III Semester

DISSERTATION PHASE- 2 (THESIS)			
Course Code	MCPM381	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	00:12:00	Viva Marks	50
Total Hours of Pedagogy	192	Total Marks	100
Credits	12	Exam hours	---

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.

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	• Guest lectures, webinars, site visits to acquire subject knowledge related to the selected topic. • 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.
3. 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

52. Ranjith Kumar (2005.) Research Methodology- A step by step guide for beginners, California: Sage Publications.
53. John W Creswell, (2002). Research design: Qualitative, Quantitative and Mixed method approaches. California: Sage Publications.
54. 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
- Workshops / seminars by industry experts
- Site visits / case studies

Course outcome (Course Skill Set)

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

Sl. No.	Description	Blooms Level
CO1	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
CO2	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
CO3	Experiment with research processes.	L4
CO4	Propose areas for further research and development	L5

Program Outcome of this course:

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
CO1	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**
CO2	**H**	**M**	**H**	**H**	**H**	**M**	**H**	**H**
CO3	**M**	**H**	**H**	**H**	**H**	**H**	**H**	**H**
CO4	**M**	**H**	**H**	**H**	**H**	**H**	**H**	**H**

H – High , M – Medium, L - Low

FINANCIAL MANAGEMENT			
Course Code	MCPM312	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	01:02:0	SEE Marks	50
Total Hours of Pedagogy	16+32(SDA)	Total Marks	100
Credits	3:00	Exam Hours	03

Course Learning objectives:

- The objective of the course is to familiarize the fundamentals of financial management concepts and their applications in the various phases of the project cycle of construction projects.
- To provide a basic knowledge to carry out the financial feasibility of projects, selection of building systems and equipment's and evaluation of project investment decisions.

Module-1

PRINCIPLES OF FINANCIAL MANAGEMENT

Nature of finance management - objectives and principles - various financing decisions - Business firms and their financing - types of business units - capital sources and structures - marginal cost of capital - optimum capital structures.

Teaching-Learning Process	***Direct method**: Lecture supported by conventional method of Blackboard and chalk to introduce the concept of Principles Of Financial Management. , Discussions, Debate, Industry interactions, and research paper/news paper reading and inferences from the same.*

Module-2

BUDGETING AND ESTIMATION

Budget as management control techniques - requirement of a good budget - budget planning - budget process - cash budget - cash flow analysis - financial ratio analysis - interpretation and return on investment- Contract costing estimation of profit -Percentage completion method – completed contract method. Basis of accounting – accounting for tax reporting & financial reporting purposes. Method of recording - cash method, accrual method. Taxation on construction contract.

Teaching-Learning Process	***Direct method**: Lecture supported by conventional method of Blackboard and chalk to explain Budgeting And Estimation.* , Discussions, Debate, Industry interactions, and research paper/news paper reading and inferences from the same.

Module-3

PROJECT EVALUATION

Evaluation of alternatives – present value method – rate of return method -time value of money – Net present value method, Profitability index and IRR method, Cost Volume benefit analysis - life cycle costing – structural cost – finishing cost – operating cost.

Teaching-Learning Process	***Direct method**: Lecture supported by conventional method of Blackboard and chalk to explain about Project Evaluation. Discussions, Debate, Industry interactions, and research paper/news paper reading and inferences from the same.*

Module-4

PROJECT FINANCE

Stages of project finance management – method of recording – cash method, accrual method, percentage of completion method, completed contract method. Financing international projects – project cash flow – progress payments and expenditures risk in international contract – accounting and economic exposure – joint ventures and BOT projects.

Teaching-Learning Process	***Direct method**: Lecture supported by conventional method of Blackboard and chalk to explain about Project Finance. , Discussions, Debate, Industry interactions, and research paper/news paper reading and inferences from the same.*

Module-5

CONSTRUCTION CLAIMS MANAGEMENT

Construction claims – classification of claims – claim forms – disputes and arbitration – contractual remedies – court cases – management of escalation – price escalation provisions – general methodology – critical analysis.

Teaching-Learning Process	***ICT and Digital support:*** *Power point presentation to explain about the* Construction *Claims Management.* ***Collaborative and Cooperative learning****: Selected topics to be given as seminar group work. The research and learning to share with the class.*

Assessment Details (both CIE and SEE):

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

Continuous Internal Evaluation:

Three Unit Tests each of 20 Marks (duration 01 hour 30 min)

1. First test at the end of 5th week of the semester
2. Second test at the end of the 10th week of the semester
3. Third test at the end of the 13th week of the semester

Two assignments each of 10 Marks

4. First assignment at the end of 4th week of the semester
5. Second assignment at the end of 9th week of the semester

Group discussion/Seminar/quiz any one of three suitably planned to attain the COs and POs for 20 Marks(duration 01 hours)

6. At the end of the 13th week of the semester

The sum of three tests, two assignments, and a quiz/seminar/group discussion will be out of 100 marks and will be scaled down to 50 marks

Semester End Examination:

Theory SEE will be conducted by the University as per the scheduled timetable, with common question papers for the subject (duration 03 hours)

1. The question paper will have ten questions. Each question is set for 20 marks.

2. There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), should have a mix of topics under that module.

The students have to answer 5 full modules, selecting one full question from each module. Marks scored by the student will be scaled down to 50 Marks

Suggested Learning Resources:

Books

22. Andrew Ross, & Williams, P. (2012). Financial Management in Construction Contracting. Wiley & Blackwell,
23. Levinson, M. (2001). Guide to financial markets. London: Economist Profile Books.
24. Madura, J. (2008). Financial markets and institutions. Ohio: Thomson Publications.
25. Steven J. Peterson , (2012), Construction Accounting & Financial Management, Pearson, USA
26. Tenah, K. A., & Guevara, J. M. (1985). Fundamentals of Construction Management and organization, Brady Company.
27. Block. Stanley, B. and Geoffrey, A. (2001), Foundations of financial management. London: McGraw- Hill.
28. Chandra. P. (2008). Financial management -Theory of practice. New Delhi: Tata McGraw - Hill.
29. Damodaran, A. (2008). Corporate finance theory and practice. New Delhi.: Wiley India.
30. Khan. M. and Jain. P. (2008). Financial management. New Delhi. Tata McGraw-Hill,
31. Myers, B.. Allen, S. and Mohanty, P. (2010). Principles of corporate finance. New Delhi. Tata McGraw -Hill,
32. Pandey, 1. (2009). Financial management. New Delhi. Vikas Publishing House,
33. Van. Home, J. and Wachowicz, J. (2005). Fundamentals of Financial management. New Delhi. Pearson,
34. Vishwanath, S. (2007). Corporate Finance them and practice. Response Books, New Delhi
35. Steven J. Peterson , (2012), Construction Accounting & Financial Management, Pearson, USA

Web links and Video Lectures (e-Resources):

1. **NTPEL Lec-03 Basics of Financial Management - Part 1**
   https://youtu.be/Sx-dy96_tCQ
2. **NTPEL Lec-04 Basics of Financial Management - Part 2**
   https://youtu.be/FEGbjCrxjAA
3. **Mod-02 Lec-05 Basics of Financial Management - Part 3**
   https://youtu.be/S05LAOR4ur8

4. https://corporatefinanceinstitute.com/resources/knowledge/finance/internal-rate-return-irr/

Skill Development Activities Suggested

- Tally prime – accounting software
- Budgeted cost and actual cost comparison using software.

Course outcome (Course Skill Set)

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

Sl. No.	Description	Blooms Level
CO1	Interpret the applicability of the concept of Financial Management to understand the managerial Decisions and Optimum Capital Structure.	L2
CO2	Interpret the concepts of Budgeting And Estimation.	L2
CO3	Analyze the current changing economic conditions and be able to predict and estimate the future financial requirement.	L4
CO4	Recommend the best project proposal to invest	L5
CO5	Connect with international projects.	L4
CO6	Analyze construction claims and how risk is assessed.	L4

Program Outcome of this course:

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
CO1	**M**	**M**	**-**	**-**	**L**	**L**	**-**	**M**
CO2	**M**	**M**	**H**	**H**	**L**	**L**	**L**	**M**
CO3	**H**	**M**	**-**	**M**	**L**	**M**	**H**	**H**
CO4	**H**	**H**	**L**	**M**	**H**	**H**	**H**	**M**
CO5	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**
CO6	**H**	**H**	**M**	**H**	**H**	**H**	**H**	**H**

H – High , M – Medium, L - Low

III semester (elective 3)

INFRASTRUCTURE MANAGEMENT- AIRPORTS, TUNNELLING MARINE/OFFSHORE CONSTRUCTION			
Course Code	MCPM313A	CIE Marks	100
Teaching Hours/Week (L:P:SDA)	1:00:02	Viva Marks	00
Total Hours of Pedagogy	48	Total Marks	100
Credits	2	Exam Hours	---

Course Learning Objectives:

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

- Understand the concept of infrastructure Management with respect Airports, Tunnelling, Marine/ Offshore, Road and Highway infrastructure management.

Module-1	
Introduction to Infrastructure Management and its processes. Types of Infrastructure Management: Airport, Tunnelling, Marine/ Offshore, Roads and Highways. Difference between Infrastructure Management and Construction Management	
Teaching-Learning Process	***ICT and Digital support****: PowerPoint presentations and videos to understand the infrastructure management and process.*
Module-2	
Land Sourcing and its Processes for Infrastructure Projects.	
Teaching-Learning Process	***ICT and Digital support****: PowerPoint presentations and videos to understand the land sourcing process.*
Module-3	
Investment and Financing for Infrastructure Projects. Viability Gap Funding, JV-PPP, Swiss-Challenge Model, etc.	
Teaching-Learning Process	***Collaborative and Cooperative learning***: Group assignments and case studies to be presented to learn the types of financing for infrastructure projects.
Module-4	
Project Planning and Control for Infrastructure Projects.	
Teaching-Learning Process	***ICT and Digital support****:* Project scheduling using software
Module-5	
Site Safety& Traffic Management for Infrastructure Projects. Labour, Material & Movement scheduling.	
Teaching-Learning Process	***ICT and Digital support****:* Labour and material management with the help of software.

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:

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 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 PEC (Professional elective 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

- Das, P.C. ed., 1999. Management of highway structures. Thomas Telford.
- Adetola, A. and Goulding, J., 2016. Collaborative framework for road infrastructure management. Infrastructure Asset Management, 3(2), pp.71-80.
- Kazda, A. and Caves, R.E., 2007. Airport design and operation. Amsterdam: Elsevier.
- Kapur, A., 1995. Airport infrastructure: The emerging role of the private sector. The World Bank.
- Frangopol, D. and Tsompanakis, Y. eds., 2014. Maintenance and safety of aging infrastructure: Structures and infrastructures book series (Vol. 10). CRC press.
- Beulen, E., Van Fenema, P. and Currie, W., 2005. From application outsourcing to infrastructure management: Extending the offshore outsourcing service portfolio. European Management Journal, 23(2), pp.133-144.

Web links and Video Lectures (e-Resources):

NTPEL lecture on infrastructure management:
https://youtu.be/W3yOD_XM5-4
Stanford Webinar: Infrastructure Project Finance
https://youtu.be/Qwsi3qln1pE

Skill Development Activities Suggested

- Guest lectures
- Case studies of live infrastructure projects
- Webinars / seminars on infrastructure management

Course outcome (Course Skill Set):

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

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

Program Outcome of this course:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	**H**	**H**	**L**	**M**	**H**	**H**	**M**	**H**
CO2	**H**	**H**	**M**	**M**	**M**	**H**	**H**	**H**
CO3	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**
CO4	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**
CO5	**H**	**H**	**M**	**H**	**H**	**H**	**H**	**H**
CO6	**H**	**H**	**M**	**H**	**H**	**H**	**H**	**H**

Mapping of COS and POs:

Sl. No.	Description	Blooms Level
CO1	Understand the concept of infrastructure management	L2
CO2	Distinguish difference between infrastructure and construction management	L2
CO3	Develop the process for land sourcing	L3
CO4	Determine the financing methods for infrastructure projects	L3
CO5	Develop the traffic management plan for the implementation of infrastructure construction	L3
CO6	Estimate and develop a detailed schedule to manage labour and material movement	L5

H – High , M – Medium, L - Low

III Semester (ElectiveII)

DISASTER MANAGEMENT			
Course Code	MCPM313 B	CIE Marks	100
Teaching Hours/Week (L:P:SDA)	01:00:02	VIVA Marks	00
Total Hours of Pedagogy	48	Total Marks	100
Credits	2	Exam hours	---

Course Learning objectives:

- To understand the disasters and their impacts over the built environments and the recovery policy and frameworks.
- To impart knowledge of identifying improved disaster resilience opportunities using project management approach.
- To familiarize the students with various disaster recovery planning and reconstruction activities.

Module-1

INTRODUCTION

Introduction – types of disaster – geological disasters, hydro meteorological disasters, biological disasters, technological disasters, manmade disasters, global disasters; relationship between disaster and redevelopment; rehabilitation and reconstruction; Role of project management in disaster planning and reconstruction projects; method, tools, processes, practices and knowledge areas in managing disaster recovery and reconstruction.

Teaching-Learning Process	***Direct method:*** *Lecture supported by conventional method of Blackboard and chalk to introduce the concept.*

Module-2

DISASTER RECOVERY AND RECONSTRUCTION FRAMEWORK

Case studies of management of large scale disaster projects; experiences and lessons learnt; factors affecting success / failure of disaster planning and management; measurement of performance of disaster recovery projects; Governance and organization of disaster planning and recovery; multiple stakeholder management and coordination; professionalism and ethics of disaster planning and reconstruction; disaster planning and reconstruction policies and standards; innovative and participatory approach to disaster management.

Teaching-Learning Process	***Direct method:*** *Lecture supported by conventional method of Blackboard and chalk to introduce the concept.* ***ICT and Digital support:*** *Video and Power point presentation to elaborate the disaster recovery and reconstruction framework.*

Module-3

POST DISASTER DAMAGE AND ASSESSMENT

Disaster damage and need assessment – effects and impacts of disaster – damage and loss assessment (DALA) – Human recovery needs assessments (HRNA)-Summary of assessment process – Post disaster need assessment deliverables – Issues and challenges in PDNA – Involvement of government in assessment process – Mega disasters of India and lessons learnt disaster management act -2005; National guidelines and plans on disaster management; role of government (local, state and national), role of non-government and inter – governmental agencies.

Teaching-Learning Process	***ICT and Digital support:*** *Video and power point presentation to explain about the post disaster damage and assessment.*

Module-4

RECOVERY AND RECONSTRUCTION PLANNING

Recovery planning – Policy – Key points to be considered for recovery policy – Basic structure of recovery and reconstruction plan – key areas of recovery and reconstruction planning – Issues and challenges in livelihood recovery Community safety and disaster resilience; predicting disasters, and appropriate response management; risk management in disaster planning and reconstruction; identification of risks; role of Geo-informatics, land use planning and development regulations, disaster safe designs; structural and non-structural mitigation of disasters.

Teaching-Learning Process	***ICT and Digital support:*** *Video and power point presentation to explain about the Recovery And Reconstruction Planning* ***Collaborative and Cooperative learning****: Selected topics to be given as seminar Group work. The research and learning to share with the class.*

Module-5

CONSTRUCTIVE ASSESSMENTS

Identifying and analysing the case studies of disaster, and do the study on the type of disaster and damage assessment basis the impact. Propose and justify the suitable recovery and resilient reconstruction planning for the particular development. Also identify and justify the project management approach suitable for such recovery and reconstruction planning.

Teaching-Learning Process	***Collaborative and Cooperative learning****: Selected topics to be given as seminar/group work and the research and learning to be shared with the class.*

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:

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 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 PEC (Professional elective 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:

1. W.Nick Carter, Disaster Management, A disaster manager's handbook, 2008.
2. S. Vaidyanathan, an Introduction to disaster management, natural disasters and manmade hazards, ikon books, New Delhi, 2011.
3. Harsh K.Gupta, Disaster Management, universities press 2003.
4. Damon P.Coppola, Introduction to International disaster management, Elsevier Inc, 2011
5. Palanivel K, Saravanavel J, Gunasekaran S, Disaster Management, Allied Publishers Pvt.Ltd, 2015
6. Dr.ParagDiwan (Ed), A manual on disaster management, Pentagon Press, New Delhi, 2010

WEB Link and Video Lectures (E-Resources)

- http://www.ndmaindia.nic.com
- http://www.nidm.gov.in

Skill Development Activities Suggested

- Disaster preparedness, response, recovery and mitigation for a specific type of disaster.
- Exploring on temporary structures for rehabilitation.

Course outcome (Course Skill Set)

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

Sl. No.	Description	Blooms Level
CO1	Interpret the Understanding of the various types of disasters and their impact over the built environment and society.	L2
CO2	Analyze the impact of the disaster and their damages and understanding of suitable disaster recovery framework	L4
CO3	Categorize the type of post disaster damages and understand the possible resilient reconstruction strategies	L4
CO4	Surveying the factors influencing the proper implementation of reconstruction planning	L4
CO5	Analyze the stakeholders involved and their role in implementing the reconstruction.	L4
CO6	Analyze the major case studies and their resilient planning and reconstruction strategies implemented	L4

Program Outcome of this course:

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
CO1	**H**	**M**	**H**	**M**	**H**	**H**	**H**	**H**
CO2	**H**	**M**	**H**	**M**	**M**	**H**	**M**	**H**
CO3	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**
CO4	**H**	**H**	**M**	**H**	**H**	**H**	**M**	**H**
CO5	**H**	**H**	**M**	**M**	**H**	**H**	**M**	**H**
CO6	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**

H – High , M – Medium, L - Low

III Semester (elective 3)

FACILITY MANAGEMENT			
Course Code	MCPM313C	CIE Marks	100
Teaching Hours/Week (L:P:SDA)	01:00:02	Viva Marks	00
Total Hours of Pedagogy	48	Total Marks	100
Credits	2	Exam Hours	---

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	***Direct method****: Lecture supported by conventional method of Blackboard and chalk to understand the importance of facility management.*

Module-2	
Role and administrative functions of Supervisors. Fire fighting - Basic requirement for the work fire fighting system, various components of the fire fighting system, maintenance required of the system, fire lighting in high-rise buildings, commercial / industrial complexes, public buildings, checklist for fire safety, fire fighting.	
Teaching-Learning Process	***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.*

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	***ICT and Digital support****: Video to demonstrate the planning and installation of lifts.* ***Collaborative and Cooperative learning***: case studies of lift installation, operation and maintenance.

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 & Don'ts for water pipe networks. Modern Sewage Treatment Plants. Landscaping & Horticulture, Building maintenance management.	
Teaching-Learning Process	***ICT and Digital support****: Video and PPT's to explain the basics of plumbing and water distribution system.* ***Collaborative and Cooperative learning***: case studies of water treatment plants and maintenance.

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 PPT's 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 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:

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 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

Suggested Learning Resources:

Books

55. 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.
56. Rondeau, E.P., Brown, R.K. and Lapides, P.D., 2012. Facility management. John Wiley & Sons.
57. 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/ekFYSJGzBFo
- lift installation Process: https://youtu.be/JgKlR3SR1UI
- 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
CO1	Determine the roles and responsibilities of a facility manager	L3
CO2	Illustrate the basic requirements for installation of fire fighting system and lifts.	L3
CO3	Apply the standard codes for planning and installation of services in buildings	L3
CO4	Experiment on the sewage treatment plants and the usage of treated water to cater to sustainable concept.	L4
CO5	Analyse the performance of air conditioning system.	L4
CO6	Develop the application of water proofing, damp proofing termite proofing.	L3

Program Outcome of this course:

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
CO1	**M**	**H**	**H**	**M**	**H**	**H**	**H**	**H**
CO2	**H**	**H**	**H**	**M**	**M**	**M**	**H**	**M**
CO3	**H**	**M**	**H**	**H**	**M**	**M**	**M**	**H**
CO4	**H**	**M**	**H**	**L**	**M**	**H**	**M**	**H**
CO5	**L**	**M**	**H**	**M**	**M**	**M**	**M**	**H**
CO6	**H**	**H**	**H**	**H**	**H**	**H**	**H**	**H**

H – High , M – Medium, L - Low

REAL ESTATE MANAGEMENT			
Course Code	MCPM313 D	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	1:00:02	Viva Marks	50
Total Hours of Pedagogy	16+32(SDA)	Total marks	100
Credits	3	Exam hours	3 hrs

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****: Lecture supported by conventional method of Blackboard and chalk to understand the practices of real estate.*

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****: Lecture supported by conventional method of Blackboard and chalk to understand the function and role and responsibility of various participants stakeholders.*

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***: *Students should present seminars on assigned topics and share the knowledge of the current practices in the real estate field.*

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 the 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 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:

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 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:

1. Madura, J. (2008). Financial markets and institutions. Ohio: Thomson Publications.
2. Levinson, M. (2001). Guide to financial markets. London: Economist Profile Books.
3. Ishkin, F., Eakins, S. (2009). Financial markets and institutions. New Delhi.: Pearson Education,
4. Verma, J. (1997). Venture capital financing in India. New Delhi.: Response Books.
5. Kotler, P. and Armstrong, G. (2008). Principles of marketing. New Delhi.: Prentice-Hall of India.
6. Kotler, P. and Keller, K. (2009). Marketing Management. New Delhi: Prentice- Hall of India.
7. 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.	L2
CO2	Determine the roles, responsibilities, rights and liabilities of different real estate stakeholders	L3
CO3	Discover the various documentation procedures for different real estate transactions, appraisals and valuation of properties.	L3
CO4	Apply quantitative methodology used in different transactions.	L3
CO5	Compute the project development process, compare the different sources of real estate funds and classify the risks.	L3
CO6	Formulate a real estate project by assessing its feasibility and evolving strategies for effective management.	L6

Program outcome of the course

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
CO1	**H**	**M**	**H**	**M**	**H**	**H**	**H**	**H**
CO2	**H**	**H**	**M**	**M**	**H**	**H**	**H**	**H**
CO3	**H**	**H**	**M**	**M**	**H**	**H**	**H**	**H**
CO4	**H**	**M**	**M**	**H**	**H**	**M**	**M**	**H**
CO5	**H**	**H**	**M**	**H**	**H**	**H**	**M**	**H**
CO6	**H**	**H**	**M**	**H**	**M**	**M**	**H**	**H**

H – High , M – Medium, L - Low