AC – 27/01/2025
Item No. – 6.7(R)

University of Mumbai

Revised Syllabus for

Master of Architecture Programme:

M. Arch. (Project Management)

Semester – (I to IV)

(Choice Based Credit System)

(With effect from the academic year 2025-26)

SEMESTER-WISE COURSE DESCRIPTION

SEMESTER-I

	SEMESTER I Exam Conducted by Individual College on behalf of the University					
Course Code	**Course Name**	**Teaching Scheme (HRS)**				
		L	T	S	TOTAL	CREDITS
PM-C101	Principles of Management and Business Organisations	3	--	--	3	3
PM-C102	Law -1 : Legal Framework for Construction	3	--	--	3	3
PM-C103	Operation Research	3	--	--	3	3
PM-E104	Choice Based Elective - 1	2	--	--	2	2
PM-E105	Choice Based Elective - 2	2	--	--	2	2
PM-S 106	Project Planning & Scheduling Methods	1	--	8	9	5
PM-S 107	Computer Applications in Construction Management-1	--	--	6	6	3
		Total/Semester			**29**	**21**

SEMESTER I Exam Conducted by Individual College on behalf of the University					
Course Code	**Course Name**	**Examination Scheme**			
		Theory Paper	Internal	External Viva	Total Marks
PM-C101	Principles of Management and Business Organisations	50	50	--	100
PM-C102	Law -1 : Legal Framework for Construction	50	50	--	100
PM-C103	Operation Research	50	50	--	100
PM-E104	Choice Based Elective - 1	--	100	--	100
PM-E105	Choice Based Elective - 2	--	100	--	100
PM-S 106	Project Planning & Scheduling Methods	--	150	150	300
PM-S 107	Computer Applications in Construction Management-1	--	200	--	200
				TOTAL	**1000**

PM-C 101 Management Theories - Principles & Practices

Course Title	Management Theories - Principles & Practices					
			Marks			
Course Code	Hrs/week	Credits	Theory	Internal	External	Total
PM-C 101	3	3	50	50	--	100

Course Objectives:

- To provide learner with a comprehensive understanding of fundamental management principles and theories applicable to construction projects.
- To equip learners with the ability to design and implement effective organizational structures that enhance project execution and stakeholder collaboration.
- To foster leadership skills necessary for motivating and guiding diverse teams in high-pressure construction environments.
- To provide knowledge on financial management principles, budgeting, and cost control specific to construction projects.
- To cultivate strategic thinking skills that allows learner to analyse market forces and develop business strategies for construction organizations.
- To instil a mind-set of continuous improvement through performance measurement and quality management practices.

Course Contents:

- Introduction to Management: Overview, Concepts Functions and decision-making process of Management
- Organizational Structure, Design, Project Teams and Stakeholder Engagement
- Leadership Theories and Styles
- Financial Management in Construction: Budgeting and Cost Control
- Financial Analysis and Reporting
- Strategic Management and Business Development
- Performance Measurement and Continuous Improvement
- Case Studies on Successful Project Management Practices in Construction

Sessional Work:
Assignments, Case Studies, Report, Group Projects and Presentations.

PM-C 102 Law-1: Legal Framework for Construction

Course Title	Law-1: Legal Framework for Construction					
			Marks			
Course Code	Hrs/week	Credits	Theory	Internal	External	Total
PM-C 102	3	3	50	50	--	100

Course Objectives:

- To provide students with a comprehensive understanding of the Indian legal system and its relevance to construction project management
- To equip students with the ability to analyze and interpret various types of contracts used in the construction industry.
- To familiarize students with key laws and regulations governing construction practices in India, including environmental and labor laws.
- To develop skills in identifying, managing, and resolving legal disputes through various mechanisms, including ADR and litigation.
- To instil knowledge of the necessary permits, licenses, and compliance requirements for construction projects in India.
- To enable students to identify and assess legal risks and liabilities associated with construction projects, and to understand insurance implications.
- To encourage critical thinking about emerging legal issues in construction, including technology's impact and sustainable practices.

Course Contents:

- Introduction and overview to Legal Framework and Legal System in India
- Contract Law in Construction: Types of Contracts, Key Elements and Interpretation of Contracts in the Construction Industry
- Construction Laws and Regulations: Major Laws Governing Construction in India (e.g., The Indian Contract Act, The Arbitration and Conciliation Act), Environmental Laws and Regulations, Building Codes and Safety Regulations, Labor Laws Affecting Construction Projects
- Dispute Resolution Mechanisms: Alternative Dispute Resolution (ADR) Methods: Mediation, Arbitration, Conciliation, Role of the Judiciary in Construction Disputes, Understanding the Arbitration Process in India
- Regulatory Compliance and Permits: Role of Regulatory Bodies, Necessary Permits and Licenses, Compliance with Environmental and Safety Standards, Consequences of Non-Compliance in Construction Projects
- Risk Management and Liability: Legal Risks in Construction Project Management, Understanding Liability: Contractual vs. Tortious, Insurance Requirements and Coverage in Construction, Risk Mitigation Strategies
- Emerging Legal Issues in Construction: Impact of Technology on Construction Law (e.g., BIM, Digital Contracts), Legal Aspects of Sustainable Construction Practices, International Laws and Standards Affecting Indian Construction Projects, Case Studies on Legal Challenges in Construction

Sessional Work:
Assignments, Case Studies, Report, Group Projects and Presentations.

PM-C 103 Operation Research

Course Title	Operation Research					
			Marks			
Course Code	Hrs/week	Credits	Theory	Internal	External	Total
PM-C 103	3	3	50	50	--	100

Course Objectives:

- To develop analytical skills necessary effective decision-making in project management.
- Familiarize learners with various Operations Research methodologies, including linear programming, simulation, and queuing theory.
- How to maximize efficiency and minimize costs through effective resource optimization strategies.
- Enable learner to analyse risks and uncertainties in projects using Operations Research techniques.
- To develop a data-centric approach to project management, emphasizing empirical evidence in decision-making processes.
- Highlight the applications of Operations Research across various fields to broaden learners' perspectives.
- To adopt practical examples to demonstrate the application of Operations Research techniques in real project management scenarios.

Course Contents:

- Introduction and overview to Operations Research, its role in Construction Management
- Optimization Techniques: Linear Programming - Graphical and simplex methods, Integer and Binary Programming - Applications in project selection and scheduling, Non-linear Programming - Techniques and real-world applications
- Simulation and Modelling: Purpose and applications in project management, Monte Carlo Simulation - Risk analysis and uncertainty modelling, System Dynamics - Modelling project processes and feedback loops
- Decision Analysis and Risk Management: Decision-Making Under Uncertainty - Decision trees and payoff matrices, Risk Assessment Techniques- Identifying and quantifying project risks, Sensitivity Analysis - Understanding the impact of variable changes on project outcomes
- Queuing Theory and Project Scheduling: Queuing Models, Project Scheduling Techniques, Resource Levelling and Allocation
- Real-World Applications and Case Studies: Case Study Analysis - In-depth examination of real-world projects utilizing OR techniques

Sessional Work:
Assignments, Case Studies, Report, Group Projects and Presentations.

PM-E 104 Choice Based Elective - 1

Course Title	Choice Based Elective - 1					
			Marks			
Course Code	Hrs/week	Credits	Theory	Internal	External	Total
PM-E 104	2	2	--	100	--	100

Course Contents:

Individual colleges will offer electives from which the student would choose as per their own interest. The colleges should design and develop the topics, objectives and contents of choice based elective courses based on their vision and strength. Sessional work for internal evaluation should be carried out in accordance with the course contents. Suggested exercises could be in the form of case study presentations, project work, essays, debates, seminar, quizzes or class tests.

PM-E 105 Choice Based Elective - 2

Course Title	Choice Based Elective - 2					
			Marks			
Course Code	Hrs/week	Credits	Theory	Internal	External	Total
PM-E 105	2	2	--	100	--	100

Course Contents:

Individual colleges will offer electives from which the student would choose as per their own interest. The colleges should design and develop the topics, objectives and contents of choice based elective courses based on their vision and strength. Sessional work for internal evaluation should be carried out in accordance with the course contents. Suggested exercises could be in the form of case study presentations, project work, essays, debates, seminar, quizzes or class tests.

..PM-S 106 Project Planning & Scheduling Methods

Course Title	Project Planning & Scheduling Methods					
			Marks			
Course Code	Hrs/week	Credits	Theory	Internal	External	Total
PM-S 106	8	5	--	150	150	300

Course Objective

- Equip students with the skills to create detailed project plans that encompass scope, objectives, timelines, and resource allocation.
- Enable students to apply various scheduling methodologies,
- Familiarize students with industry-standard project management software tools.
- Teach students to identify potential risks in project schedules and develop effective mitigation strategies to ensure project success.
- Provide students with techniques for monitoring project progress.
- Foster effective communication techniques for presenting project plans and updates to stakeholders, ensuring clarity and engagement throughout the project lifecycle.

Course Contents:

- Advanced Concepts in Project Management, trends and innovations
- Detailed Project Planning, Setting SMART objectives and defining project scope
- Work Breakdown Structure (WBS) creation and its significance
- Advanced Scheduling Techniques: Critical Path Method (CPM) and Program Evaluation Review Technique (PERT), Time-cost trade-offs and crashing techniques, Advanced Gantt charts for multi-phase projects
- Resource Management and Optimization
- Risk Management
- Earned Value Management (EVM)
- Monitoring, Controlling, and Reporting
- Case Studies and Real-World Applications

Sessional Work:
Assignments, Case Studies, Studio exercises in planning and scheduling using Project Management Softwares.

PM-S 107 Computer Applications in Construction Management-1

Course Title	Computer Applications in Construction Management-1					
			Marks			
Course Code	Hrs/week	Credits	Theory	Internal	External	Total
PM-S 107	6	3	--	200	--	200

Course Objectives

- Introduce students to a range of project management software tools to enhance their digital skills in project planning.
- Equip students with the skills to create, modify, and manage project schedules using digital tools, ensuring efficient resource allocation and timeline management.
- Teach students how to utilize software for monitoring project progress, tracking milestones, and managing deliverables effectively.
- Introduce techniques for data analysis and visualization using software tools, allowing students
- to interpret project data and make informed decisions.

Course Contents:

Introduction to Project Management Softwares and digital tools and training in using them.

Scheduling Techniques and using software to create Gantt charts and timelines, Resource Allocation and Management plans, Project Monitoring Project Progress, Report Generation and Documentation

Some important and essential software used in Project Management

- Project Management Information Systems (PMIS) like: Procore, PlanGrid, Oracle Primavera
- Building Information Modeling (BIM) software: Autodesk Revit, Graphisoft ArchiCAD
- Scheduling and planning tools: Microsoft Project, Oracle Primavera P6, Asta Powerproject
- Collaboration and communication platforms: Microsoft Teams, Slack
- Cost estimation and management software: Sage Estimating, PlanGrid
- Document management and control systems: SharePoint, Procore, Aconex
- Risk management and quality control tools: @RISK, Riskonnect
- Data analytics and reporting software: Tableau, Power BI, Excel

Sessional Work:
Studio exercises using Project Management Softwares.
