

**GOVERNMENT POLYTECHNIC, PUNE**  
(An Autonomous Institute of Govt. of Maharashtra)

|                       |   |  |
|-----------------------|---|--|
| <b>Programme</b>      | : | <b>Diploma in CE/EE/ET/ME/MT/CM/IT</b>           |
| <b>Programme Code</b> | : | <b>01/02/03/04/05/06/07/15/16/17/18/19/21/24</b> |
| <b>Name of Course</b> | : | <b>Construction Management</b>                   |
| <b>Course Code</b>    | : | <b>MA481</b>                                     |

**Teaching Scheme:**

|                  | <b>Hours/Week</b> | <b>Total Hours</b> |
|------------------|-------------------|--------------------|
| <b>Theory</b>    | <b>04</b>         | <b>64</b>          |
| <b>Practical</b> | --                | --                 |

**Evaluation Scheme:**

|                 | <b>Progressive Assessment</b>               | <b>Semester End Examination</b> |                  |             |                  |
|-----------------|---|---------------------------------|------------------|-------------|------------------|
|                 |   | <b>Theory</b>                   | <b>Practical</b> | <b>Oral</b> | <b>Term work</b> |
| <b>Duration</b> | <b>Three class tests of 60 min duration</b> | <b>3 Hrs</b>                    | --               | --          | --               |
| <b>Marks</b>    | <b>20</b>                                   | <b>80</b>                       | --               | --          | --               |

**Course Rationale:**

The Civil Engineer has to plan, Manage and execute Civil Engineering works. He has to manage different resources. He should have knowledge of basic management of basic management processes related to Civil engineering field.

**Objectives:**

The student will able to

1. Understand management techniques.
2. Plan, Monitor and execute various types of construction work
3. Manage different resources (Men, Material, Money, Machines)
4. Read, draw & update bar charts, CPM and PERT.
5. Inspect & control quality of construction.

**Contents:**

| <b>Topic No.</b> | <b>Topic &amp; Subtopic</b>   | <b>Hrs</b> | <b>Marks</b> |
|------------------|---|------------|--------------|
| 1                | <b>Construction Industry</b><br>1.1 Importance of construction industry in National Development.<br>1.2 Special characteristics of Civil engineering works.<br>1.3 Classification and types of construction works.<br>1.4 Agencies associated with construction works.<br>1.5 Resources of construction industry, Material, Manpower, Money, Machinery.<br>1.6 Stages in construction – Planning stage execution stage.<br>1.7 Objectives of Construction Management. | <b>06</b>  | <b>06</b>    |

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|   |   |    |    |
|---|---|----|----|
| 2 | <b>Scientific Management</b><br>2.1 Definition of Management.<br>2.2 Necessity Of Scientific management.<br>2.3 Principles of Management.<br>2.4 Functions of Management.<br>2.5 Application of Principal and function of management to Civil Engineering works.  | 07 | 08 |
| 3 | <b>Leadership and human relationship</b><br>3.1 Leadership – styles of leadership<br>3.2 Desirable qualities of leadership of effective Execution of construction work.<br>3.3 Functions of leadership<br>3.4 Human relation, Human needs<br>3.5 Motivation and its importance and need, functions of Motivation, Hygiene and motivation factors.   | 07 | 08 |
| 4 | <b>Planning and scheduling of construction works</b><br>4.1 Levels and stages of planning –(pre & post tenders)<br>4.2 Necessity and Importance of planning.<br>4.3 Planning for owner/client and planning for contractor.<br>4.4 Site selection and orientation of building.<br>4.5 Study of drawing, Design, Raw materials Equipment sand human resources required.<br>4.6 Methods of scheduling, Advantages of scheduling.<br>4.7 Bar chart. Preparing construction schedule. Advantages and limitations of bar charts.<br>4.8 Planning and scheduling by Network Construction, Logic, Determine of various timings EST, EFT, LST, LFT. Total float preparation of activity table, Example on developing Critical path, Introduction to PERT. Terms used.<br>4.9 Comparison between CPM and PERT.<br>4.10 Preparing Construction schedule comprising of items of work and duration.<br>4.11 Resource Aggregation for labour. | 14 | 24 |
| 5 | <b>Communication at site</b><br>5.1 Importance of communication at construction site.<br>5.2 Types of communication.<br>5.3 Barriers to effective communication.<br>5.4 Techniques to overcome barriers of effective communication.   | 04 | 06 |
| 6 | <b>Safely in Civil Engineering</b><br>6.1 Importance of safely in construction works.<br>6.2 Common Causes of accidents, types of accidents, Remedial measures.<br>6.3 Terms used- Injury frequency rate(IFR), Injury Severity rate (ISR), Injury Index (II), Accident cost.<br>6.4 Effective safety Programme.   | 06 | 08 |
| 7 | <b>Site layout</b><br>7.1 Storing and stacking of material site.<br>7.2 Location of Machinery and equipment.  | 06 | 08 |

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|              |   |           |           |
|--------------|---|-----------|-----------|
|              | 7.3 Factors on which site layout depend.<br>7.4 Preparation of site layout.   |           |           |
| 8            | <b>Inspection and quality</b><br>8.1 Concept of quality.<br>8.2 Supervision techniques to establish dimensional control such as line, Level Gradient, Slope, Plumb Camber.<br>8.3 Functions of Inspection Department.<br>8.4 Quality assurance and quality control.<br>8.5 Sampling Techniques. | 06        | 08        |
| 9            | <b>Application of Computer in Construction Management.</b><br>9.1 Types of software<br>9.2 Application of software & Areas.<br>9.3 Merits and Demerits of software.   | 04        | 004       |
| 10           | <b>Entrepreneurship in Construction Management</b><br>10.1 Concept of Entrepreneur and Entrepreneurship<br>10.2 Merits of Entrepreneurship and employment.<br>10.3 Types of Construction Management.  | 04        | 06        |
| <b>Total</b> |   | <b>64</b> | <b>80</b> |

**Suggested Instructional Strategies:**



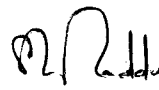
Lecture Method, Use of teaching aids, Demonstration, Case Study.

**Learning Resources:** Books, Journals

**Reference Book:**

| SN | Author            | Title                                       | Publisher            |
|----|-------------------|---|----------------------|
| 1  | M.L.Dhir, Gehlot  | Construction Planning & Management          | Wiley New Delhi      |
| 2  | Harpal Singh      | Construction Management & Accounts          | Tata McGraw Hill     |
| 3  | B.Sengupta & Guha | Construction management & planning          | Tata McGraw Hill     |
| 4  | R.L.Peurifoy      | Construction Planning equipment and methods | McGraw-Hill Co. Ltd. |
| 5  | Banga & Shoral    | Origination of Management                   | McGraw-Hill Co. Ltd. |

**Prepared By:**

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