III B.Tech – II Semester
(17CS601) SOFTWARE ENGINEERING

Int. Marks	Ext. Marks	Total Marks	L	T	P	C
40	60	100	3	1	-	3

Pre-Requisites: Basics of Programming and Basics of UML

Course Objectives:
- To understand the software life cycle models.
- To understand the software requirements and SRS document.
- To understand the importance of modeling and modeling languages.
- To design and develop correct and robust software products.
- To understand the quality control and how to ensure good quality software.
- To understand the planning and estimation of software projects.
- To understand the implementation issues, validation and verification procedures.
- To understand the maintenance of software

UNIT-I:
Software and Software Engineering: The Nature of Software, The Unique Nature of WebApps, Software Engineering, Software Process, Software Engineering Practice, Software Myths.
Process Models: A Generic Process Model, Process Assessment and Improvement, Prescriptive Process Models, Specialized Process Models, The Unified Process, Personal and Team Process Models, Process Terminology, Product and Process.

UNIT-II:
Requirements Analysis and Specification: Requirements Gathering and Analysis, Requirements engineering Process, Requirements elicitation, Requirements Analysis, Software Requirement Specification (SRS), Prototyping Analysis, Requirements Specification, Requirements Validation, Formal System Specification.

UNIT- III:
Software Design: Overview of the Design Process, How Characteristics of Good Software Design, Principles, Modular Design, Design Methodologies, Structured Design, Structured Design Methodology, Transform Vs Transaction Analysis, Cohesion and Coupling, Approaches to Software Design

UNIT - IV:
Implementation: Coding Principles, Coding Process, Code verification, Code documentation Software, Coding, Code Review, Software Documentation.
Testing: Testing Fundamentals, Unit Testing, Test Planning, Black Box Testing, White Box Testing, Levels of Testing, Usability Testing, Regression testing, Debugging approaches, Integration Testing.

UNIT - V:
Software Project Management: Project Management Essentials, what is Project management, Software Configuration Management. Project Planning and Estimation: Project Planning activities, Software Metrics and measurements, Project Size Estimation, Effort Estimation Techniques.

UNIT – VI:
Software Reliability and Quality Management: Software Reliability, Software Quality, Software Quality Management System, ISO 9000, SEI Capability Maturity Model.
Software Maintenance: Software maintenance, Maintenance Process Models.
Software Reuse: what can be reused? Why almost No Reuse So Far? Basic Issues in Reuse Approach.

Course Outcomes:

1	To understand the software life cycle models.	L2
2	Define and develop a software project from requirement gathering to implementation.	L3
3	Obtain knowledge about principles and practices of software engineering and User Interface Design.	L2
4	Obtain knowledge about coding and testing.	L2
5	Obtain knowledge about Software Reliability and Quality Management of software systems.	L2
6	Focus on the fundamentals of maintenance of software systems and reuse.	L1

Correlation of COs with POs & PSOs:

	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2	PSO-3
CO-1	2	3	2	2	2	-	-	-	-	-	-	-	1	2	-
CO-2	3	2	2	2	1	-	-	-	-	-	-	-	1	2	-
CO-3	2	2	3	2	1	-	-	-	-	-	-	-	1	2	-
CO-4	1	2	2	2	1	-	-	-	-	-	-	-	1	2	-
CO-5	1	2	3	2	1	-	-	-	-	-	-	-	1	2	-
CO-6	1	3	2	3	1	-	-	-	-	-	-	-	1	2	-

Text Books:

1. Software engineering A practitioner's Approach, Roger S. Pressman, Seventh Edition McGraw Hill International Edition.
2. Fundamentals of Software Engineering, Rajib Mall, Third Edition, PHI.
3. Software Engineering, Ian Sommerville, Ninth edition, Pearson education

Reference Books:

1. Software Engineering : A Primer, Waman S Jawadekar, Tata McGraw-Hill, 2008
2. Software Engineering, A Precise Approach, Pankaj Jalote, Wiley India, 2010.
3. Software Engineering, Principles and Practices, Deepak Jain, Oxford University Press.
4. Software Engineering1: Abstraction and modeling, Diner Bjorner, Springer International edition, 2006.