

School of Civil and Construction Engineering  
OREGON STATE UNIVERSITY

**CE 575 – EARTH RETENTION AND SUPPORT**  
**Spring Term 2011 (4 credits)**

**Instructor:** Prof. Armin W. Stuedlein, P.E. armin.stuedlein@oregonstate.edu  
340 Owen Hall 541.737.3111  
Office Hours: M,W 1 PM to 2 PM

**Class Sections:** Lecture: 1 hr 50 min, 2 days/ week (No recitation or laboratory)  
Days: T,Th Time: 12:00 PM to 1:50 PM Location: Kearney 202

**Prerequisites:** CE 373, or consent of the instructor

**Textbook:** *Required:* None.

*Recommended References:*

1. **ON RESERVE:** Foundation Engineering Handbook, 2<sup>nd</sup> Ed., Fang.
2. **ON RESERVE:** An Introduction to Geotechnical Engineering, Holtz and Kovacs, 1<sup>st</sup> Edition, or Holtz, Kovacs, and Sheahan, 2<sup>nd</sup> Edition
3. Soil Mechanics in Engineering Practice, 3<sup>rd</sup> Ed., Terzaghi, Peck & Mesri
4. Principles of Foundation Engineering (7<sup>th</sup> Edition), Das
5. NAVFAC DM 7 Design Manual: Soil Mechanics, Foundations and Earth Structures
6. FHWA Manuals: [http://www.fhwa.dot.gov/engineering/geotech/library\\_listing.cfm](http://www.fhwa.dot.gov/engineering/geotech/library_listing.cfm)

**Course Description:** This course presents the analysis and design of earth retention systems. Topics supporting course objectives include aspects of limit equilibrium analysis of soils, effects of interface friction, soil-structure interaction, factors of safety, and reliability.

**Course Learning Outcomes:** At the end of this course, all students should be able to:

1. Describe the requirements for the successful design of rigid and flexible retaining structures;
2. Identify the appropriate limiting strength conditions for earth pressure estimation;
3. Analyze active and passive earth pressure conditions using earth pressure theory;
4. Evaluate rigid and flexible retaining structures;
5. Synthesize the concepts of allowable stress design, appropriate factors of safety, and reliability applied to retaining structures;
6. Analyze cantilevered, braced, and anchored excavation and shoring elements;
7. Analyze flexible and inextensible internally reinforced soil fills; and,
8. Identify and incorporate uncertainties into design of retaining structures;

<b>Grading Basis</b>	Homework	50 %
	Mid-Term Exam	25 %
	Final Exam	25 %
		<hr/> 100 %

## Homework Policy

Homeworks will be assigned during lectures. All homework assignments will be due one week after they are assigned, unless otherwise stated. Problem sets are due at the beginning of the period indicated (e.g., lecture). Late homework will be graded with a 50% penalty, and will not be accepted more than one (1) day after the scheduled date without prior permission of the student.

Spreadsheet solutions are encouraged, however, any homework completed with a spreadsheet must be accompanied with a handwritten calculation package indicating the calculation performed in each cell/column.

## Class Policies

**Lecture attendance is required.** You are responsible for all material presented in lectures. A professional-level understanding of the course material will be significantly enhanced by full attendance and active participation in each class section. Please send an email if you anticipate missing a lecture. If you miss a lecture or recitation you should obtain copies of the course notes that cover the missed material from two of your classmates.

**Reading assignments.** This course will require the review of multiple sources of information, including books on reserve at the library, journal papers, conference proceedings, and design manuals. *Familiarity with library and electronic journal resources will be critical to your success.*

**Expectations of Student Conduct and Academic Integrity.** Students are expected to be honest and ethical in their academic work. Academic dishonesty is defined as an intentional act of deception in one of the following areas: cheating- use or attempted use of unauthorized materials, information or study aids; fabrication, falsification or invention of any information; assisting or helping another commit an act of academic dishonesty; tampering, altering, or interfering with evaluation instruments and documents; plagiarism or representing the words or ideas of another person as one's own. For more information about the University's policies and procedures in this area see:

<http://oregonstate.edu/studentconduct/regulations/index.php#acdis>

**Disruptive Behavior:** While the university is a place where the free exchange of ideas allows for debate and disagreement, all classroom behavior and discourse should reflect the values of respect and civility. Behaviors that are disruptive to the learning environment will not be tolerated. OSU's policy on disruptive behavior may be found at:

<http://oregonstate.edu/admin/stucon/disruptivebehavior.htm>

## Statement Regarding Students with Disabilities

"Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098."