CE 6311: Advanced Foundation Design  
Fall 2014

Instructor: Dr. Xinbao Yu, Ph.D., P.E., Assistant Professor

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Office Hours: Mon and Wed, 1:00 to 3:00 PM

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Time and Place of Class Meetings: ERB 131, Tuesday and Thursday, 2:00PM - 3:20PM

Description of Course Content: Subsurface investigations; advanced design of mat foundations, retaining walls, reinforced retaining walls, anchor tie-backs, driven piles, and piers; destructive and non-destructive tests on deep foundations; group piles, laterally loaded piles, and design of foundations in expansive soils.

Detailed topics are as follows.
Geotechnical Properties of Soils
Geotechnical Site Investigation, SPT and CPT
Soil Improvement
Shallow Foundations
Deep foundations, piles and Piers, vertical and lateral bearing capacity, pile dynamics, non-destructive tests

Student Learning Outcomes: Upon completion of this class, the students shall be able to
1. Use soil mechanics theory to analyze settlement, bearing capacity, and safety of foundations.
2. Interpret geotechnical laboratory and field data to obtain design parameters.
3. Utilize different software to perform foundation design analyses.
4. Write geotechnical design reports.
5. Have a sense of engineering judgment to solve geotechnical design problems independently.

Prerequisites: CE 4321 or CE 5364, or consent of Instructor. A quiz will be given in the second class to assess the soil mechanics background.

Required Textbooks and Other Course Materials: Handouts, class notes, and power point presentation. Additional recommended reference materials are as follows.

Software
Public domain software will be used throughout the course. Additionally, Excel spreadsheets will be developed or distributed.

**Descriptions of major assignments and examinations:** Homework or projects will be assigned on each topic. Generally, each project will be given two weeks to complete. Emphasis is placed on clarity and cleanliness for the problems and on presentation for the projects. Ten percent of the grade will be related to those aspects of your assignments and 90 percent on technical content. They shall be turned in on time at the beginning of the class on the due date. For online students, assignments in pdf format shall be uploaded to blackboard at the beginning of the class on the due date.

One midterm and one final exam will be scheduled. Both exams are in class-room examinations and I expect students enrolled in both regular classes and on-line sections to take examinations in the class room. No electronic examinations will be given. Note that failure to appear for an exam at the scheduled time will constitute a grade of zero in that exam. The examinations will be open book type classroom examinations. The presentations on one selected major project are going to be made in the final review week (tentative schedule).

**Attendance:** Class attendance and punctuality are expected. Anyone missing class for whatever reason is responsible for any class notes and announcements given in that class.

**Grading:** The following breakup will be used to determine the final score: Assignments and projects (70%), and two examinations (15% + 15%).

The class grade for both will be based on the following percentages of final score:

- 90 - 100%   A
- 80 - 90%   B
- 70 - 80%  C
- 60 - 70%  D and
- < 60%   F

**Make-up Exam Policy:** A make-up examination may be given only if a regular examination is missed for a justifiable reason. Submit a written request within one week after a scheduled examination is missed.

**Grade Grievances:** Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current catalog.
Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student’s responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships ([http://www.uta.edu/ses/fao](http://www.uta.edu/ses/fao)).

Other Policies: Cell phones should be turned off during the class; laptops are used only as directed.

Americans with Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the **Americans with Disabilities Act (ADA)**. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at [www.uta.edu/disability](http://www.uta.edu/disability) or by calling the Office for Students with Disabilities at (817) 272-3364.

Academic Integrity: At UT Arlington, academic dishonesty is completely unacceptable and will not be tolerated in any form, including (but not limited to) "cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts" (UT System Regents’ Rule 50101, §2.2). Suspected violations of academic integrity standards will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student’s suspension or expulsion from the University.

Student Support Services: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may contact the Maverick Resource Hotline by calling 817-272-6107, sending a message to resources@uta.edu, or visiting [www.uta.edu/resources](http://www.uta.edu/resources).

Electronic Communication: Blackboard will be used for class communication. UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and
are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at http://www.uta.edu/oit/cs/email/mavmail.php.

**Student Feedback Survey:** At the end of each term, students enrolled in classes categorized as lecture, seminar, or laboratory will be asked to complete an online Student Feedback Survey (SFS) about the course and how it was taught. Instructions on how to access the SFS system will be sent directly to students through MavMail approximately 10 days before the end of the term. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback data is required by state law; student participation in the SFS program is voluntary.

**Final Review Week:** A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

**Librarian to Contact:** Sylvia George-Williams, Science and Technology Library, sylvia@uta.edu, (817)2727519.

**Syllabus Change Policy:** This syllabus is subject to change with advance notice.
CODE OF ETHICS (ASCE)

Fundamental Principles

Engineers uphold and advance the integrity, honor and dignity of the engineering profession by:

a. using their knowledge and skill for the enhancement of human welfare and the environment;
b. being honest and impartial and serving with fidelity the public, their employers and clients;
c. striving to increase the competence and prestige of the engineering profession; and
d. supporting the professional and technical societies of their disciplines.

Fundamental Canons

a. Engineers shall hold paramount the safety, health and welfare of the public and shall strive to comply with the principles of sustainable development in the performance of their professional duties.
b. Engineers shall perform services only in areas of their competence.
c. Engineers shall issue public statements only in an objective and truthful manner.
d. Engineers shall act in professional matters for each employer or client as faithful agents or trustees, and shall avoid conflicts of interest.
e. Engineers shall build their professional reputation on the merit of their services and shall not compete unfairly with others.
f. Engineers shall act in such a manner as to uphold and enhance the honor, integrity, and dignity of the engineering profession and shall act with zero-tolerance for bribery, fraud, and corruption.
g. Engineers shall continue their professional development throughout their careers, and shall provide opportunities for the professional development of those engineers under their supervision.