

GUJARAT TECHNOLOGICAL UNIVERSITY

CIVIL ENGINEERING

B. E. SEMESTER: VII

Subject Name: **Construction Management and Equipments**

Subject Code: **170601**

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	University Exam (E)		Mid Sem Exam (Theory) (M)	Practical (Internal)
				Theory	Practical		
4	2	0	6	70	30	30	20

Module: I

Sr. No	Course Content	Total Hrs.
1.	<p>Construction Management:</p> <p>1. Introduction, Objectives and Scope of Construction Management. Work break down structure for various projects.</p> <p>2. Management Techniques:</p> <ul style="list-style-type: none"> • Conventional Methods: Gantt Bar chart, Mile stone chart, Line of balance (L O B) technique. • Network Analysis: i. Critical Path Method (CPM) : Introduction , Terminology, Types of networks , Network Rules, CPM Bar chart, Type of floats and their significance, Time grid diagram, Updating of networks and Time cost Optimization ii. Resource allocation and Resource Scheduling: Various schedules i.e. Material, labour, equipment etc. Resource allocation models with and without constraints. iii. Programme Evaluation and Review Technique (PERT): Activities and project time estimates for probabilistic model, Evaluation of project completion time probabilities. Comparison between Deterministic and Probabilistic Approaches. iv. Cash Flow analysis and expenditure schedules. Cash flow for Owner and Contractor. <p>3. Job Lay out, Supervision and Safety in Large Construction Projects.</p>	24

Module - II

Sr. No	Course Content	Total Hrs.
2.	Construction Equipment: 1. Introduction to Construction Equipment: Their contribution and importance in construction Industry. Classification of Equipment, Financial aspects related to construction equipments: Discounted present worth analysis, Depreciation, Cost of owning and operating construction equipment, Basics of equipment replacement policy. 2. Engineering fundamentals: Related to performance of IC engines, rimpull, drawbar pull, Coefficient of traction, Gradability, Soil fundamentals. 3. Equipments: <ul style="list-style-type: none">• Tractors and related equipment: Bulldozers, Rippers, Scrapers.• Excavating Equipment: Power Shovels, Draglines, Hoes, Clam Shells and trenching machines, their basic Parts, Operation, Output estimation, Factors influencing output and methods to enhance it.• Belt conveyor system: Terminology, Classification, Components, Power requirement estimation and design.• Hauling equipment: Trucks and wagons, operation and guideline for selection and deployment.• Overview of other construction equipment.	24

Note:

Each module carries equal weightage.

Term work will be based on above mentioned topics

Text Books:

1. R.L. Peurifoy and W.B. Ledbetter, "Construction Planning, Equipments and Methods" McGraw-Hill Publishers. New Delhi.
2. J. D. Weist and F.K. Levy, "A Management Guide to PERT/ CPM", Prentice Hall of India Pvt. Ltd.
3. B.C. Punmia and K.K Khandelwal, "Project Planning and control with PERT & CPM" Laxmi Publication Pvt. Ltd. New Delhi.
4. P.S. Gahlot and B.M. Dhir, "Construction Planning and Management", New Age International Pvt. Ltd., New Delhi.