NIRMA UNIVERSITY

Institute:	Institute of Technology
Name of Programme:	Integrated B.Tech.(CSE)-MBA
Course Code:	CSI0603
Course Title:	Software Engineering
Course Type:	Core
Year of Introduction:	2021-22

Credit Scheme

L	T	Practical Component				C
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Course Learning Outcomes (CLO):

At the end of the course, students will be able to –

1. explain various phases of software development lifecycle
2. identify the requirement specifications for a software project
3. develop the process model using standard tools and methodologies
4. implement a quality software project through effective team-building, planning, scheduling and risk assessment.

Syllabus: **Total Teaching hours: 20**

Unit	Syllabus	Teaching hours
Unit-I	**Introduction:** Introduction to Software Engineering, Defining Software, Changing Nature of Software, attributes of a good Software, Software Product, Software Development Life Cycle, Software Processes, Software Engineering Practices, Software Myths	02
Unit-II	**Software Process Models:** Generic Process Model (Defining Framework Activity, Identifying Task Set), Process Assessment & Improvement, Waterfall Process Model, Incremental Process Model, Spiral Process Model, Prototyping Software Process Model, Evolutionary Process Model	03
Unit-III	**Project Management Concepts:** Management activities**,** Project Planning, Project Scheduling, Risk analysis and Management, Reactive vs. Proactive Risk Strategies, Software Risks, Risk Identification, Risk Projection, Risk Refinement, Risk Mitigation, Monitoring and Management.	03
Unit-IV	**Software requirement engineering:** Software Requirements, Requirement Engineering, Extraction and Specification, Feasibility Study, Requirements Modelling	02
Unit-V	**Design Concepts:** Object oriented design, Architectural Design, Component level Design, User Interface Design	03
Unit-VI	**Software Process & Metrics:** Metrics in the Process and Project Domains: Process metrics, project metrics, Software Measurement Metrics for Software Quality	03
Unit-VII	**Software Testing:** Unit testing, integration testing, black box and white box testing, verification and validation of software, software configuration management	04

Self-Study: The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents.

Suggested Readings/ References:

1. Ian Sommerville, Software Engineering, Addison – Wesley
2. Roger Pressman, Software Engineering A Practitioner's Approach, McGraw Hill Publication
3. Rajib Mall, Fundamentals of Software Engineering, Prentice Hall of India
4. Ivar Jacobson, Object Oriented Software Engineering A use case Approach, Pearson

Suggested List of Experiments:

Sr. No.	Title	Hours
1	To identify project scope, objectives, problem statement formulation and requirement identification for project	02
2	To make a comparative study of various software process models	02
3	To define functional & non-functional requirements for same and prepare a SRS document for the project	04
4	To define modules of the project & Design the project plan (Gantt Chart) for the same and identify deliverables with time line	02
5	To design Use Case Diagrams and Use Case Specifications for your system	02
6	To construct Activity Diagram Class Diagram & CRC index cards for your system	04
7	To construct Sequence Diagram, Collaboration and State Diagram for project	02
8	To implement two functional modules of your project. Design test cases for your project and perform testing. Prepare test strategy document	02

Suggested Case List: -NA-