GUJARAT TECHNOLOGICAL UNIVERSITY
B. E. SEMESTER: VI
Computer Engineering/Information Technology/Computer Science & Engineering

Subject Name: **Software Engineering**
Subject Code: **160701**

Teaching Scheme				Evaluation Scheme		
Theory	**Tutorial**	**Practical**	**Total**	**University Exam (Theory) (E)**	**Mid Sem Exam (Theory) (M)**	**Practical (I)**
4	0	2	6	70	30	50

Sr. No	Course Content	Total Hrs.
1.	**Introduction to Software Engineering:** 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 Concurrent Development Model.	08
2.	**Requirements Engineering:** Problem Recognition, Requirement Engineering tasks, Processes, Requirements Specification, Use cases and Functional specification, Requirements validation, Requirements Analysis, Modeling – different types	08
3.	**Structured System Design:** 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.	08
4.	**Data Oriented Analysis & Design:** Difference between Data and Information, E-R Diagram, Dataflow Model, Control Flow Model, Control and Process Specification, Data Dictionary	06
5.	**User Interface Design:** Concepts of UI, Interface Design Model, Internal and External Design, Evaluation, Interaction and Information Display Software	05
6.	**Planning a Software Project:** Scope and Feasibility, Effort Estimation, Schedule and staffing, Quality Planning, Risk management- identification, assessment, control, project monitoring plan, Detailed Scheduling	06

7.	**Quality Assurance :** Quality Control, Assurance, Cost, Reviews, Software Quality Assurance, Approaches to SQA, Reliability, Quality Standards- ISO9000 And 9001	05
8.	**Coding and Unit Testing:** Programming principles and guidelines, Programming practices, Coding standards, Incremental development of code, Management of code evaluation, Unit testing- procedural units, classes, Code Inspection, Metrics – size measure, complexity metrics, Cyclomatic Complexity, Halstead measure, Knot Count, Comparison Of Different Metrics.	06
9.	**Testing:** Concepts, Psychology of testing, Levels of testing, Testing Process- test plan, test case design, Execution, Black-Box testing – Boundary value analysis – Pairwise testing- state based testing, White-Box testing – criteria and test case generation and tool support, Metrics – Coverage analysis- reliability	05
10.	**Software Project Management:** Management Spectrum, People –Product – Process- Project, W^5HH Principle, Importance of Team Management	04
11.	**Case Tools And Study:** Introduction To CASE, Building Blocks Of CASE, Integrated CASE Environment	03

Text Book:

1. Pressman R.S., Software Engineering : A Practitioner's Approach, TMH

Reference Books:

1. Software Engineering, Eighth Edition, Sommerville, Pearson
2. Software Engineering, Rajiv Mall, PHI
3. Software Engineering, Pankaj Jalote, – A Precise Approach, Wiley India
4. Software Engineering, An Engineering Approach, Peters & Pedrycz, Wile-India
5. Software Engineering, Principles and Practice, JAwadekar, TMH