

Branch: B.Sc.(IT)	Semester-IV
Subject Code: 4104	Lecture: 04 Credit: 04
Course Opted	Core Course – 14
Subject Title	SOFTWARE ENGINEERING

Course Objectives:

- To learn and understand the principles of Software Engineering
- To be acquainted with methods of capturing, specifying, visualizing and analyzing software requirements.
- To apply Design and Testing principles to S/W project development.
- To understand project management through life cycle of the project.
- To understand software quality attributes.

Course Outcomes:

- Decide on a process model for a developing a software project
- Classify software applications and identify unique features of various domains
- Design test cases of a software system.
- Understand basics of IT Project management.
- Plan, schedule and execute a project considering the risk management.
- Apply quality attributes in software development life cycle.

Modules	Sr. No.	Topic and Details	No. of Lectures Assigned	Marks Weightage %
UNIT - I	1.	Introduction to Software Engineering, Software Process Models: Software Engineering Fundamentals: Nature of Software, Software Engineering Principles, The Software Process, Software Myths. Process	3	6
	2	Models: A Generic Process Model, Prescriptive Process Models: The Waterfall, Incremental Process (RAD), Evolutionary Process, Unified Process, Concurrent.	4	8
	3	Advanced Process Models & Tools: Agile software development: Agile methods, Plan-driven and agile development	3	6
UNIT-II	4	Software Requirements Engineering & Analysis Requirements: User and system requirements, Functional and non-functional requirements, Types & Metrics, A spiral view of the requirements engineering process	4	8
	5	Software Requirements Specification (SRS): The software requirements Specification document, The structure of SRS, Ways of writing a SRS, Requirements validation, Requirements management.	3	6

	6	Design representations: flowcharts, pseudo code, HIPO and techniques	3	6
	7	Modular design: Overview, module coupling and cohesion, various types of coupling, merits and demerits, other approaches to Programming.	4	8
UNIT-III	8	Project Management: Process, Metrics, Estimations & Risks Project Management Concepts: The Management Spectrum, People, Product, Process, Project, The W5HH Principle, Metrics in the Process and Project Domains	3	6
	9	Software Measurement: size & function oriented metrics (FP & LOC), Metrics for Project and Software Quality	3	6
	10	Project Estimation: Observations on Estimation, Project Planning Process, Software Scope and feasibility	4	8
	11	Resources: Human Resources, Reusable software, Environmental Resources. Software Project Estimation, Decomposition Techniques, Empirical Estimation Models: Structure, COCOMO II, Estimation of Object- oriented Projects	4	8
UNIT-IV	12	Project Management: Risk Management, Configuration Management, Maintenance & Reengineering Project Risk Management : Risk Analysis & Management: Reactive versus Proactive Risk Strategies, Software Risks, Risk Identification, Risk Projection, Risk Refinement, Risk Mitigation, Risks Monitoring and Management, The RMMM plan for case study project	4	8
	13	Software Configuration Management: The SCM repository, SCM process, Configuration management for Web Apps	4	8
	14	Maintenance & Reengineering: Software Maintenance, Software Supportability, Reengineering, Business Process Reengineering, Software Reengineering, Reverse Engineering, Restructuring, Forward Engineering	4	8
TOTAL			50	100

Text Book:

1. Roger Pressman, —Software Engineering: A Practitioner's Approach, McGrawHill,

Reference Books:

1. Shooman "Software Engineering Design, Reliability and Management" McGrawHill 1983
2. Fairley "software Engineering concepts" " McGraw--Hill Series, New York,
3. Software Project Management, Bob Huges, Mike Cotterell, Rajib Mall, 5/E, TataMcGraw Hill Edu. (India) Pvt. Ltd.
4. Software Quality Engineering , Jeff Tian , Wiley India Ltd.