Dr. Babasaheb Ambedkar Technological University, Lonere, Raigad

Syllabus for

Master of Architecture - Construction Management

Date: 23rd March 2018

PREAMBLE

The Academic Council of Dr. Babasaheb Ambedkar Technological University aims at bridging the gap between the Industry and the Institute by framing a syllabus on the Guidelines of Council of Architecture, India and fine tuning the same with respect to the requirements of the building industry at the international and national level.

The students have been made sound enough through the Graduation Program, to proceed to Masters in any part of the World and be suitable enough to support any good Architectural office across the globe or raise his / her professional practice.
The Education at Masters Level is oriented to develop students with modern Skills and Techniques, in specialist field of Architecture i.e. Construction Management, Environmental Architecture and General (aspects in Architecture).

The Education is desired to orient and to equip students with modern skills and techniques of designing structures and detail them further with precise constructional details, use of most suitable materials, examine the sustainability attributes and further specify the process ofimplementation with the value addition of conservation of energy flavoured with modern architectural concepts giving justice to the various spaces in their chosen field of specialisation (within and around the built form),they are meant to perform.

The architectural institutes shall also educate the students on their responsibility as a professional, to create designs that shall adhere to all the local regulations and laws of the land and should provide updated knowledge of procedures to be followed from work commencement to completion.

The graduate course (B.Arch) shall be of Ten semesters (stage I & stage II) and the detailed subject wise pattern shall be strictly adhered to.

The Masters Course (M. Arch) shall be of 4 semesters and detailed subject wise pattern enclosed along with this preamble shall be strictly adhered.The Universities stipulates that maximum students in each class be 20 only and sections may be added for additional intakes

M.Arch (Construction Management):
The Masters Course on Construction Management shall make the student conversant with the modern technique of Construction Management through various systems as well as technology to convert successful design into executed project that shall be cost effective, time bound and highly qualitative.

The libraries shall be equipped with internet facility with a computer lab to provide students networking opportunities with other Institutes/Universities across the world. Facebook /Twitter/Blogs/any othersocial media tool shall be used to create data that may be required time and again as student/faculty
flow year on year.

The Institution shall encourage exchange programs of faculty and students with other Universities inIndia and abroad to help develop them.

Emphasis shall be given to live site visits, interactions with the client's promoters, contractorsand also approving authorities and project managers to get feedback on drawings, details,specifications, selection of materials, techniques of constructions.

The institutes are expected to conduct seminars on newer technologies and materials by invitingplayers from the market/industry and faculty and the students should take it further through interactiveworkshops. The institutes shall also encourage students to attend conference and conventions ofarchitectural organizations within India and Abroad.

The Institute shall guide students to leading architectural offices within and outside the Country for the internship course and shall conduct interactive feedback workshops for exchange of ideasand experience of the building industry and professional office working. The subject of Professional training shall be constantly updated based on changing trends and their expectation from professionalarchitect's .Inviting leading architects to share on the above subject within the institute may helpimbibing confidence within out-going graduates.

The BATU syllabus is composed by team of experts after thorough examination and comparativeanalysis of syllabi of colleges of architecture in India and intends to further modify or amend that maybe required by the foreign universities offering BATU their accreditation in order to respond to rapidlychanging industry, society and environment, national and international economic dimensions.

The Above architectural technology benchmark statement shall/may reflect these changes in thecontext of the building Industry, including the need to produce graduates that are employable yetadaptable, agile and flexible to respond to future challenges and changes.

List of Abbreviations		
Sr.No.	**Acronym**	**Full form**
1	TH	Theory
2	STW	Sessional Term Work with Assessment
3	SV	Sessional Work with Viva
4	L	Theory Lecture
5	S	Studio
6	IA	Internal Assessment
7	MSE	Mid Semester Exam
8	ESE	End Semester Exam

Teaching Scheme:

Each Lecture to be conducted should be of 60 min duration.

Each Studio to be conducted should be of 60 min duration.

1 Credit Point = 1 Hour Lecture (For Theory subject)

1 Credit Point = 2 Hour Studio

Mandatory Passing Criteria:

All the rules and regulations for Allowed To Keep Terms (ATKT) from Dr. Babasaheb Ambedkar Technological University (DBATU) shall be applied to the M.Arch. course.

All semesters will be counted towards the Final Class of the student i.e. Semester 1, Semester 2, Semester 3 and Semester 4.
Performance of these 4 semesters will together determine the Final Class of the student with Absolute Grading system.

Each student should publish a Research Paper in recognised National / International Journal with impact factor 1 and above, during the Second Year of Master of Architecture course. The research paper should be related to the Dissertation topic selected for Semester-4 of the Second year.

Reporting of Submissions by the students and Institutes:

All students should mandatorily submit the course work to the college, completed in the class at the end of the day through the servers to the college / university.
The evaluation of the work done in the class by the student should be done by the teacher on the same day and data to be maintained on the server.

Use of Computers:

The institutes should facilitate and encourage use of computers from 1st semester itself.

Site Visits / Study Tours:

Site Visits / Study tours should be organised by the institutes to make the students aware of latest technologies in construction. At least 1 site visit / study tour per year should be organised.

Industrial Exposure – Guidelines for selection of Office for Industrial Exposure:

1. The practical training through Industrial Exposure of 8 weeks duration should be carried out after Semester-3 and finalization of Dissertation topic, and shall end when Semester-4 begins.
2. The practical trainingshould be carried out in the office of an experienced and practicingArchitectregistered with the Council of Architecture OR practicingCivil Engineer ORpracticing Project Management Consultant OR successful Construction Company.
3. The practical training can be done in India in any city as is suitable for the student.
4. The practical training can also be done in any foreign country as is suitable for the student. The firm has to fulfil all the criteria of and be similar to the Indian counterpart.
5. The firm chosen for practical training should be preferably working on type and scale of recently completed and/or ongoing construction projects similar to those stated in the Studio subjects of the course and with minimum professional experience of 10 years in good standing.
6. The student should be exposed to all aspects of construction and management practices along with project documentationduring the training period. The training shall be able to help the student develop and evolve the dissertation topic.

Teaching and learning Process Matrix:

This matrix is to be used by the teachers and students to understand subject in detail.
It will unfold the desired skill sets required along with identification of teaching and learning process approach indicators.
It will also help teachers and students to evolve concepts and module development.
This is a tool recommended to be followed by subject teachers. It will create learning andunderstanding process of the subject.

Sr. No.	Subject Heads ⟹	Subject -1	Subject -2	Subject-3	Subject -4
	Definitive questions for learning subjects ⇩				
1	How does learning occur?				
2	What factors influence learning?				
3	What is role of learning?				
4	How does transfer occur?				
5	What type of learning is best explained by theory / graphics / visuals?				
6	How is technology used for learning in Construction Management?				

Dr. Babasaheb Ambedkar Technological University

First Year Master of Architecture - Construction Management

Semester -1

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR6CM1001	Construction Project Studio – 1	1	8	50	50	0	0	150 (SV)	250	5
AR6CM1002	Principles of Management and Business Organisations	2	0	10	10	20	60	0	100	2
AR6CM1003	Project Account Management	2	0	10	10	20	60	0	100	2
AR6CM1004	Project Planning and Scheduling Methods	1	4	30	30	0	0	90	150	3
AR6CM1005	Advanced Construction Technology & Services	2	0	10	10	20	60	0	100	2
AR6CM1006	Building Information Modelling Applications	1	4	30	30	0	0	90	150	3
AR6CM1007	Elective-1 (any 1)	1	4	30	30	0	0	90	150	3
A	Marketing Strategies									
B	Communication Skills									
C	Disaster Management									
D	Alternative Construction Technologies									
	Total	**10**	**20**	**170**	**170**	**60**	**180**	**420**	**1000**	**20**

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First Year Master of Architecture - Construction Management

Semester -2

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR6CM2001	Construction Project Studio - 2	1	8	50	50	0	0	150 (SV)	250	5
AR6CM2002	Project Logistics and Resource Management	2	0	10	10	20	60	0	100	2
AR6CM2003	Financial Management & Project Formulation	2	0	10	10	20	60	0	100	2
AR6CM2004	Computer Aided Project Scheduling & Control	1	4	30	30	0	0	90	150	3
AR6CM2005	Research Methodology	2	0	10	10	20	60	0	100	2
AR6CM2006	Sustainable Construction Practices	1	4	30	30	0	0	90	150	3
AR6CM2007	Elective-2 (any 1)	1	4	30	30	0	0	90	150	3
A	Project Site Feasibility									
B	Intelligent Building Systems									
C	Green Building Performance & Compliance									
D	Standardisation and Certification									
	Total	**10**	**20**	**170**	**170**	**60**	**180**	**420**	**1000**	**20**

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Second Year Master of Architecture - Construction Management

Semester -3

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR7CM3001	Construction Project Studio - 3	1	8	50	50	0	0	150 (SV)	250	5
AR7CM3002	Legalities in Construction Projects	2	0	10	10	20	60	0	100	2
AR7CM3003	Contract Administration and Management	2	0	10	10	20	60	0	100	2
AR7CM3004	Quality Control and Quality Management	1	4	30	30	0	0	90	150	3
AR7CM3005	Safety Management	2	0	10	10	20	60	0	100	2
AR7CM3006	Dissertation Stage -1 - Topic with Research Paper	1	4	30	30	0	0	90	150	3
AR7CM3007	Elective – 3 (any 1)	1	4	30	30	0	0	90	150	3
A	Risk Management									
B	Built Facility Management									
C	Repairs &Maintenance of Buildings									
D	Heritage Site Management									
	Total	**10**	**20**	**170**	**170**	**60**	**180**	**420**	**1000**	**20**

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Second Year Master of Architecture - Construction Management

Semester -4

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR7CM4001	Dissertation - Stage-2 - Research Methodology, Data	2	6	50	50	0	0	150 (SV)	250	5
AR7CM4002	Dissertation - Stage-3 - Data Analysis, Conclusion	4	12	100	100	0	0	300 (SV)	500	10
AR7CM4003	Industrial Exposure (8 weeks Practical Training after Sem-3)	0	0	50	50	0	0	150 (SV)	250	5
	Total	**6**	**18**	**200**	**200**	**0**	**0**	**600**	**1000**	**20**

Dr. Babasaheb Ambedkar Technological University, Lonere, Raigad

MASTER OF ARCHITECTURE – CONSTRUCTION MANAGEMENT

FIRST YEAR

SYLLABUS 2018

First Year Master of Architecture - Construction Management

Semester -1

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR6CM1001	Construction Project Studio - 1	1	8	50	50	0	0	150 (SV)	250	5

Course Objective

To introduce the studentsto the process of management of residential construction projects

To learn to apply principles of project management &business organisations

To initiate critical thinking regarding factors responsible for successful completion of a project

To understand through an individual study of a completed project, process of project management from planning to completion stage

Course Outcome

To understand an existing, recently completed small scale multi-tenement and/or multi-storied residential project (typically a housing project) with overall project study and study of project life cycle - initiating, planning, organization, executing, monitoring/control, closure

To prepare a detailed project report, with an in-depth research and analysis of activities, with critical understanding and appraisal of factors responsible for efficient and successful completion of the project

Course Content

Module-1

Individual selection of an existing, recently completed small scale multi-tenement and/or multi-storied residential project for overall project study

Project formulation, project brief, project site suitability and financial feasibility

Project overview, design and specifics

Module -2

Role of Project Manager / Architect / Engineer, Owner / Developer Company

Management / organisational structure

Overall project management, communication and site execution

Module -3

Area analysis comprising of land area, built-up area / sellable area / construction area, parking, road, landscape, amenity and services

Module -4

Cost Analysis with respect to cost of land, cost of land development, cost of construction, mobilisation and soft costs

Profit estimation considering value of land, cost of project, sellable price and area

Module-5

Construction technology and materials

Construction activities and work break-down structure

Overall project time-line

Module-6

Quality analysis with respect to design, materials, finishes, services / systems and overall construction quality

User / occupant feedback, project review by Architect and Developer with respect to the project time, cost and quality

Studio Assignment
To do a complete project documentation with analysis, critical understanding and appraisal of factors responsible for progress and successful completion of the project along with conclusion, comments, suggestions
To prepare a detailed project report, with an in-depth research and analysis of activities comprising of project documents, drawings, schedules, graphs / charts, reports, photographs, etc.
To compile the work in the form of a presentation regarding the project summary and overview
Mode of Examination
No Theory Paper
Sessional Work with Viva
Reference Books
Walker Anthony,(2004) *Project Management in Construction*, Oxford: Blackwell Publishing
Twort Alan C., Rees J Gordon,(2011) *Civil Engineering Project Management*, Gurgaon: Elsevier
Maheshwari S N, MaheshwariSuneel K, MaheshwariSharad K.,(2012) *Text Book of Accounting for Management*, New Delhi: Vikas Publishing House Pvt Ltd.
Howes Rodney & Robinson Herbert., (2005*), Infrastructure for the Built Environment: Global Procurement Strategies*, Great Britain: Butterworth Heinemann
Loraine R K.,(1993) *Construction Management in Developing Countries*, Delhi: Thomas Telford Ltd
BharadwajAshutosh.,(2011) *On Site Checklist: 245 Essential Question for your Contractor*, Yellowstone Green Home Pvt.Ltd.
BharadwajAshutosh., (2011) *Keep your Record for Complete Peace of Mind*, Yellowstone Green Home Pvt.Ltd.
Gahlot P S, Sharma S., (2012) *Building Repair and Maintenance Management*, New Delhi: CBS Publishers & Distributors Pvt. Ltd
Singh Suraj.,(2012) *Civil Engineering Building Practice*, New Delhi: CBS Publishers & Distributors Pvt. Ltd
Cain C T., (2003) *Performance Measurement for Construction*, Oxford: Blackwell Publishing
InamdarSatish., *Management Accounting*, Vol.2, Mumbai: Everest Publishing House
(2005) *Management Extra Project Management*, Italy: Elsevier, eLearn, Pergamon Flexible Learning
Newell Michael W., (2005) *Preparing for the Project Management Professional Certification Exam*, New York: AMACOM
Kant Krishna.,(2014) *Building Construction Design Aspects of Leakage and Seepage Free Buildings*, New Delhi: McGraw Hill Education
Khan M Y, Jain P K.,*Financial Management*, (2013) New Delhi: McGraw Hill Education (India) Private Limited

First Year Master of Architecture - Construction Management										
Semester -1										
Subject Code	**Subject**	**Teaching Scheme**		**Evaluation Scheme**						**Credits**
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR6CM1002	Principles of Management and Business Organisations	2	0	10	10	20	60	0	100	2

Course Objective
To introduce students to the management principles
To understand the process of management planning, organizing, staffing, directing and controlling
To understand the role of project manager in construction industry
To initiate critical thinking regarding the subject and its application in management of projects
Course Outcome
To understand and implement management principles in construction management
Course Content
Module -1
Introduction to management, definition, nature, need, importance, purpose, functions & skills
Evolution of management thoughts& theories of F.W. Taylor, Henri Fayol, Max Weber, etc.
Module -2
Management planning, what is planning? importance of planning
Nature and purpose of planning, planning process, types of planning, objectives, setting objectives, planning premises, strategic management
Module -3
Organizing as a management process, principles of organization
Different structures of organizations such as line, line& staff, functional, matrix
Project organization: characteristics,features, their merits and limitations, departmentalization.
Ownerships of organization: sole proprietorship, partnership, private ltd., public ltd., ISO standards for firms
Introduction to organizational behavior, formal and informal organizations,organizational climate, decision making and decision tree
Staffing: what is staffing? steps involved in staffing
Module -4
Directing: foundations of individual and group behaviour, motivation, motivation theories, motivational techniques, leadership, types and theories of leadership, mutual influence of leader and follower-leader's power
Process of communication,organisational communication
Controlling: controlling as a management, function, direct and indirect control, elements ofcontrol
Module -5
Role of project manager: managing projects with reference tomanaging routine activities, qualities of projectmanager, selection of project manager, training for a project manager
Construction management:nature of construction industry, role of Architect and Engineer, specialcharacteristics of construction activity, their influence on construction management, development of construction management, scope of

construction management
Mode of Examination
Theory Paper
Reference Books
Walker Anthony,(2004) *Project Management in Construction*, Oxford: Blackwell Publishing
Sherlekar S A, Sherlekar V S.,(2012) *Principles of Business Management with Case Problems*, Mumbai: Himalaya Publishing House
Jain A K., (2013) *Real Estate Management Business Process and Perspective*, New Delhi:Discovery Publishing House Pvt. Ltd
Radosvaljevic Milan, Bennett John., *Construction Management Strategies*: A Theory of Construction Management, (2012)United Kingdom: John Wiley & Sons, Inc
Clough C H, Sears G A., *Construction Contracting 6th Edition*, United Kingdom: John Wiley & Sons, Inc
Cain C T., (2003) *Performance Measurement for Construction*, Oxford: Blackwell Publishing
Shejwalkar P C, Ghanekar A, Bhivpathaki D., (2011) *Principles and Practice of Management*, Vol.2, Mumbai: Everest Publishing House
Meredith J R, Mantel S J., *Project Management: A Managerial Approach*, USA: John Wiley & Sons, Inc
Kerzner Harold., (2001) *Project Management: A System Approach to Planning Scheduling and Controlling*, USA: John Wiley & Sons, Inc
Chapman Chris, Ward Stephen., *Project Risk Management*, England: John Wiley & Sons, Inc
Koontz Harold, Weihrich Heinz, (2013) *Essentials of Management*, New Delhi: Tata McGraw Hill Education (India) Private Limited
Richman Larry., (2002) *Project Management Step by Step*, New York: AMACOM
Richman Larry., *Improving your Project Management Skills*, New York: AMACOM
Newell Michael W., (2005) *Preparing for the Project Management Professional Certification Exam*, New York: AMACOM
Bolles D L, Hubard D G.,(2007*) Power of Enterprise wide Project Management*, New York: AMACOM
Bono Edward De.,(1996) *Teach Yourself to Teach*, London: Penguin Books

First Year Master of Architecture - Construction Management										
Semester -1										
Subject Code	**Subject**	**Teaching Scheme**		**Evaluation Scheme**						**Credits**
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR6CM1003	Project Account Management	2	0	10	10	20	60	0	100	2

Course Objective

To introduce students to the basic accounting

To understand the process of management of accounts and accounting mechanism

To understand the role of project manager in account management

To initiate critical thinking regarding subject and its application in management of projects

Course Outcome

To understand and implement accountingprinciples in construction management

Course Content

Module -1

Introduction to management accounting, concept of control, status, role and scope of the management

Accounting,relationship between management accounting and top-level management

Accounting concepts and conventions

Module -2

Accounting mechanism, accounting practices in India

Financial statements, accounting policies with special reference to revenue recognition

Matching expenses and revenue, depreciation accounting

Module -3

Financial statement and their analysis, budget, capital, investment, cost, reserve funds, expenditure, price, profit

Balance sheet, profit & loss account, ratio analysis, fund flow analysis, statement of changes in financial position

Module -4

Accounting types: inflation accounting, creative accounting, social accounting and social audit

Corporate reporting practices in India

Module -5

Significance of taxation and insurance in accounting

Salary, components and employee benefit plans, percentage component in budgeting

Mode of Examination

Theory Paper

Reference Books

Riggs Henry E, (1994) *Financial and Cost Analysis for Engineering and Technology Management*, New York: John Wiley & Sons, Inc

Maheshwari S N, MaheshwariSuneel K, MaheshwariSharad K.,(2012) *Text Book of Accounting for Management*,

New Delhi: Vikas Publishing House Pvt Ltd.
Khan M Y, Jain P K.,*Financial Management*, (2013) New Delhi: McGraw Hill Education (India) Private Limited
Sridhar R., (2013) *Accounting and Finance for Bankers*,Gurgaon: MacMilian
Bhagat K J.,(2008) *Financial Accounting*, Vol.2 Mumbai: Everest Publishing House
InamdarSatish., *Management Accounting*, Vol.2, Mumbai: Everest Publishing House
Patankar Sanjay., (2010) *Financial Management*, Vol.2, Mumbai: Everest Publishing House
Phillips J., (2012) *Project Management for Small Business: A Streamlined Approach from Planning to Completion*, New York: AMACOM
Koontz Harold, Weihrich Heinz, (2013) *Essentials of Management*, New Delhi: Tata McGraw Hill Education (India) Private Limited

First Year Master of Architecture - Construction Management										
Semester -1										
Subject Code	**Subject**	**Teaching Scheme**		**Evaluation Scheme**						**Credits**
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR6CM1004	Project Planning and Scheduling Methods	1	4	30	30	0	0	90 (STW)	150	3

Course Objective
To introduce the concept of project planning and scheduling
To study basic tools and network techniques for preparing project plans & master network
To understand the role of project manager in on-site activity and time management
To initiate critical thinking regarding subject and its application in management of projects
Course Outcome
To understand and develop the ability to identifythe activities and prepare project plans
To understand the work-break-down structure and basic tools of scheduling
To applynetwork techniques of project planning and scheduling of a construction project
Course Content
Module -1
Introduction, significance of project planning
Work-break-down structure, identify tasks and activities in on-site execution of construction project, flow of activities
Module -2
Concept of scheduling, basic tools and techniques
Bar charts, Gantt charts, mile-stone charts
Application of above techniques through individual assignments
Module -3
Basic elements of network, event activity, node, link / arrow,sequence of construction
Critical event, critical activity, non-critical activity, critical path and semi critical path,
Simple logics of network, analysis ofnetwork, probable errors in network, float, types of floats
PERT, CPM and network techniques, AoAand AoNnetwork,practical application
Module -4
Network application and scheduling, planning & scheduling tools
Single & overlapping relationships, start to start, finish to start and finish to finish relationship, time chainage charts, line of balance method, scheduling withresource constraint, time constraint, time cost tradeoff – simple & complex
Module -5
Project Monitoring,progress reporting, updating plans, review meetings
Understanding time value of money, earned value concept, variance analysis, alarm reports
Module -6
Schedule control, common causes of schedule delays, control measures

Concept of productivity, work study techniques, method study and work measurement, enhancing productivity
Studio Assignment
To study theoretical and practical applications of different scheduling techniques
To apply basic technique of Gantt chart, by making list of activities and preparing project plans
To prepare work-break-down structure of a small project
To applynetwork techniques of project planning and scheduling of a construction project
Mode of Examination
No Theory Paper
Sessional Term Work with Assessment
ReferenceBooks
Jha Kumar Neeraj, (2011) *Construction Project Management:Theory and Practice*, Volume 2Delhi: Pearsn Education
Halpin D W, Senior B A.,(2012) *Construction Management*, Asia: John Wiley & Sons, Inc
Omura George., (1997) *Mastering AutoCAD*,New Delhi: BPB Publication
Singh Suraj.,(2012) *Civil Engineering Building Practice*, New Delhi: CBS Publishers & Distributors Pvt. Ltd
Radosvaljevic Milan, Bennett John., *Construction Management Strategies: A Theory of Construction Management*, (2012)United Kingdom: John Wiley & Sons, Inc
Gupta Rajiv.,(2013) *Construction planning and Technology*, New Delhi: CBS Publishers & Distributors Pvt. Ltd
Clough C H, Sears G A., *Construction Contracting 6th Edition*, United Kingdom: John Wiley & Sons, Inc
Meredith J R, Mantel S J., *Project Management: A Managerial Approach*, USA: John Wiley & Sons, Inc
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(2005) *Management Extra Project Management*, Italy: Elsevier, eLearn, Pergamon Flexible Learning
Richman Larry., (2002) *Project Management Step by Step*, New York: AMACOM
Kendrick Tom., (2010) *Project Management Tool Kit: 100 Tips & Techniques for getting the job done right*, New York: AMACOM
Woolf M B., *Faster Construction Projects with CPM Scheduling*, New York: McGraw Hill Books
Knutson Joan, Bitz Ira., *Project Management-How to Plan & Manage Successful Projects*, New York: AMACOM
Phillips J., (2012) *Project Management for Small Business: A Streamlined Approach from Planning to Completion*, New York: AMACOM
Bolles D L, Hubard D G.,(2007) *Power of Enterprise wide Project Management*, New York: AMACOM
Seetharaman S., (2015) *Construction Engineering and Management*, Delhi:Umesh Publications
Chitkara K. K., (2000) *Construction Project Management - Planning Scheduling and Controlling*, New Delhi: Tata McgrawHill Publishing Co. Ltd.
Richman Larry., *Improving your Project Management Skills*, New York: AMACOM

First Year Master of Architecture - Construction Management

Semester -1

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR6CM1005	Advanced Construction Technology & Services	2	0	10	10	20	60	0	100	2

Course Objective
To introduce the students to the advancements in construction industry
To learn the theoretical and practical aspects on advanced technology and services
To initiate critical thinking regarding practical application
To understand the subject better through expertsand site visits of an on-going or completed projects
Course Outcome
To study different advanced technologies and services through its theoretical and practical aspects
To study the theoretical / market-available / customisation / factual aspects related to construction / execution process
To analyse and appraise the application and appropriateness of the technologies
Course Content
Module -1
Large span structures like flat slabs, folded plates, space frames, shell structures, tensile structures, etc.with conceptual understanding of application in buildings like airport, stadium, industries, public spaces, etc.
Structural elements, construction details, construction process including sequence of erection, cost and maintenance
Specialized equipment, machinery and labour required for erection of such structures
Rain water drainage system, incorporation of services along with structure
Module -2
High rise buildings and structural systems in steel and concrete, construction technologies, scaffolding and formwork
Cladding systems and curtain wall details with respect to finishes, cost and maintenance
Construction in normal and adverse site conditions like topography, water-logging, surrounding development, etc.
Structural design criteria, high-rise service systems like water-supply, drainage, HVAC, electric / electronic systems
Module -3
Prefabricated materials and composites, market available elements and customization
Manufacturing, transportation, handling and erection of pre-fabricated components with specialized equipment
Modular co-ordination in design and construction, different modules and modular grid systems
National Building Code specifications, standardization, dimensioning of products, tolerance and deviations, layout
Module -4
Geo-technology,sub-surface soil explorations, hazardous site and foundation conditions
Soil improvement and methods, mechanical, thermal, chemical, etc.
Underpinning and shoring procedures, open excavation, blasting methods, dewatering
Different types of foundations like piles, needles, grillages, pit underpinning, miscellaneous methods
Module -5

Modern HVAC system, health / comfort, natural / artificial ventilation, building automation / management system
Modern Fireprevention, protection and fighting systems, NBC provisions, advanced safety and security systems
Modern Acoustics and acoustical materials, measuring equipment, altering acoustical systems
Multi-level Parking and mechanical parking systems, Elevators & Communication systems for tall / complex structures
Module -6
Adhesives and grouting materials and techniques, systems and materials for damp- & water-proofing
Compounds and composites, concrete flooring for specialised structures and use
Fire-resisting, heat- and sound-insulating materials
Mode of Examination
Theory Paper
Reference Books
Kumar Sushil.,(2014) *Building Construction,Volume 5*,Delhi: Standard Publishers Distributors
PunmiaB.C.,Jain Ashok .K.,JainArun K.,(2008) *Building Construction,Volume 3*, New Delhi: LaxmiPubications (P) Ltd
Levy Matthys, Salvadori Mario, (2002) Why Buildings Fall Down: How Structures Fail, New York: W. W Norton & Company
Savadori Mario, (2002) Why Buildings Stand up: The Strength of Architecture, New York, W. W Norton & Company
Goyal M M, *Handbook of Building Construction-The Essential Source of Standard Construction Practice*, Volume 1
Brain Cooke, (2011) *Construction Practice*, Malaysia: Wiley Blackwell
Twort Alan C., Rees J Gordon,(2011) *Civil Engineering Project Management*, Gurgaon: Elsevier
Peurifoy. R.L., Schexnayder C.J., Shapira A., (2013) *Construction Planning Equipment and Methods*, New Delhi: McGraw Hill Education (India) Private Limited
Howes Rodney & Robinson Herbert., (2005*), Infrastructure for the Built Environment: Global Procurement Strategies*, Great Britain: Butterworth Heinemann
BokaldersVaris, Block Maria., (2010) *Whole Building Handbook*, London: Earthscan Publishing
Simmons Leslie H.,(2011) *Olin's Construction Principles, Materials & Methods*, New Jersey: John Wiley & Sons, Inc
Mittal Satyendra, (1998) *Pile Foundations Design & Constructions*, New Delhi: CBS Publishers & Distributors Pvt. Ltd
Murthy V N S., *Textbook of Soil Mechanics and Soil Engineering*, (2012), New Delhi: CBS Publishers & Distributors Pvt. Ltd
Peurifoy. R.L., Schexnayder C.J., Shapira A.,(2013) *Construction Planning Equipment and Methods*, New Delhi: McGraw Hill Education (India) Private Limited
USG.,(2014) *Gypsum Construction Handbook*, USA: Wiley
Paulson B C., *Computer Applications in Construction*, Indian:McGraw Hill Education
Construction Encyclopaedia*Projects and Materials Construction Techniques* Vol 1-5 (PUB), Barcelona: New Daly Construction Encyclopaedia
Kant Krishna.,(2014) *Building Construction Design Aspects of Leakage and Seepage Free Buildings*, New Delhi: McGraw Hill Education
Vargese P C., (2014) *Building Construction*, Delhi: PHI Learning Private Limited
Rangwala SC, Dalal K B., (2016) Building Construction, Gujarat:Charotar Publishing House Pvt Ltd
Smith Peter F.,(2004) *Eco-refurbishment a guide to saving and producing energy*, London: Architectural Press

First Year Master of Architecture - Construction Management

Semester -1

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR6CM1006	Building Information Modelling Applications	1	4	30	30	0	0	90 (STW)	150	3

Course Objective

To introduce the studentsto the building information modelling (BIM)

To learn the applications of BIM

To have hands-on learning experience of use of a software

To initiate critical thinking regarding the subject

Course Outcome

To introduce BIM and various application software available

To understand and learn to use at least one application software

To prepare a report witha virtual building model, its applications with spreadsheets

To understand and identify the project management benefits of using the software

Course Content

Module-1

Introduction to BIM, various application software available

Benefits or advantages in pre-, during and post- construction phases

Module -2

Introduction to use of at least one application software like ArchiCAD, Revit, etc.

Hands-on learning experience and application of software to prepare a virtual building model

Module -3

Application of software to understand estimation of materials, use in material procurement

Advanced application of software via spread-sheets, list of prefabricated building elements and quantities

Module -4

Application during execution for material inventory, anticipation and ease of project delivery, overall safety of project

Use in operation stage of executed project for facility management, repairs and maintenance

Studio Assignment

To do a virtual building model of a small scale building project as an individual assignment

To extract spread-sheets for estimation of materials and procurement

To prepare list of prefabricated building elements and materials with quantities

To prepare a report on BIM application with extract sheets of the virtual building model

Mode of Examination

No Theory Paper

Sessional Term Work with Assessment
Reference Books
Omura George., (1997) *Mastering AutoCAD*,New Delhi: BPB Publication
Singh Suraj.,(2012) *Civil Engineering Building Practice*, New Delhi: CBS Publishers & Distributors Pvt. Ltd
Jhamb L C., *Material Logistics Management*, Vol.2 (2011), Mumbai: Everest Publishing House
Paulson B C., *Computer Applications in Construction*, Indian:McGraw Hill Education

First Year Master of Architecture - Construction Management										
Semester -1										
Subject Code	**Subject**	**Teaching Scheme**		**Evaluation Scheme**						**Credits**
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR6CM1007	Elective - 1 (any 1)	1	4	30	30	0	0	90 (STW)	150	3

Course Objective
To introduce the studentsto the subjects of Elective course
To offer the students to study the subject of their choice
To introduce and prepare students for the theoretical and practical aspects and applications of the subject
To initiate critical thinking regarding the subject
Course Outcome
To studythe subject through its theoretical and practical aspects
To understand the subjectfrom experts and case studies of completed work / projects and factual observations
To prepare a report with theoretical study and individual assignments related to practical application of the subject
Choice of Elective subject and Course Content
Any one of the 4 Elective subjects should be studied in this semester
A. Marketing Strategies
Principles of marketing, marketing mix, market segmentation, USP
Marketing environment,impact of globalization and privatization
Current market scenario, sales and promotion
Marketing of real estate projects and construction products with analysis
B. Communication Skills
Communication process, methods & types of communication and its purpose,audience analysis, barriers
Oral presentation, audio video aids, oral communication skills, verbal and non-verbal communication
Formal communication and correspondence, conveying instructions, written communication
Designing a report, report format and structure, components of reports, writing and editing
C. Disaster Management
Types and causes of disasters, risks, safety precautions and standards in built environment
Response teams and Emergency Management, training and preparedness, casualty prediction, relief operations
Legalities and responsibility of organization, insurance, financial aid and compensation
Documentation of any earlier disaster with response strategy and its appraisal
D. Alternative Construction Technologies
Non-conventional materials and technologies, structural and non-structural components
Low-cost, energy efficient and sustainable construction, techniques and application
Traditional building technology and vernacular construction, performance and weather-ability
Prefabrication, different technologies by researchers or research institutes, availability in market

Studio Assignment
To prepare a report with an in-depth study of theoretical and practical aspects
To document completed work of an expert / project and appraise applications of the subject
Mode of Examination
No Theory Paper
Sessional Term Work with Assessment
Reference Books
Sherlekar S A, Sherlekar V S.,(2012) *Principle of Business Management with Case Problems*, Mumbai: Himalaya Publishing House
Gupta Rajiv.,(2013) *Construction planning and Technology*, New Delhi: CBS Publishers & Distributors Pvt. Ltd
Gupta A S.,(2010) *Advertising and Sales Promotion: Concepts and Strategies*, Mumbai: Everest Publishing House
Kulkarni M V.,(2003) *Advertising Management*, Vol.2, Mumbai: Everest Publishing House
Varkey V O.,(1998) *A Handbook on Marketing Management*, Vol.2. Mumbai: Everest Publishing House
Kotler Philip., *A Framework for Marketing Management*
Kerzner Harold., (2001) *Project Management: A System Approach to Planning Scheduling and Controlling*, USA: John Wiley & Sons, Inc
Richman Larry., *Improving your Project Management Skills*, New York: AMACOM
Construction Encyclopaedia Projects and Materials Construction Techniques Vol 1-5 (PUB), Barcelona: New Daly Construction Encyclopaedia
Kant Krishna.,(2014) *Building Construction Design Aspects of Leakage and Seepage Free Buildings*, New Delhi: McGraw Hill Education
Kotler Philip, Keller K L, Koshy A, Jha M., (2013) *Marketing Management*, New Delhi: Pearson Education

First Year Master of Architecture - Construction Management										
Semester -2										
Subject Code	**Subject**	**Teaching Scheme**		**Evaluation Scheme**						**Credits**
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR6CM2001	Construction Project Studio - 2	1	8	50	50	0	0	150 (SV)	250	5

Course Objective
To introduce the studentsto the process of management of commercial construction projects
To learn to the overallproject management, organizational structure, focus on financial management
To initiate critical thinking regarding factors responsible for successful completionof a project
To understand through an individual study of a completed project, process of management of a commercial project with importance to capital investment, cost and profitability of the project
Course Outcome
To understand an existing, recently completed small scale mixed-use and/or multi-storied commercial project(typically a business and/or mercantile building) with overall project study and study of project life cycle - initiating, planning, organization, executing, monitoring/control, closure
To prepare a detailed project report, with an in-depth research and analysis of activities, with critical understanding and appraisal of factors responsible for its successful completion, financial feasibility and management
Course Content
Module-1
Individual selection of an existing, recently completed small scale mixed-use and/or multi-storied commercial project for overall project study
Project formulation, project site suitability
Project brief and financial feasibility
Project overview, design and specifics
Module -2
Role of Project Manager / Architect / Engineer, Owner / Developer Company
Management / organisational structure
Overall project management, communication and site execution
Module -3
Area analysis comprising of land area, built-up area / sellable area / construction area, parking, road, landscape, amenity and services
Module -4
Cost Analysis with respect to cost of land, cost of land development, cost of construction, mobilisation and soft costs
Profit estimation considering value of land, cost of project, sellable price and area
Financial resources and investment percentage
Factors responsible for sale and financial success of project
Break-even point analysis with respect to Net Present Value and Internal rate of Return
Profit analysis considering break-even point
Module-5

Construction technology and materials
Construction activities and work break-down structure
Overall project time-line
Module-6
Quality analysis with respect to design, materials, finishes, services / systems and overall construction quality
User / occupant feedback, project review by Architect and Developer with respect to the project cost and quality
Studio Assignment
To do a complete project documentation with analysis, critical understanding and appraisal of factors responsible for progress and successful completion of the project along with conclusion, comments, suggestions
To prepare a detailed project report, with an in-depth research and analysis of activities comprising of project documents, drawings, schedules, graphs / charts, reports, photographs, etc.
To compile the work in the form of a presentation regarding the project summary and overview
Mode of Examination
No Theory Paper
Sessional Work with Viva
Reference Books
Walker Anthony,(2004) *Project Management in Construction*, Oxford: Blackwell Publishing
Twort Alan C., Rees J Gordon,(2011) *Civil Engineering Project Management*, Gurgaon: Elsevier
Maheshwari S N, MaheshwariSuneel K, MaheshwariSharad K.,(2012) *Text Book of Accounting for Management*, New Delhi: Vikas Publishing House Pvt Ltd.
Howes Rodney & Robinson Herbert., (2005), *Infrastructure for the Built Environment: Global Procurement Strategies*, Great Britain: Butterworth Heinemann
Loraine R K.,(1993) *Construction Management in Developing Countries*, Delhi: Thomas Telford Ltd
BharadwajAshutosh.,(2011) *On Site Checklist: 245 Essential Question for your Contractor*, Yellowstone Green Home Pvt.Ltd.
BharadwajAshutosh., (2011) *Keep your Record for Complete Peace of Mind*, Yellowstone Green Home Pvt.Ltd.
Gahlot P S, Sharma S., (2012) *Building Repair and Maintenance Management*, New Delhi: CBS Publishers & Distributors Pvt. Ltd
Cain C T., (2003) *Performance Measurement for Construction*, Oxford: Blackwell Publishing
InamdarSatish., *Management Accounting*, Vol.2, Mumbai: Everest Publishing House
Singh Suraj.,(2012) *Civil Engineering Building Practice*, New Delhi: CBS Publishers & Distributors Pvt. Ltd
(2005) *Management Extra Project Management*, Italy: Elsevier, eLearn, Pergamon Flexible Learning
Newell Michael W., (2005) *Preparing for the Project Management Professional Certification Exam*, New York: AMACOM
Khan M Y, Jain P K.,*Financial Management*, (2013) New Delhi: McGraw Hill Education (India) Private Limited

First Year Master of Architecture - Construction Management										
Semester -2										
Subject Code	**Subject**	**Teaching Scheme**		**Evaluation Scheme**						**Credits**
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR6CM2002	Project Logistics and Resource Management	2	0	10	10	20	60	0	100	2

Course Objective
To understandthe entire process of human resource management
To understand the role of HR manager
To study material and supply chain management and procurement of equipment
To initiate critical thinking regarding factors responsible for successful completion of a project
Course Outcome
To understand resource management viz. human resource, materials and equipment
Course Content
Module-1
Material procurement: classification & codification of construction materials, ABC analysis
Economic order quantity (EOQ), purchase functions, stores management
Module -2
Introduction to logistics, introduction to terms like project life cycles, supply chain management, inventory management, purchasing, transportation management, warehousing management and planning
Procurement of equipment
Module -3
Human resources management,introduction and importance, evolution
Difference between personnel management and HRM - role of HR manager
Module -4
Human resource process: staffing & recruitments, job analysis, description and specification, recruitments tests,
Selection, placement, training: need for training, training objective, strategies and methods
Training assessment, performance appraisal, compensation, basic pay, variable pay, merit rating, job evaluation
Module -5
Labour issues: labour, definition of labour and labour welfare, agencies for labour welfare
Overview of statutory measures for labour welfare
Industrial relations: strikes, lockouts, lay-offs, grievance functions, meaning, grievance
Redressal procedures, collective bargaining, trade unions
Mode of Examination
Theory Paper
Reference Books

Peurifoy. R.L., Schexnayder C.J., Shapira A., (2013) *Construction Planning Equipment and Methods*, New Delhi: McGraw Hill Education (India) Private Limited
Howes Rodney & Robinson Herbert., (2005), *Infrastructure for the Built Environment: Global Procurement Strategies*, Great Britain: Butterworth Heinemann
Gupta Rajiv.,(2013) *Construction planning and Technology*, New Delhi: CBS Publishers & Distributors Pvt. Ltd
Cain C T., (2003) *Performance Measurement for Construction*, Oxford: Blackwell Publishing
Peurifoy. R.L., Schexnayder C.J., Shapira A.,(2013) *Construction Planning Equipment and Methods*, New Delhi: McGraw Hill Education (India) Private Limited
Jhamb L C., *Material Logistics Management*, Vol.2 (2011), Mumbai: Everest Publishing House
PatraRamakanta., (2012)*Human Resource Management*, Vol.2, Mumbai: Everest Publishing House
Peurifoy. R.L., Schexnayder C.J., Shapira A..,(2013) *Construction Planning Equipment & Methods*, New Delhi: McGraw Hill Education (India) Private Limited
Edwards Tony, Rees Chris.,(2008) *International Human Resource Management*, New Delhi: Pearson Education
RaoSubba., *Personal and Human Resource Management*
Dessler Gary, VarkkeyBiju,.(2013) *Framework for Human Resource Management*, New Delhi: Pearson Education
Koontz Harold, Weihrich Heinz, (2013) *Essentials of Management*, New Delhi: Tata McGraw Hill Education (India) Private Limited
Pierce David R., (2012) *Project Scheduling and Management for Construction*, USA: Wiley
Newell Michael W., (2005) *Preparing for the Project Management Professional Certification Exam*, New York: AMACOM
Bolles D L, Hubard D G.,(2007) *Power of Enterprisewide Project Management*, New York: AMACOM
Seetharaman S., (2015) *Construction Engineering and Management,* Delhi:Umesh Publications
Ghanekar Anjali., *Human Resource Management: Managing Personnel the HRD Way*, Vol.2, (2011) Mumbai: Everest Publishing House

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Semester -2										
Subject Code	**Subject**	**Teaching Scheme**		**Evaluation Scheme**						**Credits**
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR6CM2003	Financial Management & Project Formulation	2	0	10	10	20	60	0	100	2

Course Objective

To understandthe entire process of finance management

To understand the role of finance manager

To study project management with respect to profit analysis and the time value of money

To initiate critical thinking regarding factors responsible for successful completion of a project

Course Outcome

To understand financial feasibility and management of different types of construction projects

Course Content

Module -1

Concept of finance, corporate finance, finance functions and other functions, structures of the financial system

Working capital management, nature of working capital management, need for working capital, operating cycle

Estimation of working capital requirement, management of cash and receivables, cash budget

Working capital needs, sources, procedures, and practices in construction business

Module -2

Capital investment& budgeting,long term financing,working of financial institutesin India and abroad, self-financing,

Stock exchanges, types of securities, borrowings, and debentures

Module -3

What is a project? investment opportunities, generation and screening of project ideas,project identification and rating

Preliminary analysis, market, technical, financial, economic and ecological-pre-feasibility report

Project estimates and techno-economic feasibilityreport, detailed project report, different project clearances

Module -4

Project costing, project cash flows, time value of money, cost of capital

Project appraisal, NPV, BCR, IRR, ARR, urgency, pay-back period, assessment of various methods

Module -5

Project estimation, importance of estimation, methods of cost estimating, parameter cost estimating

Cost capacity factor, detailed cost estimation, provision for escalation, inflation, operation of contingency provisions

Mode of Examination

Theory Paper

Reference Books

Riggs Henry E, (1994) *Financial and Cost Analysis for Engineering and Technology Management*, New York: John Wiley & Sons, Inc
Jha Kumar Neeraj, (2011) *Construction Project Management:Theory and Practice*, Volume 2Delhi: Pearsn Education
Halpin D W, Senior B A.,(2012) *Construction Management*, Asia: John Wiley & Sons, Inc
Twort Alan C., Rees J Gordon,(2011) *Civil Engineering Project Management*, Gurgaon: Elsevier
Maheshwari S N, MaheshwariSuneel K, MaheshwariSharad K.,(2012) *Text Book of Accounting for Management*, New Delhi: Vikas Publishing House Pvt Ltd.
Howes Rodney & Robinson Herbert., (2005), *Infrastructure for the Built Environment: Global Procurement Strategies*, Great Britain: Butterworth Heinemann
Khan M Y, Jain P K.,*Financial Management*, (2013) New Delhi: McGraw Hill Education (India) Private Limited
Sridhar R., (2013) *Accounting and Finance for Bankers*,Gurgaon: MacMilian
Bhagat K J.,(2008) *Financial Accounting*, Vol.2 Mumbai: Everest Publishing House
InamdarSatish., *Management Accounting*, Vol.2, Mumbai: Everest Publishing House
Patankar Sanjay., (2010) *Financial Management*, Vol.2, Mumbai: Everest Publishing House
Pierce David R.., (2012) *Project Scheduling and Management for Construction*, USA: Wiley
Paulson B C., *Computer Applications in Construction*, Indian:McGraw Hill Education
Seetharaman S., (2015) *Construction Engineering and Management*, Delhi:Umesh Publications
Clough C H, Sears G A., *Construction Contracting 6th Edition*, United Kingdom: John Wiley & Sons, Inc

First Year Master of Architecture - Construction Management										
Semester -2										
Subject Code	**Subject**	**Teaching Scheme**		**Evaluation Scheme**						**Credits**
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR6CM2004	Computer Aided Project Scheduling & Control	1	4	30	30	0	0	90 (STW)	150	3

Course Objective
To introduce the concept of project planning and scheduling and control
Touse computer as a tool in construction activity schedule management
To understand the role of project manager in on-site activity and computer-aided time management
To initiate critical thinking regarding subject and its application in management of projects
Course Outcome
To introduce the students to use of computers in scheduling
To understand and learn to use at least one application software for scheduling
To prepare a report witha computer-aided master network of a completed small scale building project
To understand the project management benefits and advanced applications of the software with the extract sheets
Course Content
Module-1
Introduction to computer-aided scheduling, various application software available
Benefits or advantages in pre-, during and post- construction phases
Module -2
Introduction to use of at least one application software like MS Project, Primavera, etc.
Hands-on learning experience and application of software to prepare a master network of activities of a completed small scale building project
Module -3
Application of software to understand time planning and estimation, use in on-site activity and time management
Advanced application of software via spread-sheets, schedules, cash-flow analysis,tracking and developing cost reports, labour and machinery procurement cycle
Module -4
Application during execution for time value of money, anticipation and ease of project delivery, overall safety of project
Use in execution stage for schedule control, productivity analysis and change management
Use in operation stage of executed project for facility management, repairs and maintenance
Studio Assignment
To prepare work-break-down structure of a completed small scale building project
To do master network of the activities as an individual assignment with use of application software
To extract spread-sheets for estimation of resources and their procurement
To prepare a report on computer application with extract sheets for project scheduling and control techniques

Mode of Examination
No Theory Paper
Sessional Term Work with Assessment
Reference Books
Jha Kumar Neeraj, (2011*) Construction Project Management:Theory and Practice*, Volume 2Delhi: Pearsn Education
Halpin D W, Senior B A.,(2012*) Construction Management*, Asia: John Wiley & Sons, Inc
Omura George., (1997) *Mastering AutoCAD*,New Delhi: BPB Publication
Singh Suraj.,(2012) *Civil Engineering Building Practice*, New Delhi: CBS Publishers & Distributors Pvt. Ltd
Radosvaljevic Milan, Bennett John., *Construction Management Strategies: A Theory of Construction Management*, (2012)United Kingdom: John Wiley & Sons, Inc
Jhamb L C., *Material Logistics Management*, Vol.2 (2011), Mumbai: Everest Publishing House
Kerzner Harold., (2001) *Project Management: A System Approach to Planning Scheduling and Controlling*, USA: John Wiley & Sons, Inc
Paulson B C., *Computer Applications in Construction*, Indian:McGraw Hill Education
Kendrick Tom., (2010) *Project Management Tool Kit: 100 Tips & Techniques for getting the job done right*, New York: AMACOM
Chitkara K. K., (2000) *Construction Project Management - Planning Scheduling and Controlling*, New Delhi: Tata McgrawHill Publishing Co. Ltd.
Clough C H, Sears G A., *Construction Contracting 6th Edition*, United Kingdom: John Wiley & Sons, Inc

First Year Master of Architecture - Construction Management										
Semester -2										
Subject Code	**Subject**	**Teaching Scheme**		**Evaluation Scheme**						**Credits**
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR6CM2005	Research Methodology	2	0	10	10	20	60	0	100	2

Course Objective
To understandthe process of research and in-depth study
To understand different ways and techniques of conducting research as per the types
To study research methodology through different methods of analysis
To initiate critical thinking regarding the subject
Course Outcome
To understand methodology of conducting research through different methods of data collection and analysis
To understand the process of report writing
Course Content
Module -1
Introduction to “research”, significance in architecture, meaning of research, relationship between design and research
Types of research in architecture, areas of research in architecture, qualitative and quantitative paradigms
Module -2
Research design, components of research design,research structure, formulating the research questions, hypothesis, defining the scope and limitations of a research plan, significance of the research outcome
preparing time schedule & budget for a research plan
Module -3
Data collection, methods and techniques, identification of data resources
Quantitative and qualitative primary data collection, hypothesis testing, observation
Techniques, audio visual recording, observations, pre-testing, post-testing, recording, experiments, mechanical observations and stimulations, field research:observation, interviews and surveys
Interview techniques, questionnaires /face to face interviews / internet survey- mail, in-house or self-administered/ telephone, fax, designing a questionnaire / interview schedule
Visual techniques, observations (participant / non-participant / direct), activity mapping, accession/erosion trace observations, cognitive maps, etc.
Content analysis, secondary data analysis: understanding the relative advantages, disadvantages and application of various methods mentioned above and choosing a method appropriate for a research to achieve its objectives
Module -4
Data documentation,understanding the nature of data collected and methods of analysis suitable for that data (graphical / numerical / descriptive)
Literature study and research: significance of literature study in research, different sources of information such as books, journals, newspapers, internet, magazines, audio-recordings, etc.
Qualitative and Quantitative Analysis, converting data into numerical form for data analysis, relationship matrix
Introduction to the simple statistical methods of analysing numerical data, frequencies / percentages, mean / median / mode, correlation, chi-square test, inferring from the data and interpreting the meaning of those inferences, use of software like MS Excel for statistical data analysis

Module -5
Analysing the data and inferring from the data, concepts of dependent and independent variables, unit of analysis
Inferring in the form of graphs, charts, co-relationship and interdependency of factors
Module -6
Presentation of the data, techniques of presenting the numerical data, graphical (pie charts, bar charts, line graphs etc.), tabulations, verbal, qualitative data, architectural drawings / maps
Report writing,reporting the research, different sections of a research report, technical writing and language (tense, voice, etc.), formatting of a report
Referencing and documenting the bibliography, resources, etc.
Appendages and Annexures
Mode of Examination
Theory Paper
Reference Books
Fellows R, Lui A, *Research Methods for Construction*, England: Blackwell Publishing
Kothari C R.,(2011) *Research Methodology: Methods and Techniques*, New Delhi: New Age International Publishers
Collins H., (2010) *Creative Research*, USA: AVA Academia
Rao C N S., *Sociology Principles of Sociology with an Introduction to Social Thought*, (2011) New Delhi: S Chand & Company Ltd
Julian Jerry., *Facilitating Project Performance Improvement: A Practical Guide to Multilevel Learning*, New York: AMACON
Thomsett M C: *Little Black of Project Management*, New Delhi: AMACOM
Kendrick Tom., (2010) *Project Management Tool Kit: 100 Tips & Techniques for getting the job done right*, New York: AMACOM
Lucas Ray., (2015) *Research Methods for Architecture*, China: Laurence King

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Semester -2										
Subject Code	**Subject**	**Teaching Scheme**		**Evaluation Scheme**						**Credits**
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR6CM2006	Sustainable Construction Practices	1	4	30	30	0	0	90 (STW)	150	3

Course Objective
To introduce the students to the subject of sustainability and its significance and relevance
To learn sustainability in architecture and construction through design, construction materials, technology &methods
To introduce students for the theoretical and practical aspects and applications of the subject
To initiate critical thinking regarding the subject
Course Outcome
To study the subject through its theoretical and practical aspects
To understand the subject from experts and case studies of completed work / projects and factual observations
To prepare a report with theoretical study and individual assignments related to practical application of the subject
Course Content
Module -1
Introduction to sustainability, significance and relevance in today's context
Sustainable architecture, different aspects of sustainable design criteria as per rating systems and certifications
Module -2
Sustainable project, pertaining to different aspects of the project from feasibility to execution
Life cycle analysis, energy efficiency and eco-friendliness, impact on life and nature and surrounding
Module -3
Various conventional and alternative building materials, appraisal with respect to cradle-to-grave analysis
Different construction technologies, analysis with respect to manufacturing of material, transportation and use on site
Machinery used in construction, energy efficiency in construction process
Module -4
Sustainable construction practices, choice of material and technology
Materials & technology appropriate for project (residential, industrial, infrastructure construction / landscape / interior)
Materials & technology appropriate for project(urban / rural, greenfield / brownfield, climatic zone)
Module -5
Construction waste management, use of local or reusable or recyclable productsto minimise waste
Standardization & conservation practice in material handling to reduce wastage on site
Construction practices to reduce pollution (air, water, soil)
Studio Assignment
To prepare a report with an in-depth study oftheoretical and practical aspects
To include sustainable building materials, technology and construction practices
To document completed work of an expert / project and appraise applications of the subject

Mode of Examination
No Theory Paper
Sessional Term Work with Assessment
Reference Books
Halpin D W, Senior B A.,(2012) *Construction Management*, Asia: John Wiley & Sons, Inc
Howes Rodney & Robinson Herbert., (2005), *Infrastructure for the Built Environment: Global Procurement Strategies*, Great Britain: Butterworth Heinemann
BokaldersVaris, Block Maria., (2010) *Whole Building Handbook*, London: Earthscan Publishing
Gupta Rajiv.,(2013) *Construction planning and Technology*, New Delhi: CBS Publishers & Distributors Pvt. Ltd
Kubba Sam., (2010) *LEED Practices, Certification and Accreditation Handbook*, Oxford: Butterworth Heinemann
USG.,(2014) *Gypsum Construction Handbook*, USA: Wiley
Meiselari., *LEED Materials: A Resource Guide to Green Buildings*
Silvius G, Schipper R, Planko J, Brink Van den J, Koher A., *Sustainability in Project Management*, United Kingdom: Gower

First Year Master of Architecture - Construction Management										
Semester -2										
Subject Code	**Subject**	**Teaching Scheme**		**Evaluation Scheme**						**Credits**
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR6CM2007	Elective -2 (any 1)	1	4	30	30	0	0	90 (STW)	150	3

Course Objective
To introduce the studentsto the subjects of Elective course
To offer the students to study the subject of their choice
To introduce and prepare students for the theoretical and practical aspects and applications of the subject
To initiate critical thinking regarding the subject
Course Outcome
To study the subject through its theoretical and practical aspects
To understand the subjectfrom experts and case studies of completed work / projects and factual observations
To prepare a report with theoretical study and individual assignments related to practical application of the subject
Choice of Elective subject and Course Content
Any one of the 4 Elective subjects should be studied in this semester
A. Project Site Feasibility
GIS technology and technique, plot land information, data modelling and spatial analysis
Application in resource management, urban planning, infrastructure assessment & development, construction projects
Probable impact of project (EIA), relating information from different sources, comparison of multiple sites
Site suitability and land feasibility, overall site evaluation
B. Intelligent Building Systems
Introduction to building automation andbasic concept of Building Automation / Management System (BAS/BMS)
Measures at planning and management stage of project, design of computerized network
BAS/BMS to monitor and control natural light, illumination and ventilation, aperture/openings, shading devices , HVAC
BAS/BMSfor electric, electronic systems like alarms & security, mechanical communication and telecommunication
C. Green Building Performance & Compliance
Green building principles including environmental design, energy efficiency and conservation, waste management
Standards / Certifications:LEED, IGBC, GRIHA, ECBC, EIA & EC, BREEAM, GREEN GLOBE, ENERGY STAR, etc.
Technical requirementsand comparison of credit points &weightage of different rating systems in India and world
Formal certification procedure, compliance,building performance and revalidation of certificates
D. Standardisation and Certification
Basic concept of standardisation, purpose and benefits, quality control
Indian and international standard, significance of BIU, ISO certification of product, business process, company, etc.
Process and compliance of standardisation
Other standards / certifications: LEED, IGBC, GRIHA, EIA & EC, etc.

Studio Assignment
To prepare a report with an in-depth study oftheoretical and practical aspects
To document completed work of an expert / projectand appraise applications of the subject
Mode of Examination
No Theory Paper
Sessional Term Work with Assessment
Reference Books
Halpin D W, Senior B A.,(2012) *Construction Management*, Asia: John Wiley & Sons, Inc
Ministry of Environment & Forests., *Architecture Legalities*
Maxwell W S.,(1991) *Application of Information Technology in Construction*, London: Thomas Telford Ltd
Jain A K., (2013) *Real Estate Management Business Process and Perspective*, New Delhi:Discovery Publishing House Pvt. Ltd
BokaldersVaris, Block Maria., (2010) *Whole Building Handbook*, London: Earthscan Publishing
Kubba Sam., (2010) *LEED Practices, Certification and Accreditation Handbook*, Oxford: Butterworth Heinemann
Meiselari., *LEED Materials: A Resource Guide to Green Buildings*
Newell Michael W., (2005) *Preparing for the Project Management Professional Certification Exam*, New York: AMACOM
Silvius G, Schipper R, Planko J, Brink Van den J, Koher A., *Sustainability in Project Management*, United Kingdom: Gower
Seetharaman S., (2015) *Construction Engineering and Management*, Delhi:Umesh Publications
Paulson B C., *Computer Applications in Construction*, Indian:McGraw Hill Education

Dr. Babasaheb Ambedkar Technological University,
Lonere, Raigad

MASTER OF ARCHITECTURE – CONSTRUCTION MANAGEMENT

SECOND YEAR

SYLLABUS 2018

Second Year Master of Architecture - Construction Management

Semester -3

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR7CM3001	Construction Project Studio - 3	1	8	50	50	0	0	150 (SV)	250	5

Course Objective

To introduce the studentsto the process of management of industrialconstruction projects

To learn to the overall project management, organizational structure, focus on time management

To initiate critical thinking regarding factors responsible for successful completion of a project in required time

To understand through an individual study of a completed project, process of management of anindustrial project with importance to time-line management, material procurement, labour /equipment / machinery management

Course Outcome

To understand an existing, recently completed small scale industrial project(typically a manufacturing unit with machine installation and use of gantry) with overall project study and study of project life cycle - initiating, planning, organization, executing, monitoring/control, closure

To prepare a detailed project report, with an in-depth research and analysis of activities, with critical understanding and appraisal of factors responsible for successful completion within estimated time and effective time management

Course Content

Module-1

Individual selection of an existing, recently completed small scale industrial project for overall project study

Project formulation, project brief, project site suitability

Project overview, design and specifics

Financial and time management

Module -2

Role of Project Manager / Architect / Engineer, Owner / Developer Company / Enterprise

Management / organisational structure

Overall project management, site execution

Procurement process, communication and coordination with vendors and contractors

Module -3

Area analysis comprising of land area, plinth / construction area, parking, road, landscape, amenity and services

Site planning and material storage

Module -4

Cost Analysis with respect to cost of land, cost of land development, cost of construction, mobilisation and soft costs

Financial resources and investment percentage

Planned value, earned value and cost performance index with respect to milestone chart

Module-5

Construction technology and materials, structure and finishes

Material procurement cycle

Construction activities and work break-down structure
Overall project time-lineplanning and schedule monitoring
Labour / equipment / machinery management
Module-6
Quality analysis with respect to design, materials, finishes, services / systems and overall construction quality
User / occupant feedback, project review by Architect and Enterprise with respect to the project time, cost, quality
Studio Assignment
To do a complete project documentation with analysis, critical understanding and appraisal of factors responsible for progress and successful completion of the project along with conclusion, comments, suggestions
To prepare a detailed project report, with an in-depth research and analysis of activities comprising of project documents, drawings, schedules, graphs / charts, reports, photographs, etc.
To compile the work in the form of a presentation regarding the project summary and overview
Mode of Examination
No Theory Paper
Sessional Work with Viva
Reference Books
Walker Anthony,(2004) *Project Management in Construction*, Oxford: Blackwell Publishing
Twort Alan C., Rees J Gordon,(2011) *Civil Engineering Project Management*, Gurgaon: Elsevier
Maheshwari S N, MaheshwariSuneel K, MaheshwariSharad K.,(2012) *Text Book of Accounting for Management*, New Delhi: Vikas Publishing House Pvt Ltd.
Howes Rodney & Robinson Herbert., (2005), *Infrastructure for the Built Environment: Global Procurement Strategies*, Great Britain: Butterworth Heinemann
Loraine R K.,(1993) *Construction Management in Developing Countries*, Delhi: Thomas Telford Ltd
BharadwajAshutosh.,(2011) *On Site Checklist: 245 Essential Question for your Contractor*, Yellowstone Green Home Pvt.Ltd.
BharadwajAshutosh., (2011) *Keep your Record for Complete Peace of Mind*, Yellowstone Green Home Pvt.Ltd.
Gahlot P S, Sharma S., (2012) *Building Repair and Maintenance Management*, New Delhi: CBS Publishers & Distributors Pvt. Ltd
Singh Suraj.,(2012) *Civil Engineering Building Practice*, New Delhi: CBS Publishers & Distributors Pvt. Ltd
Cain C T., (2003) *Performance Measurement for Construction*, Oxford: Blackwell Publishing
InamdarSatish., *Management Accounting*, Vol.2, Mumbai: Everest Publishing House
(2005) *Management Extra Project Management*, Italy: Elsevier, eLearn, Pergamon Flexible Learning
Newell Michael W., (2005) *Preparing for the Project Management Professional Certification Exam*, New York: AMACOM
Kant Krishna.,(2014) *Building Construction Design Aspects of Leakage and Seepage Free Buildings*, New Delhi: McGraw Hill Education
Khan M Y, Jain P K.,*Financial Management*, (2013) New Delhi: McGraw Hill Education (India) Private Limited

Second Year Master of Architecture - Construction Management

Semester -3

Subject Code	Subject	Teaching Scheme		Evaluation Scheme						Credits
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR7CM3002	Legalities in Construction Projects	2	0	10	10	20	60	0	100	2

Course Objective

To introduce the students to the range oflegalities in construction industry

To study different laws and acts in India

To introduce and prepare students for the theoretical and practical aspects of the subject

To initiate critical thinking regarding the subject

Course Outcome

To study the subject through its theoretical and practical aspects

To understandall the legal aspects, conformance and addressal of legal parameters and issues related to construction projects

Course Content

Module -1

Introduction to legal environment in India,legal systems in India

Law and the common man,Property rights in India and regions, Easement right, encroachment of property

Module -2

Legalities related to property documents, title certificate as per old and new systems, title search report

Land and property registration procedure, transfer and conveyance deed

Module -3

Building Byelaws and National Building Code, IS Code, RERA Act 2016

Consumer Protection Act 1986, Rent Control Act 1948, Public Liability Act 1991, clauses and ordinances

Module -4

Legalities in Agreement and Contracts, terms and conditions

Indian Contract Act 1872, Arbitration & Reconciliation Act 1996, provisions and important clauses

Module -5

Labour Acts related to construction activity, Payment of Wages Act, Contract Labour Act, Minimum Wages Act, Employees' State Insurance Act, and Workmen's Compensation Act

Taxation Law, Income Tax, Service Tax, Professional Tax, Turn-over Tax, Capital Gain Tax, GST, LBT, etc.

Mode of Examination

Theory Paper

Reference Books

Fisk Edward R.,(2000) *Construction Project Administration*, Volume 1, London: Hall Prentice

Jha Kumar Neeraj, (2011) *Construction Project Management:Theory and Practice*, Volume 2Delhi: Pearson Education

Halpin D W, Senior B A.,(2012) *Construction Management*, Asia: John Wiley & Sons, Inc
Ministry of Environment & Forests., *Architecture Legalities*
Davies V J, Tomasin K., (1990) *Construction Safety Handbook*,London: Thomas Telford Ltd
Jain A K., (2013) *Real Estate Management Business Process and Perspective*, New Delhi:Discovery Publishing House Pvt. Ltd
Ali Esrafil.,(2012) *Labour Welfare-Including Industrial Hygiene*, Vol.2, Mumbai: Everest Publishing House
COA Handbook of Professional Documents
Income Tax Act
Service Tax Act
Indian Contract Act 1872
National Building Code
IS Code
Consumer Protection Act 1986, Rent Control Act 1948, Public Liability Act 1991
Payment of Wages Act, Contract Labour Act, Minimum Wages Act, Employees' State Insurance Act, and Workmen's Compensation Act
RERA Act 2016

Second Year Master of Architecture - Construction Management										
Semester -3										
Subject Code	**Subject**	**Teaching Scheme**		**Evaluation Scheme**						**Credits**
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR7CM3003	Contract Administration and Management	2	0	10	10	20	60	0	100	2

Course Objective
To introduce the students to the contract and tendering procedure
To study different aspects of contract management
To introduce and prepare students for the theoretical and practical aspects of the subject
To initiate critical thinking regarding the subject
Course Outcome
To study the subject through its theoretical and practical aspects
To understand aspects and parameters of procurement and execution of contracts of construction projects
Course Content
Module -1
Introduction to contract and tendering procedure, types of contracts, tendering and e-tendering, phases
Bid cycle, formulation of tender, tender documents, contract conditions, Earnest Money Deposit, bid preparation
Module -2
Interpretation by parties to contract, obligation and responsibilities of the parties, protection and indemnification
Procurement process, bid comparison and bid selection, local govt. procedure, World bank procedure, award of work
Module -3
Contract administration, inspection of work, change of work, rejected work, deficiencies, deviations, force majeure
Extra claims and their management, retention amount, defects liability period, project closure
Module -4
Office Management of contract, proper record keeping in contract administration, establishment of standard procedure, co-ordination between various agencies involved, providing data for interpretation of contract clauses
Contract disputes and their settlement, arbitration
Module -5
International contracting, scope, nature, types, rules & procedures
Problems that may occur during project execution, project delivery, and handling guarantee claims
Mode of Examination
Theory Paper
Reference Books
Chappell David.,(2006) *Contractual Correspondence for Architects and Project Management*,Volume 1,Oxford:Blackwell Publishing

Fisk Edward R.,(2000) *Construction Project Administration*, Volume 1, London: Hall Prentice
Walker Anthony,(2004) *Project Management in Construction*, Oxford: Blackwell Publishing
Thomas Andrew, (2006) *Design Build Architecture in Practice*, England: Wiley Academy
Jha Kumar Neeraj, (2011) *Construction Project Management:Theory and Practice*, Volume 2Delhi: Pearsn Education
Halpin D W, Senior B A.,(2012) *Construction Management,* Asia: John Wiley & Sons, Inc
Twort Alan C., Rees J Gordon,(2011) *Civil Engineering Project Management*, Gurgaon: Elsevier
BharadwajAshutosh.,(2011) *On Site Checklist: 245 Essential Question for your Contractor*, Yellowstone Green Home Pvt.Ltd.
BharadwajAshutosh., (2011) *Keep your Record for Complete Peace of Mind*, Yellowstone Green Home Pvt.Ltd.
Singh Suraj.,(2012) *Civil Engineering Building Practice*, New Delhi: CBS Publishers & Distributors Pvt. Ltd
Radosvaljevic Milan, Bennett John., *Construction Management Strategies: A Theory of Construction Management*, (2012)United Kingdom: John Wiley & Sons, Inc
Gupta Rajiv.,(2013) *Construction planning and Technology*, New Delhi: CBS Publishers & Distributors Pvt. Ltd
Clough C H, Sears G A., *Construction Contracting 6th Edition*, United Kingdom: John Wiley & Sons, Inc
Kerzner Harold., (2001) *Project Management: A System Approach to Planning Scheduling and Controlling*, USA: John Wiley & Sons, Inc
Newell Michael W., (2005) *Preparing for the Project Management Professional Certification Exam*, New York: AMACOM
Seetharaman S., (2015) *Construction Engineering and Management*, Delhi:Umesh Publications
Loraine R K.,(1993) *Construction Management in Developing Countries*, Delhi: Thomas Telford Ltd

Second Year Master of Architecture - Construction Management										
Semester -3										
Subject Code	**Subject**	**Teaching Scheme**		**Evaluation Scheme**						**Credits**
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR7CM3004	Quality Control and Quality Management	1	4	30	30	0	0	90 (STW)	150	3

Course Objective
To introduce the students to thesubject of quality management
To study different aspects of quality and quality control
To introduce and prepare students for the theoretical and practical aspects of the subject
To initiate critical thinking regarding the subject
Course Outcome
To study the subject through its theoretical and practical aspects
To understand aspects and parameters of quality and it's evolution in a process
To understand aspects and parameters of quality and quality management in construction industry
Course Content
Module -1
Introduction, definition of quality, evolution of quality, quality gurus and their teachings e.g. Deming's PDSA Cycle, Juran's Quality Triangle, Philip Crosby, etc.
Understanding through a case study, quality of project / organisation / business and its evolution during the life cycle
Module -2
Quality Control and it's methods, inspection, testing, sampling
quality assurance in projects, total quality management, essential elements of TQM, management commitment and leadership, training, teamwork, statistical methods, cost of quality, supplier involvement
Hindrances in adoption of TQM
Tools and techniques of TQM adopted by a construction company stating process of evolution of quality
Module -3
Cost of quality, quality cost breakdown, cost of quality assurance, cost of quality control, failure cost
Conformance cost, non-conformance cost
Module -4
Construction Quality Assessment System (CONQUAS), BIS and other Indian Codes for quality control
ISO Standards: Benefits of ISO 9000, ISO 9001-2000 Family of Standards, Latest ISO Standards
Understanding TQM through a case study of ISO certified companyrelated to consultancy or manufacturing construction product or construction projects
Studio Assignment
To prepare a report with an in-depth study of theoretical and practical aspects
To understand evolution of quality through individual case study of a project / organisation / business and its life cycle

To study quality management through individual case study of ISO-certified company related to construction industry
Mode of Examination
No Theory Paper
Sessional Term Work with Assessment
Reference Books
Nelson Charles.,(2006) *Managing Quality in Architecture*, Oxford: Elsevier
Maxwell W S.,(1991) *Application of Information Technology in Construction*, London: Thomas Telford Ltd
Julian Jerry., *Facilitating Project Performance Improvement: A Practical Guide to Multilevel Learning*, New York: AMACON
Kerzner Harold., (2001) *Project Management: A System Approach to Planning Scheduling and Controlling*, USA: John Wiley & Sons, Inc
Newell Michael W., (2005) *Preparing for the Project Management Professional Certification Exam*, New York: AMACOM
Seetharaman S., (2015) *Construction Engineering and Management*, Delhi:Umesh Publications

Second Year Master of Architecture - Construction Management										
Semester -3										
Subject Code	**Subject**	**Teaching Scheme**		**Evaluation Scheme**						**Credits**
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR7CM3005	Safety Management	2	0	10	10	20	60	0	100	2

Course Objective
To introduce the students to safety management
To study different aspects of employee / labour and public safety
To introduce and prepare students for the theoretical and practical aspects of the subject
To initiate critical thinking regarding the subject
Course Outcome
To study the subject through its theoretical and practical aspects
To understand aspects and parameters of safety and safety management in construction projects
Course Content
Module -1
Introduction, employee / labour and public responsibility and safety
Evolution of safety, accident causation theories, unsafe conditions, unsafe acts
Module -2
Causes of accidents, principles of safety, labour safety, precaution, roles of safety personnel
Types of accidents on construction works' sites, workers' health, first-aid facilities, emergency response protocol
Module -3
Safety and health management system, safety policy and organization, safety budget, safety organization
Education and training, safety plan, safety manual, safety committee, incentive programmes
Module -4
Accident reporting, incident investigation and analysis and record keeping, safety inspection, safety audit
Safety gear / equipment and installation, at-operation rules and mandates, site safety environment
Module -5
Cost of accidents, direct cost & indirect cost for workers and employers, compensation, insurance
Health and Safety Act and Regulations, Public Liability Act 1991
Mode of Examination
Theory Paper
Reference Books
Jha Kumar Neeraj, (2011) *Construction Project Management:Theory and Practice*, Volume 2Delhi: Pearsn Education
Peurifoy. R.L., Schexnayder C.J., Shapira A., (2013*) Construction Planning Equipment and Methods*, New Delhi: McGraw Hill Education (India) Private Limited
Howes Rodney & Robinson Herbert., (2005), *Infrastructure for the Built Environment: Global Procurement Strategies*, Great Britain: Butterworth Heinemann

Davies V J, Tomasin K., (1990) *Construction Safety Handbook*,London: Thomas Telford Ltd
Clough C H, Sears G A., *Construction Contracting 6th Edition*, United Kingdom: John Wiley & Sons, Inc
Peurifoy. R.L., Schexnayder C.J., Shapira A.,(2013) *Construction Planning Equipment and Methods*, New Delhi: McGraw Hill Education (India) Private Limited
Peurifoy. R.L., Schexnayder C.J., Shapira A..,(2013) *Construction Planning Equipment & Methods*, New Delhi: McGraw Hill Education (India) Private Limited
Seetharaman S., (2015) *Construction Engineering and Management*, Delhi:Umesh Publications

Second Year Master of Architecture - Construction Management										
Semester -3										
Subject Code	**Subject**	**Teaching Scheme**		**Evaluation Scheme**						**Credits**
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR7CM3006	Dissertation Stage -1 Topic with Research Paper	1	4	30	30	0	0	90 (STW)	150	3

Course Objective
To initiate learning and exploring through the process of topic identification and pursue an idea of research with depth of inquiry, criticality and logic
To carry out an in-depth investigation / scrutiny / experimentation of an area of construction of the student's choice
To initiate critical thinking regarding the subject
To prepare students to write a Research Paper related to the Dissertation topic selected for Semester-4 of the Second year, during the Second Year of Master of Architecture course
Course Outcome
To present the research topic with respect to synopsis, aim and objectives, data collection topics, analysis methodology, hypothesis or probable conclusion
To prepare a reportwith research design and structure
Course Content
Module-1
To identify 3 topics of student's choice for researchpertaining to investigation / scrutiny / exploration / experimentation / innovation / invention / creation / proposal of any aspect of construction management
To critically evaluate the topicsfor finalisation of unique, appropriate and feasible topic
Module -2
To develop the idea of research on the finalised dissertation topic
To explore and explain the research topic with respect to synopsis, aim and objectives, need and relevance, scope and limitation, data collection topics, analysis tool and technique, hypothesis or probable conclusion / achievement / recommendation, future scope of research
To finalise research design, structure and methodology for data collection and analysis
To identify resource material for literature review and data collection
To identify case studies for information
To prepare the questionnaire and/or survey to the identified domain of surveyees/ interviewees
To identify subject experts for information and guidance, finalization of Dissertation Guide/s
Guidelines for academic conduct of Dissertation
The Dissertation subject should have internal Dissertation Coordinator/s.
The 3 research topics of student's choice should be discussed in detail in the studio to finalise a topic.
The student has to choose the Dissertation Guide and other subject expert/s if necessary.
A practicing Architect / Civil Engineer / Project Management Consultant with at least 10 years of experience preferably

in the relevant Dissertation topic are eligibleto guide students.
More than one Guide may be necessary for certain topics. The second Guide will be involved on the recommendation by the Guide.
College shall help students to find a topic-suitable Guide / subject expert.
The exact title of the topic should be finalized at the end of the stage-1 of dissertation.
Each student should be prepared and encouraged to write a Research Paper related to the dissertation topic during the Second Year of Master of Architecture course. The research paper should be published before the end of Semester-4 of Second year.
Studio Assignment
To prepare a report with synopsis, aim and objectives, need and relevance, scope and limitation,data collection topics, analysis methodology, hypothesis or probable conclusion, future scope of research,resources and references
To identify subject experts and Dissertation Guide with his acceptance
To finalize exact title of the dissertation topic
Mode of Examination
No Theory Paper
Sessional Term Work with Assessment
Reference Books
(Literature, books, resources related to all subjects of the course)

Second Year Master of Architecture - Construction Management										
Semester -3										
Subject Code	**Subject**	**Teaching Scheme**		**Evaluation Scheme**						**Credits**
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SV/STW	Total	
AR7CM3007	Elective -3 (any 1)	1	4	30	30	0	0	90 (STW)	150	3

Course Objective
To introduce the studentsto the subjects of Elective course
To offer the students to study the subject of their choice
To introduce and prepare students for the theoretical and practical aspects and applications of the subject
To initiate critical thinking regarding the subject
Course Outcome
To study the subject through its theoretical and practical aspects
To understand the subjectfrom experts and case studies of completed work / projects and factual observations
To prepare a report with theoretical study and individual assignments related to practical application of the subject
Choice of Elective subject and Course Content
Any one of the 4 Elective subjects should be studied in this semester
A. Risk Management
Introduction, identifying risk, risk in construction with respect to time, cost, quality, environment and safety
Quantitative and qualitative risk analysis, scheduling risk, risk matrix
risk mitigation methods, risk response plan,risk responsibility and stake holders (clients, consultants& contractors), decision making
risk audit, change impact analysis, change implementation, lean construction principles for change management
B. Built Facility Management
Introduction, need, functional planning, built environment types, worker productivity, space planning, needs analysis
Buildinglife-cycle, annual cycle, facility performance audit, planning and maintenance
Financial aspects and budgeting, disaster recovery plans,maintenance and repairs schedule
use of BAS/BMS/MIS for facility management, in-houseand outsourced services
C. Repairs & Maintenance of Buildings
Maintenance and repairs aspects, importance, inspection andassessment procedure, conservation
Evaluating a damaged structure, causes of deterioration and dilapidation, testing techniques,structural stability
Materials and technology for strengthening, support, retrofitting,reconstructionof building elements and finishes
Maintenance and repair plan, schedules, budgeting, support services,preventive measures
D. Heritage Site Management
Heritage site and building, grading system, need and concept for conservation and preservation
Aspects of heritage site management: restoration, reconstruction, preventingmeasure, deterioration, repairs
Public use of site: continuous footfall, maintenance, change of use, adaptive reuse, renovation, extension
Legal aspects, development control regulations and heritage charters, economics andfunding, support services

Studio Assignment
To prepare a report with an in-depth study of theoretical and practical aspects
To document completed work of an expert / projectand appraise applications of the subject
Mode of Examination
No Theory Paper
Sessional Term Work with Assessment
Reference Books
Fisk Edward R.,(2000) *Construction Project Administration*, Volume 1, London: Hall Prentice
BokaldersVaris, Block Maria., (2010) *Whole Building Handbook*, London: Earthscan Publishing
Gahlot P S, Sharma S., (2012) *Building Repair and Maintenance Management*, New Delhi: CBS Publishers & Distributors Pvt. Ltd
Kerzner Harold., (2001) *Project Management: A System Approach to Planning Scheduling and Controlling*, USA: John Wiley & Sons, Inc
Chapman Chris, Ward Stephen., *Project Risk Management*, England: John Wiley & Sons, Inc
Kendrick Tom., (2010) *Project Management Tool Kit: 100 Tips & Techniques for getting the job done right*, New York: AMACOM
Newell Michael W., (2005) *Preparing for the Project Management Professional Certification Exam*, New York: AMACOM
Kant Krishna.,(2014) *Building Construction Design Aspects of Leakage and Seepage Free Buildings*, New Delhi: McGraw Hill Education
Williams T C., (2011) *Complete Guide to Identifying, Preventing and Recovering from Project Failure: Rescue the Problem Project*, New York: AMACOM

Second Year Master of Architecture - Construction Management										
Semester -4										
Subject Code	**Subject**	**Teaching Scheme**		**Evaluation Scheme**						**Credits**
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR7CM4001	Dissertation - Stage-2 - Research Methodology, Data	2	6	50	50	0	0	150 (SV)	250	5

Course Objective
To initiate learning and exploring through the process offinding information and data with depth of inquiry, criticality and logic
To carry out an in-depth investigation / scrutiny / exploration of the dissertation topic
To compile and document data and information collected
To initiate critical thinking regarding the subject
To prepare students to write a Research Paper related to the Dissertation topic during the Second Year of Master of Architecture course
Course Outcome
To complete data collection pertaining to the research topic and as per the methodology stated in Dissertation Stage-1
To present the research topic with respect to data collection, compilation and documentation
Course Content
Module-1
To develop and explore the researchdesign and structure through data collection methods
To enlist the heads for data collection
Module -2
To do literature study and review of theoretical and published information as resource material
To explore the research topic through case studies and site visits
To gain practical knowledge and factual information via market study, questionnaire, interview and/or survey of the identified domain of people (surveyees / interviewees)
To gain practical knowledge through experience and projects of Dissertation Guide and subject experts
To compile all data and document it with a methodological approach suitable for data mining and analysis
Studio Assignment
To prepare a detailed report with synopsis, topic introduction, aim and objectives, need and relevance, scope and limitation,data collection and documentation, analysis methodology, hypothesis or probable conclusion, resources and references
To maintain record of case study, project drawings and documents
To maintain record of market study, questionnaire, interview and/or survey
To prepare and publish a Research Paper in recognised National / International Journal with impact factor 1 and above related to the Dissertation topic during the Second Year of Master of Architecture course, before the end of Semester-4 of Second year

Mode of Examination
No Theory Paper
Sessional Work with Viva
Reference Books
(Literature, books, resources related to all subjects of the course)

Second Year Master of Architecture - Construction Management										
Semester -4										
Subject Code	**Subject**	**Teaching Scheme**		**Evaluation Scheme**						**Credits**
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR7CM4002	Dissertation - Stage-3 - Data Analysis, Conclusion	4	12	100	100	0	0	300 (SV)	500	10

Course Objective
To initiate learning and exploring through the process ofanalysing information and data with depth of inquiry, criticality and logic using quantitative and qualitative methods
To carry out an in-depth investigation / scrutiny / exploration / analysis of the dissertation topic
To attain and fulfil critical and creative thinking regarding the subject
To culminate the post graduate course through quality output demonstrating the student's interest and ability
Course Outcome
To complete data analysis pertaining to the research topic and as per methodology stated in Dissertation Stage-1 &-2
To conclude from data and analysis in the form of inferences, suggestions, recommendations or proposal
To present the research topic with respect to data documentation, analysis and conclusion
To prepare a comprehensive Dissertation Report pertaining to the research topic
To prepare and publish a Research Paper in recognised National / International Journal with impact factor 1 and above related to the Dissertation topic
Course Content
Module-1
To critically explore data mining and analysis methodology
To use the analysis tool and techniques with the collected data
To use quantitative and qualitative methods for data analysis in the form of tables, charts, graphs, matrices, etc.
To use method of investigation, examination, testing, fact-finding, reviewing, reasoning, comparison, solution-finding, creating, inventing or proposing to derive an outcome
Module -2
To derive conclusions along with results, inferences, suggestions or proposal
To produce an outcome in the form of recommendations, proposal, innovation, invention, creation or proposal
To accomplish aim and objective of research and verify hypothesis
To compile all data and analysis with a methodological approach suitable for systematic presentation of the topic
Guidelines for academic conduct of Dissertation
The Dissertation Report should be certified by internal Dissertation Coordinator/s and external Dissertation Guide.
A critical check should be made to verify the originality and authentication of the work.
Each and every reference and resource must be mentioned by the student in the report.
Dissertation should be considered as the culmination of the post graduate course and an outcome demonstrating the

student's interest and ability.
Each student should prepare and publish a Research Paper in recognised National / International Journal with impact factor 1 and above related to the Dissertation topic during the Second Year of Master of Architecture course. The research paper should be published before the end of Semester-4 of Second year.
Studio Assignment
To prepare a detailed in-depth research report with synopsis, topic introduction, aim and objectives, need and relevance, scope and limitation, data collection and documentation, data analysis, conclusion and suggestions, future scope of research, resources and references
To maintain record of case study, project drawings and documents
To maintain record of market study, questionnaire, interview and/or survey
To prepare a Dissertation Project Report together for Dissertation Stage-2 & Stage-3 of not more than A4-size 200 pages in a printed format with necessary annexure and appendages, a hardbound report that is black in colour with embossed title and other details
To prepare and publish a Research Paper in recognised National / International Journal with impact factor 1 and above related to the Dissertation topic during the Second Year of Master of Architecture course, before the end of Semester-4 of Second year
Mode of Examination
No Theory Paper
Sessional Work with Viva
Reference Books
(Literature, books, resources related to all subjects of the course)

Second Year Master of Architecture - Construction Management										
Semester -4										
Subject Code	**Subject**	**Teaching Scheme**		**Evaluation Scheme**						**Credits**
		L	S	CA1	CA2	MSE	ESE-Paper	ESE-SW/STW	Total	
AR7CM4003	Industrial Exposure (8 weeks Practical Training after Semester-3)	0	0	50	50	0	0	150 (SV)	250	5

Course Objective
To initiate learning and exploring through the practical application of the course
To expose students to the construction industry and building technology
To acquaint the students with the on-site project execution and management
To attain critical and creative thinking regarding the subject
To culminate the post graduate course through practical training
Course Outcome
To achieve practical / professional experience related to construction technology, project execution and management
To complete practical training of 8 weeks i.e. approximately 40-50 working days
To prepare a report with on-going project documentation stating the industrial exposure
Course Content
Industrial Exposure through practical training of 8 weeks duration after Semester-3 and finalization of Dissertation topic, to end when Semester-4 begins
Exposure to all aspects of construction, technology and management practices along with project documentation during the training period
Practical training to help the student develop and evolve the dissertation topic, through association with the firm and projects, access to project information and documents
Guidelines for selection of Firm for Industrial Exposure
The practical training should be carried out in the office of an experienced and practicing Architect registered with the Council of Architecture OR practicing Civil Engineer OR practicing Project Management Consultant OR successful Construction Company.
The practical training can be done in India in any city as is suitable for the student.
The practical training can also be done in any foreign country as is suitable for the student. The firm has to fulfil all the criteria of and be similar to the Indian counterpart.
The firm chosen for practical training should be preferably working on type and scale of recently completed and/or ongoing construction projects similar to those stated in the Studio subjects of the course and with minimum professional experience of 10 years in good standing.
Studio Assignment
To maintain record of executed project drawings and documents, charts and schedules, correspondence

To maintain a log of work done or tasks performed on daily basis
To prepare a report includingon-going project documentation stating the details of industrial exposure of student
Mode of Examination
No Theory Paper
Sessional Work with Viva
Reference Books
(Literature, books, resources related to all subjects of the course)