# IV B. Tech – II Semester (17CS842) SOFTWARE ENGINEERING (from CSE) (Open Elective-II)

Int. Marks		L	Т	Р	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, Software Requirement Specification (SRS), Formal System Specification. Software Design: Overview of the Design Process, How to Characterise of a Design? Cohesion and Coupling, Layered Arrangement of Modules, Approaches to Software Design

**UNIT–III:** Function-Oriented Software Design: Overview of SA/SD Methodology, Structured Analysis, Developing the DFD Model of a System, Structured Design, Detailed Design, Design Review, over view of Object-Oriented design. User Interface Design: Characteristics of Good User Interface, Basic Concepts, Types of User Interfaces, Fundamentals of Component-based GUI Development, A User Interface Design Methodology.

**UNIT–IV:** Coding And Testing: Coding, Code Review, Software Documentation, Testing, Unit Testing, Black-Box Testing, White-Box Testing, Debugging, Program Analysis Tool, Integration Testing, Testing Object-Oriented Programs, System Testing, Some General Issues Associated with Testing

**UNIT-V:** Software Reliability and Quality Management: Software Reliability, Statistical Testing, Software Quality, Software Quality Management System, ISO 9000, SEI Capability Maturity Model. Computer Aided Software Engineering: Case and its Scope, Case Environment, Case Support in Software Life Cycle, Other Characteristics of Case Tools, Towards Second Generation CASE Tool, Architecture of a Case Environment

**UNIT–VI:** Software Maintenance: Software maintenance, Maintenance Process Models, Maintenance Cost, Software Configuration Management. Software Reuse: what can be reused? Why almost No Reuse So Far? Basic Issues in Reuse Approach, Reuse at Organization Level.

#### **Course Outcomes:**

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

# **Correlation of COs with POs & PSOs:**

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