GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM
COURSE TITLE: CONSTRUCTION PROJECT MANAGEMENT
(COURSE CODE: 3360603)

Diploma Programme in which this course is offered	Semester in which offered
Civil Engineering/Transportation Engineering	SIXTH

1. RATIONALE:

Technical skills are important for overall planning, coordination, and control of a project from commencement to accomplishment the project efficiently and effectively. The awareness of various Project Management techniques is very essential to safeguard that construction projects, should complete on-time and within budget which is a biggest challenge. Construction team have to manage various resources with the objective to complete the Construction project with predetermine scope, cost, time and quality, and the constraints imposed on human material and financial resources.

In this course, the students will also learn how to plan, organise and control construction operations by using various Software which helps in the management of construction project to avoid haphazardness without undue delays and cost effectiveness.

2. COMPETENCY (Programme Outcomes (POs) According to NBA terminology)

The course content should be taught and implemented with the aim to develop with different types of skills so that students are able to acquire following competencies:

- Manage various Construction resources and activities, effectively and efficiently using applicable techniques and Software.
- Demonstrate the skills for Construction Project Management.

3. COURSE OUTCOME:

The theory should be taught and exercises should be carried out in such a manner that students are able to acquire different learning outcomes:

- The students will be able to implement the knowledge of Construction management, various organisation Structures and duties of various construction team.
- The student will be able to obtain the awareness regarding Tendering and accounting process.
- The students will be able to develop the CPM and PERT network of various Construction activities.
- Development of leadership skills so that they will be able to manage various Construction resources.
- The Student will aware about Professional ethics and basics of management information system.
- Understanding about the safety during various construction works.

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	ESE	PA	ESE	PA	
3	0	2	5	70	30	20	30	150

Legends: L- Lecture; **T-** Tutorial/Teacher Guided Student Activity; **P -** Practical; **C –**Credit; **ESE**-End Semester Examination; **PA**-Progressive Assessment

5. COURSE DETAILS

Unit	Major Learning Outcomes (Course Outcomes in Cognitive Domain according to NBA terminology)	Topics and Sub-topics
UNIT-I **Construction Project and Organisation management**	1a.Describe concept of project management. 1b.Draw the flow chart of an organisation. 1c. Explain the role of different Construction team members. 1d. Describe the causes of project failure.	1.1 Construction Project management- importance, Functions, Scope. 1.2 Organisation-Types, Characteristics, Functions, principles. 1.3 Construction team-Roles, responsibilities and skills of construction team. 1.4 Stages in Construction. 1.5 Causes of Project failure.
UNIT-II **Tendering and Accounting**	2a. Explain various features of Contract document. 2b. Prepare a Tender document for the construction project. 2c. Explain various technical and accounting terms used in government organisations. 2d. Describe methods of execution of works in government organisations.	2.1 Contract-Introduction, requirement, types. 2.2 Contract documents and conditions of Contract, Contract agreement. 2.3 Per-qualification of Contract- Importance. 2.4 Tender-Types, Terms and Conditions, issue procedure, opening, Scrutiny, Acceptance, Rejecting. 2.5 Prepare tender Notice. 2.6 Technical terms- Administrative approval, Technical Sanction, Issue rate, Competent Authority, Secured Advance, Mobilization Advance, Heads of accounts in government organization, Original and repair work, Earnest money deposit (EMD) and Security deposit(SD), 2.7 Accounting terms- Work Abstract, Cash book, Work resister, imprest, accounting for the materials, Measurement book, Muster roll, types of bills and recording. 2.8 Methods of getting work done in government organization.

UNIT-III **Construction Planning, Scheduling and time management**	3a.Discribe various planning methods for construction works. 3b. Prepare Construction schedule. 3c. Draw CPM and PERT network for construction work. 3d. Describe the features of construction planning software.	3.1 Project Planning-methods and factors affecting planning. 3.2 Scheduling and types of Schedules. 3.3 Critical path method-Important terms, Basic Rules, Advantages and disadvantages. 3.4 Examples of CPM network.. 3.5 PERT analysis-Important terms, Advantages and Disadvantages 3.6 Examples on PERT. 3.7 Cost optimization. 3.8 Introduction and importance of Primavera and MS Project for Construction Project Management.
UNIT-IV **Construction Resource Management**	4a.Discribe features of material, labour and equipment management. 4b. Prepare Job layout. 4c. Proper material, labour and equipment schedule.	4.1 Material management-Purpose, Objective, material Scheduling, material handling, Storage, safety precautions, Economy Order Quantity, inspection and testing. 4.2 Job Layout. 4.3 Labour management-Labour Scheduling, Characteristics, Output of labours, Wages of Workers, Labour Incentives, Labour Welfare, Trade Unions, Trade union act-1926, Mini Wage act- 1948, Contract labour act-1970,etc 4.4 Equipment management- equipment Scheduling, Classification of various equipment, Factor affecting selection of construction Equipment, Owning & operating cost of equipment, Inspection & testing of equipment, Maintenance & repair of equipment.
UNIT-V **Human Resource development (HRD) & MIS**	5a. Explain Supervisor's role in Construction work. 5b.Expaline MIS with example.	5.1 Importance of HRD. 5.2 Supervisor's role as trainer & Motivator. 5.3 Techniques to deal human resources effectively. 5.4 Professional Ethics in Engineering. 55 Management Information System- Purpose, need, Types, Characteristics, Implementation and Applications.
UNIT-VI **Safety Management**	6a.Explain need of safety management in Construction. 6b.Discribe Safety measures in Construction as per IS code.	6.1Safety management-requirement, importance. 6.2Causes of accidents and its type. 6.3 Safety precaution-Excavation work, Demolition, Erection. 6.4 Safety measures- Scaffolding, Ladder, Piling, Bituminous works.

6. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY)

Unit	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	**Introduction of Construction Project management**	8	07	07	00	14
II	**Contract management and accounting**	8	02	06	06	14
III	**Construction Planning, Scheduling and time management**	10	04	03	07	14
IV	**Construction resource management**	8	03	06	05	14
V	**Human Resource development and MIS**	6	01	02	04	07
VI	**Safety Management**	2	00	02	05	07
Total		42	17	26	27	70

Legends: R = Remember , U = Understand , A= Apply and above Level (Bloom's revised taxonomy)
Note: This specification table shall be treated as only general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

7. SUGGESTED LIST OF EXERCISES/PRACTICAL

The practical/exercises should be properly designed and implemented with an attempt to develop different types of skills **(outcomes in psychomotor and affective domain)** so that students are able to acquire the competencies/programme outcomes. Following is the list of practical exercises for guidance.
Note: Here only outcomes mainly in psychomotor domain are listed as practical/exercises. However, if these practical/exercises are completed appropriately, they would also lead to development of certain outcomes in affective domain which would in turn lead to development of **Course Outcomes** related to affective domain. Thus over all development of **Programme Outcomes (**as given in a common list at the beginning of curriculum document for this programme) would be assured.

Faculty should refer to that common list and should ensure that students also acquire outcomes in affective domain which are required for overall achievement of Programme Outcomes/Course Outcomes.

S. No.	Unit No.	Practical/Exercise	Approx. Hrs. Required
1.	I	List the reasons of project failure.	**2**
2.	I	Study of Tender documents and formulate report containing terms and conditions.	2
3.	II	Study of Contract & analysis of Contraction documents (Which covers all terms and conditions).	4
4.	II	Prepare Tender Notice.	2
5.	II	Prepare at least two Bar Charts and prepare CPM and PERT for Project scheduling.	6
6.	III	Prepare Material and labour schedule.	2
7.	IV	Equipment Schedule by using MS Project	2
8.	IV	Study of different labour law and applicable for construction Project.	2
9.	-	Prepare Seminar reports as per course content	6
10.		TOTAL HOURS	28

FIELD VISIT:

8. SUGGESTED LIST OF STUDENT ACTIVITIES

1) Visit of nearby ongoing residential construction site.
2) Visit of PWD and Draw Organisation structure.
3) Visit of PMC.
4) Visit of Construction firm for understanding of its accounting procedure, material purchasing and material handling.

9. SPECIAL INSTRUCTIONAL STRATEGIES (If Any)

----NILL-----

10. SUGGESTED LEARNING RESOURCES

A. BOOKS:

No.	TITLE	AUTHOR	PUBLISHER
1	Construction Project Management	K.K. Chitkara	Tata McGraw-Hill
2	Project Planning and Controlling with PERT And CPM	Dr. B.C. Punmia K.K. Khandelwal	Laxmi Publications (P)Ltd.
3	Construction Management and accounts	Harpalsingh	Tata McGraw-Hill

4	Construction of Structures and Management work	S.C. Rangwala	Charotar Publication
5	Construction Management practice	V.K.Raina	Tata McGraw-Hill
6	Construction Equipment and its Management	S.C.Sharma	Khanna Publication
7	Construction Planning and Management	P.S.Gahlot B.M.Dhir	Willey Eastern Ltd
8	Construction Engineering and Management	Seetharaman.S	Umesh Publication

B. LIST OF RECOMMENDED I.S. PUBLICATIONS:

IS 4082:1996	Recommendations on stacking and storage of construction materials and components at site
IS 7293:1974	Safety code for working with construction machinery
IS 7969:1975	Safety code for handling and storage of building materials
IS 10067:1982	Material constants in building works
IS 15883-1:2009	Construction project management - Guidelines, Part 1: General
IS 15883-2:2013	Construction project management - Guidelines, Part 2: Time Management
IS 3764:1996	Excavation
IS 4130:1976	Demolition of Building
IS 7205:1974	Erection of steel Structure.
IS 8969:1978	Erection of Concrete Framed Structure.

C. List of Software/Learning Websites

1. Primavera P6b
2. MS Project
3. www.slideshare.net
4. www.civil.iitm.ac.in

11. COURSE CURRICULUMDEVELOPMENT COMMITTEE

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