

SAVITRIBAI PHULE PUNE UNIVERSITY

(FORMERLY UNIVERSITY OF PUNE)

SYLLABUS FOR

MASTERS IN ARCHITECTURE

M.ARCH. (CONSTRUCTION MANAGEMENT)

(To be implemented w.e.f. A.Y. 2019-20)

BOARD OF STUDIES IN ARCHITECTURE

FACULTY OF SCIENCE AND TECHNOLOGY

DETAIL SYLLABUS

SEM - III

SUBJECT TITLE: CONSTRUCTION MANAGEMENT - Integration, Handover, Stakeholder Management, Ethics				
Subject Code : 2019CM301				
Teaching Scheme		Examination Scheme	Marks	Duration
Theory Periods per week	2	Sessional	300	NA
Studio Periods per week	8	Viva/Oral	100	NA
Total Contact Periods (60 min period) per week	10	In-semester Examination	Nil	NA
		End-semester Examination	Nil	NA
Total Credits	10	Total Marks	400	NA

COURSE OBJECTIVES:

In this semester focus will be on how to integrate all the modules learned earlier related with Project Management and apply them on Project to manage project in given timelines within approved budget and quality parameters. In real life for all projects there will be known and unknown STAKEHOLDERS and one is expected to manage their aspirations / needs and requirements related with Project Charter. While managing projects right from initiation to handover one needs to uphold high level of ETHICS and focus will be to first understand what is ETICAL and how does one uphold high values of ETHICS.

COURSE CONTENT :

Unit 1- PROJECT INTEGRATION

Topic of project integration is introduced, establishing the important role of the project manager as the person who not only leads the effort to create a comprehensive project plan but also executes the processes that result in successful implementation of the project plan.

- Creating a project plan and bringing together all subsidiary planning documents
- Understanding the role of project manager as an integrator
- Integration of processes and their role in defining, planning, executing, controlling, and closing a project

Unit 2 – PROJECT HANDOVER

This module introduces the key concepts pertaining to project closeout and completion of projects, including the project audit process. This includes administrative closure, lessons learned, and contract closures and payments. Finally, the important topic of post-completion reviews is covered here.

- Activities necessary to formally close a project
- Special cases where projects have been suspended or abruptly ended for business or other reasons
- Obtaining final acceptance
- Formal project audits
- Transfer of deliverables to stakeholders

- Contract closure and payments
- Other administrative closure activities
- Executing processes for releasing project resources
- Lessons-learned activities and reporting
- Post-completion project reviews
- Communicating project and team-member performance to the organization

Unit 3 - STAKEHOLDER MANAGEMENT

This module covers the key steps in identifying stakeholders and prioritizing them by power, influence, and interest in the project outcome; then, a strategy is planned and executed to engage stakeholders. The scope of stakeholder-engagement activities extends from the initiation phase through to project completion

- Understanding stakeholder engagement, the types of stakeholders, and their roles, influence, and power
- Developing a stakeholder-engagement plan
- Identifying, categorizing, and prioritizing stakeholders
- Gathering information about stakeholders
- Assessing stakeholders' strengths and weaknesses
- Given a specific project context, create a stakeholder engagement plan that includes approaches to issues such as communication, ethics, and leadership.

Unit 4 - ETHICS

The module covers the importance of ethical considerations in every aspect of a project's operations and emphasizes how ethics are critical to the successful completion of most projects. Ethics is important to the well-being of the many stakeholders that encompass the project, including the performing organization itself, the project managers, employees, customers, suppliers, sponsors, and members of society impacted by the project's operations.

- The competent project manager
- Ethical issues and considerations in project management
- Ethics models and examples of ethics issues
- How to navigate political and social ethical issues inside and outside the organizations
- Tactfully communicating values and standards to stakeholders
- Ethical issues involving compensation, conflicts of interest, and procurement
- Exploring ethical situations, including whistle blowing
- Competing with integrity in global projects
- Sustainability: the new professional responsibility
- Green PM issues and embracing greater accountability
- Professional growth of the project manager and project team

SUBMISSION REQUIREMENT FOR SESSIONAL WORK :

Students are expected to document live project case studies in terms of presentations, Project Expert's interviews, Journal submission.

OUTCOME :

Students will be technically more sound in various knowledge areas related to field of Project Management and behavioral skills of people management and ethical issues involved during the life cycle of Project.

RECOMMENDED READINGS :

- PMBOK by PMI
- P S Gahlot & B M Dhir. . Construction Planning & management. New Age International Limited.
- Charles Patrick, Pearson, (2012). Construction Project planning & Scheduling
- Kumar Neeraj Jha, Pearson, (2012). Construction Project Management Theory & practice
- Knutson, Schexnayder, Fiori, Mayo. Construction management Fundamentals. Tata McGraw.
- Chitakara. Construction Project Management Planning, Scheduling and Controlling. Tata McGraw

SUBJECT TITLE: Research II				
Subject Code : 2019CM302				
Teaching Scheme		Examination Scheme	Marks	Duration
Theory Periods per week	2	Sessional	100	NA
Studio Periods per week	1	Viva/Oral	Nil	NA
Total Contact Periods (60 min period) per week	3	In-semester Examination	Nil	NA
		End-semester Examination	Nil	NA
Total Credits	3	Total Marks	100	NA

COURSE OBJECTIVES:

The objective of Research II is to train the students to prepare state of art report by assimilation of concepts / ideas on a chosen topic in the area of Construction Management through an extensive literature study and data collection from the field.

COURSE CONTENT:

The seminar work develops the comprehension and presentation skills of the students. The chosen topic may be further extended from the scope of study in the third semester or taken up for thesis work in the final semester.

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

Research paper shall be prepared by each student based upon the topic approved by the institute in around 5000 words, in the format specified by the university. The paper has to adhere to the plagiarism norms as given by UGC and a plagiarism report will be attached as a part of the submission. A research seminar to be conducted internally at the end of the term which shall be mandatory for internal evaluation.

OUTCOME :

To acquaint in depth knowledge of the topic in all respect.

RECOMMENDED READINGS :

All books/ Journals/ Magazines/ unpublished thesis related to the topic selected by the individual student.

SUBJECT TITLE: Managing Large Projects - Construction Management Framework at Sites. Practical Training **				
Subject Code : 2019CM303				
Teaching Scheme		Examination Scheme	Marks	Duration
Theory Periods per week	2	Sessional (course sessional – 50, training portfolio – 100)	150	NA
Studio Periods per week	2	Viva/Oral	50	NA
Total Contact Periods (60 min period) per week	4	In-semester Examination	Nil	NA
		End-semester Examination	Nil	NA
Total Credits	4	Total Marks	200	NA

COURSE OBJECTIVES:

Student should be fully acquainted with the functioning of project sites and fundamentals of construction management applied on sites from conception to closing.

COURSE CONTENT :

Unit 1: Site Construction Management

Site planning, construction methodology, logistics plan, Man/material movement, Material stocking and stores management. Construction team organization. Roles and responsibilities of construction team. Site quality plan, Quality assurance and Quality checks.

Contract document implementation and understanding obligations of each party, subcontracting works and their management, Study of variance from envisaged conditions to actual conditions, recording of change orders.

Unit 2: Construction Planning and Monitoring

Construction Schedules, cash flow, planning resources, milestone dates, WBS, methods of monitoring and reviewing of progress, daily weekly and monthly progress report and photographs. How to monitor the construction progress and review of schedule. Schedule updation and review and updating of Baseline schedule.

Unit 3: Site cost Monitoring

Direct cost incurred due to materials and labour engaged on site. Store management. Site RA Bills and Billing process recording of measurements and bill preparation. Impact of delay on cost. Site based cash flows.

Unit 4: Site Compliance

Requirements of various compliance during construction for ONSITE construction. Labour compliance for BOCW/ PF/ ESIS and other labour laws. Environmental clearance and its impact

during construction and monitoring of EC/ MPCB/ others and other compliance based on statutory permissions.

Unit 5: Site HSE

Safety Plan, Hazard analysis and response document. Safety implementation and records and training, Safety audits and action taken reports.

SUBMISSION REQUIREMENT FOR SESSIONAL WORK :

Students are required to submit notes in form of journal. Students are encouraged to collect live site case studies and make presentation.

Report of weekly work done along with supporting documents and logbook to be maintained for training period.

OUTCOME :

Students will be exposed with full knowledge of functioning of project sites and issues and process of construction management of a project. They will gain insights on challenges of construction planning and monitoring of site based activities related with construction of project.

RECOMMENDED READINGS :

As suggested on office and sites.

SUBJECT TITLE: Financial Appraisal and Project Funding.				
Subject Code : 2019CM304				
Teaching Scheme		Examination Scheme	Marks	Duration
Theory Periods per week	2	Sessional	Nil	NA
Studio Periods per week	1	Viva/Oral	Nil	NA
Total Contact Periods (60 min period) per week	3	In-semester Examination	30	NA
		End-semester Examination	70	150 mins
Total Credits	3	Total Marks	100	NA

COURSE OBJECTIVES:

The objective of the course is to make the students acquainted with financial planning, analysis, selection, and implementation and review the cost expenditure investments. This additionally aims to acquaint the students with the appliance of mathematical and statistical tools for analyzing managerial issues in order to arrive at a decision for the capital expenditures.

COURSE CONTENT:

Unit: 1-Overview Of Project: Concept of project and project management, Characteristics of project, Classification of Project, Project selection process, Project life cycle, Project report, Project appraisal and its method (Economic analysis, Financial analysis, Market analysis, Technical analysis, Managerial competence, Ecological analysis) Tools and techniques for project management, Project manager's roles and responsibilities.

Unit: 2-Capital Expenditure Decision Introduction to Capital Expenditure, Meaning and features of capital budgeting decisions, Importance of capital budgeting decisions, Kinds of capital expenditure decisions, Capital expenditure budgeting process, Criteria of capital budgeting (Non discounting criteria, Discounting Criteria), Decision Tree Analysis, Resource allocation framework, Capital budgeting difficulties.

Unit: 3- Market and Demand Analysis Introduction to market and demand, Information required for marketing and demand analysis, Secondary sources of information, Market survey, Demand forecasting, Uncertainties in demand forecasting, Coping with uncertainties.

Unit: 4- Project Financial Analysis Meaning and importance of project finance, Means of finance and sources of project finance in India, Financial institution structure and financial assistance, Capital Generation & Financial Accounting Banking : Financial Institutes like IFCI, IBI, International financing etc. Book keeping process in construction. The accounting cycle. Journals, ledgers etc. for labour cost, materials and purchases miscellaneous ledgers and

accounting procedures, types of financial statements in Govt. Norms of finance and term loan procedure, Sample financing plans.

Unit: 5- PROJECT APPRAISAL: ASSESSING THE TAX BURDEN Introduction, Framework for Deriving Taxable Income, Important Provisions Relevant for Deriving Taxable Income, Set off, Carry Forward, and Order of Deduction for Computing Income from Business, risks and uncertainties, Pre-project and post project evaluation, Environmental Appraisal Of projects, Types and Environmental Dimensions of a Project, Stresses on Environment, Environmental Impact Assessment Methodologies.

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

Case study (Past and Live projects)
Study of individual topics as mentioned in above units
Class tests
Self-Studies
Presentation reviews
Individual Assignments
Group Assignment

OUTCOME:

Students would be able to: Develop the profitability projections. Develop the methods utilized in managing risk. Observe project management decisions and Control.

RECOMMENDED READINGS :

- Chandra P., 2009, Projects: Planning, Analysis, Financing, Implementation & Review, 7th Ed. Tata McGraw-Hill Publishing.
- Van Horne, Wachowicz : Fundamental of Financial Management, PH I New Delhi, Ed. 10.
- Meredith J.R. & Mantel S.J., Jr., 2000, Project Management: A Managerial Approach, 4th Ed. John Wiley & Sons.
- Patel B.M., 2000, Project Management: Strategic Financial Planning Examination & Control, Vikas Publishing House Pvt. Ltd.
- Finnerty J. D., 1996, Project Financing: Asset-Based Financial Engineering, Wiley
- Newbold C.R., 1998, Project Management in the Fast Lane: Applying Theory & Constraints, St. Lucie Press
- Diwan P., Project Management, Deep & Deep Publications
- Anthony R.N. & Govindrajana V., 1998, Management Control Systems, 9th Ed. Tata McGraw-Hill
- Desai V., 1997, Project Management, 1st Ed. Himalaya Publishing House
- Thakur D., 1992, Project Formulation & Implementation, Deep & Deep Publications

- Dayal R., Zachariah P. & Rajpal K., 1996, Project management, 1st Ed. Mittal Publications
- Goel B.B., 2001, Project Management: A Development Perspective, Deep & Deep Publications

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SUBJECT TITLE: Procurement, Quality and Safety Management systems.				
Subject Code : 2019CM305				
Teaching Scheme		Examination Scheme	Marks	Duration
Theory Periods per week	2	Sessional	Nil	NA
Studio Periods per week	1	Viva/Oral	Nil	NA
Total Contact Periods (60 min period) per week	3	In-semester Examination	30	NA
		End-semester Examination	70	150 mins
Total Credits	3	Total Marks	100	NA

COURSE OBJECTIVES:

Procurement Management covers both Men/ Material and services required for successful execution of project. This module includes identifying project needs by using techniques such as a make-or-buy analysis, solicitation planning, and determining vendors through the bidding process. The module also covers contract types, their risks, and their advantages and disadvantages for the project manager and the vendors. The module covers tools and techniques for evaluating contract incentives, the method of contracting with the appropriate vendor, and the processes for monitoring and managing them.

Unit 1: Quality - direct impact on both cost and time of project.

This module will cover all aspects of quality management of the project and includes understanding and evaluating the organization's quality policies and processes, developing an appropriate quality policy and plan, using quality tools and techniques, and understanding the key processes for measuring and documenting the project's quality. The module also covers tools and techniques for assuring quality during the project-execution phase, as well as controlling project and product quality.

Unit 2: Construction Safety is another important factor in on site construction.

Improper hazard identification may lead to compromise of safety condition on site directly affecting project progress and cost. It is important that proper safety management system is first developed specific to a project and implementation plan is worked out during planning stage so that it can be properly implemented and monitored during construction stage.

Unit 3: Definition of safety hazard at site.

Preparation of work process and safety requirements.

Contract strategy and requirements of safety.

Site construction safety plan. Assessment of safety needs and response mechanism.

Safety training and monitoring.

Unit 4: Key Topics

Identifying project needs, including make-or-buy analysis

Identifying potential deliverables for contracting and their delivery milestones
Determining a vendor and the bidding process
Determining contract types, risks, and incentives
Solicitation planning
Awarding the contract
Monitoring and managing the vendor and legal issues.

Unit 5: Definitions of quality, foundations, and paradigms

Quality approaches: defect identification, prevention, avoidance, and correction
Components of quality management in projects
Developing a quality-management plan
Project requirements and identification of metrics to manage quality
Integrating quality-management activities within the project
Tools for managing project quality, including Ishikawa diagrams, control charts, and audits
Continuous improvement and related quality processes
Inspection and quality assurance
Quality-control techniques
Managing changes and quality issues with stakeholders

Learning Outcomes:

- Construct a procurement management plan that reflects the project's procurement needs.
- Analyze different types of contracts and the risks associated with each type of contract and determine contract incentives.
- Understand the concepts and applications of quality control, quality assurance and control techniques in construction projects.
- Study and understand the various safety concepts and requirements applied to construction projects.

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

Assignment will be in the form of notes / journal assignments covering all the topics mentioned above with suitable examples and supportive material.

OUTCOME:

Students will be well versed with the knowledge of Procurement Quality and Safety Management for entire project cycle, from procurement to that of execution of the project with all quality and safety standards.

RECOMMENDED READINGS:

1. PMBOK by PMI
2. FIDIC and other Standards for Construction Contracts.
3. Project Procurement Management by Quentin W. Fleming , PMI Publication
4. **Collaborative Construction Procurement and Improved Value** by David Mosey -John Wiley & Sons, 10-Jun-2019
5. Jimmy W. Hinze, "Construction Safety", Prentice Hall Inc., 1997.
6. Richard J. Coble, Jimmie Hinze and Theo C. Haupt, Construction Safety.
7. Hutchins.G, ISO 9000 : A Comprehensive Guide to Registration, Audit Guidelines and Successful Certification, Viva Books Pvt. Ltd., 1994. 22.
8. James, J.O' Brian, "Construction Inspection Handbook" – Total Quality Management, Van Nostrand, 1997.
9. John L. Ashford, "The Management of Quality in Construction", E & F.N.Spon, 1989.
10. Juran Frank, J.M. and Gryna, F.M. "Quality Planning and Analysis", McGraw Hill, 2001.
11. Kwaku.A., Tena, Jose, M. Guevara, "Fundamentals of Construction Management and Organisation", Reston Publishing Co., Inc., 1985.
12. Steven McCabe, "Quality Improvement Techniques in Construction", Addison Wesley Longman Ltd, 1998.
13. Strategic Procurement in Construction ,Cox Andrew, Publisher: ICE Publishing.
14. Procurement Systems_A Cross-industry Project Management Perspective,Derek H T Walker. Publisher, Taylor & Francis Edition: 2007.

SUBJECT TITLE: Softlab III				
Subject Code : 2019CM306				
Teaching Scheme		Examination Scheme	Marks	Duration
Theory Periods per week	1	Sessional	100	NA
Studio Periods per week	1	Viva/Oral	Nil	NA
Total Contact Periods (60 min period) per week	2	In-semester Examination	Nil	NA
		End-semester Examination	Nil	NA
Total Credits	2	Total Marks	100	NA

COURSE OBJECTIVES:

The course is to introduce application software and their usage as integration tool in construction and rigorously impart training for using the project management software by ongoing projects

COURSE CONTENT :

Computer Lab – Use of BIM for
Clash detection from live project
Working with central files (all disciplines together architecture+ structure + MEP)
Scheduling
Geo-spatial, design, cost, time & facilities management
Other aspects/ software for BIM

OUTCOME :

BIM applications for successful construction management throughout its life cycle.

RECOMMENDED READINGS :

As suggested by faculty

DETAIL SYLLABUS

SEM - IV

SUBJECT TITLE: Project				
Subject Code : 2019CM401				
Teaching Scheme		Examination Scheme	Marks	Duration
Theory Periods per week	4	Sessional	600	NA
Studio Periods per week	16	Viva/Oral	200	NA
Total Contact Periods (60 min period) per week	20	In-semester Examination	Nil	NA
		End-semester Examination	Nil	NA
Total Credits	20	Total Marks	800	NA

COURSE OBJECTIVES: To have in-depth knowledge in the field of interest related to construction industry and encourage research at basic level.

COURSE CONTENT :

Students to choose the topics in the field of interest related to construction industry and management. Present the project in a report format.

SUBMISSION REQUIREMENT FOR SESSIONAL WORK :

The final dissertation should be submitted in black bound hard copy as well as a soft copy on CD. The Term Work of Project of semester IV should be assessed jointly by the Supervisor, Head of Department, and External Examiner, along with oral examination of the same.

OUTCOME :

On completion of the project work students will be in a position to take up any challenging practical problems in the field of construction management and find better solutions to it.

RECOMMENDED READINGS :

All books relevant to the topic of the project.

SUBJECT TITLE: Elective III				
Subject Code : 2019CM402				
Teaching Scheme		Examination Scheme	Marks	Duration
Theory Periods per week	4	Sessional	200	NA
Studio Periods per week	1	Viva/Oral	Nil	NA
Total Contact Periods (60 min period) per week	5	In-semester Examination	Nil	NA
		End-semester Examination	Nil	NA
Total Credits	5	Total Marks	200	NA

OBJECTIVE:

To expose the students in interdisciplinary area of their interest and impart them with theoretical knowledge and practical understanding of the subject offered in the elective.

COURSE CONTENTS:

Individual college may offer the students one or more topics, depending upon the availability of experts and resource material. The colleges will have the opportunity and choice to focus on one or more of the topics. Being an open interdisciplinary elective the topics offered for the elective shall be outside the core knowledge domain of architecture. The open elective would be offered by departments/schools other than architecture.

In case the topics offered cannot be conducted the students can take any one of the topics offered in either elective I or elective II but not opted for by the students earlier.

Detailed syllabus for the topics will be finalized by individual college in consultation with expert faculty, considering the time and marks allotted to the subject.

SESSIONAL/TERM WORK:

The mode of teaching learning shall be decided by the experts and the department where the elective is offered. The final outcome and submission shall be in form of report / journal/ model/ or any other form suitable for the topic studied.

OUTCOME:

Students at the end of the semester should have learnt / understood the broad idea and concept inherent in the subject as well as its application and importance in the field.

RECOMMENDED READINGS :

As per the topic offered.

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