

FAMU-FSU College of Engineering
 Department of Civil & Environmental Engineering
 Geotechnical Design (CEG 4801)
 Course Syllabus
 Spring 2024

Catalog Data	CEG 4801 Geotechnical Design	
Credit:	3.0	
Catalog Description:	This course covers geotechnical investigation, analysis, and design of different geotechnical structures, including earth retaining structures, slopes and embankments, earthwork with geosynthetics, as well as shallow foundations.	
Prerequisite/Corequisite:	Soil Mechanics CEG 3011 - Pre-req. Civil Engineering Materials Laboratory CGN 3508L – Co-req. Student who does not satisfy the pre- and co-requisites for this course may be dropped from the course at any time during the semester with the possibility of no refund of fees.	
Textbook:	Braja M. Das; Khaled Sobhan "Principles of Geotechnical Engineering, 9th Edition, CENGAGE Learning. ISBN-13 GTIN 978-1305970939	
Additional References:	- Liu, C., and Evett, J.B., "Soils and Foundations," Prentice-Hall, Inc., N.J. 1981. - Bowles, J. E., "Foundation Analysis and Design," McGraw-Hill Book Co. 1986. - Das, B, "Soil Mechanics Laboratory Manual," 2 nd Edition Oxford 2009.	
Class Time	M and W 2:00 PM to 3:15 PM	Room B-136
Instructor/Class Room:	Kamal Tawfiq, Ph.D., P.E., F.ASCE	
TA	Mashfiqul Islam mashfiqul.islam@fsu.edu	
Office Hours:	M and W 12:00 PM to 2:00PM and from 3:15 to 4:30 or by appointment	
Laboratory Requirements: 1- Instrumentation Lab 2- Computer Lab	<ol style="list-style-type: none"> 1. Develop your own software for Analysis and Design of Retaining Walls 2. Use of ROCSCIENCE "SLIDE 2" for slope stability analysis and design 	
Course Objectives - Educational Outcomes:	Course Objectives	Student Learning Tasks as related to the course objectives
<i>(Numbers in Parenthesis indicate Department Outcomes)</i>	1. To use the knowledge of soil mechanics to identify, formulate and solve practical geotechnical problems and to develop the required proficiency needed to analyze and design different geotechnical systems. (1abc, 5abc)	- HW assignments - Design Projects 1&2 - Exams
	2. To conduct standard soil testing procedures to determine mechanical and index properties soils and analyze laboratory/field testing results with respect to a given practical application. (6bd)	- HW assignments - Quiz - Exams
	3. Use of the state of knowledge and contemporary practices such as new design and construction techniques, and other sustainable developments to solve engineering problems (2abc)	- HW Assignment#1 "Impacts of constructing large dams: - MSE Wall Project
	Applying principles of soil mechanics to analyze and design retaining walls, foundations, and embankments (1a b)	- HW assignments - Quizzes - Design Projects # 1 & 2 - Exams

	5. Search for additional information outside the domain of the textbook or class handouts (7a)	- HW Assignment # 1”Construction of Large Dams: - Projects												
	- Students who successfully meet the instructional objectives of the course will be able to analyze and design various types of geotechnical systems including retaining walls, slope and embankments, and foundations.													
Course Assessment:	To meet the course objectives/program outcomes the course will be assessed using the following instruments: <ul style="list-style-type: none"> - Homework Assignments - Quizzes - Exam 1 - Exam 2 - Design Project – Retaining Walls - Design Project – Embankment or Earth Dam <ul style="list-style-type: none"> - Course learning objective # 5 shall be demonstrated in the project reports, and laboratory reports. 													
Topics /Time Schedule/ No. of Sessions:	<u>Course Topic</u>	<u>Sessions</u> (2 Sessions/week)												
	1- Geotechnical Investigation	4												
	2- Earth Pressure Methods	3												
	3- Analysis of Retaining walls, Open trenches	5												
	4- Exam # 1 (Includes parts 1,2 &3)	1												
	5- Slope stability Analysis	6												
	6- Shallow Foundations (Bearing Capacity & Settlement)	4												
	7- Exam # 2 (Includes parts 5 & 3)	-												
Relationship to the program objectives:	The course is will provide civil engineering graduates with sufficient knowledge to enter professional practice or to continue their studies at a graduate level. (Objective 3)	-												
General Policy:	6. See attached sheet													
Course Grading Policy:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">1- Homework Assignments</td> <td style="width: 50%; text-align: right;">20%</td> </tr> <tr> <td>2- Quizzes</td> <td style="text-align: right;">15%</td> </tr> <tr> <td>3- 2 Projects</td> <td style="text-align: right;">20%References are important (10% of the grade)</td> </tr> <tr> <td>4- Exam # 1</td> <td style="text-align: right;">20%</td> </tr> <tr> <td>5- Exam # 2</td> <td style="text-align: right;"><u>25%</u></td> </tr> <tr> <td style="text-align: center;">Total</td> <td style="text-align: right;">100%</td> </tr> </table> <p><i>You are encouraged to participate in the class activities (Questions, answers, discussions, etc.). There will be extra points for those who are active in the class. These additional points are the instructor’s discretion.</i></p>		1- Homework Assignments	20%	2- Quizzes	15%	3- 2 Projects	20%References are important (10% of the grade)	4- Exam # 1	20%	5- Exam # 2	<u>25%</u>	Total	100%
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Total	100%													

Honor codes and policy on cheating:	Students are required to follow the code of their university. The relationship between students and instructors is based upon trust, and the continued maintenance of this trust is necessary for education to be successful. Students need to trust that the instructor has made appropriate judgments as to the content and structure of the course. Instructors need to trust that the work turned in by students represents their own effort. Violation of this trust undermines the educational process. Cheating is dishonest and it will not help anybody toward his/her final goal, which is to become a competent engineer. Cheating implies taking credit for somebody else's work. Cheating on exams and other acts of academic dishonesty will not be tolerated and will be dealt with at the instructor's discretion. Severe violations may (and will) be punished with a failing grade in the course. Please refer to student handbook of each university for more information.
Students with disabilities:	The instructor will accommodate any student with a qualifying disability as defined in Section 504 of the Rehabilitation Act of 1973 and the Americans with Disability Act of 1990, and supported by a confirmation statement. Students with disabilities needing academic accommodations should: 1. Register with and provide documentation to the FAMU Office of Special Programs (OSP) or the FSU Student Disability Resource Center (SDRC), respectively. 2. Bring a letter to the instructor from OSP/SDRC indicating a need for academic accommodations. This should be done within first week of class. <i>For more information about services available to students with disabilities, contact:</i> 1. FAMU students: Office of Special Programs, Student Union Building, Rm. 204. 2. FSU students: Assistant Dean of Students: sdrc@admin.fsu.edu , Disabled Student Services, 08 Kellum Hall.
Prepared by:	<i>Kamal Tawfiq. Ph.D., P.E., F.ASCE</i>

General Course Policy:

Grading Policy

- 1- Your final grade in the course will based on the grading curve.
- 2- The distribution of the percentages on the student learning tasks (Assignments, Quizzes, Exams, etc.) are shown above.
- 3- The letter grades are A, B, C, D, and F, and there are no +/- letter grades.
- 4- Grads will be posted after grading each task. With the help of the instructor, each student is advised to assess him/herself during the semester based on the accumulation of the grades from the assigned tasks.
- 5- If you would like to have more references and additional instructional materials, let the instructor know about your needs.
- 6- The due date for each exam, homework, and project reports will be announced in advance.
- 7- Late homework assignments, quizzes, and project reports will not be accepted without a valid reason.
- 8- It is **mandatory** to attend all the class session during this semester. Attendance sheet will be circulated at the beginning of each session. Excused absences will be accommodated (See the accepted excuses below).
- 9- Unexcused absences will affect your status in the course. If you have three unexcused absences, the instructor will notify you in writing. A copy of this notification will be placed in your file. If you repeat the unexcused absence from the class, the instructor will request dropping you from the course.
- 10- Without a valid reason, you are not allowed to leave the classroom once the lecture has started. Leaving the classroom during the class session is considered as absent from the class. Certain circumstances may require that you leave the room during the lecture. In this case, you need to inform the instructor in advance of your intention or to contact the instructor after the fact, with a valid explanation.
- 11- Unauthorized use of cell phones during the class session are not allowed. Students who variolate this rule will be asked to leave the class.

12- All the exams will be closed-book.

13- The term projects will be individual efforts. The interim or the final reports will be submitted as hardcopies.

14- Projects may be divided into phases. The due date for each phase will be announced in the class. There will be a report for each phase and this report must be submitted to the instructor in order to earn the grads on the final submittal. The final report shall include the following:

- Cover Sheet – Project Title, Name/s, Term
- Introduction
- Statement of the problem
- Method of analysis
- Procedures and final results using developmental tools (Computer printout)
- Figures
- Other details using outside references
- References

- **Points will be deducted if any of the above listed sections are missing**
- **Word processing and other graphic programs shall be used to produce text, figures, and charts of the final report. Handwriting/drawing will not be accepted.**
- **Engineering paper must be used for HW assignments.**
- **Points will be deducted from any disorganized task.**

All homework assignments must be scanned and uploaded in CANVAS



FAMU-FSU College of Engineering

IMPORTANT POLICIES (Addendum to Syllabus)

The FAMU-FSU College of Engineering website provides several resources, links, and deadlines that students should know about. These include:

Important Deadlines, including late drop/withdrawal, retroactive drop/withdrawal, and graduation application: <https://www.eng.famu.fsu.edu/students/academic-deadlines>

Student Resources: <https://www.eng.famu.fsu.edu/student-resources>

Undergraduate Student Handbook: <https://www.eng.famu.fsu.edu/undergraduate/student-handbook>

Graduate Student Resources links: <https://www.eng.famu.fsu.edu/student-resources>

Program Outcomes/Student Learning Outcomes for engineering programs:

<https://eng.famu.fsu.edu/about/accreditation>

Academic Learning Compacts (ALC) for degree programs:

COE: <https://eng.famu.fsu.edu/about/accreditation/outcomes-alc-sacs>

FAMU: <https://www.famu.edu/administration/strategic-planning-analysis-and-institutional-effectiveness/university-assessment/academic-learning/current-alc.php>

FSU: <https://provost.fsu.edu/outcomes/smalcs-report/>

Sexual Misconduct: <https://www.eng.famu.fsu.edu/sexual-misconduct>

University Attendance Policy

Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

The College of Engineering has a restrictive interpretation of what is considered a valid excuse for an absence. See <https://www.eng.famu.fsu.edu/undergraduate/student-handbook>. Students may request an “Official Student Excuse” from Student Services and Undergraduate Affairs, B111. An excused absence does not necessarily excuse you from any missed course work. You must contact your course instructor to determine if you are eligible for any makeup assignments. Students should request an excused absence before it will occur if possible, or immediately upon their return to campus, and must bring verifiable documentation to justify the excuse. Excessive delay in requesting an excused absence or providing appropriate documentation may result in the request being denied. Deliberately providing false, forged, or misleading documentation may result in academic sanctions against the student.

Academic Honesty or Honor Policy

The Civil & Environmental Department requires ethical behavior of its administration, faculty, staff, and students that goes beyond simple compliance with the law. Academic Honesty or Honor Policy violations shall be reported, and appropriate actions will be taken by the Department Chair and Associate Dean, as appropriate for undergraduate or graduate students. Students are expected to uphold the University Student Code of Conduct and/or University Academic Honor Code for their home university, [FAMU \(https://www.famu.edu/about-famu/leadership/board-of-trustees/policies.php\)](https://www.famu.edu/about-famu/leadership/board-of-trustees/policies.php) or [FSU \(http://fda.fsu.edu/Academics/Academic-Honor-Policy\)](http://fda.fsu.edu/Academics/Academic-Honor-Policy).

Examples of Academic Integrity issues in the Civil & Environmental Engineering department include, but are not limited to:

1. **Plagiarism** – Including material/ideas from a source without proper attribution (citations).
2. **Unauthorized Group Work** – Working with another person(s) on any assignment or exam that is meant to be individual work. Unless otherwise informed, all assigned work is meant to be independent (e.g., lab reports).
3. **Distributed Group Work** – Working independently on separate problems/sections of group assignments, combining results, and submitting for grading (i.e., “divide and conquer”). All problems/sections of group assignments must be completed by the group as a collective.
4. **Individual Tasks** – Must be completed and submitted individually. Any duplicate submission will result in “No Grade” for this task.
5. **Unauthorized Online Source Use** – Submitting assignments to Chegg, Generative AI Tools (e.g., Chat GPT), and other Online Sources and presenting them as personal work.
6. **Repeated Submissions** – Submitting another student’s paper/assignment from a previous semester OR one of your own papers/assignments from a previous semester.
7. **Disruptive behavior** - is any behavior that interferes with the teaching/learning process. Disruptive behavior includes:
 - *Disrespecting a professor or another student, in class or online.*
 - *Talking, texting, or viewing material unrelated to the course during a lecture (**See Below**).*
 - *Failing to silence your cell phone during class.*
 - *Posting inappropriate material or material unrelated to the course on discussion boards.*

Technology policy

Use of mobile technology (cell phones, tablets, laptops, etc.) in the classroom may be distracting or inhibiting to student learning, both for the user and those around them. Student use of mobile technology in the classroom therefore may be limited per instructor guidelines as long the limitation of such does not negatively affect the student’s ability to access course content.

Americans with Disabilities Act

The universities value diversity and inclusion; we are committed to a climate of mutual respect and full participation. Our goal is to create learning environments that are usable, equitable, inclusive, and welcoming. We are committed to providing reasonable accommodations for all persons with disabilities in a manner that is consistent with academic standards of the course while empowering the student to meet integral requirements of the course.

Please note that instructors are not allowed to provide classroom accommodations to a student until appropriate verification from the FAMU Center for Disability Access and Resources (CeDAR) or FSU Office of Accessibility Services (OAS) has been provided. This syllabus and other class materials are available in alternative format upon request.

FAMU students with disabilities needing academic accommodation should:

- 1) register with and provide documentation to FAMU CeDAR; and
- 2) ensure a letter from CeDAR is sent to the instructor indicating the need for accommodation and type.

For more information about services available to FAMU students with disabilities, contact:

Center for Disability Access and Resources (CeDAR)

Florida A&M University

1735 Wahnish Way, Suite 102, Tallahassee, FL 32307

(850) 599-3180 (voice); (850) 561-2513 (fax)

cedar@famuedu.edu; <https://www.famuedu.edu/students/student-resources/center-for-disability-access-and-resources/index.php>

FSU students with disabilities needing academic accommodation should:

- 1) register with and provide documentation to the OAS;
- 2) request a letter from OAS to the instructor to be sent to the instructor indicating the need for accommodation and what type; and
- 3) meet (in person, via phone, email, skype, zoom, etc.) with each instructor to whom a letter of accommodation was sent to review approved accommodations.

For more information about services available to FSU students with disabilities, contact the

Office of Accessibility Services (OAS):

Florida State University

Tallahassee Campus

874 Traditions Way

108 Student Services Building

Tallahassee, FL 32306-4167

(850) 644-9566 (voice)

(850) 644-8504 (TDD)

oas@fsu.edu

<https://dsst.fsu.edu/oas>

Florida State University

Panama City Campus

Office of Student Affairs

2nd floor Barron Building, Room 215

Panama City, FL. 32405

(850) 770-2172 (voice)

(866) 693-7872 (toll-free)

sds@pc.fsu.edu

<http://pc.fsu.edu/students/student-affairs/sas>

University's Non-Discrimination Policy Statement

FAMU: <https://www.famuedu.edu/about-famuedu/leadership/division-of-legal-affairs/equal-opportunity-programs-and-labor-relations/policy-statement.php>

FSU: http://www.hr.fsu.edu/PDF/Publications/diversity/EEO_Statement.pdf

Confidential Campus Resources

Various centers and programs are available to assist students with navigating stressors that might impact academic success. These include the following:

FAMU students

Victim Advocate Program

1676 S Martin Luther King Jr Blvd 302 C.C. Cunningham Building (850) 412-5667

<https://www.famu.edu/students/student-resources/victim-advocate-program/index.php>

Office of Counseling Services 636 Gamble Street

(850) 599-3145 (voice)

(850) 599-8481 (fax)

counseling@famu.edu <https://www.famu.edu/students/student-resources/health-and-wellbeing/counseling-services/index.php>

Student Health Services 1700 Lee Hall Drive 116 Foote-Hilyer AC

(850) 599-3777 (voice)

(850) 412-5643 (fax)

<https://www.famu.edu/students/student-resources/health-and-wellbeing/health-services/index.php>

Academic Success

FSU students

Victim Advocate Program University Center A, Rm. 4100 (850) 644-7161

Available 24/7/365 Office Hours: M-F 8-5 <https://dsst.fsu.edu/vap>

Counseling and Psychological Services Askew Student Life Center, 2nd floor 942 Learning Way

(850) 644-8255

<https://counseling.fsu.edu/>

University Health Services Health and Wellness Center (850) 644-6230

<https://uhs.fsu.edu/>

Your academic success is a top priority for Florida A&M University and Florida State University. University resources to help you succeed include tutoring centers, computer labs, counseling and health services, and services for designated groups such as veterans and students with disabilities.

Syllabus Change Policy

Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice.