

CNST-2330: CONSTRUCTION SCHEDULING

Cuyahoga Community College

Viewing: CNST-2330 : Construction Scheduling

Board of Trustees:

January 2023

Academic Term:

Fall 2023

Subject Code

CNST - Construction Engineering Tech

Course Number:

2330

Title:

Construction Scheduling

Catalog Description:

Capstone course that involves time management of construction activities. Use of Gantt charts, activity on arrow diagrams, PERT techniques, and critical path method. Computer scheduling software will be used throughout the course.

Credit Hour(s):

3

Lecture Hour(s):

2

Lab Hour(s):

2

Requisites

Prerequisite and Corequisite

CNST-2131 Construction Methods and Materials, or departmental approval.

Outcomes

Course Outcome(s):

Recognize the differences between types of scheduling formats and what analysis is derived from each type.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Use critical path network development to prepare and present detail-level projections about progress for a construction project.
2. Use bar charts to present summary-level analysis about progress for a construction project.

Course Outcome(s):

Create construction schedules at the summary-level and detail-level, indicating project activities and time allotted.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Create a bar chart with computer software.
2. Create an Arrow on Activity diagram with computer software.
3. Create a Performance Evaluation and Review Technique (PERT) diagram with computer software.

4. Create a Critical Path Method network diagram with computer software.

Course Outcome(s):

Recognize and indicate limitations, and constraints, that will affect project schedules.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Analyze where time can be a factor for progress as a result of available equipment.
2. Identify all activities that need to be recognized for a construction project schedule.
3. Determine early and late start dates for project activities.
4. Determine early and late finish dates for project schedules.
5. Analyze where time can be affected by human resource capability.

Course Outcome(s):

Analyze and forecast predictions about the progress of a construction project from prepared schedules, labor reports, subcontract reports, and physical site observation.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Prepare a written report that indicates the schedule status of a project and forecasts time for activity completion.
2. Calculate milestones for project completion.

Methods of Evaluation:

- a. Written assignments
- b. Lab projects
- c. Participation and discussion
- d. Quizzes
- e. Final project

Course Content Outline:

- a. Planning and scheduling
 - i. Schedule format
 1. Bar charts
 2. Gantt charts
 3. AOA (Activity on Arrow) diagram
 4. PERT (Project Evaluation and Review Technique) diagram
 5. CPM (Critical Path Method) network diagram
 - ii. Network model
 1. Work breakdown structure
 2. Sequence of activities
 3. Activity duration
 4. Early and late start/finish times
 5. Critical path
 6. Baseline schedule
- b. Resource allocations and leveling
 - i. Start constraints
 - ii. Finish constraints
 - iii. Mandatory constraints

- iv. Balancing human resources
- v. Balancing equipment resources
- c. Progressing the construction schedule
 - i. Monitoring methods
 - 1. Labor reports
 - 2. Subcontract reports
 - 3. Physical inspection
 - ii. Rewards for schedule compliance
 - iii. Updating methods
- d. Scheduling software
 - i. Layouts
 - 1. Creating layouts
 - 2. Saving layouts
 - 3. Editing layouts
 - 4. Formatting columns
 - ii. Naming the project
 - iii. Working with calendars
 - iv. Activity codes
 - v. Updating the schedule

Resources

Gould, Frederick E. *Managing the Construction Process: Estimating, Scheduling and Project Control*. 4th ed. Upper Saddle River, NJ: Prentice Hall, 2012.

Dykstra, Alison. *Construction Project Management*. 2nd. ed. San Francisco, Kirshner Publishing, 2018.

Oracle Corporation. (2017-01-13) *Primavera P6 Professional*,

Gould, Frederick E. *Managing the Construction Process : Estimating, Scheduling, and Project Control*. 2nd. 2002.

Resources Other

- Trimble Resource Library (2020) <https://heavyindustry.trimble.com/resources> (<https://heavyindustry.trimble.com/resources/videos/?sessionLL=eyJkYXRhQ29uc2VudFNldCI6eyJjb250ZW50VHlwZSI6eyJhZF9zdG9yYWdlIjp0cnVILCJhbmFseXRpY3Nfc3RvcnFnZSI6dHJ1ZS>)
- TechTraining LLC YouTube Channel (2022) <https://www.youtube.com/c/jamesLeeTECHTRAININGllc> (<https://www.youtube.com/c/jamesLeeTECHTRAININGllc/>)

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