# ****19CE4102 - CONSTRUCTION PLANNING & MANAGEMENT****

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| **Course Category** | Professional Core | **Credits** | 3 |
| **Course Type** | Theory | **Lecture - Tutorial - Practical** | 3 - 0 - 0 |
| **Prerequisite** | Building materials and construction | **Sessional Evaluation** | 40 |
| **Semester End Exam Evaluation** | 60 |
| **Total Marks** | 100 |

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| **Course Objectives** | 1. To demonstrate the significance of construction management. 2. To develop the construction planning using CPM and PERT methods. 3. To explain the various equipment of construction industry and their significances. 4. To illustrate various mechanized construction techniques. 5. To justify ethical audit and prepare audit statement. 6. To interpret the concept of safety and risk in construction planning and organizational structure and roles. | |
| **Course Outcomes** | CO1 | Demonstrate the basics of construction management. |
| CO2 | Schedule various components of project and utilize CPM and PERT techniques. |
| CO3 | Classify the working of various equipment in construction industry. |
| CO4 | Identify various technologies in mechanized construction. |
| CO5 | Perform inspection for quality control, ethical audit and prepare audit statement. |
| CO6 | Illustrate the importance of safety and risk in construction and organizational structures and roles. |
| **Course Content** | **UNIT - I**  **INTRODUCTION:** Significance of construction management– Objectives and functions of construction management– Types of construction– Resources for construction industry–Stages of construction–Construction team– Engineering drawings.  **UNIT - II**  **CONSTRUCTION PLANNING:** Stage of planning– Scheduling– Preparation of material– Equipment– Labour and finance schedules– Bar charts– Milestone charts  **NETWORK TECHNIQUES IN CONSTRUCTION MANAGEMENT:** Critical Path Method (CPM) –Program Evaluation and Review Technique (PERT) – Network techniques breakdown structures– Classification of activities–Rules for developing networks– Network development–Network analysis– Critical activities and critical path – Cost optimization.  **UNIT - III**  **CONSTRUCTION EQUIPMENT AND MANAGEMENT:** Equipment requirement in construction industry– Heavy earth moving equipment: Bulldozer, scrapers, loaders, excavator, shovels, and cranes– Compaction equipment– Grading equipment– Aggregate production equipment– Asphalt mixing plant– Asphalt laying equipment– Hauling equipment– Concrete mixing equipment– Material handling devices– Pneumatic equipment–Bridge construction equipment– Drilling and blasting equipment– Pumping and dewatering equipment.  **UNIT – IV**  **MECHANIZED CONSTRUCTION**: Mechanized Excavation – Groundwater Control – Trenchless (No-dig) Technology – Grading – Dredging- Rock Excavation – Basic Mechanics of Breakage – Blasting Theory –Environmental Effect of Blasting- Formwork and scaffolding - Tunneling Equipment.  **UNIT – V**  **INSPECTION:** Need for inspection and quality control– Principles of inspection–Enforcement of specifications –Stages of inspection and quality control.  **QUALITY CONTROL:** Ethical Audit: Introduction – Aspects of project realization – Ethical audit procedures – The decision makers – Variety of interests – Formulation of briefs –The audit statement– The audit reviews.  **UNIT – VI**  **SAFETY AND RISK:** Introduction – Safety and risk – Concept and importance of safety – Types of risk – Safety and engineers – Safety measures in construction works – Design for safety – Risk benefit analysis – Accidents.  **ORGANISING CONSTRUCTION:** Principles of organization– Communication – Leadership and human relations– Types of organization– Organization for a construction firm– Temporary services– Job layout**.** | |
| **Textbooks**  **and References** | **TEXTBOOKS:**   * + - 1. P.S. Gahlot and B.M. Dhir, *Construction Planning and Management*, New age International Publishers, 2nd edition, 2018.       2. S.C. Sharma, *Construction Equipment and Management*, Khanna publishers, 3rd Edition, 2019.       3. B.L Gupta and Amit Gupta, *Construction Management and Machinery*, Standard Publishers Distributors, 2nd Edition, 2005.   **REFERENCE BOOKS:**   1. S. Seetharaman, *Construction Engineering and Management*, Umesh publications, 4th edition, 2008. 2. Haripal Singh, *Construction Management and Accounts*, Tata McGraw-Hill Publishing Company Limited, 5th edition, 2016. 3. Dr. B. C. Punmia, K. K. Khandelwal, *Project Planning and control with Pert and CPM*, Laxmi Publications, 4th Edition, 2012. | |

**CO-PO Mapping:** 3-High Mapping, 2-Moderate Mapping, 1-Low Mapping, - -Not Mapping

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|  | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **CO1** | 3 | - | - | - | 1 | - | - | - | - | - | 1 | - |
| **CO2** | 3 | 3 | 2 | 3 | 2 | - | - | - | - | - | 1 | 2 |
| **CO3** | 2 | - | - | - | 1 | - | - | - | - | - | - | 1 |
| **CO4** | 3 | - | - | - | 1 | - | - | - | - | - | - | - |
| **CO5** | 2 | - | - | - | - | - | - | - | - | - | 1 | - |
| **CO6** | 3 | - | - | - | - | - | - | - | - | - | - | - |