

**Western University - Faculty of Engineering
Department of Civil and Environmental Engineering**

CEE 9529a – Foundation Design - Course Outline - Fall 2015

This course is intended to develop understanding of the theories and procedures required to design different types of foundations subject to static loading.

Prerequisite:

Students are expected to have basic understanding of geotechnical engineering and soil mechanics.

Contact Hours:

1 lecture /week: Tuesday from 5:30pm to 8:30pm in AHB 2B04

Instructor:

Ahmed Fahmy, SEB 3117
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Graduate Coordinator:

SEB 3009
e-mail: civilgrad@uwo.ca

Textbook:

Prepared class notes will be posted on the course website.

Other Suggested References (No purchase required):

CGS. 2006. *Canadian Foundation Engineering Manual*, 4th edition, Canadian Geotechnical Society.

Prakash, S. & Sharma, H. D. 1990. *Pile foundation in engineering practice*, New York, John Wiley and Sons.

Topics:

1. Shallow Foundations:

By the end of this section, the students will be able to:

- i. Identify the different forms of shallow foundations
- ii. Identify the load transfer mechanism of shallow foundations
- iii. Determine the ultimate bearing capacity of shallow foundations at different loading cases
- iv. Determine the different settlement components of shallow foundations
- v. Describe the difference between ultimate limit state and working stress design techniques
- vi. Design and analyse mat foundations

2. Deep Foundations:

By the end of this section, the students will be able to:

- i. Describe the different types of piles
- ii. Identify the effects of different installation techniques
- iii. Describe the load-transfer mechanisms of axially and laterally loaded piles
- iv. Design single piles and pile groups axially and laterally loaded
- v. Analyse axial and lateral pile load tests results
- vi. Describe the difference between ultimate limit state and working stress design techniques

Evaluation:

The final course mark will be determined as follows:

Assignments:	20%
Final project	30%
Final exam	50%

Total	100%

Note: Students must pass the final examination to pass this course

1. Examinations:

A 3 hours open book final exam will be held during the examinations period. Scientific calculators are permitted (Programmable calculators are not allowed).

2. Assignments

Four assignments will be posted on the course website. Group submissions are not allowed. Assignments to be submitted in class 2 weeks after being posted. Late assignments will be penalized by 10% of its mark per day late.

3. Final Project

A design project will be assigned. Group submissions are not allowed. Late submissions will not be marked.

4. Use of English

In accordance with Senate and Faculty Policy, students may be penalised up to 10% of the marks on all assignments, tests, and examinations for the improper use of English. Additionally, poorly written work with the exception of the final examination may be returned without grading. If resubmission of the work is permitted, it may be graded with marks deducted for poor English and/or late submission.