

PANDIT DEENDAYAL PETROLEUM UNIVERSITY GANDHINAGAR
SCHOOL OF TECHNOLOGY
COURSE STRUCTURE FOR B TECH IN CIVIL ENGINEERING

Semester VIII			B TECH IN CIVIL ENGINEERING										
Sr No	Course code	Course name	Teaching Scheme					Examination Scheme					Total marks
			L	T	P	C	Hrs/wk	Theory			Practical		
								MS	ES	IA	LW	LE/Viva	
1.	CE 411P	Civil Engineering Project	--	--	8	8	8	--	--	--	50	50	100
2.	CE 412T	Professional Practice and Valuation	3	1	--	7	4	30	60	10	--	--	100
3.	CE 413T	Department Elective-III*	3	--	--	6	3	30	60	10	--	--	100
4.	CE 414T	Department Elective-IV*	3	--	--	6	3	30	60	10	--	--	100
5.	HS 412T	Management Concepts and Practices	3	--	--	6	3	30	60	10	--	--	100
6.	CE 415 T	Project Management	3	--	--	6	3	30	60	10			100
		Total	15	1	8	39	24						600

MS- Mid semester; ES- End semester; IA-Internal assessment; LW-Laboratory work; LE-Laboratory exam

CE 413T Department Elective-III*

1. Application of FEM in Civil Engineering
2. Urban and Rural Planning
3. Retrofitting and Rehabilitation of Structures
4. Advanced concrete design
5. Reinforced earth and geo-synthetics
6. Tall Buildings

CE 414T Department Elective-IV*

1. Environmental impact assessment and management
2. Ground Improvement Techniques
3. Air Quality Monitoring
4. Land Management
5. Bridge Engineering

<i>PANDIT DEENDAYAL PETROLEUM UNIVERSITY GANDHINAGAR</i>										
SCHOOL OF TECHNOLOGY										
CE411P CIVIL ENGINEERING PROJECT										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total marks
					MS	ES	IA	LW	LE/Viva	
--	--	8	8	8	--	--	--	50	50	100

The research topic on the basis of compatibility of department will be assigned to the students/ Group. Also the supervisor will be allotted to the students/Group and periodically review will be made by the panel of examiner as per university guidelines.

PANDIT DEENDAYAL PETROLEUM UNIVERSITY GANDHINAGAR										
SCHOOL OF TECHNOLOGY										
CE 412T PROFESSIONAL PRACTICE AND VALUATION										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total marks
					MS	ES	IA	LW	LE/Viva	
3	1	0	7	4	30	60	10	-	-	100

UNIT I **10**

Construction Contracts: Indian Contracts Act-Elements of Contracts-Types of contracts-Features-Suitability-Design of Contract, Documents-International contract document-Standard contract Document-Law of Torts

UNIT II **11**

Tenders: Prequalification-Bidding-Accepting-Evaluation of Tender from Technical, Contractual and commercial points of view-contract formation and interpretation-Potential contractual problems-World Bank Procedures and Guidelines

UNIT III **10**

Arbitration: Comparison of Actions and Laws-Agreements ,subject matter-Violations-Appointment of Arbitrators-Conditions of Arbitrations-Powers and duties of Arbitrator-Rules of Evidence-Enforcement of Award-costs

UNIT IV

VALUATION- Definitions of various terms, method of valuation, Freehold & Leasehold properties, Sinking fund, depreciation and method of estimating depreciation, Outgoings. **08**

APPROXIMATE TOTAL 39 Hours

References:

1. Gajaria G.T., " Laws Relating to Building and Engineering Contracts in India ", M.M.Tripathi Private Ltd., Bombay, 1982.
2. Gujrat B & C Code, 1986.
3. Jimmie Hinze, " Construction Contracts ", 2nd Edition, McGraw Hill, 2001.
4. Joseph T. Bockrath, " Contracts and the Legal Environment for Egeiners and Architects ", 6th Edition, McGraw Hill, 2000
5. B. N. Dutta, Estimating & Costing, Chand Publisher

PANDIT DEENDAYAL PETROLEUM UNIVERSITY GANDHINAGAR										
SCHOOL OF TECHNOLOGY										
CE 413T Department Elective-III (Application of FEM in Civil Engineering)										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total marks
					MS	ES	IA	LW	LE/Viva	
3	-	-	3	3	30	60	10	-	-	100

Unit I

10

Introduction: Brief History of the Development, Advantages & Disadvantages of Finite Element Method, Finite Element Method- The Displacement Approach

One Dimensional Finite Elements: Stiffness Matrix for the basic Bar & Beam Element Representation of Distributed Loading, The Assembly Process within the PMPE Approach, Element Stresses

Unit II

10

Finite Elements for Two Dimensional Planar Bodies: Triangular Elements for Plane Stress or Strain Conditions, Higher Order Triangular Elements, Rectangular Elements for Plane Stress or Strain Conditions

Unit III

10

Isoparametric element: Quadrilateral element, Shape functions, Numerical Integration, Subparametric and super parametric elements, 3D problems, Tetrahedral elements, Jacobian matrix, Stiffness matrix

Unit IV

09

Dynamic considerations: Dynamic equations, Consistent mass matrix, Eigen Values, Eigen Vectors, natural frequencies, Mode shapes, Modal Analysis

Introduction to Non linearity: Non-linear problems, Geometric Non-linearity, Material Non-linearity, Non-linear dynamic problems, analytical problems

Approximate Total 39 Hours

References:

1. Gokhale NS, SSDeshpande, SV Bedekar and Anand N (2004) Practical Finite Element Analysis Nirali Prakashan Pune
2. Reddy J N (2008) An Introduction to Nonlinear Finite Element Analysis, Oxford University Press New Delhi
3. Tirupathi K Chandrupatla & AD Belegundu (2007) Introduction to Finite Elements in Engineering, Pergamon, New York

PANDIT DEENDAYAL PETROLEUM UNIVERSITY GANDHINAGAR										
SCHOOL OF TECHNOLOGY										
CE 413T Department Elective III(Urban and Rural Planning)										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total marks
					MS	ES	IA	LW	LE/Viva	
3	-	-	3	3	30	60	10	-	-	100

UNIT I **09**

Town Planning ; Evolution of towns, rural and urban pattern of growth, factors promoting growth and development of rural-urban areas, History and trends in town planning, origin and growth, Historical development of town planning in ancient valley civilizations; Objects and necessary of town planning; Surveys and analysis of a town

UNIT II

New Concepts in town planning : Garden city movement, Linear city and Satellite city concepts, Neighborhood Planning ; Planning Principles **10**

UNIT III

Master Plan; Concepts of urban planning in India, case studies new town Gandhinagar, Jaipur, Chandigarh, design and landscaping for urban and rural areas, rural planning, concept of regional plans, physical planning of villages, standards and infrastructure requirements and planning **10**

UNIT IV

Laws and practices on 73rd and 74th constitutional amendment act **10**

Approximate Total 39 Hours

References:

1. GK Hiraskar, Town Planning in India, Dhanpat Rai and Sons New Delhi
2. N K Gandhi, Town Planning in India

PANDIT DEENDAYAL PETROLEUM UNIVERSITY GANDHINAGAR										
SCHOOL OF TECHNOLOGY										
CE 413T Department Elective-III (Advanced Concrete Design)*										
Teaching Scheme					Examination Scheme					Total marks
L	T	P	C	Hrs/Week	Theory			Practical		
					MS	ES	IA	LW	LE/Viva	
3	-	-	6	3	30	60	10	-	-	100

UNIT I **06**

Review of Limit State Design of Beams, Slabs & Columns according to IS 456-2000. Calculation of Deflection & Crack Width according to IS 456-2000.

UNIT II **11**

DESIGN OF SPECIAL RC ELEMENTS: Design of Slender Columns, Grid Floors, Curved Beams, Deep Beams, Plain & Reinforced Concrete Walls, Corbels & Edge (Spandrel) Beams.

UNIT III **11**

SLABS: Design of Circular & Flat Slabs. Yield Line Analysis of Slabs.

UNIT IV **11**

FOLDED PLATES: General Features, Structural Behavior, Analysis & Design of Folded Plates.

APPROXIMATE TOTAL 39 Hours

References:

1. N. Krishna Raju, Advanced Reinforced Concrete Design, CBS Publishers & Distributors
2. P.C. Varghese, Advanced Reinforced Concrete Design, Prentice Hall of India

PANDIT DEENDAYAL PETROLEUM UNIVERSITY GANDHINAGAR										
SCHOOL OF TECHNOLOGY										
CE 413T Department Elective-III(Reinforced Earth and Geosynthetics)										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total marks
					MS	ES	IA	LW	LE/Viva	
3	--	--	6	3	30	60	10	-	-	100

UNIT I **10**

Reinforced Earth : History, field of applications, natural fibers , overview of Geotextiles, Geomembranes, Geogrids, Geonets, Geoweb, Geomats and Geocomposites and economic aspects of their applications.

Production of Geotextiles, composites, physico-mechanical, hydraulic and chemical properties. Functions of Geosynthetics, fluid transmission, filtration, separation, protection.

UNIT II **10**

Soil Reinforcement: Basic principle of soil reinforcement, shear strength of reinforced soil, theoretical strength models, factors affecting, requirements on synthetic reinforcement, installation techniques.

UNIT III **10**

Calculation methods :Basic concepts, embankment on soft soils, internal stability, overall stability, foundation stability and bearing capacity failures -Construction of the steep slope, retaining walls-external stability, internal stability .

UNIT IV **09**

Use of Geosynthetics in Roads and Railways, drainage system - Control of groundwater level, dewatering and reclamation of land, use of Geomembranes - For lining application, management and maintenance

APPROXIMATE TOTAL 39 Hours

References:

1. Geotextiles and Geomembranes in Civil engg- Gerard P.T.M. Van santvrot, A.A.Balkema,Oxford and IBH publishing company, New Delhi.
2. Reinforced Soil and Geotextiles -J.N. Mandal, proceedings FIGC- 1988, Oxford and IBH publishing company private Ltd., New Delhi.
3. Geosynthetics : Application ,Design and Construction- R.J. Tarmat, proceedings First European Geosynthetics Conference, Netherland .A.A.Balkema, publisher-Brookfield, U.S.A.
4. Geosynthetics World . -J.N. Mandal, Willey Eastern Limited , New Delhi

PANDIT DEENDAYAL PETROLEUM UNIVERSITY GANDHINAGAR										
SCHOOL OF TECHNOLOGY										
CE 413T Department Elective-III (Tall Buildings)*										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total marks
					MS	ES	IA	LW	LE/Viva	
3	-	-	6	3	30	60	10	-	-	100

UNIT I **10**

INTRODUCTION: The Tall Building in the Urban Context - The Tall Building and its Support Structure - Development of High Rise Building Structures - General Planning Considerations. Dead Loads - Live Loads-Construction Loads -Snow, Rain, and Ice Loads - Wind Loads-Seismic Loading – Water and Earth Pressure Loads - Loads - Loads Due to Restrained Volume Changes of Material - Impact and Dynamic Loads - Blast Loads -Combination of Loads.

UNIT II **09**

THE VERTICAL STRUCTURE PLANE: Dispersion of Vertical Forces- Dispersion of Lateral Forces - Optimum Ground Level Space - Shear Wall Arrangement - Behaviour of Shear Walls under Lateral Loading. The Floor Structure or Horizontal Building Plane Floor Framing Systems-Horizontal Bracing- Composite Floor Systems The High - Rise Building as related to assemblage Kits Skeleton Frame Systems - Load Bearing Wall Panel Systems - Panel – Frame Systems - Multistory Box Systems.

UNIT III **09**

COMMON HIGH-RISE BUILDING STRUCTURES AND THEIR BEHAVIOUR UNDER LOAD: The Bearing Wall Structure- The Shear Core Structure - Rigid Frame Systems- The Wall - Beam Structure: Interspatial and Staggered Truss Systems - Frame - Shear Wall Building Systems - Flat Slab Building Structures - Shear Truss - Frame Interaction System with Rigid - Belt Trusses - Tubular Systems-Composite Buildings - Comparison of High - Rise Structural Systems Other Design Approaches Controlling Building Drift Efficient Building Forms - The Counteracting Force or Dynamic Response.

UNIT IV **11**

APPROXIMATE STRUCTURAL ANALYSIS AND DESIGN OF BUILDINGS: Approximate Analysis of Bearing Wall Buildings The Cross Wall Structure - The Long Wall Structure The Rigid Frame Structure Approximate Analysis for Vertical Loading - Approximate Analysis for Lateral Loading - Approximate Design of Rigid Frame Buildings-Lateral Deformation of Rigid Frame Buildings The Rigid Frame - Shear Wall Structure - The Vierendeel Structure - The Hollow Tube Structure.

APPROXIMATE TOTAL 39 Hours

References:

1. WOLFGANG SCHUELLER " High - rise building Structures", John Wiley and Sons, New York 1976.
2. Bryan Stafford Smith and Alex Coull, " Tall Building Structures ", Analysis and Design, John Wiley and Sons, Inc., 1991.
3. COULL, A. and SMITH, STAFFORD, B. " Tall Buildings ", Pergamon Press, London, 1997.
4. LinT.Y. and Burry D.Stotes, " Structural Concepts and Systems for Architects and Engineers ", John Wiley, 1994.
5. Lynn S.Beedle, Advances in Tall Buildings, CBS Publishers and Distributors, Delhi, 1996.

PANDIT DEENDAYAL PETROLEUM UNIVERSITY GANDHINAGAR										
SCHOOL OF TECHNOLOGY										
CE 414T Department Elective-IV (Environmental Impact Assessment and Management)*										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total marks
					MS	ES	IA	LW	LE/Viva	
3	-	-	6	3	30	60	10	-	-	100

UNIT I **06**

Environmental Problems and Issues: Explosion of Environmental issues and scientific, technological and regulatory responses. Effects on ecology, environment, society, health and economy. Review of national and international developments on environmental issues; Review of Remedial Actions: Rural and urban approaches, energy approach, transportation approach, industrial approach, agricultural approach, Technological solutions and Role of technology; religious-philosophical approaches and concept of deep ecology, market based instruments including taxation for pollution control; Role of environmental ethics.

UNIT II **11**

Environmental Management, Planning and Economics: Multidisciplinary environmental strategies, planning and decision making, human dimensions. Siting of industries and concept of Zoning Atlas, Economic valuation of environmental assets and preliminary concept of Natural Resource Accounting.

UNIT III **11**

Sustainable development: Concept of limits to growth in terms of population, Food, Resources, Capital, Energy, Land Services, Use of Systems approach including feedback loops. Carrying capacity of systems, prerequisites for sustainable development, concepts of sustainable development in the various sectors of economy such as Industry, Agriculture and Infrastructure

UNIT IV **11**

Impact Assessment: Collection of baseline data, concept and methodologies for initial environmental examination (IEE), Environmental Impact Assessment (EIA), Environmental Impact Statement (EIS), Environmental Audit (EA), Risk Assessment (RA)

APPROXIMATE TOTAL 39 Hours

References:

1. Ecology and Environment by P.D.Sharma
2. Environment Management in India by R.K.Sapru.
3. Environmental Quality Management by Bindu N.Lohani.
4. Studies in Environment and Development by R.B.Singh.
5. Environmental Impact Assesment by Larry W.Canter.
6. Environmental Planning, Policies and Programmes in India by K.D.Saxena.
7. Concepts in Environmental Impact Analysis by S.K.Shukla & P.R.Shrivastava.

PANDIT DEENDAYAL PETROLEUM UNIVERSITY GANDHINAGAR										
SCHOOL OF TECHNOLOGY										
CE 414T Department Elective-IV (Ground Improvement Techniques)										
Teaching Scheme					Examination Scheme					Total marks
L	T	P	C	Hrs/Week	Theory			Practical		
					MS	ES	IA	LW	LE/Viva	
3	--	--	3	3	30	60	10	-	-	100

UNIT I **09**

Role of ground improvement in foundation engineering - methods of ground improvement – Geotechnical problems in alluvial, laterite and black cotton soils -Selection of suitable ground Improvement techniques based on soil condition.

UNIT II **10**

DRAINAGE AND DEWATERING

Drainage techniques - Well points - Vacuum and electroosmotic methods - Seepage analysis for two dimensional flow-fully and partially penetrating slots in homogenous deposits (Simple cases only).

UNIT III **10**

In situ densification of cohesionless and consolidation of cohesive soils -Dynamic compaction and consolidation - Vibrofloatation - Sand pile compaction - Preloading with sand drains and fabric drains – Stone columns – Lime piles - Installation techniques only - relative merits of various methods and their limitations

UNIT IV **10**

EARTH REINFORCEMENT

Concept of reinforcement - Types of reinforcement material - Applications of reinforced earth – use of Geotextiles for filtration, drainage and separation in road and other works.

Types of grouts - Grouting equipment and machinery - Injection methods - Grout monitoring – Stabilisation with cement, lime and chemicals - Stabilisation of expansive soils.

APPROXIMATE TOTAL 39 Hours

References:

1. Koerner R.M., "Construction and Geotechnical Methods in Foundation Engineering", McGraw-Hill, 1994.
2. Purushothama Raj, P. "Ground Improvement Techniques", Tata McGraw-Hill Publishing Company, New Delhi, 1995
3. Moseley M.P., Ground Improvement Blockie Academic and Professional, Chapman and Hall, Glasgow, 1993.
4. Jones J.E.P., Earth Reinforcement and Soil Structure, Butterworths, 1995.
5. Koerner, R.M., "Design with Geosynthetics", (3rd Edition) Prentice Hall, New Jersey, 2002
6. Jewell, R.A., "Soil Reinforcement with Geotextiles", CIRIA special publication, London, 1996
7. Das, B.M., "Principles of Foundation Engineering", Thomson Books / Cole, 2003.

PANDIT DEENDAYAL PETROLEUM UNIVERSITY GANDHINAGAR										
SCHOOL OF TECHNOLOGY										
CE 413T Department Elective-III (Air Quality Monitoring)*										
Teaching Scheme					Examination Scheme					Total marks
L	T	P	C	Hrs/Week	Theory			Practical		
					MS	ES	IA	LW	LE/Viva	
3	-	-	6	3	30	60	10	-	-	100

UNIT I **06**

Sources of Air pollution, effects of Air pollution on plants, animals, human health, classification of pollutants, properties of gaseous and particulate matter, Sampling and Analysis: Ambient air sampling, stack sampling, Air quality standard.

UNIT II **11**

Atmospheric transport of pollutant: winds, wind profiles, inversions, plume behaviour, convective current, turbulence, Dispersion and diffusion of Air pollution, Prediction of effective stack height - physics of plume rise, Holland's equation, Briggs equation, etc. modifications of Gaussian dispersion models; indoor air quality models.

UNIT III **11**

Air pollution control devices, Air sampling and analysis, theory and equipment ambient and Stack sampling, monitoring of quality emission standards and Indoor air pollution, Control of Particulate matter: Dusts, fumes, smoke, samples, settling chambers, cyclones, spray towers, electrostatic precipitators, etc. for control.

UNIT IV **11**

Noise Pollution: Basics of acoustics and specification of sound; sound power, sound intensity and sound pressure levels; plane, point and line sources, multiple sources; outdoor and indoor noise propagation; psycho-acoustics and noise criteria, effects of noise on health, annoyance rating schemes; special noise environments: Infra-sound, ultrasound, impulsive sound and sonic boom; noise standards and limit values; noise instrumentation and monitoring procedure, Noise indice.

APPROXIMATE TOTAL 39 Hours

References:

1. Environmental Engineering Arcadio P. Sincero and Gregoria A. Sincero, Prentice Hall of India, 1999.
2. Environmental Pollution Control Engineering- CS Rao, Wiley Eastern Ltd., New Delhi, 1996.
3. Environmental Noise Pollution PE Cunniff, McGraw Hill, New York, 1987.
4. Handbook of Noise Measurement - APG Peterson & EE Gross PH, Englewood cliffs New Jersey, latest edition.
5. Air Pollution Control Equipment H. Brauer and Y. B. G. Verma, Berlin Heidelberg, New York, latest edition

PANDIT DEENDAYAL PETROLEUM UNIVERSITY GANDHINAGAR										
SCHOOL OF TECHNOLOGY										
CE 413T Department Elective-III (Bridge Engineering)*										
Teaching Scheme					Examination Scheme					Total marks
L	T	P	C	Hrs/Week	Theory			Practical		
					MS	ES	IA	LW	LE/Viva	
3	-	-	6	3	30	60	10	-	-	100

UNIT I **10**

Definition, Basic forms, Components of Bridge, Classification, Importance of Bridges, Need for Investigation, Selection of bridge site, Economical Span, Investigation report, Choice of Bridge type, Importance of proper investigation.

UNIT II **09**

Introduction, Indian Roads Congress Bridge Code, Codal Provisions, Width of carriageway, Clearances, Different loads to be considered for analysis and design of bridges, IRC standard live loads.

UNIT III **11**

Various types of R. C. C. bridges (brief description of each type), design of R.C.C. culvert and T-beam bridges, Hydraulic and Structural design of piers, abutments, wing walls and approaches.

UNIT IV **09**

Brief description of bearings and joints, articulation and other details, Various types, necessary investigations and design criteria of well foundation.

APPROXIMATE TOTAL 39 Hours

References:

1. D. J. Victor, Essentials of Bridge Engineering, Oxford & IBH Pub. New Delhi.
2. N. Krishna Raju Design of Bridges, Oxford & IBH, New Delhi
3. T.R. Jagadish & M.A. Jairam, Design of Bridge Structures, Prentice Hall of India, New Delhi
4. S. Ponnusamy, Bridge Engineering, Tata McGraw Hill, New Delhi, 2001
5. Vazirani and Ratwani, design of Concrete Bridge, Khanna publisher, 1986
6. Arthur Richard Hezlet, Wai fai chen, Lian Duan ,Bridge Engineering; substructure design, CRC press,2003
7. IRC6-2000 Standard specifications and code of practice for road bridges

PANDIT DEENDAYAL PETROLEUM UNIVERSITY GANDHINAGAR										
SCHOOL OF TECHNOLOGY										
HS 412T Management Concepts & Practices										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total marks
					MS	ES	IA	LW	LE/Viva	
3	-	-	6	3	30	60	10	-	-	100

UNIT I **10**

Historical Development and Introduction to Management: Historical development of management; Role and responsibilities of managers; How managers are different from operative employees; Type of managers; Management & administration; Organizations & need for management; Efficiency & effectiveness; Demings fourteen point theory.

Planning: Overview and need for planning; Importance of planning at organizations, Planning & performance; Management by objectives.

UNIT II **09**

Decision making: Decision making process; Decision making conditions; Time and human relationships in decision making.

Organizing: Principles of organization; Organization charts; Classification of organizations. Case studies.

UNIT III **10**

Directing: Managing creativity & innovation; Individual creativity; Organization creativity & innovation.

Leadership: Managers versus leaders; Defining leadership; Contingency approaches to leadership; Developing leadership skills; Case studies.

Globalization: Need for globalization; Internationalization and collaboration; Developing global managers

UNIT IV **10**

Motivation: Need for motivation; Challenge of motivation; Current issues in motivation; Effects and impacts of motivation. Case studies.

Communication: Importance of effective communication; Modes of communication; Interpersonal and organizational communication; Vertical and lateral communication; Developing communication skills; Impact of soft skills. Case studies.

APPROXIMATE TOTAL 39 Hours

References:

1. Stoner James, A. F. (2007) "Principles of Management", Pearson Education, India.
2. Ttipathi, P.C. and Reddy, P.N. (2008) "Principles of Management", Tata Mcgraw Hill, New Delhi

PANDIT DEENDAYAL PETROLEUM UNIVERSITY GANDHINAGAR										
SCHOOL OF TECHNOLOGY										
CE 415T Project Management										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total marks
					MS	ES	IA	LW	LE/Viva	
2	1	--	3	3	30	60	10	-	-	100

Unit I

10

Introduction: Parameters affecting a project; Project planning & implementation cycle; Definition, concept & scope of project management; Role of project manager; Enhancing the probability of success of a project; Phases of a project – Identification, feasibility, execution, completion & commissioning; Project life cycle.

Project Organization: Factors responsible for organizational revolution; Formal & informal organization structures; Requirements of a project organization; Matrix organization structure; Selecting a project organization structure; Criteria to help determine a suitable organizational form in a given project environment.

Unit II

10

Work Break Down Structure (WBS):

Role of project manager in developing WBS; Rules facilitating the preparation of WBS; Typical hierarchy in the WBS of a project; Desirable characteristics of work packages; Project oriented WBS; Functionally oriented WBS.

Project Scheduling & Planning: Scheduling principles; Bar charts (Gantt charts); Milestones charts; S-curve, Critical path method: Arrow diagram; Network logic diagram; Time estimates; Slack; Total, free & independent floats; Case studies. PERT (Project evaluation & review techniques): Three time estimates (optimistic, most likely, pessimistic); Beta distribution; Expected time; Variance in project duration.

Unit III

10

Project Control: Concept; Control cycle; Basic controlling parameters; Line of Balance; Role of project management on control cycle; Basic planning & developing a classification system for controlling. Time control: Measures to be taken by project manager for time control. Cost control: Strategic planning & cost programming; Potentiality of cost reduction during different phases of a project; Cost planning; Control curves; Cash flow; Time cost trade-off planning for minimum costs; Cost slope concept; Crash point; Normal point; Total project cost; Controlling cost overrun & time overrun. Quality control: Need of QA/QC programs; Objectives of QA/QC; Quality assurance techniques.

Unit IV

09

Project Monitoring:

Measurement of performance; Reporting of performance; Corrective measures for unfavourable variations; Major functions of monitoring; Influence of decision making authority in project monitoring

APPROXIMATE TOTAL 39 Hours

References:

1. Iyer P Parameshwar (2001) Engineering Project Management with case studies. Wheeler Publishing New Delhi.
2. Nicholas John M (2007) Project Management for Business and Technology: Principles and Practice, 2nd Edition, Pearson Prentice Hall New Delhi
3. Austen AD & Neele RH (1985) Managing Construction Projects: A guide to process and procedures, Dialogue New Delhi
4. Joy PK (1990) Handbook of Construction Management, Macmillan Delhi

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