**PROJECT SCHEDULING**

Time is an important criterion for job control. If a project is to proceed efficiently and be completed within the contract time, the work must be carefully planned and scheduled in advance. Specifically, in a large project with many mutually dependent and interrelated operations wherein each task has its own time, materials, equipment, and labor requirements, project planning and scheduling becomes a very complicated and difficult management function.

**Course Objectives:**

The primary course objectives are to teach theoretical concepts and practical techniques for planning and scheduling of construction projects and to provide students with the ability to prepare a comprehensive schedule for a project, including bar charts, network diagrams, resource profiles, and time contingency analysis. To obtain a feel for how to approach a real life situation, students will prepare a schedule for a construction project. The project requires students to work in groups of four or five. Upon completion of the course the students should be able to demonstrate competence in the following areas: 1) Identify activities involved in a construction project and their relationships; 2) Develop arrow and precedence network diagrams and perform schedule computation for networks; 3) Identify the resources required in a project and apply techniques for resource allocation and leveling; 4) Perform cost loading and time-cost trade-offs; 5) Explain concepts and techniques for monitoring, evaluating, and controlling project performance (i.e. earned value analysis); 6) Explain contractual and legal issues related to scheduling; and 7) Use a scheduling software.

Following is a week-by-week breakdown of the course:

**Week 1**
Introduction to Project Scheduling; Work Breakdown Structure; Activity Identification; Bar Chart Schedules, Activity on Node Networks; "PRIMAVERA" Scheduling Software
Text: Chapters 1, 2, 3 and handouts “PM101: The WBS” and “Advocating a Deliverable-Oriented Work Breakdown Structure”

**Week 2**
Activity on Arrow Networks; Scheduling Computations; "NetPoint" Scheduling Software
Text: Chapter 4

**Week 3**
Estimating Activity Durations; Schedule Specifications; Introduction to Term Project
Text: Chapter 10

**Week 4**
Precedence Networks; Resource Allocation and Leveling
Text: Chapters 5 and 6

**Week 5**
Reviewing, Analyzing, and Updating the Schedule; Project Progress Measurement
Text: Chapters 7 and 9

**Week 6**
Review and Mid-Term Exam

**Week 7**
Cost Planning and Scheduling, Schedule Compression and Decompression
Text: Chapter 8

**Week 8**
Lean Scheduling – Last Planner
Week 9  
CPM in Dispute Resolution  
Text: Chapters 13, 14, and handouts

Week 10  
Short-Interval Scheduling; Linear Scheduling; PERT Scheduling  
Text: Chapter 11  
Course Project Due

Week 11  
Final Exam 6:30-8:30 PM

Time: Lecture W 6:30-9:30 PM, Computer Lab: TBA  
Text: Construction Project Scheduling and Control by Saleh Mubarak, Fourth Edition, 2019  
Software: PRIMAVERA P6 and NetPoint (on MPM Lab. Workstations - Room AG45)  
Course Grade: Homework 20%; Term Project 25%; Mid-Term Exam 20%; Final Exam 25%; participation 10%.  
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