Lok Jagruti Kendra University
University with a Difference

Diploma in Civil Engineering

LJ Polytechnic

Course Code:025050405

Construction Project Management

Programme / Branch Name			Diploma in Civil Engineering			
Course Name	Construction Project Management				**Course Code**	025050405
Course Type	HSSC	BSC	ESC	PCC	OEC	PEC

Legends: HSSC: Humanities and Social Sciences Courses BSC: Basic Science Courses
ESC: Engineering Science Courses PCC: Program Core Courses
OEC: Open Elective Courses PEC: Program Elective Courses

1. Teaching and Evaluation Scheme

Teaching Hours / Week				Evaluation Scheme			
L	**T**	**P**	**Total Credit**	**CCE**	**SEE (Th)**	**SEE (Pr)**	**TOTAL**
3	0	2	4	50	50	50	150

Legends:
L: Lectures T: Tutorial P: Practical
CCE: Continuous & Comprehensive Evaluation
SEE (Th): Semester End Evaluation (Theory)
SEE (Pr): Semester End Evaluation (Practical)

2. Prerequisites

- ✓ Building Materials
- ✓ Construction Technology
- ✓ Civil Engineering Workshop

3. Rationale

Project management skills are important for the overall planning, coordination and control of a project from commencement to the accomplishment of the project efficiently and effectively. Effective construction project management benefits owners by increasing the potential for successful project completion- on time, within budget and free of financial or legal complications. Construction management is particularly vital to large-scale projects that have more potential for problems that could significantly delay the project and cost money. A construction manager measures each design decision with a careful analysis that calculates the impact that decision will make on the budget and schedule. This syllabus is designed in such a way that after learning this course the students will be able to plan, organize and control construction operations by using various management techniques and software. This course is, therefore, a very important course for diploma students of civil engineering since they have to manage construction projects on their own.

4. Objectives

- ✓ To manage various resources and activities, effectively and efficiently using appropriate techniques and software to complete the project within time and budget according to the desired quality.
- ✓ To prepare and understand the principles involved in site layout.
- ✓ To know the procedure for scheduling various activities in a construction project.
- ✓ To understand the labour laws.
- ✓ To know different safety measures in construction projects.

5. Contents

Unit No.	Unit Name	Topics	Learning Outcomes	% Weightage	Hours
1.	**Construction Project and Organisation Management**	1.1. Construction Project Management 1.1.1. Importance of Construction Project Management 1.1.2. Need for Construction Management 1.1.3. Scope of Construction Management 1.1.4. Functions of Construction Management 1.1.5. Engineer and Construction Economy 1.1.6. Contractor ad Construction Economy 1.1.7. Construction Cost 1.1.8. Stages in Construction 1.1.9. Planning the Project 1.1.10. Project Supervision	• Explain the Concept of Construction Management. • Understand the Role of Different Construction Team Members.	20	8
		1.2. Organisation Management 1.2.1. Meaning of Organisation 1.2.2. Forms of Business Organisation 1.2.3. Principles of Organisation 1.2.4. Systems of Staff Organisation 1.2.5. Organisation of a Construction Company	• Understand the Flowchart or Hierarchy of an Organisation.		
2.	**CPM and PERT**	2.1. General-CPM 2.2. Network Analysis 2.3. Features of Network Planning 2.4. Rules for Network Diagram 2.5. Procedure for CPM 2.6. Advantages of CPM 2.7. Uses of CPM 2.8. Application of CPM	• Gain Knowledge of Various Planning Methods for Construction Works. • Draw CPM and PERT Network for any Construction Works.	20	9

		in Project Management 2.9. Numericals Based on CPM 2.10. General- PERT 2.11. Terminologies Used in PERT 2.12. Numericals Based on PERT 2.13. Selection of Technique 2.14. Bar Charts or Gantt Charts 2.15. Mile-Stone Charts			
3.	**Construction Resources**	3.1. Construction Materials 3.1.1. General 3.1.2. Types of Materials 3.1.3. Storage of Materials 3.1.4. Stores 3.1.5. Purchasing Department 3.1.6. Store Keeping 3.1.7. Job Layout 3.1.8. Stages of Material Management 3.1.9. Inventory Control 3.1.10. Disposal of Surplus Materials	• Prepare a List of Material Required for any Construction Work. • Prepare Job Layout for any Construction Site. • Check the Quality of Construction Materials.	35	14
		3.2. Construction Labour 3.2.1. General 3.2.2. Theories of Wages 3.2.3. Nominal Wages and Real Wages 3.2.4. Systems of Wage Payments 3.2.5. Trade Unions 3.2.6. Labour Welfare 3.2.7. Indian Labour	• Understand Wage Theories for Labours. • Understand Various Labour Acts Applicable to any Construction Project.		
		3.3. Construction Equipment 3.3.1. General 3.3.2. Classification of Equipments 3.3.3. Selection of Construction Equipments 3.3.4. Owning and Operating Cost of Equipment 3.3.5. Economic Life of Construction	• Select Proper Equipment for any Construction Work. • Understand the Process of Owning & Operating Cost, Economic Life of Construction Equipments.		

		Equipments 3.3.6. Sources of Equipments 3.3.7. Various Types of Construction Equipments			
4.	**Construction Accidents**	4.1. General 4.2. Causes of Construction Accidents 4.3. Classification of Construction Accidents 4.4. Accident Costs 4.5. Safety Programme 4.6. Rules for Preventing Construction Failures	• Understand the Importance of Construction Safety. • Knowledge of Causes of Accidents and their Costs.	10	3
5.	**Introduction to MS Project and Primavera P6**	5.1. MS Project 5.1.1. Basic Functions and Fundamentals of MS Project 5.2. Primavera P6 5.2.1. Basic Functions and Fundamentals of Primavera P6	• Understand and Apply the Features of Construction Planning Software.	15	8
				Total Hours	**42**

6. List of Practicals / Exercises

The practicals/exercises have been properly designed and implemented in an attempt to develop different types of skills so that students can acquire the competencies/programme outcomes. Following is the list of practicals/exercises.

Sr. No.	Practical / Exercises	Key Competency	Hours
1.	Visit nearby ongoing residential construction site and study management aspect.	Understand the Management Aspect	2
2.	Visit the PWD office and draw the organisation structure.	Understand the Organisation Hierarchy	2
3.	Case study of a construction site for their success or failure in construction projects. Analyse & submit your feedback report.	Identification of the Causes of Project Failure	2
4.	Visit any construction site and understand the material purchasing and handling techniques or process.	Material Procurement & Storage	2
5.	Prepare a 2D job-layout plan in AutoCAD for the same construction site selected for planning.	Software Knowledge	2
6.	Collect and compile various documents which are being used on site for material management. Prepare formats of stock management of various materials and payment sheets for vendors.	Documentation Work	2
7.	Study different labour laws applicable to construction projects & prepare a report.	Understand the Labour Laws	2
8.	Prepare a schedule and learn how to define duration with a point of view of quantity and resources available – MS Project & Primavera P6.	Application of MS Project & Primavera P6.	8
9.	Seminar- The topic of the Seminar shall be given to a group of students. The students are required to submit and present it in front of the students and faculties and a report including PPT is to be attached with submission. Each student's contribution to group work needs to be made explicit.	MS Powerpoint Skill	6
		Total Hours	**28**

7. Suggested Specification Table for Evaluation Scheme

Unit No.	Unit Name	Distribution of Topics According to Bloom's Taxonomy					
		R %	U %	App %	C %	E %	An %
1.	Construction Project and Organisation Management	25	30	35	10	0	0
2.	CPM and PERT	20	35	25	10	5	5
3.	Construction Resources	20	30	20	5	5	20
4.	Construction Accidents	20	50	30	0	0	0
5.	Introduction to MS Project and Primavera P6	20	20	20	20	0	20

Legends: R: Remembering U: Understanding
App: Applying C: Creating
E: Evaluating An: Analyzing

8. Textbooks

1) Construction of Structures & Management Works by S.C.Rangwala, Charotar Publications.

9. Reference Books

1) Construction Project Management by K.K.Chitkara, Tata McGraw-Hill.
2) Construction Planning and Management by P.S. Gahlot, B.M. Dhir, New Age International(P) Limited.
3) Construction Management and Accounts by V.N. Vazirani, S.P. Chandola, Khanna Publishers.

10. List of Publications

1) IS 15883-1 (2009)-Construction Project Management - Guidelines, Part 1: General.
2) IS 15883- 2 (2013)-Construction Project Management - Guidelines, Part 2: Time Management.
3) IS 10067 (1982)-Material constants in building works.
4) IS 4082 (1996)-Recommendations on stacking and storage of construction materials and components at the site.
5) IS 7969 (1975)-Safety code for handling and storage of building materials.
6) IS 7293 (1974)-Safety code for working with construction machinery.
7) IS 3764 (1996)-Excavation.
8) IS 4130 (1976)-Demolition of Building.
9) IS 7205 (1974)-Erection of Steel Structure.
10) IS 8969 (1978)-Erection of Concrete Framed Structure.

11. Open Sources (Website, Video, Movie)

1) Microsoft Project Software
2) Primavera P6 Software
3) Microsoft Excel
4) AutoCAD Software
5) LJP-Civil-Construction Project Management (Youtube)