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Department of Civil Engineering	
Advanced Foundation I (61533)	
Total Credits	**3**
major elective	
Prerequisites	P1 : Foundation Engineering (61431) OR Foundation Eng'g (61303)

Course Contents

This course begins with review to pile foundation, and then will continue with advanced topics of pile foundation, such as, uplift capacity, group of piles and lateral capacity of piles. The course continues with the subject braced excavations. Sheet pile walls will be then covered. Then foundation on difficult soils will be studied. Then if time permits introduction to reinforced earth and introduction to geotechnical earthquake engineering will be given. It includes computer applications for pile foundation, sheet pile walls, and other applications in time permits

	Intended Learning Outcomes (ILO's)	Student Outcomes (SO's)	Contribution
1	Ability to analyze and design advanced pile foundation systems.	A E I K	30 %
2	Ability to analyze and design excavation activities and excavation support systems.	A E I J	22 %
3	Ability to analyze and design sheet piles.	A E I J K	23 %
4	Ability to understand geotechnical earthquake engineering and reinforced earth.	A E J	15 %
5	Ability to communicate effectively.	G	10 %

Textbook and/ or Refrences

1. Principles of Foundation Engineering, Braja M. Das, Sixth Edition, PWS-KENT, 2007. 2. Foundation Analysis and Design, Joseph E. Bowles, Fifth Edition, McGraw-Hill, Inc., 1997. 3. Other references will be furnished during the semester.

Assessment Criteria	Percent (%)
First Exam	20 %
Second Exam	20 %
Projects	20 %
Final Exam	40 %

Course Plan

Week	Topic
1	Advanced pile foundation
2	Advanced pile foundation
3	Advanced pile foundation
4	Advanced pile foundation
5	Braced cuts
6	Braced cuts
7	MIDTERM EXAM 1
8	Sheet pile walls
9	Sheet pile walls
10	Sheet pile walls
11	MIDTERM EXAM 2
12	Introduction to reinforced earth
13	Introduction to geotechnical earthquake engineering
14	Presentations

15	Presentations
16	Final Exam