

**CE 5369: Computational Geotechnics
Spring 2015**

Instructor(s): Dr. Mohammad Sadik Khan, P.E.

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Office Hours: Tu. 2:00 PM – 5.00 PM

Section Information: *CE 5369-001 and CE 5369-002*

Time and Place of Class Meetings: CH 106, Tu., Th. (5:30 PM– 6:50 PM)

Description of Course Content: Introduction to analytical, finite differences, and finite element modeling, analyses of embankments, earth dams, slopes, excavation support systems including soldier pile and diaphragm walls, shallow and deep foundation systems, and other geo-structures using different geotechnical software.

Student Learning Outcomes:

- Ability to apply knowledge of mathematics, science, and engineering
- Ability to design and conduct experiments
- Ability to analyze and interpret data
- Ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- Ability to identify, formulate, and solve engineering problems
- Understanding of professional and ethical responsibility
- Ability to communicate effectively the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- Recognition of the need for, and an ability to engage in life-long learning
- Knowledge of contemporary issues
- Ability to use the techniques, skills and modern engineering tools necessary for engineering practice

Required Textbooks and Other Course Materials:**Required Textbook:** *Handouts and Class Notes***REFERENCES:**

- Technical and Users Manuals of Computer Programs:
- STABL, gINT, Geo-Slope, PLAXIS, ct-Shoring.
- Advance Soil Mechanics by B.M. Das
- Principle of Geotechnical Engineering by B.M. Das
- NAVFAC Manual 7.1 and 7.2
- Slope Stability Engineering Manual, US Army Corps
- Papers, Handouts

Descriptions of major assignments and examinations: 4 (Four) group projects and presentations. All project reports must be turned in at the start of the class or, if submitted electronically, prior to the class period in which they are due. Failure to do so will constitute a grade of zero for the project report in question. One week of advanced notice will be provided in scheduling the project presentations. Note that failure to appear for a presentation at the scheduled time will constitute a grade of zero in that presentation.

Attendance: Class attendance and punctuality are expected. Anyone missing class for whatever reason is responsible for any class notes, assignments or announcements missed in that class

Other Requirements:**Prerequisites:** CE 3343 or consent of instructor.**Grading:**

4 Group Projects and Presentations: 80 %

Finals: 20 %

Make-up Exams: 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. Academic dishonesty will be dealt with strict accordance within university regulations.

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 University Catalog.

for graduate courses, see <http://catalog.uta.edu/academicregulations/grades/#graduatetext>.

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/ao/fao/>).

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 or by calling the Office for Students with Disabilities at (817) 272-3364.

Title IX: The University of Texas at Arlington is committed to upholding U.S. Federal Law "Title IX" such that no member of the UT Arlington community shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity. For more information, visit www.uta.edu/titleIX.

Academic Integrity: Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) 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.

Electronic 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” shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student’s feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs>.

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.

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

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 visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at www.uta.edu/resources.

The English Writing Center (411LIBR): Hours are 9 am to 8 pm Mondays-Thursdays, 9 am to 3 pm Fridays and Noon to 5 pm Saturdays and Sundays. Walk In **Quick Hits** sessions during all open hours Mon-Thurs. Register and make appointments online at <http://uta.mywconline.com>. Classroom Visits, Workshops, and advanced services for graduate students and faculty are also available. Please see www.uta.edu/owl for detailed information.

Librarian to Contact: Sylvia George-Williams, Science and Engineering Library.

For more information:

- Library Home Page <http://www.uta.edu/library>
- Subject Guides..... <http://libguides.uta.edu>
- Subject Librarians <http://www.uta.edu/library/help/subject-librarians.php>
- Database List <http://www.uta.edu/library/databases/index.php>
- Course Reserves <http://pulse.uta.edu/vwebv/enterCourseReserve.do>
- Library Tutorials <http://www.uta.edu/library/help/tutorials.php>
- Connecting from Off- Campus..... <http://libguides.uta.edu/offcampus>
- Ask A Librarian..... <http://ask.uta.edu>

Course Schedule

“As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course. –Mohammad Sadik Khan.”

Lecture	Date	Topic
1	1/20/15	Introduction
2	1/22/15	
3	1/27/15	Gint
4	1/29/15	
5	2/3/15	Slope Stability Analysis using Gstabl
6	2/5/15	
7	2/10/15	Slope Stability Analysis using Geoslope
8	2/12/15	
9	2/17/15	Seepage Analysis using Slope/W and Geo-slope
10	2/19/15	
11	2/24/15	Introduction to Plaxis, Deformation and Safety analysis
12	2/26/15	
13	3/3/15	Shallow and Deep Foundation using Plaxis
14	3/5/15	
15	3/17/15	Design of Excavation Support System using Plaxis
16	3/19/15	
17	3/24/15	Slope Stability Analysis using Plaxis
18	3/26/15	
19	3/31/15	Design of MSE wall using Plaxis
20	4/2/15	
21	4/7/15	Seepage Analysis using Plax Flow
22	4/9/15	
23	4/14/15	Analysis of Tunnels
24	4/16/15	
25	4/21/15	Analysis of Composite Geo-structures using Plaxis
26	4/23/15	
27	4/28/15	
28	4/30/15	
29	5/5/15	Final Project Presentation
30	5/7/15	
31	5/12/15	Final

Emergency Phone Numbers: In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911.