Fall 2018

CE 410-101: Construction Scheduling and Estimating

Muhammad Elgammal

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CE 410 – CONSTRUCTION SCHEDULING AND ESTIMATING Fall 2018
Section: 101

Time & Location Monday 6:00-9:05PM, COLT 416

Instructor Muhammad Elgammal, PE, PMP
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Office Hours TBD, COLT 261

Prerequisites CE 210, Construction Materials & Procedures

Robert L. Peurifoy and Garold D. Oberlender

Course Description Quantity take off, cost estimate and CPM computer analysis of typical building or highway projects. A study is made of construction project organization, contract requirements and management control techniques with an introduction to computer applications (Microsoft Project).

<table>
<thead>
<tr>
<th>Wk</th>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
</table>
| 7  | 10/22| Drainage & Utilities  
Total Cost of Engineering Projects |
| 8  | 10/29| Midterm Examination |
| 9  | 11/5 | Project Control Principles  
Network Modeling |
| 10 | 11/12| Construction Sequencing |
| 12 | 11/26| Critical Path Method |
| 13 | 12/3 | Monitoring & Control  
Change Management |
| 14 | 12/10| Cost Schedule Integration |
| 15 | 12/17*| Final Examination |
### General Notes
Lecture slides will be uploaded to Moodle after lecture. No late assignments accepted. No use of electronic devices. The NJIT Honor Code will be upheld in this course. Students participating in this course agree to conform to, abide by, and agree to the sanctions of the University Code on Academic Integrity.

### Grading

<table>
<thead>
<tr>
<th>Participation</th>
<th>5%</th>
<th>Midterm Examination</th>
<th>25%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>13%</td>
<td>Term Project</td>
<td>25%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>12%</td>
<td>Final Examination</td>
<td>20%</td>
</tr>
</tbody>
</table>

### Outcomes Course Matrix – CE 410-102 Construction Estimating and Scheduling

<table>
<thead>
<tr>
<th>Wk</th>
<th>Date</th>
<th>Topic</th>
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</thead>
</table>
| 1  | 9/10 | Introduction  
Estimating Overview  
Scheduling Overview |
| 2  | 9/17 | Contract Drawing Review  
Industry Standards  
Activity Relationships |
| 3  | 9/24 | Bid Documents & Preparation  
Estimating Process  
Conceptual Cost Estimating |
| 4  | 10/1 | Cost of Construction Labor & Equipment  
Construction Safety  
Handling and Transporting Material |
| 5  | 10/8 | Earthwork and Excavation |
| 6  | 10/15 | Highways & Pavements  
Portland Cement Concrete  
Asphalt Concrete |

<table>
<thead>
<tr>
<th>Strategies, Actions and Assignments</th>
<th>ABET Student Outcomes (1-7)</th>
<th>Program Educational Objectives</th>
<th>Assessment Measures</th>
</tr>
</thead>
</table>
| Student Learning Outcome 1: Recognize the various components of construction.  
Review bid documents and the cost estimating process using labor, materials, equipment, overhead and profit. | 1, 7 | 1, 2 | Homework, mid-term exam. |
| Student Learning Outcome 2: Prepare cost estimates.  
Prepare cost estimates for various civil areas of construction. | 1, 7 | 1, 2 | Homework, project assignment |
| Student Learning Outcome 3: Prepare a CPM schedule for a project.  
Present project control principals, CPM and cost schedule integration. | 1, 7 | 1, 2 | Homework, project assignment, final exam. |
The mission of the Department of Civil and Environmental Engineering is:

- to educate a diverse student body to be employed in the engineering profession
- to encourage research and scholarship among our faculty and students
- to promote service to the engineering profession and society

Our program educational objectives are reflected in the achievements of our recent alumni:

1 – Engineering Practice: Alumni will successfully engage in the practice of civil engineering within industry, government, and private practice, working toward sustainable solutions in a wide array of technical specialties including construction, environmental, geotechnical, structural, transportation, and water resources.

2 – Professional Growth: Alumni will advance their skills through professional growth and development activities such as graduate study in engineering, research and development, professional registration and continuing education; some graduates will transition into other professional fields such as business and law through further education.

3 – Service: Alumni will perform service to society and the engineering profession through membership and participation in professional societies, government, educational institutions, civic organizations, charitable giving and other humanitarian endeavors.

Our Student Outcomes are what students are expected to know and be able to do by the time of their graduation:

1. an ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety and welfare, as well as global, cultural, social, environmental and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Revised: 2/13/18