

SINGHANIA UNIVERSITY
M.B.A. in Construction Management
ELECTIVE PAPERS
SEMESTER 4

**MBA-C401: Management and Project Planning In
Construction**

MODULE—I Basics of Management

Modern scientific management, Management Functions, Management Styles.

MODULE –II - Project Management

Basic forms of organization with emphasis on Project and matrix structures; project life cycle, planning for achieving time, cost, quality, project feasibility reports based on socio-techno-economic-environmental impact analysis, project clearance procedures and necessary documentation for major works like dams, multi-storied structures, ports, tunnels, Qualities, role and responsibilities of project Manager, Role of Project Management Consultants, Web based project management.

MODULE—III : Project Scheduling

Construction Scheduling , Work break down structure, activity cost and time estimation in CPM, PERT, RPM (Repetitive Project Modeling) techniques. LOB technique, Mass haul diagrams.

Precedence Network Analysis, software in Construction scheduling (MSP, primavera, Construction manager).

MODULE—IV: Project Controlling

Monitoring and Control, Crashing, Resource Leveling, Updating.

MODULE—V - Construction Management [6 hrs.] Site mobilization – demobilization aspects, various Resources management based on funds availability. Co-coordinating, communicating & reporting techniques. Application of MIS to construction. Training of Construction Managers.

MODULE—VI - Work Study

Definition, Objectives, basic procedure, method study and work measurement, work study applications in Civil Engineering.

Method study – Definition, Objective, Procedure for selecting the work, recording facts, symbols, flow process charts, multiple activity charts, string diagrams.

Work measurement – Time and motion studies, Concept of standard time and various allowances, time study, equipment performance rating. Activity sampling, time-lapse photography technique, Analytical production studies.

MODULE—VII - Safety Engineering

Causes of Accidents on various sites, safety measures and safety policies to be adopted, determination of safety parameters, personal protective equipments. Workmen Compensation Act.

MODULE—VIII - Administration of Incentive Scheme s [7 hrs] Necessity, Merit rating, job evaluation, installation, modification and maintaining of incentive schemes based on implementation experience.

Reference books

1. Modern construction management--Harris, Wiley India.
2. Construction Management and Planning by Sengupta and Guha-Tata McGraw Hill publication.
3. Project Management – K Nagrajan – New age International Ltd.
4. Work study – Currie.
5. Professional Construction Management Barrie-Paulson-McGraw Hill Institute Edition.
6. Project Management – Ahuja H.N. – John Wiely, New York.
7. Construction Project Management Planning, Scheduling and Controlling-Tata McGraw Hill, New Delhi

MBA-C402: CONSTRUCTION TECHNOLOGY

MODULE—I- Underground Construction

Underground and Underwater Construction – Tunnel-Shaft sinking, Micro Tunneling, Tunnel driving in hard and soft strata, bedding of conduits.

MODULE—II - Under water construction

Problems encountered. Underwater drilling, blasting, Grouting methods in soft and hard soil including Jet grouting and Chemical grouting, Dewatering in shallow and deep excavations using different methods, Vacuum Dewatering and Well point system.

MODULE—III – Construction using Concrete Technology

Concrete – Various methods of shuttering, Ready Mix Concrete, Pumped Concrete, Concrete mix design with various methods of concreting and also underwater concreting using tremie method, Concreting for under water Construction

MODULE—IV – Pile Construction [8 hrs.] a) Piling – Single pile and a group piles (Bored and Driven) during driving, Working loads and ultimate loads on driven and cast-in-situ piles, Piles in land and marine structures. Construction details of precast piles, pre stressed piles, steel piles and friction piles.

b) Pile Capacity - Load test on piles initial and routine, failure and causes, Methods of pile driving by Vibration and Construction of micro piles, Diaphragm Walls.

MODULE—V - Cofferdams [8 hrs.] Cofferdams – types, design and construction of single, double wall. Cofferdam. Sheet pile cofferdams, concrete wall movable cofferdam, land cofferdams, soldier construction method. Cofferdam wall by ICOS method.

MODULE—VI -Caissons

Types, box, pneumatic and open caissons, Well foundations, details, design and construction of caissons.

MODULE –VII - Equipment Management

Equipment Management, Costing, Optimum utilization and Equipment selection, depreciation, interest on capital, Manpower, Spare parts etc, Documentation, Log-Books, History Books, Periodical MIS Report.

MODULE—VIII - Construction Equipment [8 hrs.] Construction Equipments – Understanding basics and functions of Equipment Earthmoving Machinery, Concreting Equipment, Material Handling Equipment and Transportation of Equipments.

Reference Books:

- 1 Construction Technology: Analysis, and Choice, 2ed, Bryan, Wiley India
2. Construction Planning, Equipment and methods – P. E. Parry-Tata McGraw Hill Publication
3. Construction Equipment Planning and Applications – Dr. Mahesh Varma
4. Brochures Published by various agencies associated with construction.
5. Journals such as CE & CR. Construction world, International Construction.
5. Document Reports of actual major works executed.
6. Construction Technology by Roy Chudley and Roger Greeno, Prentice Hall, 2005.

MBA-C403: Construction Safety

MODULE – I

Construction Safety Management – Role of various parties, duties and responsibilities of top management, site managers, supervisors etc. role of safety officers, responsibilities of general employees, safety committee, safety training, incentives and monitoring. Writing safety manuals, preparing safety checklists and inspection reports.

MODULE – II [8 hrs.] Safety in construction operations – Safety of accidents on various construction sites such as buildings, dams, tunnels, bridges, roads, etc. safety at various stages of construction. Prevention of accidents. Safety measures. Safety in use of construction equipment e.g. vehicles, cranes, hoists and lifts etc. safety of scaffolding and working platforms. Safety while using electrical appliances. Explosives used.

MODULE – III

Various safety equipment and gear used on site. First aid on site, Safety awareness program. Labor laws, legal requirement and cost aspects of accidents on site, Incentive for safety practices.

MODULE – IV

Study of safety policies, methods, equipment, training provided on any ISO approved construction Company safety in office, working on sites of high rise construction, deep excavation

Reference Books

1. Construction safety manual published by National Safety Commission of India.
2. Safety Management in Construction Industry – A manual for project managers. NICMAR Mumbai.
3. Construction Safety Handbook – Davies V.S.Thomas in K, Thomas Telford, London.
4. ISI for safety in Construction – Bureau of Indian Standards.
5. “Safety management” –Girimaldi and Simonds, AITB S, New Delhi.

MBA-C404: Construction Contracts Administration & Management

MODULE—1 - Construction Contracts

- a) Standard forms of contracts, methods of inviting tenders, pre-bid meetings, pre-qualification system, scrutiny of tenders and comparative statement.
- b) Contract formation, conditions of contracts, contracts with various stakeholders on a major construction projects, contract pricing by the client, project management consultants and the contractor, contract performance, contract correspondence and contract closure.

MODULE - 2 Construction Claims

Extra items and causes of claims. Types of construction claims, documentation. settlement of claims, extension of time.

MODULE - 3 Dispute Resolution

Causes of disputes and importance of role of various stakeholders in prevention of disputes, Alternate Dispute Resolution methods- mediation, conciliation, arbitration and Dispute Resolution Boards.

MODULE - 4 Contract Conditions

- a) General condition and Particular conditions, conditions of Ministry of Statistics and Program Implementation- Government Of India. Model forms of contract. Role of Planning Commission.
- b) ICE conditions-Introduction, FIDIC conditions- evolution of FIDIC document, types based on whether design is of employer or contractor, Design & Build contract, EPC contract, short forms of contract- Colour Code. Various conditions of Red Book.

MODULE—5 Indian Contract Act (1872)

- a) Definition of the contract as per the ACT. Valid, Voidable, Void contracts, Objectives of the act.
- b) Clauses 1 to 75- Contract formation, contract performance, valid excuses for non-performance, Breach of contract, effects of breach- understanding the clauses and applying them to situations/scenarios on construction projects. Importance of the Workmen's Compensation Act on construction projects.

MODULE—6 Arbitration

Indian Arbitration And Conciliation Act 1996

Difference between 1940 Act and 1996 Act. Extent of application of 1996 Act. Objectives, general provisions. Composition of the arbitral tribunal, jurisdiction of arbitral tribunal, duties, power of arbitrators.

MODULE—7 - Conciliation

[6 hrs.]

Conciliation and its provisions in the Act, Conduct of conciliation and arbitral proceedings, grounds for challenge. Arbitral award and its enforcement. Procedure of appeal against the awards.

MODULE—8 - Injunctions And Bailment

[9 hrs.]

- a) Injunctions- Types, temporary, perpetual, mandatory.
- b) Indemnity & Guarantee- difference between the two ; Contracts of Guarantee & Indemnity. Consideration for Guarantee, Surety's liability, discharge of surety. Bailment- Nature of transaction, delivery of bailee.

Reference Books:

- 1) Civil Engineering Contracts and Estimates - B. S. Patil – Universities Press- 2006 Edition, reprint ed in 2009.
- 2) The Indian Contract Act (9 of 1872), 1872- Bare Act- 2006 edition, Professional Book Publishers.
- 3) The Arbitration and Conciliation Act,(1996), 1996 (26 of 1996)- 2006 Edition, Professional Book Publisher.

MBA-C405: Value Engineering and valuation

MODULE – 1 - Value Analysis

Value : Meaning of value, basic and secondary functions, factor contributing to value such as aesthetic, ergonomic, technical, economic : identifying reasons or unnecessary costs :

Value Analysis : 10 Commandments of value analysis; value analysis team; principles of value analysis, elements of a job plan viz. orientation, Information, presentation. Implementation, follow up action, benefits of value analysis, various applications; assessing effectiveness of value analysis.

MODULE – 2 - Life cycle costing

Life cycle costing – Forecasting of Capital as well as operating & maintenance costs, time value, present worth analysis, DCF methods, ROR analysis, sensitivity analysis. Different methods of performing value engineering.

MODULE - 3 - Valuation

Types of value, purposes of valuation factors affecting value. Different methods of valuation for different types of assets such as land and building, horticulture, historical places.

MODULE – 4 Valuation Report

Valuation Report, contents, standard formats, Case study of any one Report.

Reference Books

1. Value Engineering: Analysis And Methodology By Del Younke
2. Industrial Engg. & Mgt., O.P.Khanna, Dhanpat Rai Publ.
3. Industrial Organization & Engg. Economics, T.R.Banga, S.C.Sharma, Khanna Publ.
4. Estimating and Costing in Civil Engineering: Theory and Practice B.N Dutta Published S. Dutta & Company, Lucknow.
5. Estimating, Costing Specifications & valuation in Civil EngineeringBy: M.Chakraborty Published By: Author.
6. Estimating and Costing By: G.S.Birdie
7. Estimating and Costing By: Rangwala Published By: Charotar Publishing House,