ALTINBAŞ UNIVERSİTY

Department of Civil Engineering

Syllabus of CVE481 Planning and Control of Construction Projects

NOTE: This syllabus is subject to change. Any changes will be communicated in advance.

1. COURSE INFO	**Credits**	(3+0+0) 3
	Lecture Hours	Wednesday, 13:00 – 16:00
	Lecture Hall	D503
2. INSTRUCTOR	**Name**	Işık Ateş Kıral
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3. COURSE TEXTBOOK

Hinze, J. (2011). Construction planning and scheduling. Fourth Edition, Upper Saddle River, NJ: Pearson/Prentice Hall.

4. COURSE DESCRIPTION (CATALOG)

This course introduces students to a basic understanding of the planning and scheduling issues significant to construction industry professionals. While the course is designed to teach basic concepts of planning, monitoring and control, the use of software such as MS Project and Primavera is not included. Scheduling and monitoring tools such as critical path method, assigning activity duration, resource allocation, cost crashing, etc.

Course Type

Elective

Laboratory and Computer Usage

N/A

Grading Policy:

- In-class Bonus Points: Individual extra points based on the performance of students' comments, answers to questions, additional comments during the lectures (maximum 20%)
- Summary Report Assignments: Summary and critical review of the assigned journal papers 25% of the course grade.
- Midterm Examination: 25% of the course grade.
- Final Examination: Comprehensive exam at the end of the semester, 50% of the course grade.

Course Learning Outcomes

CLO1: To develop necessary skills and improve the knowledge level about the basics of the construction project scheduling such as the CPM, PERT, bar charts, WBS, etc.

CLO2: To develop necessary skills and improve the knowledge level about the concepts of developing a network model and precedence diagrams.

CLO3: To develop necessary skills and improve the knowledge level about the concepts of determining activity durations and basic statistics.

CLO4: To develop necessary skills and improve the knowledge level about the concepts of resources such as leveling, allocation.

CLO5: To develop necessary skills and improve the knowledge level about the concepts of cost management such as cost estimating methods, earned value management, cost crashing and cost categorization.

CLO6: To develop necessary skills and improve the knowledge level about the impact of scheduling on several features such as monitoring, control, decisions on productivity, dispute resolution and litigation

CLO6: To develop necessary skills and improve the knowledge level about the alternative scheduling methods such as short-interval schedules and linear scheduling.

Course Content			
Week	**Lectures**	**Covered Topics**	**Course Learning Outcomes**
1	Lecture 1: Orientation Lecture 2: Introduction to Planning	Introduction, Planning and Scheduling, Planning and Scheduling in Construction Industry, Bar Charts, Values and Shortcomings of Bar Charts, Scheduling Networks, Work Breakdown Structure, Reasons for Planning & Scheduling	CLO1
2	Lecture 3: Developing a Network Model	Steps in Building a Network Model, Defining Activities, Ordering Activities, Drawing the Network Diagram, Assigning Durations to Activities, Assigning Resources and Costs, Calculating Early and Late Start/Finish Times, Identify the Critical Path, Scheduling Activity Start/Finish Times	CLO2
3	Lecture 4: Precedence Diagrams	Precedence (Activity-on-Node) Networks, Activity Relationships, Basics about Precedence Diagrams, Calculations on a Precedence Network, Independent Float and Interfering Float, Computations for Different-Activity Relationships	CLO2
4	Midterm Revision		
5	Lecture 5: Basic Probability and Statistics Lecture 6: Determining Activity Durations	Estimating, Types of Estimates, Conceptual Estimates, Detailed Estimates, Conducting a Detailed Estimate, Estimating Durations, Scheduling Issues, Factors Influencing Choice of Activity, Schedules, Weather and the Schedule, Uncertainty in Duration Estimates	CLO3
6	Lecture 6: Determining Activity Durations		
7	Lecture 7: Resource Allocation and Resource Leveling	The Management of Resources, When Resources Are Limited (Resource Allocation), The Manual Solution for Resource, Allocation, The Brooks Method of Resource Allocation, When Project Duration Is Fixed (Resource Leveling), The Manual Solution for Resource Leveling	CLO2, CLO3
8	Lecture 8: Money and Network Schedules	Cash Flow, The Time Value of Money, Interest Rates, Contractor Cash Disbursements, Contract Provisions That Impact Cash Flow, Owner Policies and Practices That Impact, The Cash Flow Analysis, The Present Worth of Cash Flow, The Value of Cash Flow Analysis, Time–Cost Trade-Offs, Direct Costs, Indirect Job Costs (Job Overhead), Overhead (Company Overhead), Profit	CLO2, CLO3
9	Lecture 9: Earned Value Analysis	The Earned Value Concept, Difficulties in Integrating Cost and Schedule Systems	CLO2, CLO3
10	Lecture 10: Project Monitoring and Control	Construction Time, Effective Scheduling, Monitoring Project Status, Difficulties in Assessing Progress, Updating the Schedule, Controlling the Project	CLO3
11	Lecture 11: The Impact of Scheduling Decisions on Productivity	Working Overtime, Increasing the Workforce (Crowding), Increasing the Number of Starting Points, Identifying the Causes of Delays, Interruption of Work on Multiple Units (Impact of Lost Learning), Learning Applied to Individual Units, Learning Applied to Cumulative Average Units, What Happens When Work Is Interrupted? Other Sources of Lost, Productivity	CLO3
12	Lecture 12: CPM in Dispute Resolution and Litigation	Going to Court, Types of Schedules, Impact of Changes, Impact of Delays	CLO3
13	Lecture 13: Short-interval Schedules	Short-Interval Schedules in the Literature, How Contractors Use Short-Interval Schedules, Other Short-Interval Schedules	CLO3
14	Lecture 14: Linear Scheduling	What Is Linear Scheduling? Buffers, Generating the Linear Schedule	CLO3