

# Post Graduate Programme in Quantity Surveying and Contract Management for Working Executives (PGP QSCM)

*Twelve Month Part Time Week-end Programme - offered from Mumbai*

**INTRODUCTION:** In the changing scenario, heavy investments are being made in the construction sector by various governments and financial institutions. With the ever rising prices, larger size of projects, tight work schedules and more competitive rates, Quantity Surveying and Contract Management have emerged as a professional function in construction and civil works projects in India. This is a function that combines quantities taking off, working out cost, improved system of tendering and contractual arrangements, cost planning and efficient contract management.

**OBJECTIVE:** Graduates of this Programme will have competency in:

- Measurement & Estimation of Quantities, Preparation of Bill of Quantities and Submission of Tenders
- Post Contract Functions, Monthly Valuations and Project Variance Reports
- Identification of Claims & Extra Works at sites
- Proficiency in Information Technology applications in Contract Management and Quantity Surveying
- Administration of Contracts, Arbitration and Dispute Resolution.

**WHAT STUDENTS WILL LEARN:**

- Acquire proficiency in estimation of quantities, preparation of BOQ and submission of tenders.
- Post-contract functions: monthly valuations and project variance reports.
- Identification of claims and extra works at sites.

**DURATION:** Twelve months of Studies. Teaching days are Saturdays/Sundays.

**SEATS:** Twenty four only.

**ELIGIBILITY:** Graduate in any branch of Engineering / Architecture with 2 year work experience. OR Diploma in Engineering from State Board of Technical Education with 4 year work experience.

**TUITION FEE:** The total amount of tuition fee payable for this Programme is Rs. 1,00,000/-

**PAYMENT SCHEDULE:** The Schedule of the payment of fees is given below:

1. At the time of admission and on the date specified in the Admission Letter : Rs. 50,000/-
  2. On commencement of Module 2 & within 7 days of it : Rs. 50,000/-
- Total :Rs.1,00,000**

Fees once paid are non-refundable and non-transferable.

**FACULTY:** The courses will be conducted by NICMAR faculty and experts drawn from industry.

**ASSESSMENT:** Taught Courses are assessed by examination method. Presentations/Workshops are assessed by practical tests.

Examinations are held Module-wise for the courses offered. Each course of 100 marks consists of 60% of marks for Term-end examination and 40% of marks for Concurrent Internal Assessment (CIA). The CIA will be based on quiz / class test, class participation, assignments, presentation and attendance.

**AWARD:** In order to be eligible for the Award of the Diploma, the student must meet the following requirements.

- i. Pass in each Term-end Exam by obtaining a minimum of 40 percent marks in each paper
- ii. Have paid full fees of the course.
- iii. 80% attendance.

**ADMISSION PROCEDURE:** Persons interested in admission may download the Prospectus and Application Form from NICMAR website, [www.nicmar.ac.in](http://www.nicmar.ac.in). It may also be obtained from NICMAR Pune campus by post on payment of Rs. 1000 (Rupees thousand only). The payment of fee should be made by a Demand Draft drawn in favour of 'NICMAR - SODE' payable at Pune.

Fill in forms, attach photocopies of the required documents and return to NICMAR School of Distance Education at Pune along with a processing fee of Rs.1000 by Demand Draft.

Send the application along with enclosures by Regd. A.D. to: The Dean, NICMAR School of Distance Education, 25/1, Balewadi, N.I.A Post Office, Pune - 411 045, Maharashtra. Tel.: 020-2729 2671 / 2729 2512 (Extn.: 202).

► **Courses and Credits**

Contract Management	Credits	Quantity Surveying	Credits
Project Management Systems	3	Construction Economics and Cost Control	2
Financial and Management Accounts	4	Construction Technology & Design Practices	3
Estimating, Tendering and Bidding	3	Quantification and Documentation	4
Contract Administration and Planning	3	Analysis of Prices and Machinery charges	4
Indian Contract Laws, Arbitration, Conciliation and ADR	3	Valuation of Land, Buildings and Machinery	4
EPC/Turnkey Contracts	2	Computer Applications in Quantity Surveying and Contract Management	3
International Contracts Management	2		
BOTs and Concession Agreements	2		
Contractual Risk & Insurance Management	2		
Construction Quality and Environment Management	3		

## ► COURSE CONTENTS

### CONSTRUCTION TECHNOLOGY & DESIGN PRACTICES

Effect of climatic factors on building design. Setting out at site, Important Survey methods, Modern surveying instruments. Concrete Technology, Recent developments in concrete. Basic methods in foundation engineering, excavation, soil stabilization, compaction methods. Underpinning. Prefabricated and Precast technologies. Shoring and Form-work. Load bearing walls, Shear walls. Sound insulation, electrification, fire fighting & safety, water supply systems, Refuse disposal. Construction equipments. Basic design philosophies. Structural systems- functions of structural systems, types of structures. Design considerations & construction details of various types of buildings. Pre-stressed concrete, Post tensioned segmental concrete construction.

#### Reference Books

1. Roy Chudley, Advanced Construction Technology, Longman Group.
2. Shetty M.S., Concrete Technology, S Chand, New Delhi, 2005.
3. Verma Mahesh, Construction Equipment and its planning and applications, Metropolitan Book Co. Ltd.

### PROJECT MANAGEMENT SYSTEMS

**Construction Project Management Concepts:** Construction Projects – Objectives, Characteristics, life cycle phases; balancing project time, cost, quality and procurement. Project Management – functions, processes, organization. Project managers role, responsibility, competency criteria; main causes of project failure. Project development process. Project management organization, Project planning and control approach. Project Work Breakdown: Classification of levels, Work breakdown methodology, Assessing duration, Costing activity, CPM/PERT Networks and Precedence Network Analysis, **Project Work Scheduling. Types of scheduling:** Barchart, Network, Line of Balance schedule, Time limited and Resources limited schedule, Schedule hierarchy, Resources forecasting, Manpower planning, Material planning, Material Procurement schedule, Planning and selection of equipment. Cost planning and Scheduling: Classification of cost, Standard cost, Financial forecasting, Budgeting, Project Control Methodology: Control system framework, Performance accounting procedures, Monitoring performance, Communicating Information, Codifying data. Resources Productivity Controlling: Labour productivity control, Material wastage control. Equipment activity control, Productivity improvement measures. Project Cost Control: Control approach, Direct cost control, Budgetary control, Contribution control, Control responsibility. Project Time Control: Time monitoring methodology, Reviewing time progress. Time cost relationship. What -if analysis.

#### Reference Books

1. Chitkara K. K., Construction Project Management - Planning, Scheduling and Controlling, Tata McGraw Hill, New Delhi, 1997.
2. Joy P. K., Project Management, MacMillan, New Delhi, 1990.
3. Antil J. M. and Woodhead R. W., Critical Path Methods in Construction Practice, John Wiley, Canada, 1990.
4. Neale R. H. & Neale D. E., Construction Planning, Thomas Telford, London, 1989.
5. O'Brien James, CPM in Construction Management, McGraw Hill, New York, 1993.

### FINANCIAL AND MANAGEMENT ACCOUNTS

Basic financial and accounting concepts and methods. The company as an economic unit. Project as a profit centre. Basic concepts: capital and revenue, financial accounting, cost accounting, management, revenue,

financial accounting, cost accounting, management accounting, financial management. Accounting Process: GAPP, double entry system, ten point programme in book-keeping. Journal, ledger, cash book, trial balance, final balance, depreciation accounting, provisions and reserves. Preparation of Profit and Loss Account and Balance Sheet as per the Companies Act, 1956. Budgeting: Types of Budgets, procedure for master budget, Cash flow forecasts. Budgetary Control System. Interpretation of financial statements, Balance Sheet, Profit and Loss account, Balance Sheet as a Valuation statement. Financial Ratios. Project Accounts: Preparation of contract accounts for each project. Methods of recording and reporting site accounts to project office and from project office to head office.

#### Reference Books

1. Bhattacharya, S.K. and Dearden John, "Accounting for Management", Vani Educational Books, Bombay.
2. Chatterjee, B.K., "Finance for Non Finance Managers", Jaico, Bombay, 1991.
3. Cormican, D., "Construction Management: Planning and Finance", Construction Press, London, 1985.
4. Gupta R.L. & Gupta V.K., Principles and Practices of Accountancy, S, Chand & Co., New Delhi, 1994.
5. Singh H., "Construction Management and Accounts", Tata McGraw Hill, New Delhi, 1993.

### CONSTRUCTION QUALITY, ENVIRONMENT MANAGEMENT

**Construction Quality:** Quality Management Concepts: Quality management, concepts, principles, total quality management (TQM); Quality planning: Objectives, policy, plan, organization, identifying standards & specifications construction method statements, check lists, laboratory testing plan, manual. Quality assurance prior to activity commencement: Design scrutiny, soil investigation, material testing, defects prevention measures, zero defect programme, training, competency, verification at supervisory & tradesmen levels, quality circle bench-marking.

**Quality Control During Execution:** Methodology, Implementing quality assurance plan, testing materials, monitoring results, analysis of quality failures, remedying defects, system documentation, site laboratory management, tools and techniques, data distribution analysis, cause and effect analysis, process control charts, acceptance sampling.

**Quality Inspection:** Measuring, examining, testing, to determine conformance, acceptance of work in stages; Quality Audit: Scanning performance against specified rules & procedures, Identifying Improvement opportunities. Cost of quality Analysis. Prevention Costs, appraisal costs, failure costs, total conformance and non conformance costs, ISO 9000:2000 requirements.

**Environmental Management:** Components of environment, environmental degradation due to human activities; Types of pollution: water pollution, Air pollution land pollution and noise pollution. Hazardous waste management: sources, types and risks. Legislations: Environmental protection acts. Costs: Economic aspects of environmental pollution, subsidies, service charges, cess, surcharges, cost benefits, Sustainable development: Environmental assessment & environment management plan.

#### Reference Books

1. Kharb K.S, Project Management and Quality Assurance (Vol.4), Kumar Book Depot, Delhi.
2. Terry Hughes & Trefor Williams, Quality Assurance, University Press, Cambridge, U.K.

## ESTIMATING, TENDERING AND BIDDING

Tender structure for different types of contracts, Tendering procedure, Specifications, Preparation of pre-qualification documents, Preparation of Tender Documents and invitation to bid, Submission of bids, Tender documents for LCB, NCB and ICB, Procurement of tender documents, Pre-bid conference and site investigation, Bank guarantees and Performance Bonds, Sub contracting & labour contracting system, Letter of Acceptance and Contract signing.

### Reference Books

1. McCaffer R. & Baldwin A. N., Estimating & Tendering for Civil Engineering Works, Thomas Telford, London, 1991.
2. Patil B. S., Building & Engineering Contracts, Patil, Pune, 1994.
3. FIDIC-Tendering Procedure, 2nd edn., FIDIC, Switzerland, 1994.
4. Lewis Harold – Bids, Tenders & Proposals, 2nd edn., Kagar Page, London, 2005.
5. Baldwin, A., McCaffer, R., International Bid Preparation (International Construction Management Series - 4), ILO, Geneva, 1995.

## CONTRACT ADMINISTRATION AND PLANNING

Study of Contract Conditions, Contract administration, Project Diary, Creating Project Record, Planning at head office of Contractor and preparing for execution, Co-ordination with clients, consultants, other contractors and agencies, Site opening and Mobilisation, Selecting and appointing sub contractors on suitable terms, Contractors need to interact with consultants and the clients, Submission of reports, Submission of bills and follow up for payment, Contract payment, Contract close outs, Defects Notification.

### Reference Books

1. Clough Richard and Sears G. A., Construction Contracting, 6th edn., John Wiley & Sons, New York, 1994.
2. Prakash V. A., Contract Management in Civil Works Projects - A Text Book, NICMAR, 1997.

## INDIAN CONTRACT LAWS, ARBITRATION, CONCILIATION AND ADR

Contract documents of: CPWD, CIDC, NHAI, World Bank, ADB, etc., Indian Contract Act 1872 & the latest amendments, Limitation Act, Companies Act 1956, Negotiable Instruments Act, Contract Labour (Regulation & Abolition Act), Workmen's compensation Act 1923, Safety laws, Laws relating to Environmental Protection and Control of Pollution, Minimum Wages Act 1948, Public Liability Insurance Act 1991, Indemnity clauses, standard rules for interpretation of contracts, etc., Obligations and rights of employer, Architect, Engineer, Quantity Surveyor and Contractor, Breach of Contract.

The Arbitration and Conciliation Act, 1996, UNCITRAL Arbitration Rules, ICC rules of arbitration, ICC rules of optional conciliation, Composition & Jurisdiction of Arbitral Tribunal, Conduct of arbitral proceedings, Making of arbitral award and termination of proceedings, Conciliation: conciliation proceedings, Settlement of dispute, Role of conciliator in ordering proceedings, Claims Management, Raising & detending Claims, Issues responsible for claims, Alternate Dispute Resolution (ADR), Dispute Review Boards (DRBs), Expert advisory panels, Adjudicator/mediators/claims committees of employer, Arbitration and Alternate Dispute Resolution Methods, Arbitration and Conciliation Act.

### Reference Books

1. Clough Richard & Sears G.A., Construction Contracting, 6th ed., John Wiley & Sons, New York, 1994.
2. Prakash V. A., Contract Management in Civil Works Projects - A Text Book, NICMAR, 1997.
3. Patil B.S., Building and Engineering Contracts 5th ed., S.B. Patil, Pune, 2005.
4. Patil B.S. and Woolhouse S. Patil, The Law of Arbitration and Conciliation- Case Law Supplement 2003, Ms.S.B. Patil, Pune, 2005.
5. Kishore Gajria, Law Relating to Building and Engineering Contracts in India, Butterworth India, New Delhi, 2000.
6. Avtar Singh, Law of Contract, Eastern Book Company Lucknow, 1993.
7. Vasavada, Engineering Contracts and Arbitration, Jyot Publication, Gandhinagar.
8. Indian Arbitration and Conciliation Act, 1996.
9. UK Arbitration Act 1996.
10. Rao, Chandra Sekhara P., Arbitration and Conciliation Act, 1996 A commentary, Universal Law Publishing Co, Delhi.
11. Chawla, S.K, Law of Arbitration and Conciliation, Eastern Law House, New Delhi.
12. Kharb K.S, Arbitration (Vol 3 Part II), Kumar Book Depot, Delhi.

## EPC/TURNKEY CONTRACTS

Basic types of contracts, Item rate, Lump sum and EPC Contracts, Features of an EPC contract, FIDIC contract conditions for EPC projects, Factors affecting EPC Contracts' performance.

### Reference Books

1. FIDIC Conditions of Contract for EPC Turnkey Projects.
2. Keith, Collier, Construction Contracts (2nd Ed.), Prentice Hall, New Jersey, 1975.

## BOTs AND CONCESSION AGREEMENTS

Turnkey and BOT family contracts, Turnkey & BOT forms of contract documents, Financial arrangements, Roles and responsibilities of parties, Testing & Commissioning of Turnkey & BOT, Full Performance of Turnkey & BOT Contracts, Concession Agreements.

### Reference Books

1. Joshi Piyush, Laws Relating to Infrastructure Projects, 2nd edn., Butterworths-Lexis Nexis, India, New Delhi, 2001.

## CONTRACTUAL RISK & INSURANCE MANAGEMENT

Contractual risks & Force Majeure Conditions, Contractors All Risks (C.A.R.) Policy, Erection All Risks (EAR) Policy, Construction Works Policy, Financing risk, political risk, technical risk and termination risk, Foreign exchange guarantees, Sharing of risk / risk allocation, Risk mitigation, Insurance Management.

### Reference Books

1. Fanagan R. & Norman G., Risk Management and Construction, Blackwood, Oxford, 1999.
2. Raftery J., Risk Analysis in Project Management, E & FN Spon, London, 1998.
3. Gupta P.K., Insurance and Risk Management; Himalaya, Mumbai, 2004.
4. Harrington Scott E., Niehaus G.R., Risk Management and insurance, Tata McGraw Hill, New Delhi, 2004.
5. Cooper D., Grey S., Raymond G. & Walker P., Project Risk Management Guidelines – Managing Risk in Large Projects & Complex Procurement, John Wiley, UK, 2005.

## QUANTIFICATION AND DOCUMENTATION

Engineering drawings for buildings and various structures, Principles of standard methods of measurement of work, introduction to new materials & Technology; Quantities taking off: Principles and practices for taking off quantities for the components of: Foundations and plinth, Super structure, Roof structure, Joinery, Flooring/Finishing; Other structures: irrigation structures, roads, culverts and bridges, tunnels; Services: Water supply & sewage, electrification, Earthing, HVAC, instrumentation & controls, lightning protection, gas landscaping;

Preparation of bill of quantities and abstracting process, Client's project cost estimation Project reports, Empirical methods, Contractor's cost estimation, Services: Water supply and sewage, Internal and external electrification, Earthing, HVAC, instrumentation and controls, lightning protection, gas, landscaping; Preparation of Bill Of Quantities and abstracting process, Client's project cost estimation Project reports, Empirical methods; Contractor's cost estimation; Quality and work certification.

### Reference Books

1. Bhasin P. L., Quantity Surveying, S Chand & Co, Delhi.
2. Kharb K.S., Taking off Quantities, Abstracting and billing (Vol. 1), Kumar Book Depot, Delhi.
3. IS 1200, Standard Method of Measurement, BIS, New Delhi.
4. SP 27, Handbook of Method of measurement of Building Works, BIS New Delhi.
5. Sheeloy I.H. Building Quantities, Explained, Macmillan Education Ltd, London.

## ANALYSIS OF PRICES & MACHINERY CHARGES

Analysis of prices of Construction materials, Labour, Machinery, Overheads & incidentals, Other incidentals in the analysis of rates for various trade items of civil engineering construction, Standard schedule of rates, Rates based on market analysis and their comparison, costing quoting lump sum prices and cost planning, Wastages, taxes, direct and indirect charges and profit, Factors affecting analysis of rates, Analysis of rates for non standard new items of works, Types of construction machinery their uses in various construction activities, Output constants, Life, depreciation, cost of owning and operating charges for machinery, Economics of owning or hiring machinery.

### Reference Books

1. Kharb K.S., Analysis of Prices, Vol.2, Kumar Book Depot, Delhi.
2. Enterkin & Reynolds, Estimating for Building and Surveyor, Heineman, London.

## VALUATION OF LAND, BUILDINGS & MACHINERY

The principal types of landed property, the incidents of their tenure, Income derived from them and the outgoing to which they are subjected; Underlying principles governing the relative values of different classes of property; Annual value and capital value, Methods of Valuation, use of valuation tables; Capital and rental valuation of property; Valuation of life interests in property, Valuation for income tax assessment, valuation for mortgage; Laws governing valuation of land & building; Methods of valuation of Construction machinery.

### Reference Books

1. Chatterjee K.P., Principles and Practices of Valuation (J.A.Parks) Eastern Law House, Calcutta.
2. Kharb.K.S., Valuation of Lands and Buildings, Volume 2, Kumar Book Depot, New Delhi.
3. Lawrence D.N., Rees J.T., Modern Methods of Valuation of Land, Houses and Buildings, Estate Gazette, London.
4. Dr. Ashok Nair, Professional Valuation Practice, Tata McGraw Hill, New Delhi.
5. Kirit Budhbbhati, Valuation of Plant and machinery, Vallabh Vidyanagar, Gujrat.

## CONSTRUCTION ECONOMICS AND COST CONTROL

Definition, scope, theories of consumer behaviour, supply and demand, inflation, cost of living, Price indices - Wholesale Price Index, Consumer Price Index, Construction Cost Indices, Opportunity cost, Trade cycles. Construction economics, project appraisals and financial profitability.

Economics of Construction Industry: Industry profile, contribution to national economic, infrastructure and projects at national level, construction market, participants, social responsibility; Construction micro economics: economic evaluation, resources optimization and allocation, feasibility analysis; cost benefit, time and cost relationship, investment appraisal, UNIDO guidelines approach for project appraisal, Input industries, clients, contractors, consultants and workers and their organizations.

### Reference Books

1. Vakil, C.M and Pathak H.N., Introduction to Economics
2. Ahuja H.L., Advanced Economics Theory
3. Kharb K.S. Construction Economics, Kumar Book depot, Delhi
4. Prasanna Chandra, Projects – Planning, Analysis, Financing, Implementation and Review, Tata McGraw Hill, New Delhi.

## INTERNATIONAL CONTRACTS MANAGEMENT

Bidding for international contracts: methods and strategies, Procurement Guidelines of World Bank and ADB, Risk Management of International Projects/Contracts, FIDIC Contract Conditions, Comparison of FIDIC Contract Conditions with India Contract Conditions Rules and procedures of project exports, role of RBI, Exim Bank, ECGC and Scheduled banks. Exploratory studies of potential markets. Risk Management: political, currency, labour, etc. Repatriation of funds, personnel and equipments. International projects-special features and methods of handling them.

### Reference Books

1. Miles Derek, International Project Marketing, ILO, Geneva, 1995.
2. Edison, J.C., Readings on International Contracting and Project Exports, NICMAR, Pune, 2001.
3. Pollio, Geralel, International Project Analysis and Financing, Macmillan Press, London.
4. Price ADF, Financing International Projects, ILO Geneva.
5. RBI, Project Export Manual (PEM) - Memorandum of Instructions on Project Exports and Services.
6. EXIM Bank, Exim policy.
7. Federation International Desingenieurs Conseils (FIDIC), Condition of Contract for Works of Civil Engineering Construction Part I – General Conditions with Forms of Tender and Agreement (Red Book), FIDIC, Switerland, 1987.

## COMPUTER APPLICATIONS IN QUANTITY SURVEYING AND CONTRACT MANAGEMENT

Quantity estimation, Tendering, Billing and Project Management concept; Quick and accurate quantity calculation; Generation of quantities from graphics from AutoCAD® drawing; Graphics generation by taking dimensions from existing AutoCAD® drawing; Tabulation of generated quantities in the LBD format of measurement books; Detailed rate analysis of each & every item; Consumption of resources for any estimate; Tendering Facility for contractor to quote the tender and Facility to client for analyzing the tenders; Project management - scheduling & monitoring of activities; Billing - Generating and maintaining measurement books & running bills for project; Reports generation; Create, manage and understand the status of a contract; Creating Engineers project estimation, bid evaluation; Contract administration & field inspection processes; Change order management; Document management; Submittals, invoices; Hands-on working on Candy Quantity Estimation and Project Management) Contract Management softwares' applications supported by case studies.