GUJARAT TECHNOLOGICAL UNIVERSITY
Syllabus for Integrated MSc, 5th Semester
Branch: Information Technology
Subject Name: Software Engineering
Subject Code: 1350501

Teaching and Examination Scheme

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE(E)	PA (M)	PA (V)	PA (I)	
3	0	2	4	70	30	30	20	150

Content:

Sr. No.	Content	Teaching Hours	Module Weightage (%)
1.	**Introduction to Software and Software Engineering** The Evolving Role of Software, Software: A Crisis on the Horizon and Software Myths, Software Engineering: A Layered Technology, Software Process Models, The Linear Sequential Model, The Prototyping Model, The RAD Model, Evolutionary Process Models, Agile Process Model, Component-Based Development, Process, Product and Process.	5	15
2.	**Agile Development** Agility and Agile Process model, Extreme Programming, Other Process models of Agile Development and Tools.	3	10
3.	**Requirement Analysis and Specification** Understanding the Requirement, Requirement Modeling, Requirement Specification (SRS), Requirement Analysis and Requirement Elicitation, Requirement Engineering	5	15
4.	**Software Design** Design Concepts and Design Principal, Architectural Design, Cohesion and Coupling, **Object Oriented Model (Unified Modeling Model) – UML Diagrams (Class diagram, State chart Diagram, Use case Diagram ,Activity Diagram, Sequence Diagram),** Dataflow Diagram (DFD), Data Dictionary	10	25
5.	**Software Coding & Testing** Coding Standard and coding Guidelines, Code Review, Software Documentation, Testing Strategies, Testing Techniques and Test Case, Test Suites Design, Testing Conventional Applications, Testing Object Oriented Applications, Testing Web and Mobile Applications	8	20
6.	**Quality Assurance and Management** Quality Concepts and Software Quality Assurance, Software Reviews (Formal Technical Reviews), Software Reliability, The Quality Standards: ISO 9000, CMM, Six Sigma for SE, SQA Plan.	5	10

7.	**Software Maintenance and Configuration** Management Types of Software Maintenance, Re-Engineering, Reverse Engineering, Forward Engineering, And The SCM Process.	4	05

Suggested Specification table with Marks (Theory):70

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
15	25	10	10	5	5

R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Reference Books:

1. Roger S.Pressman, Software Engineering- A practitioner's Approach, McGraw-Hill International Editions
2. Ian Sommerville, Software engineering, Pearson education Asia
3. Pankaj Jalote, Software Engineering – A Precise Approach Wiley
4. Behhforoz & Frederick Hudson, Software Engineering Fundamentals, OXFORD
5. Rajib Mall, Fundamentals of software Engineering, Prentice Hall of India.
6. Deepak Gaikwad, Viral Thakkar, DevOps Tools from Practitioner's ViewPoint, Wiley
7. Merlin Dorfman (Editor), Richard H. Thayer (Editor) ,Software Engineering
8. Robert C. "Uncle Bob" Martin , Clean Architecture: A Craftsman's Guide to Software Structure and Design

Course Outcome:

After learning the course, the students should be able to:

No.	CO statement
CO-1	Prepare SRS (Software Requirement Specification) document.
CO-2	Apply the concept of Functional Oriented and Object Oriented Approach for Software Design.
CO-3	Recognize how to ensure the quality of software product, different quality standards and software review techniques.
CO-4	Apply various testing techniques and test plan in.
CO-5	Able to understand modern Agile Development