MVCT/MBCT 201 – Construction Management

1. Contract Management - I :
   Types of Construction contract, Lump sum, Unit rate, cost plus-fee, Cost Plus percentage-fee, Incentive Contracts, Nature of Contract, Contract Documents and Contracting procedures, contract revisions, Negotiated contracts, contract claims.

2. Contract Management - II :
   Technical Specifications, Drawings, Tender Bond, Labour and Material Payment Bonds, Scrutiny of Tenders, acceptance, letter of indent. Important Contract clauses, Terms of Payment, retention acceptance and final payment, maintenance period, Time for Completion, Extension of time, Variation in work and conditions, claims and disputes, liquidated damages, Termination rights and responsibility of client, Architect, Engineer, Contractor, Professional liability. Disputes in contracts, Sub-contracts> Purchase orders as contracts. Insurance Contract and Claims. Arbitration, Accounts.

3. Tender Management :
   Advance Techniques of Estimating. Principles of Analysis of rates and Specification, writing for different types of construction industries, capital structure, Theories.

4. Legal Frame Work of Construction :
   Constitutional provisions relating to Business and industry, Master Plans, Indian Contract Act. Arbitration act.

5. Labour Laws and Legislation :
   Contract labour (RRA) ACT 1970, laws relating to wages, bonus & industrial disputes.

MVCT/MBCT 202 – Prefabrication design & its construction tech.

1. Prefabricated Construction :
   Prefabricated construction, necessity, Advantages, disadvantages, Mass produced steel, reinforced concrete and masonry systems, Industrialised buildings.

2. Modular Construction :
   Modular coordination, basic module, planning and design modules, Modular grid systems, National Building Code Specification, Standardisation, Dimensioning of products, Preferred dimensions and sizes, tolerances and deviations layout and processes.

3. Prefabricates :
   Classification, foundation, columns, beams, roof and floor panels, wall panels, clay units, box prefabricates, erection and assembly.

4. Design of prefabricated Elements :
   Lift points, beams, slabs, columns, wall panels, footings, design of joints to transfer axial forces, moments and shear forces.

5. Construction Techniques :
   Large panel construction, Lift slab system, Glover system, constains' jack-block system, Constain V-Plate system, Bis on system, Silber-Kuhi System, control of construction processes.

   Equipments, horizontal and vertical transportation.

MBCT 203 – Construction Cost Dynamics and Management

Unit.1 Building construction industry, specific features.
Elements of engineering economics, time value of money, compounding components of cost, criteria for cost comparison, cost indices.

Unit.2 Planning, effects of plan shape and storey heights.
Probabilistic concepts, uncertainty, probability models, minimization of expected costs applications to site planning, bidding reliability analysis.

Unit.3 Introduction to network techniques LOB, CPM, PERT, time, cost and material scheduling, cash flow diagrams.

Unit.4 Resources leveling and allocation, application to mass housing, statistical methods for decision making under uncertainty, balancing the risk and cost effectiveness of decisions.

Unit.5 Application of construction management softwares like Construct SIM and Primavera.

Suggested Books :

1. Adeli, H. and Karim, A., "Construction Scheduling, Cost Optimization and Management", Taylor & Francis.
2. Jaggar, D.,Ross, A.,Smith, J.and Love, P., "Building Design Cost Management", Blackwell science Ltd.
3. Harris, F., Mccaffer,R.and Fotwe, F.E., "Modern Construction Management", Wiley – Blackwell.

MBCT 204 – Evaluation and Retrofitting of Buildings

Unit.1 Deterioration of concrete buildings, embedded metal corrosion, disintegration mechanisms, moisture effects

Unit.2 Evaluation of concrete buildings, visual investigation, destructive testing systems, non- destructive testing technique testing.

Unit.3 Structural health monitoring, vibration based monitoring technique, smart materials and sensors

Unit.4 Surface repair and retrofitting techniques, strategy & design, selection of repair materials, surface preparation methods.

Unit.5 Strengthening techniques, Strengthening techniques, beam shear capacity Strengthening, shear transfer Strengthening, and crack stabilization.
Seismic rehabilitation of existing buildings, seismic vulnerability and strategies for seismic retrofit.

Suggested Books :

1. Emmons, P.H., “Concrete Repair and Maintenance Illustrated’, Galgotia Publications Pvt.
2. Bungey, S., Lillard, G. and Grantham, M.G., “Testing of Concrete in Structures” , Taylor and Francis.
3. Malhotra, V.M.and Carino, N.J., Handbook on Non-destructive Testing of Concrete, CRC Press.
4. Bohni, H.,”Corrosion in Concrete Structures” , CRC Press.
5. FEMA 273; NEHRP Guidelines for the Seismic Rehabilitation of Buildings.
6. ATC-40:Seismic Evaluation and Retrofit of Concrete Buildings, Vol.1&2.
7. Priestley, M.J.N., Seible, F. and

MBCT 205 – Quantitative Methods and Project Financing

Unit.1 Working capital needs, sources, procedures, practices in construction business. Long term financing.
Working of financial institute in India and abroad.

Unit.2 Self financing, stock exchange.
Types of securities, borrowings debentures.

Unit.3 Understanding of financial statements and their analysis, like balance sheet, profit and loss account, rate analysis fund flow analysis, statement of changes in financial position. Corporate reporting practices in India.

Unit.4 Introduction, meaning, importance and development of value analysis techniques, life cycle costing: maintenance and operating costs, energy and utility costs, cost of insurance, anticipated future income growth, effect of facilities on productivity, present and future trends in real estate.

Unit.5 Sampling and sampling distributions, testing hypothesis: one sample test, testing hypothesis: two sample test, simple regression and correlations.

Suggested Books :

1. Goodpasture, J.C.,"Quantitative Methods in Project management", j. Ross Publishing, Inc.
2. Kerzner, H.,"Project Management: A Systems Approach to Planning, Scheduling and Controlling",Wiley.
3. Wysocki, R.K., "Effective project Management," John wiley & Sons.