

Course Title: Construction Engineering & Management Laboratory

Course Code: 15ECVP306

L-T-P: 0-0-1

Credits: 1

Contact Hours: 2 Hrs/ week

ISA Marks: 80

ESA Marks: 20

Total Marks: 100

Teaching Hours: 30

Examination Duration: 3 Hrs

1. Introduction to Primavera P6
2. Develop a Work Break-down Structure (WBS) for a residential building of 3 storey.
3. Create and add activities to the WBS and assign relationships as per the logic of the precedence diagram for the residential building. Determine the duration of the project.
4. Apply constraints and filters to the developed activities to develop two-week, one-month and three-month look-ahead schedule.
5. Develop different roles and resources in the resource library and assign to the various activities along with their unit rates.
6. Develop the cost-loaded schedule and create baseline of the project.
7. Perform earned value analysis to track and monitor the project.
8. Conduct simulations in Microsoft Visio process simulator to determine most efficient excavation cycles on large scale projects.
9. Conduct Monte-Carlo simulation in Microsoft Excel to perform risk analysis for the project.

Reference Books:

1. Kim Heldman & William Heldman, *Microsoft Excel for Project managers 2007*.
2. P. Harris, *Planning and Scheduling Using Primavera P6 2010*.

Course Title: Construction Simulation Practice

Course Code: 17ECVP301

L-T-P: 0-0-1

Credits: 1

Contact Hours: 2 Hrs/ week

ISA Marks: 80

ESA Marks: 20

Total Marks: 100

Teaching Hours: 30

Examination Duration: 3 Hrs

Preamble:

Through the courses in the preceding semesters (3rd, 4th and 5th), the students are studying the basics of many courses in the fields of construction engineering and management, structural engineering, geotechnical engineering, environmental engineering and transportation engineering. This course aims to bridge the gaps between theoretical concepts learned in classroom and their practical applications in the industry.

Course will be delivered through a series of site visits and guest lecturers from industry experts.

Deliverables:

Student group will be given a hypothetical site where in their job profile will be of a project manager. Guest lecturers from project managers and site engineers will provide the necessary tools and work cultures on the site, which the students have to apply to their project.

The students will learn the following concepts as practiced in the field:

1. Roles and responsibilities of various stakeholders involved like the owner, architect, structural consultant and the general contractor.
2. The material procurement process – quality and cost negotiation process. Costs involved in using RMC or procurement of raw materials to produce concrete on site etc.
3. Labour cost negotiations, roles and responsibilities, basic amenities to be provided and person-hour tracking.
4. Safety protocol followed in the jobsite.
5. Process of material delivery on the job site and coordination with the accounts department.
6. Technical problems encountered during execution – For example, deep well located during excavation – design changes to be made, concrete strength failure after 28 days – what measures to be taken, errors during surveying of the building, honeycombing or bulging of concrete etc.
7. Tracking of the progress – both time and cost. Creating of monthly progress reports.
8. Equipment management – renting vs owning, maintenance.
9. Roles and responsibilities on the project manager, site engineers, supervisors, safety officers.
10. Store management.
11. On site testing and third party testing – advantages and disadvantages.

12. Site layout for optimum utilization of construction space.
13. Reconciliation of materials like formwork, steel etc.

The student team will submit a comprehensive report about the management of a construction site and the difficulties and solutions employed to their sites and present their case.

References books:

1. Kumar Neeraj Jha, *Construction Project Management: Theory and Practice*, 2ed., Edition, Pearson Publications, 2015.
2. Robert. L Peurifoy and William B. Ledbetter, *Construction planning and Equipment & methods*, Tata McGraw Hill Pvt. Ltd, New Delhi, 3ed., 2010.
3. Ursula Kuehn, *Integrated Cost and Schedule Control in Project Management*, 2ed., 2011.