NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF CIVIL ENGINEERING

COURSE PLAN – PART I			
Name of the programme and specialization	**M.Tech - Construction Technology & Management**		
Course Title	**CONSTRUCTION PLANNING AND CONTROL**		
Course Code	**CE751**	**No. of Credits**	**3**
Course Code of Pre-requisite subject(s)	**NIL**	**Semester**	**I**
Session	**July 2021**	**Section (if, applicable)**	**NA**
Name of Faculty	**K.SHENBAGAVALLI**	**Department**	**CIVIL ENGINEERING**
Official Email	**Kshenba@nitt.edu**	**Telephone No.**	**7339072500**
Name of Course Coordinator(s) (if, applicable)	**-**		
Official E-mail	**-**	**Telephone No.**	**-**
Course Type	**Core course**		

Syllabus (approved in BoS)

Introduction to Project Management

Networking Techniques - Work Breakdown Structure, Gantt Charts, Network representation - AOA and AON network diagrams

Network analysis – Critical Path Method (CPM), Program Evaluation and Review Technique (PERT); Network crashing - Least cost scheduling, Time-cost trade off, Resource scheduling and leveling **Project control** – Earned Value Analysis, Delay analysis, Linear scheduling method

Advanced topics – Case studies, Introduction to computer applications.

COURSE OBJECTIVES

To impart knowledge on Construction Management, scientific tools needed for planning and control of projects effectively and efficiently, concepts involved in the formulation of network techniques, time estimates and its applications to a project, network crashing techniques, EVA & Delay analysis and introduction to related computer applications and new advancements in this area.

Course Outcomes (CO)

On completion of the course, the students will be able to:

1. Explain the concept of project, management, objectives and functions of project and construction management
2. Analyze, interpret data for complex planning problems and manage project duration through non networking (Gantt charts) and networking techniques (CPM and PERT)
3. Update projects and determine revised schedule of activities and critical path if any
4. Conceptualize, solve and arrive at a feasible and optimal solution by crashing and manage

resources using resource smoothing and leveling techniques.
5. Analyze and manage projects efficiently considering economical and financial factors
6. Identify the need for application of emerging trends in project management using computer applications.

COURSE PLAN – PART II

COURSE OVERVIEW

This course introduces the students to the available planning tools pertaining to construction industry, their usage, proper choice, analysis, interpretation of data, visualization, solving and applying the outcomes considering the economical and financial terms associated with the problems and to expose them to the available modern techniques and IT tools.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Schedule (3 Hours/Week)	Topic	Mode of Delivery
1	Week1	Introduction to Construction management and Work Breakdown Structure(WBS)	Lecture by PPT
2	Week 2	Work Breakdown Structure, Introduction to Gantt Charts	
3	Week 3	Introduction to Network Representation - Fulkerson's rule, Activity on Arrow (A-O-A), Activity on Arrow (A-O-N) & Tutorials	
4	Week 4	Introduction to Network Analysis, Critical Path Method (CPM)	
5	Week 5	CPM - Project duration calculation, Forward pass, Backward pass, Float, Critical Activities, Critical Path, Tutorials	
6	Week 6	Introduction to Precedence Network, Additional Activity Relationship types, Floats	
7	Week 7	Precedence Network Tutorials, Assessment – 1	
8	Week 8	Introduction to Programme Evaluation Review Technique (PERT), Statics Review, Network Calculation, Slack, Tutorials	
9	Week 9	Break for Online class	
10	Week 10	Time- Cost Trade off, Network crashing, Types of Cost, Schedule Compression Techniques - Crashing, Fast Tracking & Re-estimation- Crash time and crash cost.	

11	Week 11	Network Crashing Tutorials, Resource Allocation, Resource smoothing	Lecture by PPT
12	Week 12	Assessment – 2, Resource Leveling techniques - Trial and error method, Moment Algorithm	
13	Week 13	Project Control - Project scheduling, Reviewing, updating and monitoring, Problems in updating of projects, determination of revised critical path	
14	Week 14	Project Progress monitoring techniques, EVA, Tutorials, Linear Scheduling Method	
15	Week 15	Case studies on Advanced Topics, Introduction to Computer applications	

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Duration	% Weightage
1	Assessment -1	1 hr	20
2	Assessment -2	1 hr	20
3	Assignment	At the end of each topic	20
4	Student Seminar	20~30 mins for each group	10
5	Final Assessment As per Schedule	2 hrs	30
CPA	Compensation Assessment* (if necessary)		

TEXT / REFERENCES:

- *"A Guide to the Project Management Body of Knowledge (PMBOK Guide) - Fifth Edition"*, An American National Standard, ANSI/PMI 990001-2008
- Fedrick E. Gould, *"Managing the Construction Process*", Pearson Prentice Hall, 2005
- Chris Hendrickson and Tung Au, *"Project Management for Construction – Fundamental Concepts for Owners, Engineers, Architects and Builders"*, Prentice Hall, Pittsburgh.
- Chitkara, K.K , *"Construction Project Management: Planning, Scheduling and Control"*, McGraw Hill Publishing Company, NewDelhi,1998.
- Jerome D. Wiest and Ferdinand K. Levy, *"A Management Guide to PERT/CPM",* Prentice Hall of India Publishers Ltd., New Delhi, 1994.
- Willis, E. M., *"Scheduling Construction Projects"*, John Wiley & Sons, 1986.
- Halpin , D. W., "*Financial and Cost Concepts for Construction Management*", John Wiley & Sons,New York, 1985.
- Calin M. Popescu, Chotchai Charoenngam, *"Project Planning, Scheduling and Control in Construction: An Encyclopedia of Terms and Applications"*

COURSE EXIT SURVEY

- Direct feedback from the students by face-to-face meeting individually and as the class as a whole. Feedback from the students during class committee meetings. Exit survey from the students at the end of the session

COURSE POLICY

- Attending all the assessments (Assessment 1 to 5) is MANDATORY for every student.
- If any student is not able to attend Assessment-1 / Assessment-2 due to genuine reason, student is permitted to attend the respective assessment as compensation assessment (CPA) with the same weightage. Prior permission and required document must be submitted for absence.
- At any case, CPA will not be considered as an improvement test. A minimum of 30% should be scored in the end assessment for a pass.
- Every student is expected to score minimum 40% to pass the course. Otherwise the student would be declared fail and 'F' grade will be awarded

ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)

- At least 75% attendance in each course is mandatory.
- A maximum of 10% shall be allowed under On Duty (OD) category.
- Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.

ACADEMIC DISHONESTY & PLAGIARISM

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.
- The above policy against academic dishonesty shall be applicable for all the programmes.

FOR APPROVAL

Course Faculty K. Shanbagavalli **CC- Chairperson** Nisha **HOD** Head, Department of Civil Engineering, National Institute of Technology, Tiruchirappalli - 620 015.

Guidelines

a) The number of assessments for any theory course shall range from 4 to 6.

b) Every theory course shall have a final assessment on the entire syllabus with at least 30% weightage.

c) One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered.

d) The passing minimum shall be as per the regulations.

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2018	2017	2016	2015	
35% or (Class average/2) whichever is greater.		(Peak/3) or (Class Average/2) whichever is lower		40%

e) Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.

f) Absolute grading policy shall be incorporated if the number of students per course is less than 10.

g) Necessary care shall be taken to ensure that the course plan is reasonable and is objective.