

III – SEMESTER (Professional Elective Course – V)

FACILITY MANAGEMENT			
Course Code	2MCPM301A	CIE Marks	50
Teaching Hours/Week (L: T:P:TW+SL)	42:00:28:50	Viva Marks	50
Total Hours of Pedagogy	120 hrs.	Total Marks	100
Credits	03	Exam Hours	00
Course Learning objectives: - To understand the need of Facility Management and its applications. - To attain the knowledge in maintenance and service of building services. - To achieve high performance of buildings and building services.			
Module-1			
Facility management (FM) as part of Construction Management			
Teaching-Learning Process	<i>Direct method: Lecture supported by conventional method of Blackboard and chalk to understand the importance of facility management.</i>		
Module-2			
Role and administrative functions of Supervisors. Fire fighting - Basic requirements for the fire fighting system, various components of the fire fighting system, maintenance required for the system, fire fighting in high-rise buildings, commercial/industrial complexes, public buildings, checklist for fire safety, fire fighting.			
Teaching-Learning Process	<i>Collaborative and Cooperative learning: Students should work on case studies of different building typologies and the extend of fire fighting services provide. The frequency of maintenance and services provided for the same.</i>		
Module-3			
Lifts / elevators, escalators, permissions & procedures legal formalities for Elevators, various types of lifts, working mechanisms of lift and escalators. Indian standard codes for planning & installations of elevator, inspection & maintenance of lifts.			
Teaching-Learning Process	<i>ICT and Digital support: Video to demonstrate the planning and installation of lifts.</i> <i>Collaborative and Cooperative learning: case studies of lift installation, operation and maintenance.</i>		
Module-4			
Plumbing Services: Basics of Plumbing systems, Requirement of Plumbing works, Agency, Activity Flow chart for Plumbing work, Quality, checking of materials. Water Supply distribution system in high-rise buildings & other complexes, pumps and pumping mechanism, operation & maintenance of fittings & fixtures of w/s.Do's & for water pipe networks. Modern Sewage Treatment Plants. Landscaping & Horticulture, Building maintenance management.			
Teaching-Learning Process	<i>ICT and Digital support: Video and to explain the basics of plumbing and water distribution system.</i> <i>Collaborative and Cooperative learning: case studies of water treatment plants and maintenance.</i>		
Module-5			
Air - Conditioning and Heating: Flowcharts of air conditioning & heating. Centralized systems, monitoring working of the equipment, checklist of Inspection, Performance testing. Waterproofing, Damp proofing & Termite proofing. Working Procedure & stages of work of waterproofing for W.C., bathrooms. Terrace, Sloping roof, Basements, tanks.			

Teaching-Learning Process	ICT and Digital support: Video and to explain the concept of air- conditioning and heating. Working mechanism of centralized air conditioning system. Collaborative and Cooperative learning: case studies of centralized AC plant to understand the working mechanism and maintenance. Direct Method: Lecture supported by conventional method of Blackboard and chalk to explain the stages of waterproofing.
Assessment Details (both CIE and SEE) The weightage of Continuous Internal Evaluation (CIE) is 50% and for Viva voce is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in Viva is 50% 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% in the sum total of the CIE (Continuous Internal Evaluation) and Viva- Voce taken together. Continuous Internal Evaluation: CIE marks shall be awarded by a committee comprising of Principal/Dean, PG Course Coordinator/HOD and Guide/Co-guide of the department. The CIE marks awarded for PSC (professional supportive course), shall be based on the progress of the student throughout the semester, presentation skills in seminars and submission of the report. Viva voce Examination: 9.The student needs to submit his/her report done throughout the semester, including the data collection for the Viva examination, at least one day prior to the Viva examination to the PG course coordinator/HOD. 10. The Viva-voce will be evaluated by two external examiners appointed by the University along with PG Course coordinator/ guide/ co-guide or an internal examiner. 11.The viva-voce marks awarded for PSC (Professional supportive course), shall be based on the evaluation of report submission, presentation skill and performance in Question-and-Answer session in the ratio 30:10:10. 12. The viva-voce marks list generated is to be signed by both internal and external examiners and submitted to VTU in the sealed cover through the Principal of the institution.	
Suggested Learning Resources: Books 13. Jensen, P.A. and van der Voordt, T. eds., 2016. Facilities management and corporate real estate management as value drivers: how to manage and measure adding value. Taylor & Francis. 14. Rondeau, E.P., Brown, R.K. and Lapides, P.D., 2012. Facility management. John Wiley & Sons. 15. Roper, K. and Payant, R., 2014. The facility management handbook. Amacom.	
Web links and Video Lectures (e-Resources): ○ Lecture on facility management https://youtu.be/ekFYSIGzBFo ○ Lift installation process: https://youtu.be/IgKlR3SR1UI ○ NPTEL Lecture : Water distribution system https://youtu.be/5NzMt6PErYo	

Skill Development Activities Suggested

- Site visits
- Seminars on building services by industry experts.
- Certification course offered by NTPEL

Course outcome (Course Skill Set)

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

Sl. No.	Description	Blooms Level
C01	Determine the roles and responsibilities of a facility manager	L3
C02	Illustrate the basic requirements for installation of fire fighting system and lifts.	L3
C03	Apply the standard codes for planning and installation of services in buildings	L3
C04	Experiment on the sewage treatment plants and the usage of treated water to cater to sustainable concept.	L4
C05	Analyse the performance of air conditioning system.	L4
C06	Develop the application of water proofing, damp proofing termite proofing.	L5

Program Outcome of the CPM Program:

Sl. No.	Description	POs
1	Acquire outstanding fundamental knowledge in the field of Construction Project Management.	P01
2	Encompass the ability to work in collaboration with interdisciplinary teams.	P02
3	Demonstrate creativity in the problem-solving process through professional quality graphic presentations and technical drawings.	P03
4	Acquire outstanding knowledge & software skills for design, construction, resources management and scheduling & Monitoring of projects.	P04
5	Understanding the diverse needs of values and systems of society and providing sustainable solutions.	P05
6	Demonstrate design solutions that integrate contextual, social, economic, cultural, ethical, environmental concerns.	P06
7	Ability to do independent/option-based research and exploration of advanced and emerging topics.	P07
8	Appraise professional standards and ethical responsibilities as a team member.	P08

Mapping of COS and POS

	P01	P02	P03	P04	P05	P06	P07	P08
C01	M	H	H	M	H	H	H	H
C02	H	H	H	M	M	M	H	M
C03	H	M	H	H	M	M	M	H
C04	H	M	H	L	M	H	M	H
C05	L	M	H	M	M	M	M	H
C06	H	H	H	H	H	H	H	H

H – High , M – Medium, L - Low

III – SEMESTER (Professional Elective Course – V)

REAL ESTATE MANAGEMENT			
Course Code	2MCPM301B	CIE Marks	50
Teaching Hours/Week (L: T:P:TW+SL)	42:00:28:50	Viva Marks	50
Total Hours of Pedagogy	120 hrs.	Total Marks	100
Credits	03	Exam Hours	00
Course Learning objectives: - To offer hands-on experience that is vital to excel in the marketplace by understanding the principles and practices of real estate. - To comprehensively understand real estate practice, financial markets, legal aspects and marketing management. - To formulate and appraise capital investments for developers for different types of projects and to be able to prepare DPRs. - To acquire competence in managing real estate and infrastructure assets and interpretation of valuation methods.			
Module-1			
REAL ESTATE MARKET Real Estate Scope; classification of real estate activities and peculiarities; Factors affecting real estate market; Role of Government in real estate market; Statutory provisions, Laws, rules, and regulation, land use controls in property development, registration And licensing requirements Knowledge base for assessment and forecasting the Real Estate market environmental issues related to Real Estate Transactions.			
Teaching-Learning Process	Direct method: <i>Lecture supported by conventional method of Blackboard and chalk to understand the practices of real estate.</i>		
Module-2			
PARTICIPANTS AND STAKE HOLDERS Role, Scope, working characteristics and principal functions of real estate participants and stakeholders; real estate consultants and their activities, role and responsibilities of property managers; Code of ethics for Real Estate participants; Good practices and managerial responsibilities.			
Teaching-Learning Process	Direct method : <i>Direct method: Lecture supported by conventional method of Blackboard and chalk to understand the function and role and responsibility of various participants stakeholders.</i>		
Module-3			
REAL ESTATE DEVELOPMENT PRACTICE Development control regulations; Zoning; Rent control Act; Building byelaws; Permissions; Changing land use; Real estate types; Location selection; relevant ownership flats/apartments act; Planning for single, mixed use, planned use, specialized Special Economic Zones (SEZ) projects; Choosing vendors, contract terms; Facilities mix management; Integrating environmental issues in development.			
Teaching-Learning Process	Collaborative and Cooperative learning: <i>Students should present seminars on assigned topics and share the knowledge of the current practices in the real estate field.</i>		
Module-4			
VALUATION AND ASSET MANAGEMENT OF PROPERTIES Value, valuation and importance of Value, Appraisal/valuation cycle, Valuation principles and factors, Major Approaches to Valuation-Market approach, Cost approach and Income approach, Valuation techniques/methods Valuation for Contemporary Issues viz., Energy and Environment, Contemporary issues in valuation. Asset			

management strategy and objectives; Overview of asset management standards: British Standard Institution (BSI), Publicly Available Specification (PAS) 55:ISO 55000; Asset management policy, Deterioration modeling; Maintenance - objectives models and maintenance requirements determination; Life cycle costing; Economic life of asset; Replacement analysis; Decision tools for asset management; Prioritization and optimization; System Reliability.	
Teaching-Learning Process	ICT and collaborative learning: videos and ppt to teach the concepts of valuation. Collaborative and cooperative learning: case studies to understand asset management, maintenance and deterioration modelling.
Module-5	
CONSTRUCTIVE ASSIGNMENTS Individual assignments on valuation, EIA, cash flow, project formulation, DPR and case study analysis.	
Teaching-Learning Process	Collaborative and Cooperative learning: critical analysis of project formulation and DPR through case studies.
Assessment Details (both CIE and SEE) The weightage of Continuous Internal Evaluation (CIE) is 50% and for Viva voce is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in Viva is 50% 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% in the sum total of the CIE (Continuous Internal Evaluation) and Viva- Voce taken together. Continuous Internal Evaluation: CIE marks shall be awarded by a committee comprising of Principal/Dean, PG Course Coordinator/HOD and Guide/Co-guide of the department. The CIE marks awarded for PSC (professional supportive course), shall be based on the progress of the student throughout the semester, presentation skills in seminars and submission of the report. Viva voce Examination: 13. The student needs to submit his/her report done throughout the semester, including the data collection for the Viva examination, at least one day prior to the Viva examination to the PG course coordinator/HOD. 14. The Viva-voce will be evaluated by two external examiners appointed by the University along with PG Course coordinator/ guide/ co-guide or an internal examiner. 15. The viva-voce marks awarded for PSC (Professional supportive course), shall be based on the evaluation of report submission, presentation skill and performance in Question-and-Answer session in the ratio 30:10:10. The viva-voce marks list generated is to be signed by both internal and external examiners and submitted to VTU in the sealed cover through the Principal of the institution.	

Suggested Learning Resources:**Books**

16. Madura, J. (2008). Financial markets and institutions. Ohio: Thomson Publications.
17. Levinson, M. (2001). Guide to financial markets. London: Economist Profile Books.
18. Ishkin, F., Eakins, S. (2009). Financial markets and institutions. New Delhi: Pearson Education,
19. Verma, J. (1997). Venture capital financing in India. New Delhi: Response Books.
20. Kotler, P. and Armstrong, G. (2008). Principles of marketing. New Delhi: Prentice-Hall of India.
21. Kotler, P. and Keller, K. (2009). Marketing Management. New Delhi: Prentice- Hall of India.
22. Porter, M. (1992). Competitive strategy. New York: Free Press.

Web links and Video Lectures (e-Resources):

- https://www.researchgate.net/publication/304580462_Management_of_Real_Estate_Principles_of_Real_Estate_Development_Management
- Real Estate Training Course - Online Video Lessons | Study.com
- 110105144.pdf - Google Drive

Skill Development Activities Suggested

- Site visits
- Seminars by industry experts
- Certification courses by NPTEL

Course outcome (Course Skill Set)

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

Sl. No.	Description	Blooms Level
CO1	Summarize the scope of the existing real estate industry in the current business environment and to classify the various statutory and legal regulations applicable to real estate market.	L1
CO2	Determine the roles, responsibilities, rights and liabilities of different real estate stakeholders	L1
CO3	Discover the various documentation procedures for different real estate transactions, appraisals and valuation of properties.	L2
CO4	Apply quantitative methodology used in different transactions.	L1
CO5	Compute the project development process, compare the different sources of real estate funds and classify the risks.	L1
CO6	Formulate a real estate project by assessing its feasibility and evolving strategies for effective management.	L2

Program Outcome of the CPM Program:

Sl. No.	Description	POs
1	Acquire outstanding fundamental knowledge in the field of Construction Project Management.	P01
2	Encompass the ability to work in collaboration with interdisciplinary teams.	P02
3	Demonstrate creativity in the problem-solving process through professional quality graphic presentations and technical drawings.	P03
4	Acquire outstanding knowledge & software skills for design, construction, resources management and scheduling & Monitoring of projects.	P04
5	Understanding the diverse needs of values and systems of society and providing sustainable solutions.	P05
6	Demonstrate design solutions that integrate contextual, social, economic, cultural, ethical, environmental concerns.	P06
7	Ability to do independent/option-based research and exploration of advanced and emerging topics.	P07
8	Appraise professional standards and ethical responsibilities as a team member.	P08

Mapping of COS and POS

	P01	P02	P03	P04	P05	P06	P07	P08
C01	H	M	H	M	H	H	H	H
C02	H	H	M	M	H	H	H	H
C03	H	H	M	M	H	H	H	H
C04	H	M	M	H	H	M	M	H
C05	H	H	M	H	H	H	M	H
C06	H	H	M	H	M	M	H	H

H – High , M – Medium, L - Low

III – SEMESTER (Professional Elective Course – V)

SUPPLY CHAIN AND LOGISTICS MANAGEMENT			
Course Code	2MCPM301C	CIE Marks	50
Teaching Hours/Week (L: T:P:TW+SL)	42:00:28:50	Viva Marks	50
Total Hours of Pedagogy	120 hrs.	Total Marks	100
Credits	03	Exam Hours	00
Course Learning objectives: - To understand the fundamentals of Supply Chain Management and Logistics and their application in construction projects. - To understand procurement, supplier management, inventory, transportation and material management. - To understand supply chain planning, coordination, performance measurement and information technology applications. - To understand construction logistics, supply chain risks and strategies for improving project supply chain performance.			
Module-1			
Fundamentals of Supply Chain Management Introduction to Supply Chain Management – Definition, objectives and importance of Supply Chain Management – Stages of Supply Chain – Supply Chain processes and flows – Material, information and financial flows – Supply Chain drivers and obstacles – Supply Chain strategies – Strategic fit – Integrated Supply Chain planning – Supply Chain networks – Supply Chain management in the construction industry – Construction supply chain characteristics and stakeholders.			
Teaching-Learning Process	<i>Direct method: Lecture supported by conventional method of Blackboard and chalk to understand the concepts, processes, drivers and strategies of Supply Chain Management.</i>		
Module-2			
Procurement and Supplier Management Procurement and purchasing in Supply Chain Management – Sourcing strategies – Procurement strategies – Supplier selection and evaluation – Supplier relationship management – Supply scheduling – Purchasing aspects of Supply Chain – Subcontracting – Supply-chain-oriented contracts – Global sourcing – Strategic management of construction procurement.			
Teaching-Learning Process	<i>Collaborative and Cooperative learning: Case studies of procurement methods, supplier selection, sourcing strategies and supplier relationships in construction projects.</i>		
Module-3			
Construction Logistics and Material Management Construction logistics – Role of logistics management within construction – Transportation of materials and equipment – Transportation modes and costs – Distribution logistics – Warehousing and storage – Material handling – Inventory management – Inventory control – Just-in-Time delivery – Off-site manufacture and assembly – Lean supply onto site – Logistics planning and coordination.			
Teaching-Learning Process	<i>ICT and Digital support: Use of digital resources and case studies to understand transportation, logistics planning, inventory management and material flow.</i> <i>Collaborative and Cooperative learning: Case studies of construction material delivery, storage, handling and Just-in-Time supply.</i>		
Module-4			

Supply Chain Planning and Performance Management Supply Chain planning – Demand and supply planning – Demand forecasting – Supply Chain performance – Performance measurement – Performance metrics – Supply Chain coordination – Bullwhip effect – Strategic alliances and outsourcing – Supply Chain risks – Framework agreements – Supply Chain improvement strategies	
Teaching-Learning Process	<i>Collaborative and Cooperative learning:</i> Case studies to understand supply chain performance, coordination, risks, outsourcing and improvement strategies.
Module-5	
Information Technology and Global Supply Chain Management Role of Information Technology in Supply Chain – Computer-based information systems – Enterprise Resource Planning – Information management in construction – E-procurement – Supply Chain integration – Global logistics – Global Supply Chain Management – Global sourcing – Global purchasing – Supply Chain Management in construction projects – Case studies.	
Teaching-Learning Process	<i>ICT and Digital support:</i> Use of digital resources to understand information technology, ERP, e-procurement and information management in Supply Chain Management. <i>Case study method:</i> Case studies of global sourcing, supply chain integration and information technology applications in construction.
Assessment Details (both CIE and SEE) The weightage of Continuous Internal Evaluation (CIE) is 50% and for Viva voce is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in Viva is 50% 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% in the sum total of the CIE (Continuous Internal Evaluation) and Viva- Voce taken together.	
Continuous Internal Evaluation: CIE marks shall be awarded by a committee comprising of Principal/Dean, PG Course Coordinator/HOD and Guide/Co-guide of the department. The CIE marks awarded for PSC (professional supportive course), shall be based on the progress of the student throughout the semester, presentation skills in seminars and submission of the report.	
Viva voce Examination: 16. The student needs to submit his/her report done throughout the semester, including the data collection for the Viva examination, at least one day prior to the Viva examination to the PG course coordinator/HOD. 17. The Viva-voce will be evaluated by two external examiners appointed by the University along with PG Course coordinator/ guide/ co-guide or an internal examiner. 18.The viva-voce marks awarded for PSC (Professional supportive course), shall be based on the evaluation of report submission, presentation skill and performance in Question-and-Answer session in the ratio 30:10:10. The viva-voce marks list generated is to be signed by both internal and external examiners and submitted to VTU in the sealed cover through the Principal of the institution.	

Suggested Learning Resources:**Books**

13. Pryke, S., 2009. *Construction Supply Chain Management: Concepts and Case Studies*. Wiley-Blackwell.
14. O'Brien, W.J., Formoso, C.T., Vrijhoef, R. and London, K.A., 2009. *Construction Supply Chain Management Handbook*. CRC Press.
15. Lundesjo, G., 2015. *Supply Chain Management and Logistics in Construction*. Kogan Page
16. Chopra, S., Meindl, P. and Kalra, D.V., *Supply Chain Management: Strategy, Planning, and Operation*. Pearson.

Web links and Video Lectures (e-Resources):**Skill Development Activities Suggested**

- Site visits to understand construction logistics and material movement.
- Case studies on construction supply chains.
- Case studies on inventory management and Just-in-Time delivery.
- Seminars by industry professionals on construction supply chain management.

Course outcome (Course Skill Set)

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

Sl. No.	Description	Blooms Level
C01	Explain the concepts, processes, drivers and strategies of Supply Chain Management in construction projects.	L2
C02	Apply procurement and supplier management strategies for construction projects.	L2
C03	Analyse logistics, transportation, inventory, storage and material management requirements in construction projects.	L3
C04	Evaluate supply chain performance, coordination, risks and improvement strategies.	L3
C05	Apply information technology and information management systems for supply chain integration.	L3
C06	Analyse global sourcing, logistics and supply chain management practices applicable to construction projects.	L4

Program Outcomes of the CPM Program:

Sl. No.	Description	POs
1	Acquire outstanding fundamental knowledge in the field of Construction Project Management.	PO1
2	Encompass the ability to work in collaboration with interdisciplinary teams.	PO2
3	Demonstrate creativity in the problem-solving process through professional quality graphic presentations and technical drawings.	PO3
4	Acquire outstanding knowledge & software skills for design, construction, resources management and scheduling & Monitoring of projects.	PO4
5	Understanding the diverse needs of values and systems of society and providing sustainable solutions.	PO5
6	Demonstrate design solutions that integrate contextual, social, economic, cultural, ethical, environmental concerns.	PO6
7	Ability to do independent/option-based research and exploration of advanced and emerging topics.	PO7
8	Appraise professional standards and ethical responsibilities as a team member.	PO8

Mapping of COS and POS

	P01	P02	P03	P04	P05	P06	P07	P08
C01	H	H	M	H	M	M	H	H
C02	H	H	H	H	M	M	H	H
C03	H	H	H	H	H	M	H	H
C04	H	H	H	H	H	H	H	H
C05	H	H	H	H	M	M	H	H
C06	H	H	M	H	H	H	H	H

H – High , M – Medium, L - Low

III – SEMESTER (Professional Elective Course – V)

PROJECT MANAGEMENT INFORMATION SYSTEM			
Course Code	2MCPM301D	CIE Marks	50
Teaching Hours/Week (L: T:P:TW+SL)	42:00:28:50	Viva Marks	50
Total Hours of Pedagogy	120 hrs.	Total Marks	100
Credits	03	Exam Hours	00
Course Learning objectives: - To gain the necessary skills needed to develop a Management Information System for a corporate organisation and for various functions of construction management. - To understand the application of information systems and technology in construction management. - To understand the use of information systems for financial and project management.			
Module-1			
Evaluation of information system technology. Cash flow forecasting of projects. Prerequisites for cash flow forecasting, Preparations for cash flow statement, Use of S-curve, Composite cash flow statements (Multiple Projects), Cost of borrowing, Self-financing contracts.			
Teaching-Learning Process	Direct method: Lecture supported by conventional method of Blackboard and chalk to understand information system technology and cash flow management.		
Module-2			
Definition and components of Working Capital, Cash Management, Receivable Management, Payable Management, Inventory Management, Estimating Working Capital Requirements, and Working Capital Management of Construction Companies			
Teaching-Learning Process	Collaborative and Cooperative learning: Students should study and analyse working capital management practices of construction companies through relevant case studies.		
Module-3			
Management Information System: Definition, Concept, Role and impact. System development, data processing and flow chart.			
Teaching-Learning Process	ICT and Digital support: Use of digital resources to understand Management Information Systems, system development and data processing. Collaborative and Cooperative learning: Case studies of Management Information Systems used in construction and corporate organisations.		
Module-4			
Computer application, file design, DBM, data communication, Documentation, System design specifications, System analysis and design. Information processing technology: Data processing technology, communication technology distributed processing and emerging information technology.			
Teaching-Learning Process	ICT and Digital support: Digital demonstrations to understand computer applications, data communication and information processing technology. Direct Method: Lecture supported by conventional method of Blackboard and chalk to explain system analysis, system design and information processing technology.		

Module-5	
Development and implementation of MIS; Long range plan, Management of quality, MIS factors of success and failure, impact of computer application. Case studies of MIS at corporate and project level.	
Teaching-Learning Process	ICT and Digital support: Use of digital resources and case studies to understand the development and implementation of MIS. Collaborative and Cooperative learning: Case studies of MIS applications at corporate and project level.
Assessment Details (both CIE and VIVA-VOCE) The weightage of Continuous Internal Evaluation (CIE) is 50% and for viva-voce examination is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in viva voce examination is 50% of the maximum marks. 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% in the sum total of the CIE (Continuous Internal Evaluation) and viva voce marks taken together. Continuous Internal Evaluation: CIE marks shall be awarded by a committee comprising of Principal/Dean, PG Course Coordinator/HOD and Guide/Co-guide of the department. The CIE marks awarded for PSC (professional supportive course), shall be based on the progress of the student throughout the semester, presentation skills in seminars and submission of the report. Viva-voce Examination: - The student needs to submit his/her report done throughout the semester, including the data collection for the Viva examination, at least one day prior to the Viva examination to the PG course coordinator/HOD. - The Viva-voce will be evaluated by external examiners appointed by the University along with PG Course coordinator/ guide/ co-guide or an internal examiner. - The viva-voce marks awarded for PEC (Professional elective course), shall be based on the evaluation of report submission, presentation skill, and performance in the Question-and-Answer session in the ratio 30:10:10. - The viva-voce marks list generated is to be signed by both internal and external examiners and submitted to VTU in the sealed cover through the Principal of the institution.	
Suggested Learning Resources Books - Hardin, B. and McCool, D., 2015. <i>BIM and Construction Management: Proven Tools, Methods, and Workflows</i>. John Wiley & Sons. - Paulson Jr, B.C., 1994. <i>Computer Applications in Construction</i>. McGraw-Hill, Inc. - Olson, D., 2014. <i>Information Systems Project Management</i>. Business Expert Press. - Schwalbe, K., 2015. <i>Information Technology Project Management</i>. Cengage Learning.	

Web links and Video Lectures (e-Resources):**Skill Development Activities Suggested**

- Site visits to understand the application of MIS in construction projects.
- Seminars on information systems and computer applications in construction management.
- Case studies of MIS at corporate and project level.
- Certification courses related to information technology and project management.
- Case studies on working capital management.
- Preparation of cash flow statements and S-curves.

Course outcome (Course Skill Set)

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

Sl. No.	Description	Blooms Level
C01	Identify the concepts and components of Management Information Systems and their applications in construction management.	L3
C02	Apply information system technology for cash flow forecasting and financial management of construction projects.	L3
C03	Analyse working capital management, cash management, receivable management, payable management and inventory management in construction companies	L4
C04	Apply computer applications, data processing, communication technology and system analysis and design in construction management.	L3
C05	Evaluate the development, implementation, success and failure factors of Management Information Systems.	L4
C06	Analyse the application of MIS at corporate and project level for effective construction project management.	L4

Program Outcomes of the CPM Program:

Sl. No.	Description	POs
1	Acquire outstanding fundamental knowledge in the field of Construction Project Management.	PO1
2	Encompass the ability to work in collaboration with interdisciplinary teams.	PO2
3	Demonstrate creativity in the problem-solving process through professional quality graphic presentations and technical drawings.	PO3
4	Acquire outstanding knowledge & software skills for design, construction, resources management and scheduling & Monitoring of projects.	PO4
5	Understanding the diverse needs of values and systems of society and providing sustainable solutions.	PO5
6	Demonstrate design solutions that integrate contextual, social, economic, cultural, ethical, environmental concerns.	PO6
7	Ability to do independent/option-based research and exploration of advanced and emerging topics.	PO7
8	Appraise professional standards and ethical responsibilities as a team member.	PO8

mapping of COS and POS

	P01	P02	P03	P04	P05	P06	P07	P08
C01	H	H	H	H	M	M	H	H
C02	H	H	H	H	M	M	M	H
C03	H	H	M	H	M	M	H	H
C04	H	H	H	H	M	M	H	H
C05	H	H	M	H	M	H	H	H
C06	H	H	H	H	H	H	H	H

H - High, M - Medium, L - Low

III – SEMESTER (Professional Elective Course – VI)

ENTREPRENEURSHIP DEVELOPMENT			
Course Code	2MCPM302A	CIE Marks	50
Teaching Hours/Week (L: T:P:TW+SL)	42:00:00:48	Viva Marks	50
Total Hours of Pedagogy	90 hrs.	Total Marks	100
Credits	03	Exam Hours	00
Course Learning objectives: - To understand the concepts, characteristics and development process of entrepreneurship. - To develop the ability to identify entrepreneurial opportunities and prepare business plans. - To understand the management challenges of MSMEs and entrepreneurial ventures. - To develop knowledge of marketing, pricing, branding and growth strategies for new ventures. - To understand strategic growth, business incubation, technology entrepreneurship and women entrepreneurship.			
Module-1			
Entrepreneurial Perspectives Introduction to Entrepreneurship – Evolution - Concept of Entrepreneurship - Types of Entrepreneurs - Entrepreneurial Competencies, Capacity Building for Entrepreneurs. Entrepreneurial Training Methods - Entrepreneurial Motivations - Models for Entrepreneurial Development - The process of Entrepreneurial Development.			
Teaching-Learning Process	<i>Direct method: Lecture supported by conventional method to understand the concepts, competencies, motivations and development process of entrepreneurship.</i>		
Module-2			
New Venture Creation Introduction, Mobility of Entrepreneurs, Models for Opportunity Evaluation; Business plans – Purpose, Contents, Presenting Business Plan, Procedure for setting up Enterprises, Central level - Startup and State level - T Hub, Other Institutions initiatives.			
Teaching-Learning Process	<i>Collaborative and Cooperative learning: Students shall study business plans and analyse models for opportunity evaluation and procedures for setting up enterprises.</i>		
Module-3			
Management of MSMEs and Sick Enterprises Challenges of MSMEs, Preventing Sickness in Enterprises – Specific Management Problems; Industrial Sickness; Industrial Sickness in India – Symptoms, process and Rehabilitation of Sick Units.			
Teaching-Learning Process	<i>Case study method: Case studies of MSMEs and sick enterprises to understand management problems, causes of industrial sickness and rehabilitation measures.</i>		
Module-4			
Managing Marketing and Growth of Enterprises Essential Marketing Mix of Services, Key Success Factors in Service Marketing, Cost and Pricing, Branding, New Techniques in Marketing, International Trade.			
Teaching-Learning Process	<i>Collaborative and Cooperative learning: Students shall study marketing strategies, pricing, branding and growth strategies through relevant case studies.</i>		

Module-5	
Strategic Perspectives in Entrepreneurship Strategic Growth in Entrepreneurship, The Valuation Challenge in Entrepreneurship, The Final Harvest of New Ventures, Technology, Business Incubation, India way – Entrepreneurship; Women Entrepreneurs – Strategies to develop Women Entrepreneurs, Institutions supporting Women Entrepreneurship in India.	
Teaching-Learning Process	ICT and Digital support: Use of digital resources to understand business incubation, technology entrepreneurship and emerging entrepreneurial practices. Collaborative and Cooperative learning: Case studies of successful entrepreneurs, business incubation models and women entrepreneurship in India.
Assessment Details (both CIE and SEE) The weightage of Continuous Internal Evaluation (CIE) is 50% and for Viva voce is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in Viva is 50% 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% in the sum total of the CIE (Continuous Internal Evaluation) and Viva- Voce taken together. Continuous Internal Evaluation: CIE marks shall be awarded by a committee comprising of Principal/Dean, PG Course Coordinator/HOD and Guide/Co-guide of the department. The CIE marks awarded for PSC (professional supportive course), shall be based on the progress of the student throughout the semester, presentation skills in seminars and submission of the report. Viva voce Examination: 1. The student needs to submit his/her report done throughout the semester, including the data collection for the Viva examination, at least one day prior to the Viva examination to the PG course coordinator/HOD. 2. The Viva-voce will be evaluated by two external examiners appointed by the University along with PG Course coordinator/ guide/ co-guide or an internal examiner. 3. The viva-voce marks awarded for PSC (Professional supportive course), shall be based on the evaluation of report submission, presentation skill and performance in Question-and-Answer session in the ratio 30:10:10. 4. The viva-voce marks list generated is to be signed by both internal and external examiners and submitted to VTU in the sealed cover through the Principal of the institution.	
Suggested Learning Resources: Books a. Charantimath, P.M., <i>Entrepreneurship Development and Small Business Enterprises</i>, 2e, Pearson, 2014. b. Kuratko, D.F. and Rao, T.V., <i>Entrepreneurship: A South – Asian Perspective</i>, 3e, Cengage, 2012. c. Kumar, A., <i>Entrepreneurship</i>, 4e, Pearson, 2015. d. Desai, V., <i>The Dynamics of Entrepreneurial Development and Management</i>, Himalaya Publishing House, 2015.	

Web links and Video Lectures (e-Resources):		
Skill Development Activities Suggested • Case studies on successful entrepreneurs. • Study of MSMEs and entrepreneurial ventures. • Seminars by entrepreneurs and industry experts.		
Course outcome (Course Skill Set) At the end of the course the student will be able to:		
Sl. No.	Description	Blooms Level
C01	Understand the concepts, types, competencies and development process of entrepreneurship.	L2
C02	Apply entrepreneurial concepts in evaluating opportunities and developing business plans.	L3
C03	Analyse the challenges and management issues of MSMEs and sick enterprises.	L4
C04	Apply marketing, pricing, branding and growth strategies for entrepreneurial ventures.	L3
C05	Evaluate strategic growth, business incubation and technology opportunities in entrepreneurship.	L4
C06	Analyse the role of institutions and strategies supporting women entrepreneurship in India.	L4
Program Outcomes of the CPM Program:		
Sl. No.	Description	POs
1	Acquire outstanding fundamental knowledge in the field of Construction Project Management.	PO1
2	Encompass the ability to work in collaboration with interdisciplinary teams.	PO2
3	Demonstrate creativity in the problem-solving process through professional quality graphic presentations and technical drawings.	PO3
4	Acquire outstanding knowledge & software skills for design, construction, resources management and scheduling & Monitoring of projects.	PO4
5	Understanding the diverse needs of values and systems of society and providing sustainable solutions.	PO5
6	Demonstrate design solutions that integrate contextual, social, economic, cultural, ethical, environmental concerns.	PO6
7	Ability to do independent/option-based research and exploration of advanced and emerging topics.	PO7
8	Appraise professional standards and ethical responsibilities as a team member.	PO8

Mapping of COS and POS

	P01	P02	P03	P04	P05	P06	P07	P08
C01	H	H	M	M	M	M	H	H
C02	H	H	H	H	M	M	H	H
C03	H	H	M	H	H	H	H	H
C04	H	H	H	H	H	H	H	H
C05	H	H	H	H	M	H	H	H
C06	H	H	M	M	H	H	H	H

H – High , M – Medium, L - Low

III – SEMESTER (Professional Elective Course – VI)

LEGAL FRAMEWORK AND LABOUR LAWS			
Course Code	2MCPM302B	CIE Marks	50
Teaching Hours/Week (L: T:P:TW+SL)	42:00:00:48	Viva Marks	50
Total Hours of Pedagogy	90 hrs.	Total Marks	100
Credits	03	Exam Hours	00
Course Learning objectives: - To provide an overview of laws and regulations related to construction projects at various stages of the project cycle. - To understand building regulations, land development laws, construction contracts and statutory requirements. - To understand labour laws, environmental regulations and legal provisions applicable to the construction industry. - To understand construction disputes, arbitration, conciliation and mechanisms for dispute resolution.			
Module-1			
Land acquisition, Act (1894, 1984 & 2012/13) lease & easement rights, property acts and Gunthewari acts. City Master Plans, Zoning regulations and building byelaws.			
Teaching-Learning Process	<i>Direct method: Lecture supported by conventional method to understand land acquisition, property rights, development regulations, zoning regulations and building byelaws.</i>		
Module-2			
National Building Code, Role of Zilla Parishad & IRDP in rural housing. Permits and approval for construction activities; statutory requirements and clearance related to environment impact, urban form, fire regulation, completion certificate.			
Teaching-Learning Process	<i>ICT and Digital support: Use of digital resources and case studies to understand statutory approvals, building regulations, environmental clearances and fire regulations.</i>		
Module-3			
Laws and legislation related to construction Industry labour laws & consumer protection Act, MRTP act. Interpretation of various revenue documents such as: RTC, Survey Records, Pahani, Tippani, Akarbandh etc. Consumer Forum, RERA Act and its implications. NGT regulations, Restrictions on Non-Agriculturist purchasing of Land, Land Ceiling act.			
Teaching-Learning Process	<i>Collaborative and Cooperative learning: Case studies to understand construction-related legislation, revenue documents, RERA, consumer protection and land regulations.</i>		
Module-4			
The building and construction workers (regulation of employment and conditions of service) Act, 1996, workmen's compensation Act. Payment of wages Act, The employee's provident fund and Miscellaneous provisions Act 1995 etc. Indemnity & guarantee, Industrial act and Labour laws, Environmental laws. Types of disputes in construction contracts and methods of dispute resolution processes. Alternative dispute resolution and dispute review mechanisms. Arbitration and conciliation Act 1996.			
Teaching-Learning Process	<i>Collaborative and Cooperative learning: Case studies of labour laws, construction contracts, disputes and alternative dispute resolution mechanisms.</i>		

Module-5	
Managerial approach to dispute minimization, Conduct of Arbitration proceedings, Making of Arbitration award and Termination proceedings, powers of arbitrator, case studies of arbitration award, setting aside of awards and enforcement of awards, appeal and revision and court proceedings, introduction to civil & criminal procedure code with special reference to laws & order at project sites, project police relations.	
Teaching-Learning Process	ICT and Digital support: Use of relevant case studies and digital resources to understand arbitration proceedings, awards, enforcement and legal procedures related to construction projects.
Assessment Details (both CIE and SEE) The weightage of Continuous Internal Evaluation (CIE) is 50% and for Viva voce is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in Viva is 50% 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% in the sum total of the CIE (Continuous Internal Evaluation) and Viva- Voce taken together. Continuous Internal Evaluation: CIE marks shall be awarded by a committee comprising of Principal/Dean, PG Course Coordinator/HOD and Guide/Co-guide of the department. The CIE marks awarded for PSC (professional supportive course), shall be based on the progress of the student throughout the semester, presentation skills in seminars and submission of the report. Viva voce Examination: 1. The student needs to submit his/her report done throughout the semester, including the data collection for the Viva examination, at least one day prior to the Viva examination to the PG course coordinator/HOD. 2. The Viva-voce will be evaluated by two external examiners appointed by the University along with PG Course coordinator/ guide/ co-guide or an internal examiner. 3. The viva-voce marks awarded for PSC (Professional supportive course), shall be based on the evaluation of report submission, presentation skill and performance in Question-and-Answer session in the ratio 30:10:10. 4. The viva-voce marks list generated is to be signed by both internal and external examiners and submitted to VTU in the sealed cover through the Principal of the institution. Suggested Learning Resources: Books 7. The Arbitration and Conciliation Act, 1996. 8. Makranda, P.C., <i>Building and Engineering Contracts Law and Practice</i>. 9. Kelley, G., 2012. <i>Construction Law: An Introduction for Engineers, Architects, and Contractors</i>. John Wiley & Sons. 10. Adriaanse, M.J., 2016. <i>Construction Contract Law</i>. Macmillan International Higher Education. Web links and Video Lectures (e-Resources): Skill Development Activities Suggested • Site visits to understand statutory compliance and legal requirements in construction projects. • Case studies on construction contracts and disputes. • Study of building regulations and statutory approvals. • Case studies on RERA and construction-related legislation. • Seminars by legal professionals and construction industry experts. • Certification courses related to construction law and labour laws.	

Course outcome (Course Skill Set)

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

Sl. No.	Description	Blooms Level
C01	Identify the laws, regulations and statutory provisions applicable to construction projects.	L3
C02	Apply building regulations, land development laws and statutory approval requirements in construction projects.	L3
C03	Analyse labour laws, environmental laws, RERA provisions and legal requirements applicable to the construction industry.	L4
C04	Analyse construction contracts and identify appropriate mechanisms for dispute resolution, arbitration and conciliation.	L4
C05	Apply legal principles and procedures related to arbitration proceedings, awards and enforcement in construction disputes.	L3
C06	Evaluate legal and managerial approaches for minimising disputes and maintaining law and order at construction project sites	L5

Program Outcomes of the CPM Program:

Sl. No.	Description	POs
1	Acquire outstanding fundamental knowledge in the field of Construction Project Management.	PO1
2	Encompass the ability to work in collaboration with interdisciplinary teams.	PO2
3	Demonstrate creativity in the problem-solving process through professional quality graphic presentations and technical drawings.	PO3
4	Acquire outstanding knowledge & software skills for design, construction, resources management and scheduling & Monitoring of projects.	PO4
5	Understanding the diverse needs of values and systems of society and providing sustainable solutions.	PO5
6	Demonstrate design solutions that integrate contextual, social, economic, cultural, ethical, environmental concerns.	PO6
7	Ability to do independent/option-based research and exploration of advanced and emerging topics.	PO7
8	Appraise professional standards and ethical responsibilities as a team member.	PO8

Mapping of COS and POS

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
C01	H	H	M	M	H	H	H	H
C02	H	H	H	H	H	H	M	H
C03	H	H	M	H	H	H	H	H
C04	H	H	H	H	M	H	H	H
C05	H	H	H	H	M	H	H	H
C06	H	H	H	H	H	H	H	H

H – High , M – Medium, L - Low

III – SEMESTER (Professional Elective Course – VI)

GEOSPATIAL TECHNIQUES IN PRACTICE			
Course Code	2MCPM302C	CIE Marks	50
Teaching Hours/Week (L: T:P:TW+SL)	42:00:00:48	Viva Marks	50
Total Hours of Pedagogy	90 hrs.	Total Marks	100
Credits	03	Exam Hours	00
Course Learning Objectives: - To understand the fundamentals of geospatial techniques and their applications in the construction industry. - To understand modern surveying, GNSS, remote sensing and geospatial data acquisition techniques. - To understand GIS, spatial data models, mapping and spatial analysis. - To understand the application of geospatial technologies in construction projects and decision-making.			
Module-1			
Geospatial Technology and Surveying Geospatial in day-to-day life, spatial thinking, evolution of location technology and importance of geography and maps. Need for spatial information, terminologies, logic, language and formats of spatial technology. Location perspective of construction industry, overview of geospatial technology in tenders, design and execution and construction lifecycle management. Fundamentals and components of Geospatial Engineering, surveying and conventional survey equipment versus modern surveying equipment, components and digital land surveying.			
Teaching-Learning Process	<i>Direct method: Lecture supported by conventional method of Blackboard and chalk to understand the fundamentals of geospatial technology, surveying and their applications in construction.</i>		
Module-2			
Total Station and Global Navigation Satellite System (GNSS) Basics of surveying, introduction to survey and mapping, geospatial surveying equipment, Total Station, setting out and mapping. Advanced geospatial solutions, overview of components, working and signal structure of Global Navigation Satellite System. Applications of GNSS in surveying and mapping.			
Teaching-Learning Process	<i>ICT and Digital support: Demonstration of Total Station and GNSS equipment and their applications in surveying and mapping.</i> <i>Collaborative and Cooperative learning: Case studies of surveying and mapping applications in construction projects.</i>		
Module-3			
Remote Sensing and Geospatial Technologies Remote Sensing Technologies, types of remote sensing, sensors and their types, application of sensors and platforms, image acquisition and applications of Remote Sensing. 3D scanning, principles and science behind Photogrammetry, LiDAR, RADAR and SONAR. Introduction to platforms and their working.			
Teaching-Learning Process	<i>ICT and Digital support: Use of digital resources and demonstrations to understand Remote Sensing, Photogrammetry, LiDAR, RADAR and 3D scanning technologies.</i>		
Module-4			
Geographical Information System Basics of GIS, vector and raster data models, types and components of a map. Hardware for GIS, DEM and TIN data products, attribute data types. Basic GIS data conversions, conversions from non-spatial formats to spatial formats. Conversion of Excel to GIS, conversion of CAD to GIS, downloading and geo-referencing topographic sheets and raster files.			

Teaching-Learning Process	ICT and Digital support: Demonstration of GIS software and basic conversion of spatial and non-spatial data. Collaborative and Cooperative learning: Students shall work on basic GIS mapping and geo-referencing exercises.
Module-5	
Applications and Future Trends of Geospatial Technologies Application of GIS – Spatial Analysis, Catchment Area delineation, Overlay Analysis, Cluster Analysis, Hotspot Analysis, Viewshed Analysis. Future Trends of Geospatial Technologies. Case Study 1 – Benefit Realization. Case Study 2 – Advancements in Modern Survey & Mapping Technologies, Advancements in Spatial Analytics – Geo Intelligence, Future Trends, Geospatial Technology – Way Forward.	
Teaching-Learning Process	Collaborative and Cooperative learning: Case studies on spatial analysis, geospatial applications and modern survey and mapping technologies.
Assessment Details (both CIE and SEE) The weightage of Continuous Internal Evaluation (CIE) is 50% and for Viva voce is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in Viva is 50% 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% in the sum total of the CIE (Continuous Internal Evaluation) and Viva- Voce taken together. Continuous Internal Evaluation: CIE marks shall be awarded by a committee comprising of Principal/Dean, PG Course Coordinator/HOD and Guide/Co-guide of the department. The CIE marks awarded for PSC (professional supportive course), shall be based on the progress of the student throughout the semester, presentation skills in seminars and submission of the report. Viva voce Examination: 1. The student needs to submit his/her report done throughout the semester, including the data collection for the Viva examination, at least one day prior to the Viva examination to the PG course coordinator/HOD. 2. The Viva-voce will be evaluated by two external examiners appointed by the University along with PG Course coordinator/ guide/ co-guide or an internal examiner. 3. The viva-voce marks awarded for PSC (Professional supportive course), shall be based on the evaluation of report submission, presentation skill and performance in Question-and-Answer session in the ratio 30:10:10. 4. The viva-voce marks list generated is to be signed by both internal and external examiners and submitted to VTU in the sealed cover through the Principal of the institution.	
Suggested Learning Resources: Books • Lillesand, T.M., Kiefer, R.W. and Chipman, J.W., <i>Remote Sensing and Image Interpretation</i>. • Burrough, P.A. and McDonnell, R.A., <i>Principles of Geographical Information Systems</i>. • Lo, C.P. and Yeung, A.K.W., <i>Concepts and Techniques of Geographic Information Systems</i>. • Jensen, J.R., <i>Remote Sensing of the Environment: An Earth Resource Perspective</i>.	
Web links and Video Lectures (e-Resources):	

Skill Development Activities Suggested

- Site visits to understand geospatial surveying and mapping applications.
- GIS mapping and geo-referencing exercises.
- Case studies on Remote Sensing, LiDAR and Photogrammetry.
- Spatial analysis exercises using GIS.

Course outcome (Course Skill Set)

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

Sl. No.	Description	Blooms Level
C01	Explain the fundamentals of geospatial techniques and their applications in construction projects.	L2
C02	Apply surveying and GNSS techniques for establishing locations, distances and alignments in construction projects.	L3
C03	Analyse the applications of Remote Sensing, Photogrammetry, LiDAR and other geospatial technologies.	L4
C04	Apply GIS data models, geo-referencing and spatial data conversion techniques for construction-related mapping.	L3
C05	Analyse spatial data using GIS-based spatial analysis techniques.	L4
C06	Evaluate modern geospatial technologies and their applications in construction surveying, mapping and decision-making.	L5

Program Outcomes of the CPM Program:

Sl. No.	Description	POs
1	Acquire outstanding fundamental knowledge in the field of Construction Project Management.	P01
2	Encompass the ability to work in collaboration with interdisciplinary teams.	P02
3	Demonstrate creativity in the problem-solving process through professional quality graphic presentations and technical drawings.	P03
4	Acquire outstanding knowledge & software skills for design, construction, resources management and scheduling & Monitoring of projects.	P04
5	Understanding the diverse needs of values and systems of society and providing sustainable solutions.	P05
6	Demonstrate design solutions that integrate contextual, social, economic, cultural, ethical, environmental concerns.	P06
7	Ability to do independent/option-based research and exploration of advanced and emerging topics.	P07
8	Appraise professional standards and ethical responsibilities as a team member.	P08

Mapping of COS and POS

	P01	P02	P03	P04	P05	P06	P07	P08
C01	H	H	M	H	M	M	H	H
C02	H	H	H	H	M	M	H	H
C03	H	H	H	H	H	M	H	H
C04	H	H	H	H	M	M	H	H
C05	H	H	H	H	H	H	H	H
C06	H	H	H	H	H	H	H	H

H - High , M - Medium, L - Low

III – SEMESTER (Professional Elective Course – VI)

CLOUD ADOPTION AND MANAGEMENT TECHNIQUES			
Course Code	2MCPM302D	CIE Marks	50
Teaching Hours/Week (L: T:P:TW+SL)	42:00:00:48	Viva Marks	50
Total Hours of Pedagogy	90 hrs.	Total Marks	100
Credits	03	Exam Hours	00
Course Learning objectives: - To understand the fundamentals of cloud computing and cloud adoption. - To understand cloud adoption strategies, frameworks and readiness assessment. - To understand cloud migration needs, processes and assessment. - To understand cloud management, operations, governance and cloud economics.			
Module-1			
Cloud Adoption Overview Introduction to IT and Cloud concepts, Cloud Computing, Cloud adoption overview, need for cloud adoption, benefits and challenges of cloud adoption, cloud adoption strategy, cloud adoption framework, cloud transformation and organisational considerations.			
Teaching-Learning Process	<i>Direct method: Lecture supported by conventional method of Blackboard and chalk to understand cloud concepts, adoption strategies and cloud adoption framework.</i>		
Module-2			
Cloud Readiness Assessment Cloud readiness assessment, assessment of existing IT environment, business and technical assessment, application and workload assessment, cloud readiness considerations, cloud assessment and outcomes, identifying cloud adoption requirements, cloud adoption planning.			
Teaching-Learning Process	<i>Collaborative and Cooperative learning: Case studies to understand cloud readiness assessment, application assessment and outcomes of cloud adoption</i>		
Module-3			
Cloud Migration Needs and Process Cloud migration needs, cloud migration process, migration strategy, migration planning, migration assessment, migration and deployment options, workloads and applications for migration, migration priorities, security and data considerations, cloud migration challenges and risks.			
Teaching-Learning Process	<i>ICT and Digital support: Use of digital resources to understand cloud migration processes, strategies and assessment techniques.</i> <i>Collaborative and Cooperative learning: Case studies of cloud migration and identification of migration requirements and risks.</i>		
Module-4			
Manage and Operate Cloud management, cloud operations, cloud operating models, roles and responsibilities in cloud management, monitoring and management of cloud services, security and compliance, governance and policies, risk management, business continuity and disaster recovery, managing and operating cloud environments.			
Teaching-Learning Process	<i>ICT and Digital support: Use of digital resources to understand cloud operations, monitoring, governance and security.</i> <i>Case study method: Case studies on managing and operating cloud environments and addressing operational risks.</i>		

Module-5	
Cloud Economics and Optimisation Cloud economics, cloud cost considerations, cost assessment, cloud pricing and expenditure, cost management, cost optimisation, business value of cloud adoption, measuring cloud adoption outcomes, cloud adoption best practices, case studies of cloud adoption and management.	
Teaching-Learning Process	ICT and Digital support: Use of digital resources to understand cloud economics, cost management and optimisation. Collaborative and Cooperative learning: Case studies to evaluate cloud adoption outcomes, costs and management strategies.
Assessment Details (both CIE and SEE) The weightage of Continuous Internal Evaluation (CIE) is 50% and for Viva voce is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in Viva is 50% 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% in the sum total of the CIE (Continuous Internal Evaluation) and Viva- Voce taken together.	
Continuous Internal Evaluation: CIE marks shall be awarded by a committee comprising of Principal/Dean, PG Course Coordinator/HOD and Guide/Co-guide of the department. The CIE marks awarded for PSC (professional supportive course), shall be based on the progress of the student throughout the semester, presentation skills in seminars and submission of the report.	
Viva voce Examination: 1. The student needs to submit his/her report done throughout the semester, including the data collection for the Viva examination, at least one day prior to the Viva examination to the PG course coordinator/HOD. 2. The Viva-voce will be evaluated by two external examiners appointed by the University along with PG Course coordinator/ guide/ co-guide or an internal examiner. 3. The viva-voce marks awarded for PSC (Professional supportive course), shall be based on the evaluation of report submission, presentation skill and performance in Question-and-Answer session in the ratio 30:10:10. 4. The viva-voce marks list generated is to be signed by both internal and external examiners and submitted to VTU in the sealed cover through the Principal of the institution..	
Suggested Learning Resources: Books: 15. Erl, T., Puttini, R. and Mahmood, Z., <i>Cloud Computing: Concepts, Technology & Architecture</i>. 16. Kavis, M.J., <i>Architecting the Cloud: Design Decisions for Cloud Computing Service Models</i>. 17. Fehling, C., Leymann, F. and Mietzner, R., <i>Cloud Computing Patterns: Fundamentals to Design, Build, and Manage Cloud Applications</i>. 18. Srinivasan, A. and Suresh, J., <i>Cloud Computing: A Practical Approach for Learning and Implementation</i>, Pearson.	
Web Links and Video Lectures (E-Resources) • Microsoft Cloud Adoption Framework – Cloud adoption, governance and cloud operations resources. • L&T EduTech – Cloud Adoption and Management Techniques.	
Skill Development Activities Suggested • Case studies on cloud adoption strategies. • Case studies on cloud management and operations. • Study of cloud governance, security and risk management. • Seminars by industry experts on cloud adoption and management.	

Course outcome (Course Skill Set)

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

Sl. No.	Description	Blooms Level
C01	Explain the fundamental concepts of cloud computing, cloud adoption and cloud adoption frameworks.	L2
C02	Apply cloud readiness assessment techniques to evaluate organisational requirements for cloud adoption.	L3
C03	Analyse cloud migration needs, processes, strategies and associated risks.	L4
C04	Apply cloud management, operations, governance and security practices.	L3
C05	Evaluate cloud economics, cost management and optimisation strategies.	L4
C06	Analyse cloud adoption outcomes and recommend appropriate cloud adoption and management strategies.	L4

Program Outcomes of the CPM Program:

Sl. No.	Description	POs
1	Acquire outstanding fundamental knowledge in the field of Construction Project Management.	P01
2	Encompass the ability to work in collaboration with interdisciplinary teams.	P02
3	Demonstrate creativity in the problem-solving process through professional quality graphic presentations and technical drawings.	P03
4	Acquire outstanding knowledge & software skills for design, construction, resources management and scheduling & Monitoring of projects.	P04
5	Understanding the diverse needs of values and systems of society and providing sustainable solutions.	P05
6	Demonstrate design solutions that integrate contextual, social, economic, cultural, ethical, environmental concerns.	P06
7	Ability to do independent/option-based research and exploration of advanced and emerging topics.	P07
8	Appraise professional standards and ethical responsibilities as a team member.	P08

Mapping of COS and POS

	P01	P02	P03	P04	P05	P06	P07	P08
C01	H	H	M	H	M	M	H	H
C02	H	H	H	H	M	M	H	H
C03	H	H	H	H	H	M	H	H
C04	H	H	M	H	H	H	H	H
C05	H	H	M	H	H	H	H	H
C06	H	H	H	H	H	H	H	H

H - High , M - Medium, L - Low

III – SEMESTER (Multidisciplinary Elective Courses)

PUBLIC POLICIES FOR YOUNG PROFESSIONAL			
Course Code	2MCPM303A	CIE Marks	100
Teaching Hours/Week (L: T:P:TW+SL)	42:00:00:48	SEE Marks	00
Total Hours of Pedagogy	90 Hrs	Total Marks	100
Credits	03	Exam Hours	--
Course Learning objectives: - To understand the importance and role of public policy in achieving social outcomes. - To understand public policy tools, concepts and decision-making processes. - To understand the political, administrative, financial and regulatory systems in India - To develop an understanding of policy challenges and the role of young professionals in addressing them			
Module-1			
Introduction to Public Policy Need for public policy – Importance of public policy in achieving social outcomes – Public policy tools and concepts – Public policy decision-making processes – Interaction of economics, sociology and political science in public policy.			
Teaching-Learning Process	<i>Direct method: Lecture supported by conventional method of Blackboard and chalk to understand the fundamentals, concepts and importance of public policy.</i>		
Module-2			
Public Policy Implementation Implementation of public policy – Strategic dimensions of public policy implementation – Policy decision-making – Political, administrative, financial and regulatory systems – Challenges in policy implementation.			
Teaching-Learning Process	<i>Case-based learning: Case studies and real-life examples to understand public policy implementation and strategic dimensions of policy implementation.</i>		
Module-3			
Public Policy Challenges in India Public policy challenges for India – Major challenges in society – Approaches to addressing social outcomes – Decision-making in addressing public policy challenges – Role of data in policy decisions.			
Teaching-Learning Process	<i>Collaborative and Cooperative learning: Case studies of public policy challenges in India and discussions on alternative approaches to addressing these challenges.</i>		
Module-4			
Sector Perspectives in Public Policy Sector perspectives – Infrastructure – Urbanisation – Education – Health – Banking and capital markets – Policy issues and challenges across sectors.			
Teaching-Learning Process	<i>Case study method: Real-life examples and case studies to understand public policy perspectives in infrastructure, urbanisation and other sectors.</i>		

Module-5	
Emerging Challenges and Public Policy Emerging challenges in public policy – Role of markets in solving challenges – Role of technology in delivering public service – Influencing public policy – Data-backed decision-making – Role of young professionals in addressing public challenges.	
Teaching-Learning Process	ICT and Digital support: Use of digital resources and real-life examples to understand the role of technology and data in public service. Case-based learning: Case studies to examine emerging public policy challenges and the role of markets and technology in addressing them.
Assessment Details (CIE Marks) The weightage of Continuous Internal Evaluation (CIE) is 100% . The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks. 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% in the CIE (Continuous Internal Evaluation) .	
Continuous Internal Evaluation: Three reviews each of 25 Marks • First review at the end of 5th week of the semester • Second review at the end of the 10th week of the semester • Third review at the end of the 13th week of the semester Final report submission will carry 25 Marks The Final CIE marks will be a sum of three reviews, and report submission out of 100 marks	
Suggested Learning Resources: Books • Bardach, E. and Patashnik, E.M., <i>A Practical Guide for Policy Analysis: The Eightfold Path to More Effective Problem Solving</i>. • Dunn, W.N., <i>Public Policy Analysis</i>. • Anderson, J.E., <i>Public Policymaking: An Introduction</i>. • Weimer, D.L. and Vining, A.R., <i>Policy Analysis: Concepts and Practice</i>.	
Web links and Video Lectures (e-Resources): 1. L&T EduTech – Public Policy for Young Professionals. L&T EduTech Course 2. Indian School of Public Policy – Public Policy programmes and resources. Indian School of Public Policy	
Skill Development Activities Suggested • Case studies on public policy implementation. • Case studies on infrastructure and urbanisation policies. • Analysis of public policy challenges in India. • Group discussions on emerging public policy challenges. • Study of the role of markets in solving public challenges. • Presentations on sector-specific public policy issues.	

Course outcome (Course Skill Set)

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

Sl. No.	Description	Blooms Level
C01	Explain the importance, concepts and tools of public policy and its role in achieving social outcomes.	L2
C02	Explain the processes and strategic dimensions involved in public policy implementation	L2
C03	Analyse major public policy challenges and evaluate approaches to addressing social outcomes.	L4
C04	Analyse public policy perspectives related to infrastructure, urbanisation, education, health, banking and capital markets	L4
C05	Evaluate the role of markets and technology in addressing public policy challenges and delivering public services.	L5
C06	Apply data-backed decision-making approaches to public policy challenges and identify the role of young professionals in addressing them.	L3

Program Outcomes of the CPM Program:

Sl. No.	Description	POs
1	Acquire outstanding fundamental knowledge in the field of Construction Project Management.	PO1
2	Encompass the ability to work in collaboration with interdisciplinary teams.	PO2
3	Demonstrate creativity in the problem-solving process through professional quality graphic presentations and technical drawings.	PO3
4	Acquire outstanding knowledge & software skills for design, construction, resources management and scheduling & Monitoring of projects.	PO4
5	Understanding the diverse needs of values and systems of society and providing sustainable solutions.	PO5
6	Demonstrate design solutions that integrate contextual, social, economic, cultural, ethical, environmental concerns.	PO6
7	Ability to do independent/option-based research and exploration of advanced and emerging topics.	PO7
8	Appraise professional standards and ethical responsibilities as a team member.	PO8

Mapping of COS and POS

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
C01	H	H	M	M	H	H	H	H
C02	H	H	M	M	H	H	H	H
C03	H	H	H	M	H	H	H	H
C04	H	H	H	H	H	H	H	H
C05	H	H	M	H	H	H	H	H
C06	H	H	M	H	H	H	H	H

H – High , M – Medium, L - Low

III – SEMESTER (Multidisciplinary Elective Courses)

ORGANIZATIONAL BEHAVIOUR			
Course Code	2MCPM303B	CIE Marks	100
Teaching Hours/Week (L: T:P:TW+SL)	42:00:00:48	SEE Marks	00
Total Hours of Pedagogy	90 Hrs	Total Marks	100
Credits	03	Exam Hours	--
Course Learning objectives: - To understand the concepts and importance of Organizational Behaviour. - To understand individual and group behaviour in organizations. - To understand motivation, leadership, communication and conflict management. - To understand organizational culture, change and organizational effectiveness in construction organizations.			
Module-1			
Introduction to Organizational Behaviour Definition, nature and scope of Organizational Behaviour – Importance of Organizational Behaviour – Disciplines contributing to Organizational Behaviour – Models of Organizational Behaviour – Challenges and opportunities of Organizational Behaviour – Organizational context and behaviour in construction organizations.			
Teaching-Learning Process	<i>Direct method: Lecture supported by conventional method of Blackboard and chalk to understand the fundamentals, scope and importance of Organizational Behaviour.</i>		
Module-2			
Individual Behaviour Foundations of individual behaviour – Personality – Determinants of personality – Perception – Factors influencing perception – Learning and learning process – Attitudes and values – Job satisfaction – Individual decision making.			
Teaching-Learning Process	<i>Collaborative and Cooperative learning: Case studies to understand individual behaviour, personality, perception, attitudes and job satisfaction in organizational settings.</i>		
Module-3			
Group Behaviour, Motivation and Leadership Group behaviour – Types of groups – Group formation and development – Group dynamics – Group cohesiveness – Team building – Motivation – Theories of motivation – Maslow's theory – Herzberg's two-factor theory – McGregor's Theory X and Theory Y – Leadership – Leadership styles – Leadership theories.			
Teaching-Learning Process	<i>Case study method: Case studies on group dynamics, motivation and leadership in construction project teams.</i> <i>Collaborative and Cooperative learning: Group activities to understand team building, leadership and motivation.</i>		
Module-4			
Communication, Conflict and Negotiation Communication – Importance and process – Types and directions of communication – Interpersonal and organizational communication – Barriers to communication – Improving organizational communication – Conflict – Types of conflict – Causes of conflict – Conflict management – Negotiation – Team coordination and collaboration.			
Teaching-Learning Process	<i>Collaborative and Cooperative learning: Case studies and role-play exercises to understand communication, conflict management and negotiation in project teams.</i>		

Module-5	
Organizational Culture, Change and Development Organizational culture – Organizational climate – Organizational change – Resistance to change – Managing change – Organizational development – Organizational effectiveness – Work stress – Stress management – Work-life balance – Emerging challenges in Organizational Behaviour – Case studies of organizational behaviour in construction projects.	
Teaching-Learning Process	Case study method: Case studies of organizational culture, organizational change, stress management and organizational effectiveness in construction organizations.
Assessment Details (CIE Marks) The weightage of Continuous Internal Evaluation (CIE) is 100% . The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks. 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% in the CIE (Continuous Internal Evaluation) . Continuous Internal Evaluation: Three reviews each of 25 Marks • First review at the end of 5th week of the semester • Second review at the end of the 10th week of the semester • Third review at the end of the 13th week of the semester Final report submission will carry 25 Marks The Final CIE marks will be a sum of three reviews, and report submission out of 100 marks	
Suggested Learning Resources: 9. Robbins, S.P. and Judge, T.A., <i>Organizational Behavior</i>, Pearson. 10. Luthans, F., <i>Organizational Behavior</i>, McGraw Hill. 11. . Daniel King, Scott Lawley, (2016) <i>Organizational Behaviour</i> Oxford University press, New Delhi 12. David Buchanan, Andrzej Huczynski, (2016), <i>Organizational Behaviour</i>, 9th edition, Pearson.	
Web links and Video Lectures (e-Resources): NPTEL – Organizational Behaviour: Individual Dynamics in Organization. nptel.ac.in/courses/110103433?utm	
Skill Development Activities Suggested: • Case studies on Organizational Behaviour in construction organizations. • Role-play exercises on leadership and conflict management. • Seminars on leadership and human behaviour in construction. • Site visits to understand organizational structure and team coordination in construction projects.	

Course outcome (Course Skill Set)

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

Sl. No.	Description	Blooms Level
C01	Explain the concepts, nature, scope and importance of Organizational Behaviour in construction organizations.	L2
C02	Analyse individual behaviour with respect to personality, perception, attitudes, learning and job satisfaction.	L4
C03	Apply theories of motivation and leadership to manage individuals and project teams effectively.	L3
C04	Analyse communication processes, conflicts and negotiation within construction project teams.	L4
C05	Evaluate organizational culture, change, stress and organizational effectiveness.	L5
C06	Apply Organizational Behaviour concepts to improve teamwork, coordination and effectiveness in construction organizations.	L3

Program Outcome of this course:

Sl. No.	Description	POs
1	Acquire outstanding fundamental knowledge in the field of Construction Project Management.	P01
2	Encompass the ability to work in collaboration with interdisciplinary teams.	P02
3	Demonstrate creativity in the problem-solving process through professional quality graphic presentations and technical drawings.	P03
4	Acquire outstanding knowledge & software skills for design, construction, resources management and scheduling & Monitoring of projects.	P04
5	Understanding the diverse needs of values and systems of society and providing sustainable solutions.	P05
6	Demonstrate design solutions that integrate contextual, social, economic, cultural, ethical, environmental concerns.	P06
7	Ability to do independent/option-based research and exploration of advanced and emerging topics.	P07
8	Appraise professional standards and ethical responsibilities as a team member.	P08

Mapping of COS and POs:

	P01	P02	P03	P04	P05	P06	P07	P08
C01	H	H	M	H	M	M	H	H
C02	H	H	H	M	H	M	H	H
C03	H	H	H	H	H	H	H	H
C04	H	H	H	H	H	H	H	H
C05	H	H	M	H	H	H	H	H
C06	H	H	H	H	H	H	H	H

H – High , M – Medium, L - Low

III – SEMESTER (Multidisciplinary Elective Courses)

CRITICAL THINKING, DESIGN THINKING, LEADERSHIP AND TEAMWORK			
Course Code	2MCPM303C	CIE Marks	100
Teaching Hours/Week (L: T:P:TW+SL)	42:00:00:48	SEE Marks	00
Total Hours of Pedagogy	90 Hrs	Total Marks	100
Credits	03	Exam Hours	--
Course Learning objectives: • To develop critical thinking and effective decision-making skills. • To understand the principles and process of Design Thinking. • To develop creativity and innovative problem-solving abilities. • To develop leadership, communication and teamwork skills.			
Module-1			
Design Thinking Fundamentals Introduction to Design Thinking – Design Thinking for complex problem solving – Stages of Design Thinking – Exploring solution space – Empathy building – Empathy maps – User journey mapping – Storyboarding – Design Thinking practices – Design Thinking for professional skills – Design Thinking in industrial projects.			
Teaching-Learning Process	<i>Collaborative and Cooperative learning: Case studies and group activities to understand Design Thinking principles and their application in problem solving.</i>		
Module-2			
Design Thinking in Creativity and Innovation Unique characteristics of Design Thinking – Creativity and Innovation – Categories and misconceptions of creativity – Resilience in problem-solving – Analytical Thinking driven by Design Thinking – Waterfall models and Design Thinking – Agile Development models – Agile process integrated with Design Thinking – Design Thinking based product development – Design methodology – Prototyping – UX design – Value proposition.			
Teaching-Learning Process	<i>ICT and Digital support: Use of digital resources and case studies to understand creativity, innovation, prototyping and Design Thinking.</i>		
Module-3			
Critical Thinking Introduction to Critical Thinking – Styles and challenges of Critical Thinking – Benefits of Critical Thinking – Identifying and clarifying issues and arguments – Types of arguments – Deductive reasoning – Inductive reasoning – Reasoning with statistics – Fallacies of relevance – Fallacies of insufficient evidence – Evaluating arguments – Critical Thinking models – Principles of decision making – De Bono's Thinking Hats – Effective argument writing – Critical Thinking based case study analysis.			
Teaching-Learning Process	<i>Case-based learning: Case studies and problem-solving exercises to develop critical thinking, reasoning and decision-making skills.</i>		
Module-4			
Leadership Defining leaders and leadership – Types of leaders and leadership styles – Understanding people, personalities and abilities – Active listening – Non-verbal communication – Feedback – Clarity – Effective leadership – Psychology of change for individuals and teams – Personal resilience and well-being – Feedback and feed-forward.			
Teaching-Learning Process	<i>Collaborative and Cooperative learning: Case studies, discussions and activities to understand leadership, communication, resilience and professional behaviour.</i>		

Module-5	
Teamwork Effective teams – Stages of team development – Leaders and teams – Working effectively towards common goals – Role of integrity in leadership – Growth mindset in leadership – Conflict resolution – Managing team dynamics – Team communication – Collaboration and coordination.	
Teaching-Learning Process	Collaborative and Cooperative learning: Group activities and team exercises to develop communication, collaboration, coordination, conflict resolution and teamwork skills.
Assessment Details (CIE Marks) The weightage of Continuous Internal Evaluation (CIE) is 100% . The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks. 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% in the CIE (Continuous Internal Evaluation) . Continuous Internal Evaluation: Three reviews each of 25 Marks • First review at the end of 5th week of the semester • Second review at the end of the 10th week of the semester • Third review at the end of the 13th week of the semester Final report submission will carry 25 Marks The Final CIE marks will be a sum of three reviews, and report submission out of 100 marks	
Suggested Learning Resources: Books 7. Thwaites, G. and Butterworth, J., <i>Thinking Skills: Critical Thinking and Problem Solving</i> 8. Bassham, G., Irwin, W., Nardone, H. and Wallace, J.M., <i>Critical Thinking: A Student's Introduction.</i> 9. Northouse, P.G., <i>Leadership: Theory and Practice.</i> 10. Cross, N., <i>Design Thinking: Understanding How Designers Think and Work.</i> 11. Paul, R. and Elder, L., <i>Critical Thinking: Tools for Taking Charge of Your Learning and Your Life.</i> 12. Covey, S.R., <i>The 7 Habits of Highly Effective People.</i> 13. Johnson, S., <i>Where Good Ideas Come From.</i> 14. Christensen, C., <i>The Innovator's Dilemma.</i> 15. Harvard Business Review – <i>Innovation resources.</i>	
Web links and Video Lectures (e-Resources): • NPTEL – Design Thinking and Innovation. nptel.ac.in/courses/110106124 • NPTEL – Leadership and Teamwork. nptel.ac.in/courses/110107159	
Skill Development Activities Suggested • Role-play activities on communication and conflict resolution. • Presentations on leadership and teamwork. • Critical Thinking and problem-solving exercises. • Group discussions and case studies. • Leadership activities. • Team-building exercises.	

Course outcome (Course Skill Set)

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

Sl. No.	Description	Blooms Level
C01	Explain the principles, stages and applications of Design Thinking for complex problem solving.	L2
C02	Apply Design Thinking approaches to creativity, innovation, prototyping and problem solving.	L3
C03	Analyse issues, arguments and information using Critical Thinking and reasoning techniques.	L4
C04	Apply appropriate leadership principles, communication and decision-making skills in professional situations	L3
C05	Analyse team dynamics, communication and conflicts for effective teamwork	L4
C06	Develop collaborative problem-solving, leadership and teamwork skills for professional practice.	L6

Program Outcome of the CPM Program:

Sl. No.	Description	POs
1	Acquire outstanding fundamental knowledge in the field of Construction Project Management.	PO1
2	Encompass the ability to work in collaboration with interdisciplinary teams.	PO2
3	Demonstrate creativity in the problem-solving process through professional quality graphic presentations and technical drawings.	PO3
4	Acquire outstanding knowledge & software skills for design, construction, resources management and scheduling & Monitoring of projects.	PO4
5	Understanding the diverse needs of values and systems of society and providing sustainable solutions.	PO5
6	Demonstrate design solutions that integrate contextual, social, economic, cultural, ethical, environmental concerns.	PO6
7	Ability to do independent/option-based research and exploration of advanced and emerging topics.	PO7
8	Appraise professional standards and ethical responsibilities as a team member.	PO8

Mapping of COS and POS

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
C01	H	H	H	M	H	H	H	M
C02	H	H	H	H	H	H	H	M
C03	H	H	H	M	H	H	H	H
C04	H	H	M	H	H	H	M	H
C05	M	H	H	H	H	H	M	H
C06	M	H	H	H	H	H	H	H

H – High , M – Medium, L -LOW

III – SEMESTER (Multidisciplinary Elective Courses)

FOREIGN LANGUAGE			
Course Code	2MCPM303D	CIE Marks	100
Teaching Hours/Week (L: T:P:TW+SL)	42:00:00:48	SEE Marks	00
Total Hours of Pedagogy	90 Hrs	Total Marks	100
Credits	03	Exam Hours	--
Course Learning objectives: - To develop basic communication skills in a foreign language. - To develop the ability to understand and use commonly used words and expressions - To develop basic reading, writing, listening and speaking skills. - To develop language skills useful for professional and international communication.			
Module-1			
Introduction to the Foreign Language Alphabet and pronunciation – Basic vocabulary – Greetings and introductions – Numbers – Days, dates and time – Common expressions – Personal information – Basic sentence formation.			
Teaching-Learning Process	<i>Direct method: Lecture, pronunciation practice and interactive exercises to develop basic vocabulary and sentence formation.</i>		
Module-2			
Everyday Communication Common words and expressions – Asking and answering questions – Describing people and places – Directions and locations – Daily activities – Basic conversations – Reading and understanding simple texts.			
Teaching-Learning Process	<i>Collaborative and Cooperative learning: Pair activities, conversations and role-play exercises to develop basic communication skills.</i>		
Module-3			
Grammar and Vocabulary Nouns and pronouns – Articles – Verbs – Adjectives – Adverbs – Basic sentence structures – Present, past and future forms – Question formation – Negation – Common vocabulary and expressions.			
Teaching-Learning Process	<i>ICT and Digital support: Audio-visual resources and language-learning applications to develop vocabulary, grammar and pronunciation.</i>		
Module-4			
Professional Communication Professional vocabulary – Workplace expressions – Introducing oneself professionally – Telephone conversations – Making appointments – Giving and receiving information – Reading notices, instructions and simple professional documents – Basic email communication.			
Teaching-Learning Process	<i>Role-play and Collaborative learning: Role-play exercises based on workplace situations and professional communication.</i>		
Module-5			
Foreign Language for Architecture and Construction Practice Basic terminology related to architecture, construction and project management – Construction site vocabulary – Building materials and components – Project team and professional roles – Basic instructions and communication at project sites – Simple conversations related to meetings, site visits and professional situations.			

Teaching-Learning Process	<i>Case-based and Activity-based learning:</i> Language exercises, vocabulary activities and role-play based on architectural, construction and project-management situations.
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Assessment Details (CIE Marks)

The weightage of Continuous Internal Evaluation (CIE) is 100% . The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks. 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% in the CIE (Continuous Internal Evaluation) .

Continuous Internal Evaluation:

Three reviews each of 25 Marks

- First review at the end of 5th week of the semester
- Second review at the end of the 10th week of the semester
- Third review at the end of the 13th week of the semester

Final report submission will carry 25 Marks

The Final CIE marks will be a sum of three reviews, and report submission out of 100 marks

Suggested Learning Resources:

Books

- Beginner-level textbook prescribed for the selected foreign language.
- Basic foreign language grammar and vocabulary reference book.
- Foreign language–English dictionary.
- Foreign language communication and conversation handbook.
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Web links and Video Lectures (e-Resources):

1. NPTEL – Foreign Language and Communication related learning resources.

Skill Development Activities Suggested

- Vocabulary-building exercises.
- Professional communication exercises.
- Construction-site vocabulary exercises.
- Presentation in the selected foreign language.
- Reading and translation exercises.

Course outcome (Course Skill Set)

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

Sl. No.	Description	Blooms Level
CO1	Demonstrate basic vocabulary, pronunciation and expressions in the selected foreign language.	L3
CO2	Use basic grammatical structures and sentence patterns for everyday communication.	L3
CO3	Communicate in simple spoken situations and understand basic conversations.	L3
CO4	Read and interpret simple professional texts, notices and instructions.	L3
CO5	Apply basic foreign-language vocabulary in architecture, construction and project-management situations.	L3
CO6	Demonstrate basic foreign-language communication skills required for professional and international interactions.	L3

Program Outcomes of the CPM Program:

Sl. No.	Description	POs
1	Acquire outstanding fundamental knowledge in the field of Construction Project Management.	P01
2	Encompass the ability to work in collaboration with interdisciplinary teams.	P02
3	Demonstrate creativity in the problem-solving process through professional quality graphic presentations and technical drawings.	P03
4	Acquire outstanding knowledge & software skills for design, construction, resources management and scheduling & Monitoring of projects.	P04
5	Understanding the diverse needs of values and systems of society and providing sustainable solutions.	P05
6	Demonstrate design solutions that integrate contextual, social, economic, cultural, ethical, environmental concerns.	P06
7	Ability to do independent/option-based research and exploration of advanced and emerging topics.	P07
8	Appraise professional standards and ethical responsibilities as a team member.	P08

Mapping of COS and POS

	P01	P02	P03	P04	P05	P06	P07	P08
C01	H	H	M	M	H	M	M	H
C02	H	H	M	M	H	M	M	H
C03	H	H	M	M	H	M	M	H
C04	H	H	M	M	H	M	H	H
C05	H	H	H	H	H	H	M	H
C06	H	H	H	H	H	H	H	H

H – High , M – Medium, L - Low

III-SEMESTER

DISSERTATION PHASE – II			
Course Code	2MPRJ304	CIE Marks	50
Teaching Hours/Week (L: T:P:TW+SL)	42:28:00:50	Viva Marks	50
Total Hours of Pedagogy	120 Hrs.	Total Marks	100
Credits	04	Exam Marks	00
Course Learning objectives: - The dissertation's objective is to provide the students an opportunity to prepare independent and original study of a special project of his/her own choice. - The project provides students an opportunity for academic research to cultivate specialization in the areas of their own interest under the overall guidance of the faculty. - The objective of the seminar work is to train the students to prepare state of art report by assimilation of concepts / ideas on a chosen topic in the area of Building Engineering and Management.			
COURSE CONTENT			
Research Content: The dissertation/ thesis is an individual research project that is a major piece of work undertaken by the students. It is a continuation of the Dissertation phase-1 of the previous semester. They are expected to select a topic on a live problem in the industry or a macro-issue having a bearing on performance of the real estate, construction or urban infrastructure industry. The topic should be researchable and involve scientific design of a study, collection and analysis. The aim is to prepare state of art report on the chosen topic and develop hypothesis to be tested through the research methodology designed for the purpose. The thesis proposal should include an overview of the proposed plan of work, including the general scope of your project, your basic research questions, research methodology, and the overall significance of your study. In short, the proposal should explain what to study, how to study this topic, why this topic needs to be studied. Thesis proposals are designed to - Justify and plan (or contract for) a research project. - Show how your project contributes to existing research. - Demonstrate to your advisor and committee that you understand how to conduct discipline specific research within an acceptable time-frame. - Recommend future study areas for research. Research Process: Students are required to test their outcome proposals through various methods, including questionnaire surveys and case studies. Students must create an innovative insight on the specific issues. Thesis work includes processes such as: Research area identification; hypothesis of research topic; literature sourcing and search; aim and objective definition; formulation of methodology; field study planning; survey data collection, analysis and result presentation; literature study; conceptual an empirical :compilation and inference drawing; research study validation through case studies, field application and simulation models; discussion of findings of research findings; study conclusion and recommendation formulations. The progress of the Thesis work is presented and discussed by the student periodically in the classroom environment and progress monitored continuously. This work develops the comprehension and presentation skills of the students. The students are provided guidance from the faculty to channelize their thoughts. Area of Research: The subject for special study may be conceptual or practical but pertaining to Building Engineering and Management in areas like Building Engineering, Construction technology ,Structural systems , Energy efficient building materials & techniques , Construction project management, Time management, Cost management, Quality management, Safety management, Contract Administration, Design management, Construction financial management, Human resource management, Quantitative techniques, Energy management, Building services, Building management systems, Infrastructure services , Management information systems , Project planning and feasibility and Disaster management Presentation: The dissertation Project shall be submitted in the form of drawings, project report, models, slides etc. Relevant details/codes, schematic charts, reports and photographs.			

Teaching-Learning Process	3. Guest lectures, webinars, site visits to acquire subject knowledge related to the selected topic. 4. Critical review with constructive suggestions / feed backs has to be provided by the Guide/ co-guide during the progress of the dissertation.
Assessment Details (both CIE and VIVA-VOCE): The weightage of Continuous Internal Evaluation (CIE) is 50% and for viva-voce examination is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in viva voce examination is 50% of the maximum marks. 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% in the sum total of the CIE (Continuous Internal Evaluation) and viva voce marks taken together. Continuous Internal Evaluation: CIE marks shall be awarded by a committee comprising of Principal/Dean, PG Course Coordinator/HOD and Guide/Co-guide of the department. The CIE marks awarded for Dissertation Stage -2, shall be based on the progress of the student throughout the semester, presentation skills in seminars and submission of the Dissertation report. Viva-voce Examination: 1. The student needs to submit his/her report done throughout the semester, including the data collection for the Viva examination, at least one day prior to the Viva examination to the PG course coordinator/HOD. 2. The Viva-voce will be evaluated by two external examiners appointed by the University along with PG Course coordinator/ guide/ co-guide or an internal examiner. 3. The viva-voce marks awarded for Dissertation Stage -2, shall be based on the evaluation of Dissertation report submission, presentation skill and performance in Question-and-Answer session in the ratio 30:10:10. 4. The viva-voce marks list generated is to be signed by both internal and external examiners and submitted to VTU in the sealed cover through the Principal of the institution.	
Suggested Learning Resources: Books: • Ranjith Kumar (2005.) Research Methodology- A step by step guide for beginners, California: Sage Publications. • John W Creswell, (2002). Research design: Qualitative, Quantitative and Mixed method approaches. California: Sage Publications. • Kate Turabian. (2018) A Manual for Writers of Research Papers, Theses, and Dissertations. Chicago: Chicago Guides to Writing, Editing, and Publishing.	
Web links and Video Lectures (e-Resources): • Thesis Format Dissertation Format Paper, Structure, Sample Leverage Edu	
Skill Development Activities Suggested • Guest lecture • Review of research papers • Site visits / Case studies	

Course outcome(Course Skillset)

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

Sl. No.	Description	Blooms Level
C01	Prepare an extensive literature study and data collection from the field and presentation in the form of drawings, relevant details/codes, schematic charts, reports and photographs	L3
C02	Develop a hypothesis to be tested through the research methodology designed for the purpose with innovative insight on specific issues thereby undertaking academic research independently.	L3
C03	Experiment with research processes.	L4
C04	Propose areas for further research and development	L5

program Outcomes of the CPM Program:

Sl. No.	Description	POs
1	Acquire outstanding fundamental knowledge in the field of Construction Project Management.	PO1
2	Encompass the ability to work in collaboration with interdisciplinary teams.	PO2
3	Demonstrate creativity in the problem-solving process through professional quality graphic presentations and technical drawings.	PO3
4	Acquire outstanding knowledge & software skills for design, construction, resources management and scheduling & Monitoring of projects.	PO4
5	Understanding the diverse needs of values and systems of society and providing sustainable solutions.	PO5
6	Demonstrate design solutions that integrate contextual, social, economic, cultural, ethical, environmental concerns.	PO6
7	Ability to do independent/option-based research and exploration of advanced and emerging topics.	PO7
8	Appraise professional standards and ethical responsibilities as a team member.	PO8

Mapping of COS and POS

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
C01	H	H	H	H	H	H	H	H
C02	H	M	H	H	H	M	H	H
C03	M	H	H	H	H	H	H	H
C04	M	H	H	H	H	H	H	H

H – High , M – Medium, L - Low

IV-SEMESTER

INTERNSHIP			
Course Code	2MINT401	CIE Marks	--
Teaching Hours/Week (L: T:P:TW+SL)	00:00:00:00	Viva Marks	200
Total Hours of Pedagogy	-	Total Marks	200
Credits	18	Exam Marks	00
Course Learning objectives: • To undergo professional training in a construction/project management organisation and gain practical experience in handling live construction projects. • To understand project planning, scheduling, cost, resource, quality and construction management practices. • To understand project coordination, contract administration and communication with project stakeholders. • To identify construction project risks, delays and challenges and understand appropriate mitigation measures.			
COURSE CONTENT			
INTERNSHIP: A candidate has to undergo practical training for 15 weeks in an approved Construction Project Management / Project Management Organisation involved in construction, property development or infrastructure projects. During this period, the student shall study and participate in live projects and gain practical exposure to project planning, scheduling, estimation and costing, resource management, procurement, quality control, site management, contract administration, risk management, progress monitoring and stakeholder coordination. The training internship is intended to provide students with practical insights into the professional management of construction projects. The final internship report shall comprise documentation and analysis of the activities undertaken in the form of project schedules, charts, reports, relevant drawings, photographs, project documentation, observations, comments and suggestions.			
Teaching-Learning Process	ICT and Digital support: Listening to webinars and online seminars relevant to construction project management and related topics.		
Assessment Details (SEE Marks) The Semester End Examination (SEE) shall carry 100% of the total marks and shall be conducted in the form of a Viva-Voce Examination. The minimum passing mark in the SEE shall be 50% of the maximum marks. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to the course if the student secures not less than 50% in the SEE/Viva-Voce examination. Viva-voce Examination: 1. The student needs to submit his/her report done throughout the semester, including the data collection for the Viva examination, at least one day prior to the Viva examination to the PG course coordinator/HOD. 2. The Viva-voce will be evaluated by two external examiners appointed by the University along with PG Course coordinator/ guide/ co-guide or an internal examiner. 3. The viva-voce marks awarded for internship shall be based on the evaluation of internship report, internship presentation skill and performance in Question-and-Answer session in the ratio 30:10:10. 4. The viva-voce marks list generated is to be signed by both internal and external examiners and submitted to VTU in the sealed cover through the Principal of the institution.			