University of Texas at Arlington
Department of Civil Engineering
CE 5369 (001, 002): Computational Geotechnics
ERB 129
Spring 2014

Catalog Data	CE 5369: Computational Geotechnics
Credits	3.0
Catalog Description (2012-2013)	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.
Prerequisites	CE3343 (or consent of instructor)
Class Schedule	Tue, Th (5:30 am– 6:50 am)
Instructor	Mohammad Sadik Khan, Ph.D. Office: 119C NH Office hours: Tue - Th: 3:30 PM – 5.00 PM Phone: (817) 272-6220 Fax: (817) 272-0371 E-mail: mdskhan@uta.edu
Course Material	**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
Computer Accounts	• Lecture notes, lecture slides, this syllabus, assignments, assignment solutions, term project details, grades, etc. will be available on Blackboard (http://www.uta.edu/blackboard).
Course Content	• Site investigation, soil boring logs, and site profile development by using gINT. • Geotechnical analysis and design of slope stability problems by using STABL, Geoslope. • Geotechnical analyses and design of excavation support systems (soldier pile, sheet pile, drilled shaft, earth berm and strutting) by using ct-SHORING. • Introduction to Numerical Modeling • Numerical analyses and design of embankment, earth dam, column supported embankment, slopes, foundation systems, and other geostructures by using Finite Element Program PLAXIS.

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

Tentative Time Schedule

Lecture	Date	Topic
1	1/14/14	Introduction
2	1/16/14	
3	1/21/14	Soil investigation and soil profile development using Gint
4	1/23/14	
5	1/28/14	Slope Stability Anlaysis using Gstabl
6	1/30/14	
7	2/4/14	
8	2/6/14	
9	2/11/14	Slope Stability Analysis using Geoslope
10	2/13/14	
11	2/18/14	
12	2/20/14	
13	2/25/14	Introduction to Plaxis
14	2/27/14	
15	3/4/14	Shallow and Deep Foundation using Plaxis
16	3/6/14	
17	3/18/14	Design of Excavation Support System using Plaxis
18	3/20/14	
19	3/25/14	Project Presentation
20	3/27/14	
21	4/1/14	Slope Stability Analysis using Plaxis
22	4/3/14	
23	4/8/14	Design of MSE wall using Plaxis
24	4/10/14	
25	4/15/14	Analysis of Sheet pile wall using Plaxis
26	4/17/14	
27	4/22/14	Analysis of Composite Geo-structures using Plaxis
28	4/24/14	
29	4/29/14	Final Project Presentation
30	5/1/14	
31	5/6/14	No Class
32	5/8/14	Final

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.
Grading Criteria	3 Group Projects and Presentations :75 % Finals: 25 %
FINAL GRADING	90 – 100 (A) 80 – 89 (B) 70 – 79 (C) 60 – 69 (D) 00 – 59 (F)

COURSE POLICIES

Examinations: There will be one final examination at the end of the semester. No make-up exams are given except for medical or other similar hardships where advanced arrangements are made with the instructor; or in case of non-selective medical emergencies with appropriate physician's note or documentation. Other than circumstances described above, failure to take the exam at the scheduled time will constitute a grade of zero in the exam.

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. 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 Grievance Policy: Grade grievances will be handled according to the policy described in the College of Engineering portion of the Catalog.

"X" Grade: Excerpts from UTA Undergraduate Catalog: " A grade of X (incomplete) may be assigned for a course if, in the opinion of the instructor, there are extenuating circumstances which prevent the student from completing the required work within the semester of enrollment for the course. The incomplete must be removed by the end of the final examination period of the following semester, excluding the summer session, for the student to receive credit for the course. If the incomplete is not removed during the allotted time period, it will revert automatically to an F. As long as the grade is carried as an X, it will not be used in the calculation of the student's grade point average. Consistent with these policies, an incomplete grade will only be assigned at the instructor's discretion only under the following circumstances:

- The optional final test is missed with an accepted excuse. In this case, you must make up the final test during the first two weeks of the following semester.
- Due to an extended illness or other extraordinary circumstances, with accepted documentation, the student is unable to participate in class for

an extended time. In this case, arrangements must be made to make up the missed work prior to the end of the following semester.

An 'X' grade will not be given as a remedy for poor work.

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://wweb.uta.edu/aao/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.

Academic Integrity: Students enrolled in this course 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.

Plagiarism: Plagiarism is representing another's work or any part thereof, be it published or unpublished, as one's own. For example, plagiarism includes failure to use quotation marks or other conventional markings around material quoted from any source. Failure to document properly is also considered plagiarism. Copying someone else's work and turning it in as if it was your own work, is also considered plagiarism.

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.

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.

Librarian to Contact: Barbara Howser, Science and Technology Library.

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.

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, which is located at the east/west ends of the first floor of Nedderman Hall. 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 handicapped individuals.

Syllabus Change Policy: This syllabus is a guide for the course and is subject to change with advance notice.