PRAIRIE VIEW A&M UNIVERSITY

SYLLABUS

CVEG 3023 - Geotechnical Engineering
Spring 2018

Instructor:	Dr. R. Radha, P.E., F. ASCE, Professor
Section # and CRN:	P01 and P81; CRN 24218 and 24224
Office Location:	*Wilson Room 110C*
Office Phone:	*936-261-1657*
Email Address:	*raradha@pvamu.edu*
Office Hours:	**M W – 11:00 to 11:50 AM**
Mode of Instruction:	Face to Face]
Course Location:	***WILC 109K (Lecture) and 109J (Laboratory)***
Class Days & Times:	**MW 1:00 – 1:50 PM and Lab M 2:00 - 4:50 PM**
Catalog Description:	3023 Geotechnical Engineering (2-3) Credit 3 semester hours. Physical and mechanical properties of soil; moisture and its movement in soil; moisture density relationships; soil classification; settlement; consolidation; permeability; testing of soil for physical and strength properties; and laboratory sessions.
Prerequisites:	CVEG 2063
Co-requisites:	None
Required Texts:	Soils and Foundations by Cheng Liu and Jack B. Evett, 8th ed., 2014, Publisher: PEARSON Prentice Hall
Recommended Texts:	Principles of Geotechnical Engineering by Braja M. Das, 8th ed., 2014, Publisher: CENGAGE Learning

The following policy is only for students who have declared a major (Engineering, Computer Science, and/or Technology) in the Roy G. Perry College of Engineering.

College of Engineering (CoE) Textbook Policy:

Students MUST acquire the required textbook that is listed on the course syllabus for this course. The textbook must be acquired by the 10th class day. Students are not allowed to share textbooks with students who are currently registered in the same class. Failure to acquire (or show proof of purchase) the required textbook by the 10th class day will result in the student being administratively dropped from the course. The University will assess financial obligations for the course to the student as with any other dropped class according to the fee schedule as well as your financial aid may be affected.

If you are not financially able to purchase a required textbook for an engineering course prior to the 10th class day, you may apply to the College of Engineering Textbook Fund for a textbook voucher. The voucher can only be used at the Campus Bookstore. Additional information about the College of Engineering Textbook Policy and the CoE Textbook Fund may be found at http://www.pvamu.edu/engineering/. The student may need to contact the Director of Engineering Student Services) in the CoE Dean's office (350 SR Collins).

Student Learning Outcomes:

	Upon successful completion of this course, students will be able to:	Program Learning Outcome # Alignment*	ABET Outcome Alignment
1	Understand the principles of Geotechnical Engineering, specifically: the procedures to determine the properties of soils.	e and k	
2	Analyze soil behavior under load, stress and strain	e and k	
3	Have the ability to apply the principles of soil mechanics in the design and construction of foundations	c	
4	Have the ability to determine bearing capacity and design shallow foundations	c	
5	Have an ability to design and conduct experiments, as well as to analyze and interpret data	b	
6	Have an ability to communicate effectively.	g	

* The Civil Engineering Program Learning Outcomes are derived from ABET Criterion 3 (Student Outcomes)

ABET Criterion 3 and Civil Engineering Program Educational Objectives

***ABET Criterion 3. Student Outcomes**

Engineering programs must demonstrate that their graduates have:

(a) an ability to apply knowledge of mathematics, science, and engineering
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(c) an ability to design a system, component, or process to meet desired needs
(d) an ability to function on multi-disciplinary teams
(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of professional and ethical responsibility
(g) an ability to communicate effectively
(h) the broad education necessary to understand the impact of engineering solutions in a global and societal context
(i) a recognition of the need for, and an ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Civil Engineering Program Educational Objectives (PEOs):

Civil Engineering program graduates will:

1) Have careers in civil engineering or related fields that lead to increasing levels of responsibility and leadership;
2) Obtain professional licensure/certifications;
3) Complete graduate studies in civil engineering or related fields;
4) Engage in professional development and service.

Table: Outcome Measures

Course	CVEG Objectives				ABET Criterion 3										
	1	2	3	4	a	b	c	d	e	f	g	h	i	j	k
CVEG 3023	**x**	**x**	**x**	**x**		**x**					**x**				

x are the outcomes measured for this course

Course Requirements & Evaluation Methods

Students will be evaluated based on their performance in class examinations, homework, quiz, laboratory reports, design project and presentation and class attendance and participation in class discussions. ABET Criteria 3(b), and 3(g) will be measured for this course.

TOPICS COVERED

Lecture Topics:

Origin of Soil, Classification of Soil, Soil Properties, Subsoil Exploration, Soil Compaction, Permeability, Stress in a Soil Mass, Consolidation and Settlement, Shear Strength of Soil, Soil Bearing Capacity, Shallow Foundations and Pile Foundations.

Laboratory Test Topics:

Moisture Content, Specific Gravity, Sieve Analysis, Atterberg Limits, Compaction, Permeability, Field Unit Weight, Direct Shear, Unconfined Compression Test

Method of Determining Final Course Grade

Course Grade Requirement	Value	Total
1) Class Participation and quizzes	5%	5%
2) Homework	10%	10%
3) Lab Reports and Project	20%	20%
4) Tests @ 15% each	45%	45%
5) Final Exam (Comprehensive)	20%	20%
Total:	**100%**	**100%**

Grading Criteria and Conversion:
A = 90-100
B = 80-89
C = 70-79
D = 60-69
F = 0-59

Taskstream
Taskstream is a tool that Prairie View A&M University uses for assessment purposes. At least one of your assignments is **REQUIRED** to be submitted as an "artifact," an item of coursework that serves as evidence that course objectives are met. More information will be provided during the semester, but for general information, you can visit Taskstream via the link in eCourses.

Course Procedures and or Additional Instructor Policies

1. Class attendance is a requirement for the course.

2. Student absent or late for four or more classes may receive a failing grade.

3. Homework, projects, or reports must be turned in at the beginning of class on the due date.

4. Quiz may be given on any day without prior announcement.

5. No make-up quiz, test or examination will be given. If you miss a test/examination, you will receive zero credit for that test. If you have an excused absence, notify the instructor ahead of time.
6. Cell phones must not be used during class period, tests and exams.

HOMEWORK:
All assignments must be submitted to complete the course.
The following areas will be graded:

1. Completeness: Did you work all parts of the assignments?
2. Accuracy: Did you get the "correct" answer and indicate the units?
3. Format and Neatness: Is your presentation of the solution easy to follow, legible and in a professional manner?

Semester Calendar

LECTURE MW 1:00-1:50 P.M.

CLASS	SUBJECT	READING ASSIGNMENT
1	Introduction	1.1-1.4
2	Soil Particle Size	2.1-2.2
3	Atterberg Limits	2.3
4	Classification of Soil AASHTO	2.4
5	Classification of Soil USCS	2.4
6	Weight – Volume Relationships	2.5-2.6
7	Soil Properties, Relative density	2.7-2.11
8	Soil Exploration	3.1-3.10
9	Soil Compaction	4.1-4.9
10	Test #1	
11	Review of Test	
12	Permeability	5.1-5.5
13	Stress distribution in Soil	6.1-6.2
	Concentrated Load	
14	Stresses in a Soil Mass UDL	6.3
15	TEST #2 (MID SEMESTER EXAM)	
16	Spring Break	
17	Review of Test	

18	Consolidation	7.1-7.6
19	Settlement	7.7
20	Time Rate of Settlement	7.8-7.10
21	Shear Strength of Soil	8.1-8.2
22	Shear Strength-Soil Failure	8.3-8.5
23	Shallow Foundations	9.1-9.3
24	TEST #3	
25	REVIEW of Test	
26	Soil-Bearing Capacity	9.4-9.5
27	design of Footings	9.6-9.8
28	Pile Foundations	10.1-10.6
29	Review Day	
30	Study Day	

May FINAL EXAMINATION (Comprehensive)

LABORATORY - M 2:00-4:50 P.M. ROOM 109J, Wilson Engineering Center

Lab session	Topic	Experiment #
1	Lab Organization and Standard	
2	Determination of Moisture Content	#1
3	Specific Gravity	#2
4	Sieve Analysis	#3
	Hydrometer Analysis	
5	Liquid Limit	#4
6	Plastic Limit, Shrinkage Limit	#5 and #6
7	Modified Proctor Compaction Test	#7
	Spring break	
8	Permeability (Constant-Head Method)	#8
9	Permeability (Falling-Head Method)	#9
10	Determination of Field Unit Weight	#10
11	Direct Shear Test	#11
12	Unconfined Compression Test	#12
14	Visits to Area Labs	

Estimated ABET Category Content:

Engineering Science:		**66% or 2 credits**
Engineering Practice and Design:		**34% or 1 credit**
	TOTAL:	**100% or 3 credits**

Student Support and Success

John B. Coleman Library
The library and its partners have as their mission to provide resources and instructional material in support of the evolving curriculum, as a partner in Prairie View A&M University's mission of teaching, research, and service and to support the University's core values of access and quality, diversity, leadership, relevance, and social responsibility through emphasis on ten key areas of service. It maintains library collections and access both on campus, online, and through local agreements to further the educational goals of students and faculty. https://www.pvamu.edu/library/ Phone: 936-261-1500

The Learning Curve (Center for Academic Support)
The Learning Curve offers Tutoring via peer tutoring. The services include workshops (i.e., Save My Semester, Recalculate Your Route), seminars (i.e., Tools You Can Use: TI-84), group review sessions (i.e., College Algebra Topic Reviews, GRE Preparation), group study opportunities (i.e., TSIA, HESI, Study Break, Exam Cram), and test-taking strategies (How to take Notes, Study Buddy, 5 Day Study Guide). The Learning Curve is a nationally certified tutoring program through the National Tutoring Association. The peer tutors are trained and certified by the coordinator each semester. Location: J.B. Coleman Library Rm. 207F. Phone: 936-261-1561

The Center for the Oversight and Management of Personalized Academic Student Success (COMPASS)
The Center for the Oversight and Management of Personalized Academic Student Success (COMPASS) is designed to help Prairie View students in their second year and beyond navigate towards graduation by providing the following services: Academic Advisement, Targeted Tutorials for Personalized Learning, Campus-Wide Referrals, and Academic & Social Workshops. Location: J.B. Coleman Library Rm. 306. Phone: 936-261-1040

Writing Center
The Writing Center provides student consultants on all aspects of the writing process and a variety of writing assignments. Writing Center consultations assist students in such areas as prewriting, brainstorming, audience awareness, organization, research, and citation. Students taking on-line courses or courses at the Northwest Houston Center or College of Nursing may consult remotely or by email. Location: Hilliard Hall Rm. 121. Phone: 936-261-3724.

Student Counseling Services
The Student Counseling Services unit offers a range of services and programs to assist students in maximizing their potential for success: short-term individual, couples, and group counseling, as well as crisis intervention, outreach, consultation, and referral services. The staff is licensed by the State of Texas and provides assistance to students who are dealing with academic skills concerns, situational crises, adjustment problems, and emotional difficulties. Information shared with the staff is treated confidentially and in accordance with Texas State Law. Location: Owens-Franklin Health Center Rm. 226. Phone: 936-261-3564

Testing
The Department of Testing administers College Board CLEP examinations, the HESI A2 for pre-nursing majors, LSAT for law school applicants and MPRE for second-year law students, the Experiential Learning Portfolio option, the Texas Success Initiative (TSI) Assessment, which determines college readiness in the state, and exam proctoring, among other service such as SAT and ACT for high school students. Location: Delco Rm. 141. Phone: 936-261-4286

Office of Diagnostic Testing and Disability Services
As a federally-mandated educational support unit, the Office of Disability Services serves as the repository for confidential disability files for faculty, staff, and students. For persons with a disability, the Office develops individualized ADA letters of request for accommodations. Other services include: learning style inventories, awareness workshops, accessibility pathways, webinars, computer laboratory with adapted hard and software, adapted furniture, proctoring of non-standardized test administrations, ASL interpreters, ALDs, digital recorders, livescribe, Kurtzweil, and a comprehensive referral network across campus and the broader community. Location: Evans Hall Rm. 317. Phone: 936-261-3585

Veteran Affairs
Veterans Services works with student veterans, current military and military dependents to support their transition to the college environment and continued persistence to graduation. The Office coordinates and certifies benefits for both the G.I. Bill and the Texas Hazlewood Act. Location: Evans Hall Rm. 323. Phone: 936-261-3563

Office for Student Engagement
The Office for Student Engagement delivers comprehensive programs and services designed to meet the co-curricular needs of students. The Office implements inclusive and accessible programs and services that enhance student development through exposure to and participation in diverse and relevant social, cultural, intellectual, recreational, community service, leadership development and campus governance. Location: Memorial Student Center Rm. 221. Phone: 936-261-1340

Career Services
Career Services supports students through professional development, career readiness, and placement and employment assistance. The Office provides one-on-one career coaching, interview preparation, resume and letter writing, and career exploration workshops and seminars. Services are provided for students at the Northwest Houston Center and College of Nursing in the Medical Center twice a month or on a requested basis. Distance Learning students are encouraged to visit the Career Services website for information regarding services provided. Location: Evans Hall Rm. 217. Phone: 936-261-3570

University Rules and Procedures

Disability Statement (Also See Student Handbook):
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Evans Hall, Room 317, or call 936-261-3585/3.

Academic Misconduct (See Student Handbook):
You are expected to practice academic honesty in every aspect of this course and all other courses. Make sure you are familiar with your Student Handbook, especially the section on academic misconduct. Students who engage in academic misconduct are subject to university disciplinary procedures.

Forms of Academic Dishonesty:

1. Cheating: deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.

2. Academic misconduct: tampering with grades or taking part in obtaining or distributing any part of a scheduled test.

3. Fabrication: use of invented information or falsified research.

4. Plagiarism: unacknowledged quotation and/or paraphrase of someone else's words, ideas, or data as one's own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one's own work also constitutes plagiarism.

Nonacademic Misconduct (See Student Handbook)
The university respects the rights of instructors to teach and students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with either (1) the instructor's ability to conduct the class, (2) the inability of other students to profit from the instructional program, or (3) campus behavior that interferes with the rights of others will not be tolerated. An individual engaging in such disruptive behavior may be subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under nonacademic procedures.

Sexual Misconduct (See Student Handbook):
Sexual harassment of students and employers at Prairie View A&M University is unacceptable and will not be tolerated. Any member of the university community violating this policy will be subject to disciplinary action.

Title IX Statement
Prairie View A&M University (PVAMU) is committed to supporting students and complying with the Texas A&M University System non-discrimination policy. It seeks to establish an environment that is free of bias, discrimination, and harassment. If you experience an incident of sex- or gender-based discrimination, including sexual harassment, sexual assault or attempted sexual assault, we encourage you to report it. While you may talk to a faculty member about an incident of misconduct, the faculty member must report the basic facts of your experience to Ms. Alexia Taylor, PVAMU's Title IX Coordinator. If you would like to speak with someone who may be able to afford you privacy or confidentiality, there are individuals who can meet with you. The Title IX Coordinator is designated to handle inquiries regarding non-discrimination policies and can assist you with understanding your options and connect you with on- and off-campus resources. The Title IX Coordinator can be reached by phone at 936-261-2123 or in Suite 013 in the A.I. Thomas Administration Building.

Class Attendance Policy (See Catalog for Full Attendance Policy)
Prairie View A&M University requires regular class attendance. Attending all classes supports full academic development of each learner whether classes are taught with the instructor physically present or via distance learning technologies such as interactive video and/or internet.

Excessive absenteeism, whether excused or unexcused, may result in a student's course grade being reduced or in assignment of a grade of "F". Absences are accumulated beginning with the first day of class during regular semesters and summer terms. Each faculty member will include the University's attendance policy in each course syllabus.

Student Academic Appeals Process
Authority and responsibility for assigning grades to students rests with the faculty. However, in those instances where students believe that miscommunication, errors, or unfairness of any kind may have adversely affected the instructor's assessment of their academic performance, the student has a right to appeal by the procedure listed in the Undergraduate Catalog and by doing so within thirty days of receiving the grade or experiencing any other problematic academic event that prompted the complaint.

TECHNICAL CONSIDERATIONS

***Minimum* Recommended Hardware and Software:**
- Intel PC or Laptop with Windows 7; Mac with OS X; Smartphone or iPad/Tablet with Wi-Fi
- High speed Internet access
- 8 GB Memory
- Hard drive with 320 GB storage space
- 15" monitor, 800x600, color or 16 bit
- Sound card w/speakers
- Microphone and recording software
- Keyboard & mouse
- Most current version of Google Chrome, Safari, Internet Explorer or Firefox

Note: Be sure to enable Java & pop-ups in the Web browser preferences

Participants should have a basic proficiency of the following computer skills:
- Sending and receiving email
- A working knowledge of the Internet
- Proficiency in Microsoft Word (or a program convertible to Word)
- Proficiency in the Acrobat PDF Reader
- Basic knowledge of Windows or Mac O.S.

***Netiquette* (online etiquette):**
Students are expected to participate in all discussions and virtual classroom chats as directed. Students are to be respectful and courteous to others on discussions boards. Foul or abusive language will not be tolerated.

***Technical Support*:**

Students should go to https://mypassword.pvamu.edu/ if they have password issues. The page will provide instructions for resetting passwords and contact information if login issues persist. For other technical questions regarding eCourses, call the Office of Distance Learning at 936-261-3283

***Communication Expectations and Standards*:**

Emails or discussion postings will receive a response from the instructor, usually in less than 48 hours. Urgent emails should be marked as such. Check regularly for responses.

Discussion Requirement:

Online courses often require minimal to no face-to-face meetings. However, conversations about the readings, lectures, materials, and other aspects of the course can take place in a seminar fashion. This will be accomplished by the use of the discussion board. The exact use of discussion will be determined by the instructor.

It is strongly suggested that students type their discussion postings in a word processing application and save it to their PC or a removable drive before posting to the discussion board. This is important for two reasons: 1) If for some reason your discussion responses are lost in your online course, you will have another copy; 2) Grammatical errors can be greatly minimized by the use of the spell-and-grammar check functions in word processing applications. Once the post(s) have been typed and corrected in the word processing application, it/they should be copied and pasted to the discussion board.

[ABET Criterion 3a-k] {Fall 2015 Degree Plan}

a) an ability to apply knowledge of mathematics, science, and engineering
b) an ability to design and conduct experiments, as well as to analyze and interpret data
c) an 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
d) an ability to function on multidisciplinary teams
e) an ability to identify, formulate, and solve engineering problems
f) an understanding of professional and ethical responsibility
g) an ability to communicate effectively
h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
i) a recognition of the need for, and an ability to engage in life-long learning
j) a knowledge of contemporary issues
k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Civil Engineering Program Criteria (2016-2017)

The curriculum must prepare graduates to apply knowledge of mathematics through differential equations, calculus-based physics, chemistry, and at least one additional area of basic science; ***apply probability and statistics to address uncertainty****; analyze and solve problems in at least four technical areas appropriate to civil engineering; conduct experiments in at least two technical areas of civil engineering and analyze and interpret the resulting data; design a system, component, or process in at least two civil engineering contexts;* ***include principles of sustainability in design****; explain basic concepts in project management, business, public policy, and leadership;* ***analyze issues in professional ethics****; and explain the importance of professional licensure.*

Civil Engineering Program Educational Objectives

Graduates from the Civil Engineering program will:

1. Have careers in civil engineering or related fields that lead to increasing levels of responsibility and leadership
2. Obtain professional licensure/certifications
3. Complete graduate studies in civil engineering or related fields
4. Engage in professional development and service

Mapping of Program Educational Objectives (PEOs) onto Student Outcomes (SOs)

PEO ID	Objectives	CVEG Student Outcomes										
	Graduates from the Civil Engineering program will:	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**
PEO 1	have careers in civil engineering or related fields that lead to increasing levels of responsibility and leadership	X	X	X	X	X	X	X	X	X	X	X
PEO 2	obtain professional licensure/certifications	X		X		X						X
PEO 3	complete graduate studies in civil engineering or related fields	X	X	X		X		X	X	X	X	X
PEO 4	engage in professional development and service						X	X	X	X	X	X

Mapping of CVEG Courses onto PEOs and Student Outcomes [Fall 2015 Degree Plan]

Course No	Course Title	CVEG Program Educational Objectives				CVEG Student Outcomes										
		1	2	3	4	a	b	c	d	e	f	g	h	i	j	k
CVEG 1011	Intro to Engineering	X			X						M			M		
CVEG 1021	Intro to Civil Engineering	X	X		X							M				M
CVEG 2001	Emerging Issues in CE Prof	X	X		X				M							M
CVEG 2043	Engineering Mechanics I	X	X			M				M						
CVEG 2061	Materials & Dynamics Lab	X	X			M			M							
CVEG 2063	Mechanics of Materials I	X	X			M				M						
CVEG 2081	**Surveying & Geospatial Concepts**	**X**	**X**				**M D**								**M**	
CVEG 3023	Geotechnical Engineering	X	X				M					M				
CVEG 3031	Concrete & Steel Lab	X					M					M				
CVEG 3043	Environmental Engineering	X	X				M D			M						
CVEG 3051	Professional Engineering I	X	X		X						M			M		
CVEG 3053	Transportation Engineering	X	X							M			M			
CVEG 3063	Hydraulics	X	X			M	M D									
CVEG 3073	Structural Analysis I	X	X							M						M
CVEG 3083	Steel Design	X	X	X	X			M								M
CVEG 4013	Reinforced Concrete	X	X	X	X			M								M
CVEG 4021	Geotechnical Engineering Design I	X	X							M			M			
CVEG 4043	Environmental Eng Design	X	X	X	X			M						M		
CVEG 4053	Transportation Eng Design	X	X	X	X			M							M	
CVEG 4063	Water Resources Eng.	X	X	X	X			M			M			M		
CVEG 4072	Systems Engineering and Uncertainty	X		X												
CVEG 4141	Engineering Management & Ethics	X	X		X						M				M	
CVEG 4472	Sr. Design & Professionalism I	X	X	X	X			M	M		M			M		
CVEG 4482	Sr. Design & Professionalism II	X	X	X	X			M				M	M		M	

X means the Program Objective is achieved
M means that the skills described in the program outcome is covered in greater details and measured in the course.
D design of experiments

Note: In addition, evidence will be collected to demonstrate the satisfaction of CE Program Criteria for the following: I) Application of probability and statistics to address uncertainty; II) the inclusion of principles of sustainability in design; III) explanation of basic concepts in Management, Business, Public Policy and Leadership; IV) the analysis of issues in professional ethics.