



# GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Master of Engineering

Level: PG

Branch: Civil Engineering

Subject Code: ME02065011

Subject Name: Construction Projects Management and Safety

w. e. f. Academic Year:	2024-2025
Semester:	2
Category of the Course:	PCC

<b>Prerequisite:</b>	Construction basics, scheduling and management aspects
<b>Rationale:</b>	For civil Engineers construction activities are the core of the technical expertise. Project Management techniques need to be considered for the effective management of construction projects

### Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Carryout life cycle analysis of Construction Project	A,N
02	Carryout Cost control and Accounting of Construction Project	A, E
03	Able to keep site management quality control	R, U ,A
04	Keep safety measures at construction site	U, C

\*Revised Bloom's Taxonomy (RBT)

### Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
L	T	PR	C	Theory		Tutorial / Practical		
				ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
3	0	2	4	70	30	20	30	150



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## Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	<b>Project Management:</b> 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, multistoried structures, ports, tunnels, Qualities, role and responsibilities of project manager, Role of Project Management Consultants, Enterprise Resource Planning (ERP)	7	20
2.	<b>Cost Control Monitoring and Accounting:</b> The Cost Control Problem - The Project Budget - Forecasting for Activity Cost Control - Financial Accounting Systems and Cost Accounts - Control of Project Cash Flows - Schedule Control - Schedule and Budget Updates - Relating Cost and Schedule Information.	6	15
3.	<b>Quality Control during construction:</b> Quality Concerns in Construction - Organizing for Quality - Work and Material specifications - Total Quality Control - Quality Control by Statistical Methods - Statistical Quality Control with Sampling by Attributes- Statistical Quality Control with Sampling by Variables	6	15
4.	<b>Organization and Use Of Project Information:</b> Types of Project Information - Accuracy and Use of Information - Computerized Organization and Use of Information -Organizing Information in Databases - Relational Model of Databases - Other Conceptual Models of Databases - Centralized Database Management Systems - Databases and Applications Programs - Information Transfer and Flow. Software related to management QE pro basics	7	15



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5.	<p><b>Safety Engineering:</b></p> <p>a) Causes of Accidents on various sites, safety measures and safety policies to be adopted, determination of safety parameters, personal protective equipment. Workmen Compensation Act, Minimum wages act</p> <p>b) Type of Industrial Hazards-Nature, Causes and Control Measures, Hazard Identifications And Control Techniques - HAZOP, FMEA, FMECA. -Cost of Construction Injuries-Legal Implications</p> <p>c) Safety Organization –Safety Policy, Safety Record Keeping, Safety Culture, Safety and First Line Supervisors, Middle Managers, Top Management Practices, Sub contractual obligation, Project Coordination and Safety Procedure</p> <p>d) Safety in various construction operations- Excavation- under-water worksunder- pinning &amp; shoring Ladders &amp; Scaffolds-Tunneling- BlastingDemolition- Pneumatic caissons- confined Space Temporary Structures. Indian Standards on construction safety- National Building Code Provisions on construction safety.</p> <p>e) Safety in material handling and equipment’s-Safety in storage &amp; stacking of construction materials.</p> <p>f) Safety in these of construction equipment’s- Vehicles, Cranes, Tower Cranes, Lifting gears, Hoists &amp; Lifts, Wire Ropes, Pulley blocks, Mixers, Conveyors, Pneumatic and hydraulic tools in construction. Temporary power supply.</p>	19	35
<b>Total</b>		<b>45</b>	<b>100</b>

### Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	U Level	A Level	N Level	E Level	C Level
10	10	20	20	20	20

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom’s Taxonomy)



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## References/Suggested Learning Resources:

### (a) Books:

1. Akintoye, A., Beck, M., & Hardcastle, C. (Eds.). (2003). Public-Private Partnerships- Managing risk and opportunities. Oxford: Blackwell Science Limited.
2. Alvin Goodman, Makarand Hastak, Infrastructure Planning Handbook: Planning, Engineering, and Economics 1st Edition, MH/ASCE press.
3. Raghuram G (2001) Infrastructure Development And Financing Towards A Public Private Partnership, Macmillan Publishers, New Delhi
4. Alagiri, Infrastructure Development, ICFAI University press, Hyderabad
5. Marcel Hertogh, Stuart Baker, Pau Lian Staal-Ong, Eddy Westerveld Managing Large Infrastructure Projects, ISBN/EAN 978-90-810025-2-3, NUR-code 801.
6. Finnerty, J.D. (1996). Project financing- Asset-based financial engineering. New York: John Wiley & Sons, Inc.
7. Walker, C., & Smith, A.J. (1995). Privatized infrastructure: the Build Operate Transfer approach. London: Thomas Telford.
8. Pretorius, F., Lejot, P., McInnis, A., Arner, D., & Hsu, B.F.-C. (2008). Project finance for construction and infrastructure: Principles and case studies. Oxford: Blackwell Publishing.
9. Construction safety By R. K. Mishra Aitbus Publisher India

### (b) Open source software and website:

<https://www.openproject.org/>

<https://nptel.ac.in/>

## Suggested Course Practical List: If any

1. Case studies of various infrastructures.
2. Life cycle analysis
3. PPP Mode implementation
4. Strategies of Implementation of Infrastructure
5. Risk Mitigation

## List of Laboratory/Learning Resources Required:

PRIMAVERA Software

## Suggested Project List:

Life Cycle Analysis Project

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