



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal - 500 043, Hyderabad, Telangana

COURSE CONTENT

CONSTRUCTION ENGINEERING AND MANAGEMENT								
VII Semester: CE								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
ACEC36	Elective	L	T	P	C	CIA	SEE	Total
		3	0	0	3	30	70	100
Contact Classes: 45		Tutorial Classes: Nil		Practical Classes: Nil		Total Classes: 45		
Prerequisite: Estimation, Costing and Valuation								
I. COURSE OVERVIEW:								
<p>This course deals with the designing, planning, construction, and management of infrastructures such as roads, bridges, airports, railroads, buildings, dams, and other projects. This course helps to know the implementation of safety aspects and to know different legal aspect and its provisions during the execution of civil engineering project. This course addresses the modern construction materials, techniques and effective construction management practices. This course also focuses on the resources management efficiently for successful completion of construction projects.</p>								
II. COURSE OBJECTIVES:								
The students will try to learn:								
<ol style="list-style-type: none"> I. The construction project schedules, documents for planning and management of construction processes. II. The various types of planning tools like bar chart, CPM networks and PERT analysis III. The different methods of project delivery, roles and responsibilities of all constituencies involved in the design and construction process. IV. The various types of construction contracts, their legal aspects and provisions. 								
III. COURSE SYLLABUS:								
MODULE –I: ORGANISATION AND HUMAN RELATIONS (9)								
<p>Management process, Roles, management theories, Social responsibilities, planning and strategic management strategy implementation. Decision making: tools and techniques, Organizational structure. Human resource management, motivation performance leadership.</p>								
MODULE -II: CONSTRUCTION PROJECT PLANNING (9)								
<p>Stages of project planning: pre-tender planning, preconstruction planning, detailed construction planning, role of client and contractor, Networks: basic terminology, types of precedence relationships, preparation of CPM networks: activity on link and activity on node representation, computation of float values, critical and semicritical paths, calendaring networks. PERT- Assumptions underlying PERT analysis.</p>								
MODULE -III: PLANNING AND ORGANIZING CONSTRUCTION SITE AND RESOURCES (9)								
<p>Site: site layout including enabling structures, developing site organization, Documentation at site; Manpower: planning, organizing, staffing, motivation; Materials: concepts of planning, procurement and inventory control; Equipment: basic concepts of planning and organizing;</p>								

Funds: cash flow, sources of funds; Histograms and S-Curves. Earned Value; Resource Scheduling- Bar chart, line of balance technique, resource constraints and conflicts; resource aggregation, allocation, smoothing and leveling.

MODULE -IV: PROJECT MONITORING & CONTROL (9)

Supervision, record keeping, periodic progress reports, periodical progress meetings. Updating of plans: purpose, frequency and methods of updating, Basics of Modern Project management systems such as Lean Construction; Use of Building Information Modelling (BIM) in project management; Quality control: concept of quality, quality of constructed structure, use of manuals and checklists for quality control, role of inspection, basics of statistical quality control. Safety and Health.

MODULE -V: CONSTRUCTION COSTS & CONTRACTS (9)

Make-up of construction costs; Classification of costs, time-cost trade-off in construction projects, time and cost overruns and corrective measures.

Contract, Types of contract, contract document, specification, important conditions of contract, tender and tender document.

IV. TEXT BOOKS:

1. Ghalot, P.S., Dhir, D. M., Construction Planning and Management, Wiley Eastern Limited, 1992.
2. Chitkara, K. K., Construction Project Management. Tata McGraw Hill Publishing Co, Ltd., New Delhi, 1998.
3. Punmia, B. C., Project Planning and Control with PERT and CPM, Laxmi Publications, New Delhi, 1987.

V. REFERENCE BOOKS:

1. Sengupta, Guha, "Construction Management And Planning". Tata McGraw-Hill Inc, 1994.
2. George J. Ritz, "Total Construction Project Management", McGraw-Hill Inc, 1994.

VI. WEB REFERENCES:

<https://nptel.ac.in/courses/105106149/>

VII. E-TEXT BOOKS:

1. <https://www.scribd.com/doc/231678531/k-k-Chitkara-Construction-Project-Management>
2. http://civilcafe.weebly.com/uploads/2/8/9/8/28985467/total_construction_project_management_by_george_j._ritz_-_civilenggforall.pdf
3. http://www.opentextbooks.org.hk/system/files/export/15/15694/pdf/Project_Management.pdf