# LECTURES

<table>
<thead>
<tr>
<th>Topic</th>
<th>READINGS</th>
<th>PROBLEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsurface Exploration</td>
<td>Chapter 1, 2</td>
<td>2.3, 5, 9, 11, 13</td>
</tr>
<tr>
<td>Soil Compaction</td>
<td>Chapter 14</td>
<td>14.1, 3, 5, 7, 9, 11</td>
</tr>
<tr>
<td>Soil Improvement Ground Modification</td>
<td>Handout</td>
<td></td>
</tr>
<tr>
<td>Limit Equilibrium</td>
<td>Handout</td>
<td></td>
</tr>
<tr>
<td>Bearing Capacity</td>
<td>Chapter 3</td>
<td>3.1, 3, 5, 9, 11</td>
</tr>
<tr>
<td>Foundation Design</td>
<td>Chapter 4</td>
<td>4.1, 3, 7, 9</td>
</tr>
<tr>
<td>Foundation Settlement</td>
<td>Chapter 5</td>
<td>5.1, 3, 9, 11, 15, 19</td>
</tr>
<tr>
<td>Matt Foundations</td>
<td>Chapter 6</td>
<td>6.1, 3, 6</td>
</tr>
<tr>
<td>Lateral Earth Pressure</td>
<td>Chapter 7</td>
<td>7.3, 5, 9, Handout</td>
</tr>
<tr>
<td>Retaining Wall Design</td>
<td>Chapter 8</td>
<td>8.1, 5, 9, 10</td>
</tr>
<tr>
<td>Cant. Wall Gravity Wall</td>
<td>Programs GeoChallenge</td>
<td></td>
</tr>
<tr>
<td>MIDTERM EXAM (October 21)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheet Pile Walls</td>
<td>Chapter 9</td>
<td>9.1, 5, 7, 10</td>
</tr>
<tr>
<td>Sheet Pile Wall Program</td>
<td>Handout</td>
<td></td>
</tr>
<tr>
<td>Driven Piles</td>
<td>Chapter 11</td>
<td>11.1, 2, 10, 13</td>
</tr>
<tr>
<td>Laterally Loaded Piles</td>
<td>Handout</td>
<td>11.15</td>
</tr>
<tr>
<td>Pile Groups</td>
<td>Chapter 11</td>
<td>11.23</td>
</tr>
<tr>
<td>Drilled Piles</td>
<td>Chapter 12</td>
<td>12.1, 3, 9, 13</td>
</tr>
<tr>
<td>Slope</td>
<td>Handout</td>
<td>Handout</td>
</tr>
<tr>
<td>Stability</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Final Exam:
Wednesday, December 16, 2009

## Textbooks:
Principles of Foundation Engineering, 6th Edition, Braja M. Das (Required)

## Design Manuals:
U.S. Army Corps of Engineers Engineering Manuals (optional)
[http://140.194.76.129/publications/eng-manuals/](http://140.194.76.129/publications/eng-manuals/)
FHWA Geotechnical Documents (optional)
Naval Facilities (NAVFAC) Engineering Command (optional)

## Prerequisites:
CIVE 3210 Soil Mechanics, CIVE 3220 Foundation Engineering or Consent of Instructor

## Instructor:
Dr. Andrew G. Heydinger  
Office NI3029  
Phone 530-8133  
Email: andrew.heydinger@utoledo.edu

## Office Hours:
Office Hours: MW 3:00 - 4:00, other times as needed or by appointment

## Course Grade:
- Homework Assignments & Practicals: 40%
- Midterm exam: 30%
- Final Exam: 30%
Policy on Homework:  
1. Homework problems as announced.
2. Unexcused late assignments will not be accepted.

Advanced Foundation Engineering Practicals - Fall Semester, 2009

Each Student is to submit a 1 to 2 page summary of a publication dealing with subjects covered in this course. Suggested topics are listed below. The emphasis of the presentations will be on design procedures, design applications, special problems and innovative solutions. The summaries should contain a project description, information on subsurface conditions, design/solution approach and other details of special interest. Three sources of information that can be used are:

1) journals and conference proceedings (e.g., ASCE Journal and GSP);
2) trade magazines (e.g., Geotechnical News, Geo-Strata, Civil Engineering) and
3) the World Wide Web.

Each student should do one practical on subsurface investigation and one practical on a failure. In addition, undergraduate students should prepare 1 practical and graduate students should prepare 2 practicals. Graduate students must use all three sources.

List of Topics
- Subsurface Investigation Program
- Soil/Ground Improvement
  - Sand drains; Wick drains; Stone columns; Dynamic compaction/replacement; Vibratory compaction; Deep soil mixing; Slurry walls or other
- Soil Reinforcement
  - Retaining walls; Reinforced earth
- Retaining walls
  - Anchored walls; Soil nailing; Flexible walls
- Soil Stabilization
  - Soil admixtures; Grouting
- Slope Stability
  - Reinforced slopes; Pile reinforcement; Stability of landfills
- Deep Excavations
  - Deep soil mixing; Auger jet piles; Soil freezing or other
- Shallow or Deep Foundations
  - Capacity of foundations; Load tests; Foundation settlement
- Failures
  - Foundations; Retaining structures; Slopes