Summer 2019

CE 614-850: Underground Construction

Alan Slaughter

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Introduction to Tunnel Construction;
Second Edition, Authors:
David Chapman, Nicole Metje and Alfred Stark; Publisher: CRC Press;
Paperback

Prerequisites: Undergraduate course in soil mechanics.

Course Description: The course covers the various aspects of underground construction including rock and soft ground tunnel construction, shaft construction, inspection and rehabilitation of existing structures, open cut construction, blasting, and immersed tube tunnel construction.

Course Outline

<table>
<thead>
<tr>
<th>Week No. /Date</th>
<th>Topics</th>
<th>Chapter Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/ May 20</td>
<td>Introduction – History</td>
<td>Chapt. 1</td>
</tr>
<tr>
<td>2/ May 28</td>
<td>Geotechnical &amp; Shafts</td>
<td>Chapt. 2</td>
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<tr>
<td>3/ June 3</td>
<td>Groundwater Control and Open Cut</td>
<td>Chapt. 4.1, 4.2</td>
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</table>
4/ June 10 Safety Chapt. 6

5/ June 17 Inspection of Tunnels Safety Chapt. 6

6/ June 23 Midterm Exam

7/ July 1 Rock Excavation – Blasting Tunnel Boring Machine Chapt. 5.6 Chapt. 5.5

8/ July 8 Immersed Tube Tunnels Microtunneling Chapt. 5.9, 5.10, 5.11, 5.12

9/ July 15 Earth Tunneling Shield Tunneling Methods Chapt. 5.1, 5.2, 5.3, 5.4

10/ July 22 Tunnel Linings Projects Due

11/ July 29

12/ August 5 Final Exam

**Homework**

Homework will be assigned during the semester on moodle. Each assignment will be due the following week.

**Term Projects**

A list of potential project subjects will be provided. Students must select a project either from a list provided or some other source. On Week 4 or before, students will submit a one paragraph topic description on moodle.
The project report will be 8 pages, including text, photos, drawings and the like. The report will be prepared in an organized and professional manner. *(Neatness counts)*

**Grading**

1. Homework 15%
2. Midterm 25%
3. Term Project 30%
4. Final 30%

Total 100%

**Grades**

- 90-100 A
- 85-90 B+
- 80-84 B
- 75-79 C+
- 70-74 C
- <60 F

**Important Note:**

1. The NJIT Honor Code will be upheld in this course. Any violations will be brought to the immediate attention of the Dean of Students.