
19.	Configuration Management: Configuration management planning, Change management, Version and release

	management, System building, CASE tools for configuration management
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Text Book:

1. Software Engineering By Sommerville, 8th edition