

## **Engineering Technology – CET Option**

**Course Number and name:** ET 455 Cost Estimation and Scheduling

**Credits & Contact Hours:** 3cr. Each week has two lectures of 75 min.

**Instructor's name:** Ruinian Jiang

### **Textbook:**

- Robert L. Peurifoy, Garold D. Oberlender, *Estimating Construction Costs*, 5<sup>th</sup> edition, 2002, ISBN 0-07-243580-1, McGraw-Hill Higher Education.

### **Other References:**

- **Means Building Construction Cost Data** (I have two CDs you can borrow)
- *Estimating Construction Management Fundamentals* by Clifford J. Schexnayder and Richard E. Mayo 1st Edition, Elizabeth A. Jones. ISBN: 0072818778
- *How to Estimate with Means Data & CostWorks*, 2<sup>nd</sup> Edition, by Saleh Mubarak and Means
- Primavera P3e/c<sup>TM</sup> User Manual
- Means Cost Estimating guides
- PMI website and resources, and
- CMAA website and resources.

### **Specific Course Information:**

**Course Catalog Description:** Methods and techniques in construction estimating & scheduling including basic principles, preliminary and final estimates' quantity take offs, cost and duration determinations, and final bid preparation. Methods and techniques involved in construction planning and scheduling including use of Primavera Project Management<sup>®</sup> software.

**Course Prerequisites:** Senior standing in Civil Engineering Technology or consent of the instructor.

**Goals/Objectives:** To give the student insight into the role of the project manager and the importance of estimating, scheduling, and project control. To aid the student in learning one of industries most popular scheduling software programs. To aid the student in learning the sufficient tools and methods required in construction estimating and scheduling for qualification as junior estimator upon graduating.

This Technical Specialty course will help achieve the following goals of the overall program outcomes (ABET outcomes):

- |   |       |    |
|---|-------|----|
| • develop basic skills on quantity surveying and technical specifications | 3a, b | 9a |
| • develop basic skills for construction cost estimation                   | 3b    | 9b |
| • develop basic skills for construction scheduling                        | 3b, c | 9e |

- learn basic knowledge of project bidding and contract system 3d, f 9f
- use industrial most popular project management software 3e
- communicate effectively by oral presentations and written project report 3g

### Topics Covered:

<u>Period</u>	<u>Topic</u>
1	Introduction: Syllabus, construction industry, construction projects, basics of estimating and scheduling.
2	Bid documents and process, plan review, site visit, decision making
3	Cost estimation: definition, goals, process, source of cost data, errors, units, variation factors, types and accuracy.
4	Conceptual and square foot estimating
5	Estimating labor and equipment cost
6	Estimating handling and transportation cost
7	Scheduling fundamentals: work breakdown, activities, etc.
8	Primavera overview
9	Loading the schedule
10	Earthwork cost estimation/scheduling
11	Highways and Pavements/scheduling
12	Estimating foundations/scheduling
13	Concrete structures estimating/scheduling
14	Steel structures estimating/scheduling
15	Carpentry estimating/scheduling
16	Masonry estimating/scheduling
17	Review for project and exam, field trip
19	<b>Midterm Exam</b>
20	Electrical works, Plumbing, etc.
21	<b>Midterm Project Due</b> , Scheduling review
23	Calculating the project schedule
24	Tabular and graphic output
25	Summarizing the schedule
26	Updating the schedule
27	Resource loading
28	Cost loading and cash flow
29	Progress planning and project analysis
30	<b>Thanksgiving Holiday</b>
31	Comprehensive project review
32	Oral presentation

**Computer Usage:** Microsoft Excel, Primavera P3e/c™

**Oral and Written Communication Requirements:** Class discussions are encouraged. An oral final presentation and a written report of the final project are required.