



CE566 Project Controls: Planning and Scheduling

Units: 3

Fall 2017—Thursday—7pm to 9:40pm

Location: SAL 126

Instructor: Devang Dedhia, PSP

Office Hours: 30mins before and after class on class days, or by prior appointment

Contact Info: dedhia@usc.edu cell: (323)-445-0137
(Please allow 2-3 business days for a response)

Teaching Assistant: Evangelos Pantazis

Office: KAP 239

Office Hours: Monday 5pm to 7pm (or by prior appointment)

Contact Info: epantazi@usc.edu

Blackboard Help: Blackboard Help

Hours of Service: 24/7

Contact Info:

- <https://studentblackboardhelp.usc.edu/>
- Call 213-740-5555 and choose option 2
- Text chat and Blackboard 9 Support Portal
- Send an email to blackboard@usc.edu

Viterbi IT Help: Viterbi IT Help

Hours of Service: Mon-Fri, 8am – 5pm

Contact Info:

- <https://viterbi.usc.edu/resources/vit/getting-assistance/>
- Call 213-740-0517
- Send email to engrhelphelp@usc.edu
- Walk-In support is available by visiting DRB 205

Course Description

In today's increasingly fast-paced and connected work environment, there is increased focus on delivering complex construction projects on-time and on-budget. There is a demand for increased control and communication to respond to changing project conditions. Effective project controls provides a solution to successfully manage any project that every team member needs to understand and master. This course is designed to educate, encourage and inspire future leaders about planning and scheduling principles which drive successful projects. The course demonstrates how students integrate various data elements into their project planning and schedule. This course will help the students connect various learning concepts from other CEE courses. In this course, student will learn about various planning and scheduling methodologies, master the CPM method, learn to develop a schedule plan, evaluate the plan, monitor the progress, and learn how to respond to variances in the plan.

Learning Objectives

- Provide an understanding of the components of project controls
- Learn various Planning and Scheduling Methodologies
- Learn to develop a schedule plan, evaluate the plan, monitor the progress and respond to variances in the plan
- Learn the CPM method (critical path method)
- Learn about deterministic and probabilistic scheduling methods
- Introduce the student to the use of Oracle's Primavera P6 scheduling software, which is the leading industry scheduling software for creating and maintaining CPM schedules

As a result of taking the course, the student will be

- Able to apply their knowledge of Planning and Scheduling on any project
- Able to develop a schedule plan, monitor and forecast completion dates
- Learn about industry best practices for planning and scheduling

The classroom discussions will emphasize on the theory and understanding of about the various concepts and methodologies related to Planning and Scheduling. The students will be introduced to Oracle's Primavera P6 scheduling software operations and are expected to develop mastery outside the classroom. Students can use university provided computers or personal computers to learn Oracle's Primavera P6 scheduling software operations. Coursework and assignments will form the basis of the group project. Students can access all the course material, assignment, announcements and discussions through BlackBoard.

While the course syllabus lists an outline of course material, class discussions and progress will guide coverage of course material. Participation by students in class is required. All questions will be addressed; no question is invalid. While office hours are limited due to work constraints, all efforts will be made to meet and resolve any questions or issues you may have.

Recommended Preparation: In order to acquire maximum benefit from this course, it is advisable to have a basic understanding of the various construction activities and work. Students without prior work experience are advised to take the CE556: Project Controls - Estimating Course, but this is not mandatory.

Technological Proficiency and Hardware/Software Required

- BlackBoard

- MS Word, MS Excel, and MS Powerpoint will be utilized. Students must have a working knowledge of computer systems & MS Office suite of applications.

Required Readings and Supplementary Materials

Course Bibliography:

1. Construction Planning and Scheduling Second Edition, Thomas E. Glavinich, D.E., P.E., The Associated General Contractors of America, 2004, ASIN: B001D06PIM, ISBN-13: 978-0010034158
2. PRIMAVERA PROJECT PLANNER (P6) SOFTWARE HELP FEATURE

Recommended Reference Books:

1. Planning and Control Using Oracle Primavera P6 Versions 8, 15 and 16 PPM Professional, Paul E Harris, Eastwood Harris, 2016, ASIN: B01JVW17FE
2. CPM Scheduling for Construction: Best Practices and Guidelines, PMI, 2014
ISBN13: 978-1-62825-037-4
3. Oracle Primavera P6 (Version 8.1 Professional Client) Beginner's Guide, Kugan Panchadsaram, ASIN B00B56CJV6 (Available as E-Book for Kindle)

Grading Breakdown

- Assignments will demonstrate the student understanding of the principle or procedure introduced in the preceding class. Quizzes and Exams will consist of multiple choice questions, written calculations, questions with short answers as well as schedule software file solutions.
- Each assignment and quiz will have equal weightage towards its category (25% of the Final Letter Grade).
- The team project objective will be to develop a schedule to demonstrate execution plan for a small construction project. Teams will consist of a group of minimum 3 students and a maximum of 5 students. Further instructions will be provided in class.
- Final Letter Grade will be distributed on a curve based on the Total score with the breakdown shown below

CATEGORY	POINTS
Weekly Participation, Assignments and Quiz	25%
Mid-Term Exam	25%
Group Project	20%
Final Exam	30%
Total	100%

Assignment Submission Policy

Work in the current session will build on completed assignments. Students will refer to course schedule for assignment due dates. Weekly assignments are due at the beginning of the class. Students shall include their name on each page of the assignments for both hard copies & electronic copies. When submitting electronic files, please include your student name in the filename(s).

Students will get one (1) attempt to submit the assignment. Students are responsible for submitting complete file(s) in their latest attempt.

Any assignment attempts submitted after first attempt will be treated as a Late assignment. Late assignments will be accepted and 20% points per day will be deducted for a late submission. Late assignments will not be accepted after 11/23/17 or 1 week from original due date, whichever is earlier.

Grading Timeline

Assignments will be graded and returned before the next class.

Course Schedule: Weekly Breakdown

	Topics/Daily Activities	Readings	Assignment Due
Week 1 8/24/17	Project Life Cycle Phases. Overview of Project Controls	Glavinich Chapter 1 CPM Scheduling Chapter 1, 2.1-2.5	-
Week 2 8/31/17	Contract Documents	Glavinich Chapter 1 CPM Scheduling Chapter 2.1 – 2.5	-
Week 3 9/7/17	Network Methods, Diagramming Building the Network	Glavinich Chapters 5, 6, 7, 17	Contract Questionnaire
Week 4 9/14/17	CPM Method. Defining Scope of Work Work Breakdown Structure techniques	Glavinich Chapters 5, 6, 7, 17 CPM Scheduling Chapters 2.6 - 3.4 Harris Chapter 2	CPM Network Diagram
Week 5 9/21/17	Hierarchical Structures and Work Breakdown Structures Quiz	Kugan Module 2, 5, 6, 7, 9 Harris Chapter 2, 3, 4, 6, 22, 24	CPM Calculation
Week 6 9/28/17	Use of Calendars & Constraints in schedule networks	CPM Scheduling 3.8 – 3.10 Harris Chapters 2, 5, 7, 11 Kugan Module 8, 13	Create Project & WBS
Week 7 10/5/17	Mid-Term Exam		
Week 8 10/12/17	Activities and Logic, Schedule Network Calculations	Glavinich Chapter 2, 3 CPM Scheduling 3.5 – 3.6; Kugan Module 10, 11, 12 Harris Chapter 7, 9	Create Calendars
Week 9 10/19/17	Formatting Schedule Network Data – filter, sort and schedule organization.	Glavinich Chapter 8 CPM Scheduling 3.14, 5.4.1 Kugan Module 4, 15 Harris Chapter 8, 12, 13, 22	Defining Activities & Assigning Logic
Week 10 10/26/17	Resource Management – Revenue, Cost, and Margin	Glavinich Chapter 19,21 CPM Scheduling 3.11; Kugan Module 16, 17, 18 Harris Chapter 18, 19, 20	Schedule Reports
Week 11 11/2/17	Resource Analysis - Resource Utilization and Cumulative Curves	Glavinich Chapter 19,21 CPM Scheduling 5.4 Kugan Module 19 Harris Chapter 20, 27	Cost-loading & Resource-Loading

Week 12 11/9/17	Progress Monitoring & Reporting - Forecaste and Compare Current plan against Baseline plan	Glavinich Chapter 14, 22 CPM Scheduling 4 Kugan Module 21, 22, 23 Harris Chapter 14, 15, 16, 21	Resource Curves & Histogram
Week 13 11/16/17	Probabilistic Schedules	CPM Scheduling 3.12 & 3.14 Glavinich Chapter 16	Baseline & Schedule Updating
Week 14 11/23/17	Thanksgiving Recess No Class	-	-
Week 15 11/30/17	Change Management Delay Claims – Quantitative and Qualitative Issues	CPM Scheduling 5.6; 5.7.1, 5.7.2	Group Project Due
FINAL 12/7/17	Final Exam - Written and Lab		

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, “Behavior Violating University Standards” <https://policy.usc.edu/scampus-part-b/>. Other forms of academic dishonesty are equally unacceptable. For example,

- Unauthorized collaboration on a project, homework or other assignment. Collaboration will be considered unauthorized unless expressly part of the assignment in question or expressly permitted by the instructor.
- Obtaining for oneself or providing for another person a solution to homework, a project or other assignment, or a copy of an exam or exam key without the knowledge and expressed consent of the instructor.

See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

Support Systems:

Student Counseling Services (SCS) - (213) 740-7711 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. <https://engemannshc.usc.edu/counseling/>

National Suicide Prevention Lifeline - 1-800-273-8255

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. <http://www.suicidepreventionlifeline.org>

Relationship & Sexual Violence Prevention Services (RSVP) - (213) 740-4900 - 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. <https://engemannshc.usc.edu/rsvp/>

Sexual Assault Resource Center

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: <http://sarc.usc.edu/>

Office of Equity and Diversity (OED)/Title IX compliance – (213) 740-5086

Works with faculty, staff, visitors, applicants, and students around issues of protected class. <https://equity.usc.edu/>

Bias Assessment Response and Support

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. <https://studentaffairs.usc.edu/bias-assessment-response-support/>

Student Support & Advocacy – (213) 821-4710

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. <https://studentaffairs.usc.edu/ssa/>

Diversity at USC

Tab for Events, Programs and Training, Task Force (including representatives for each school), Chronology, Participate, Resources for Students. <https://diversity.usc.edu/>