A T M E ®

College of Engineering

DEPARTMENT OF MASTER OF COMPUTER APPLICATIONS (MCA)

ISO 9001:2015

ISO Certified

COURSE MODULE: SOFTWARE ENGINEERING

Course Coordinator: Prof. Divyashree B K | Academic Year:**2024-25**

Department: Master of Computer Application

Course Code	Course Title	Core/Elective	Prerequisite	Contact Hours	Total Hrs/ Sessions
				L:T: P:S	
MMC204	**SOFTWARE ENGINEERING**	CORE		2:0:0:1	40

Course Learning Objective:

The course will enable the students to:

1. Understand the importance of various Software Engineering Lifecycle Models.
2. Document the Software Requirements Specification (SRS) for the identified system.
3. Gain knowledge of the System Analysis and Design concepts using UML.

Teaching-Learning Process (General Instruction):

1. Adopt different types of teaching methods to develop the outcomes through PowerPoint presentations and Video demonstrations.
2. Adopt collaborative (Group Learning) Learning in the class.
3. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills and develops thinking skills such as evaluating, generalizing, and analyzing information.

Module-1

SOFTWARE PROCESS AND AGILE DEVELOPMENT: Introduction to Software Engineering, Software Process, Perspective and Specialized Process Models –Introduction to Agility-Agile process-Extreme programming-XP Process-Case Study.

TLP: Power Point Presentation, Chalk and Talk

Module-2

REQUIREMENTS ANALYSIS AND SPECIFICATION: Requirement analysis and specification – Requirements gathering and analysis – Software Requirement Specification – Formal system specification – Finite State Machines – Petrinets –Object modelling using UML – Use case Model – Class diagrams – Interaction diagrams Activity diagrams – State chart diagrams – Functional modelling –Data Flow Diagram- CASE TOOLS.

TLP: Power Point Presentation, Chalk and Talk

Module-3

SOFTWARE DESIGN: Software design – Design process – Design concepts – Coupling – Cohesion – Functional independence Design patterns Model-view-controller Publish-subscribe Adapter Command – Strategy – Observer – Proxy – Facade – Architectural styles – Layered - Client Server - Tiered - Pipe and filter- User interface design-Case Study

TLP: Power Point Presentation, Chalk and Talk

Module-4

TESTING AND MAINTENANCE : Testing – Unit testing – Black box testing– White box testing – Integration and System testing–Regression testing – Debugging - Program analysis – Symbolic execution – Model Checking Case Study.

TLP: Power Point Presentation, Chalk and Talk

Module-5

PROJECT MANAGEMENT: Software Project Management- Software Configuration Management - Project Scheduling- DevOps: Motivation-Cloud as a platform-Operations- Deployment Pipeline:Overall Architecture Building and Testing-Deployment- Tools- Case Study.

TLP: Power Point Presentation, Chalk and Talk

Course Outcomes:

At the end of the course, the student will be able to:

Sl. No.	Description	Blooms Level
CO1	Describe the fundamental software process models and the principles of requirement analysis.	L2
CO2	Implement design patterns and architectural styles to construct software systems.	L3
CO3	Utilize the software testing methodologies to ensure the quality and reliability of software.	L3
CO4	Analyze the integration of software project management practices with DevOps principles to improve software delivery and operational efficiency.	L4

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% (50 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

1. Two Unit Tests each of **25 Marks**
2. Two assignments each of **25 Marks** or **one Skill Development Activity of 50 marks** to attain the COs and POs
3. The sum of two tests, two assignments/skill Development Activities, will be **scaled down to 50 marks**
4. CIE methods/question paper is designed to attain the different levels of Bloom's Taxonomy as per **the outcome defined for the course.**

Semester-End Examination:

1. The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.
2. The question paper will have ten full questions carrying equal marks.
3. Each full question is for 20 marks. There will be two full questions (with a maximum of four sub-questions) from each module.
4. Each full question will have a sub-question covering all the topics under a module.The students will have to answer five full questions, selecting one full question from each module

List of Text Books

Text Books:

1. Bernd Bruegge and Allen H. Dutoit, "Object-Oriented Software Engineering: Using UML, Patterns and Java" Third Edition, Pearson Education, 2009
2. Roger S. Pressman, Object-Oriented Software Engineering: An Agile Unified Methodology, First Edition, Mc Graw-Hill International Edition, 2014.
3. Len Bass, Ingo Weber and Liming Zhu, ―DevOps: A Software Architect's Perspective, Pearson Education 2016.
4. Rajib Mall, ―Fundamentals of Software Engineering, Third Edition, PHI Learning Private Limited, 2009
PankajJalote, ―Software Engineering, A Precise Approach, Wiley India, 2010

The Correlation of Course Outcomes (CO's) and Program Outcomes (PO's)

Subject Code: MMC204			TITLE: SOFTWARE ENGINEERING							Faculty: DIVYASHREE B K		
List of Course Outcomes	Program Outcomes											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1	3	2			2							
CO-2	3	3	3	2	3							
CO-3	3	3	2	2	3							
CO-4	3	3	3	3	3				2	2		
Total												

Note: 3 = Strong Contribution, 2 = Average Contribution , 1 = Weak Contribution - = No Contribution