Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
COM-603	Software Engineering	PCC	3	3	0	0	50	100	150

Course Outcomes:

At the end of the course the student will be able to:	
CO1	Analyze software development process models, including agile models and traditional models.
CO2	Demonstrate the use of software life cycle through requirements gathering, choice of process model and design model.
CO3	Apply and use various UML models for software analysis, design and testing.
CO4	Acquire knowledge about the concepts of application of formal specification, case tools and configuration management for software development.
CO5	Analysis of software estimation techniques for creating project baselines.

Detailed Syllabus

Section-A

Unit 1: Software Engineering and Processes: - Introduction to Software Engineering, Software Evolution, Software Characteristics, Legacy Software, Software Crisis: myths and Causes, Software Engineering: A layered Technology, Process Framework, and Software process models (Waterfall, Incremental, and Evolutionary process models and Agile).

(8 hrs)

Unit 2: Requirements Engineering: Problem Analysis, Requirement elicitation and Validation, Requirements modeling: Scenarios, Information and analysis classes, flow and behavioral modeling, documenting Software Requirement Specification (SRS).

(5 hrs)

Unit 3: Software Planning and Project management: -Software project management Process: Software scope, Resources, Software Metrics, Software project estimation, Decomposition techniques, Empirical estimation model: COCOMO, Software project scheduling, Risk Analysis, Software acquisition.

(6 hrs)

Section-B

Unit 4: Software Design and construction: System design principles: levels of abstraction (architectural and detailed design),coupling and cohesion, Structured design (top-down functional decomposition), object-oriented design, event driven design, component-level design, test driven design, aspect oriented design , function oriented, service oriented, Design patterns, Coding Practices: Techniques, Refactoring, Integration Strategies, Internal Documentation, Data Flow Diagrams transform analysis, transaction analysis, Transform and Transaction Mapping.

(8 hrs)

Unit 5: Software Quality Assurance, Testing and Maintenance: -Software quality and software quality assurance, Formal Technical Reviews, Software quality metrics: McCall's Quality Factors, Software Reliability, Software Testing Fundamentals, White box Testing, Basic Path Testing, Control Structure Testing, Black Box Testing. Software Testing Strategies, Unit Testing, Integration Testing, Validation Testing, System Testing, Maintenance characteristics, Reverse Engineering, Re-engineering.

(12 hrs)

Text Books

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Software Engineering, A	Pressman S. R. and	McGraw Hill	9th (2020)