**19CE42E1 – CONSTRUCTION EQUIPMENT AND MANAGEMENT**

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| **Course Category**  | Professional Elective | **Credits** | 3 |
| **Course Type** | Theory | **Lecture - Tutorial - Practical** | 3 - 0 - 0 |
| **Prerequisite** | None | **Sessional Evaluation**  | 40 |
| **Semester End Exam Evaluation** | 60 |
| **Total Marks** | 100 |

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| **Course Objectives** | * + - 1. To discuss the significance of heavy earth moving equipment, shovels, cranes and hauling equipment.
			2. To understand the working procedure of compaction, grading, aggregate production, Asphalt mixing and laying, and concreting equipment.
			3. To learn about material handling devices, drilling and blasting, tunneling, pumping and dewatering equipment.
			4. To understand the necessity of equipment management in construction industry.
			5. To study the economics of construction equipment.
			6. To study the types of maintenance of equipment in construction industry.
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| **Course Outcomes** | CO1 | Identify and explain working procedure of various heavy earth moving equipment, shovels, cranes and hauling equipment. |
| CO2 | Know the working procedure of compaction, grading, aggregate production, asphalt mixing and laying, and concreting equipment. |
| CO3 | Know the significance of material handling devices, drilling and blasting, tunneling, pumping and dewatering equipment in construction industry. |
| CO4 | Manage construction equipment on-site and off-site. |
| CO5 | Carryout economic evaluation to select or retire an equipment. |
| CO6 | Maintain equipment in the construction industry. |
| **Course Content** | **UNIT – I****CONSTRUCTION EQUIPMENT - I:** Heavy earth moving equipment - Bull-dozers, Scrapers, Loader, Excavators – Shovels – Cranes – Hauling equipment.**UNIT – II****CONSTRUCTION EQUIPMENT - II:** Compaction equipment – Grading equipment – Aggregate production, screening and mixing equipment – Asphalt mixing plant – Asphalt laying equipment – Concreting equipment.**UNIT – III****CONSTRUCTION EQUIPMENT - III:** Material handling devices – Drilling and blasting equipment – Tunneling equipment – Pumping and Dewatering equipment.**UNIT – IV****EQUIPMENT MANAGEMENT IN CONSTRUCTION INDUSTRY:** Equipment planning – Forecasting equipment requirement – output and capacity of equipment – Utilization and time period – Equipment operation planning – Selection of equipment – Forward planning – Maintenance management – Down time and availability – Management techniques – Reduction of construction cost – Decision making.**UNIT – V****ECNOMICS OF CONSTRUCTION EQUIPMENT:** Introduction – Hourly working rate – Owning costs – Operating costs – Standard costing – Cost control and cost reduction – Cost accounting – Replacement of equipment.**UNIT – VI****MAINTENANCE OF CONSTRUCTION EQUIPMENT:** Introduction – Types of maintenance – Breakdown maintenance and preventive maintenance – Reclamation of machinery – Advantages of reclamation – Maintenance planning – Maintenance work measurement – Maintenance of construction equipment – Storage and handling lubricants. |
| **Textbooks****and References** | **TEXTBOOKS:*** + - 1. S. C. Sharma, *Construction Equipment and its Management*, Khanna Publishers, 6th edition, 2017.
			2. B.L Gupta and Amit Gupta, *Construction Management and Machinery*, Standard Publishers Distributors, 2nd Edition, 2005.
			3. S. Seetharaman, *Construction Engineering and Management*, Umesh publications, 4th edition, 2008.

**REFERENCE BOOKS:** 1. Haripal Singh, *Construction Management and Accounts*, Tata McGraw-Hill Publishing Company Limited, 5th edition, 2016.
2. [John E. Schaufelberger](https://www.routledge.com/search?author=John%20E.%20Schaufelberger) and [Giovanni C. Migliaccio](https://www.routledge.com/search?author=Giovanni%20C.%20Migliaccio), *Construction Equipment and Management*, Routledge publication, 2nd edition, 2019.
3. [Robert L. Peurifoy](https://www.textbooks.com/Author/Robert_Peurifoy.php?CSID=2CDD2ZTJAUUSSUU2UDK2DDSCB), *Construction planning, Equipment and Methods*, McGraw-Hill Publishing Company, 8th edition, 2011.
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**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** | 2 | - | - | - | 3 | 2 | - | - | 1 | - | 2 | 1 |
| **CO2** | 2 | 1 | - | 1 | 2 | 2 | 1 | 1 | 1 | - | 2 | 1 |
| **CO3** | 2 | 1 | - | 1 | 3 | 2 | 1 | 1 | 2 | - | 2 | - |
| **CO4** | 1 | - | - | - | 2 | 2 | - | 1 | 2 | 3 | 2 | - |
| **CO5** | - | - | - | - | 1 | 1 | - | 2 | 1 | 1 | 1 | - |
| **CO6** | - | - | - | - | 1 | 1 | - | 2 | 1 | 1 | 2 | - |