BHAGWAN MAHAVIR UNIVERSITY

Effective From (2025-2026)

MASTER OF COMPUTER APPLICATION

Semester: I

Subject Code	Subject Title	Teaching Scheme					
		(Hours/Week)		Credits	Examination Marks		Total Marks
		Theory	Tutorial		Internal	External	
3050302105	**Software Engineering and Project Management**	4	0	4	40	60	100

Duration of Exam: 2:30 Hours

Objective of the course:

- To provide comprehensive knowledge of software engineering principles, models, and project management techniques for building high-quality software systems.

Course Outcomes:

Upon completion of the course, the student shall be able to:

Sr. No.	CO statement	Marks % weightage
CO-1	Understand the fundamentals and characteristics of software engineering.	25
CO-2	Describe and differentiate various software process models including agile.	15
CO-3	Analyze and document software requirements using standard techniques.	25
CO-4	Apply software project planning and risk management techniques.	15
CO-5	Develop project design plans including SCM, testing, and quality assurance.	20

Detail Content:

Sr. No.	Topic	Total Hrs.
1	**Introduction to Software Engineering** • Definition and Scope: Software engineering • Software Characteristics: Modularity, reliability, maintainability, and scalability. • Software Development Life Cycle (SDLC) • Types of Software Products • Software Engineering Principles	11
2	**Software Process Models** • Waterfall Model • Iterative and Incremental Models • Agile Methodology • Incremental Process Model • Comparison of Models	08
3	**Software Requirements Engineering** • Requirement Engineering • Types of Requirements • Feasibility Study • Requirement Documentation • Requirement Validation	11
4	**Managing Software Projects** • Concepts of Project Management • Process and Project Metrics • Estimation for software project • Project Scheduling • Risk Management	08
5	**Project Design and planning** • Introduction of Process planning • Software configuration Management plan • Quality plan • Project Monitoring plan Design • Reliability Testing of software	10

CO-PO Mapping Matrix with Bloom's Levels

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	1
CO2	3	1	1	-	-	-	-	-	-	-	-	1
CO3	3	3	2	1	-	-	-	-	-	1	-	2
CO4	3	3	3	2	1	-	-	-	-	2	2	2
CO5	3	2	3	2	2	-	-	-	-	1	2	2

Scale: 3 = Strong, 2 = Moderate, 1 = Slight, - = No relation

Text books:

1. **Software Engineering –** A Practitioner's Approach – Roger S. Pressman and Bruce R. Maxim – McGraw Hill Education – 8th Edition
2. **Software Engineering –** Ian Sommerville – Pearson Education – 10th Edition
3. **A Guide to the Project Management Body of Knowledge (PMBOK Guide) –** Project Management Institute (PMI) – PMI Publications – 7th Edition
4. **Software Project Management** – Bob Hughes and Mike Cotterell – McGraw Hill Education – 5th Edition

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