

This document downloaded from
vulcanhammer.net vulcanhammer.info
Chet Aero Marine



Don't forget to visit our companion site
<http://www.vulcanhammer.org>

Use subject to the terms and conditions of the respective websites.

University of Tennessee at Chattanooga
College of Engineering and Computer Science
ENCE 3610 - Soil Mechanics (3)
CECS Differential Course Fee, Upper Division Credit
Conventional Methodology Instructional Method
22035—0—Spring 2020
TR 0925-1040, EMCS 218

Catalog Description

Geological overview, soil composition, soil type and structure, index properties, classification, site investigation, subsurface flow, flow nets, drainage, subsurface stresses, settlement, shear strength, and slope stability. Spring semester. Lecture 3 hours. Prerequisites: ENCE 2460 and ENCE 2460L with minimum grades of C or department head approval. Corequisite: ENCE 3610L or department head approval. Differential course fee will be assessed.

Instructor

Don C. Warrington, P.E., PhD., M. A.S.C.E.
Office: EMCS 214D

Hours posted on Blackboard

Email Don-Warrington@mocs.utc.edu

Telephone (423) 488-8590 (also accept text messages, you should identify yourself as you're probably not in my contacts list.) I attempt to respond within six (6) hours to your emails or messages.

There are two website relating to the instructor and the course which you need to be aware of:

- Instructor's website with links to all the PowerPoint presentations he uses, and many more links which will make this

course a lot easier: <https://wp.me/P8fAje-fJ>

- More information about the instructor: <https://wp.me/P8QSbh-2>

Textbooks

- Verruijt, A., *Soil Mechanics*. Delft, The Netherlands: VSSD, 2012.
- Naresh C. Samtani and Edward A. Nowatzki, *Soils and Foundations Reference Manual*, Vols. 1 and 2. Washington, DC: National Highway Institute, Department of Transportation, 2006.

Technology

I attempt to make the technology as simple to implement as possible, these are the requirements:

- Adobe Acrobat Reader, at least version 7.0. You can also use an alternative such as Mac Preview, Okular, etc. All of the course slides and many of the online handouts are in this format.
- Microsoft Excel spreadsheets, which can also be read in programs such as LibreOffice.

University of Tennessee at Chattanooga
College of Engineering and Computer Science
ENCE 3610 - Soil Mechanics (3)
CECS Differential Course Fee, Upper Division Credit
Conventional Methodology Instructional Method
22035—0—Spring 2020
TR 0925-1040, EMCS 218

- Windows 32-bit executables which generally do not need to be installed on your computer or UTC's. These will work in Windows 2000 or later (sometimes earlier) and do fine in Linux on Wine. Unfortunately Mac doesn't have a widely accessible way of running Windows executables, even ones as simple as these.
- You will need your browser for some of the online routines (such as those for driven piles.) There are no fancy requirements for this either.
- 5. Predict consolidation settlement in a cohesive soil. (1)
- 6. Determine Mohr-Coulomb failure envelope from triaxial test results. (1)

Course Outline

- Introduction; Engineering Geology
- Soil Classification
- Site Exploration and Classification
- Soil Composition
- Effective Stress
- Groundwater
- Settlement and Volume Expansion
- Mohr's Circle and Combined Stresses
- Induced Stresses by External Loads
- Shear Strength
- Lateral Earth Pressures
- Stability of Earth Slopes

Course Objectives (numbers in parentheses indicate relationship to civil engineering program outcomes at end of syllabus)

At the completion of the course, students will have demonstrated the ability to:

1. Perform phase calculations on soil/water/air mixtures, and classify a soil according to the Unified System. (1)
2. Determine groundwater flow through a homogeneous, isotropic soil. (1)
3. Determine stress in a soil induced by surface load away from point or area of load. (1)
4. Determine effective stress of a soil assuming hydrostatic conditions. (1)

Evaluation

- Homework: Five (5) assignments @ 8% each = 40%
- Two in-class tests (including Mid-Term) @ 20% each = 40%
- Final Examination: 20%

University of Tennessee at Chattanooga
 College of Engineering and Computer Science
 ENCE 3610 - Soil Mechanics (3)
 CECS Differential Course Fee, Upper Division Credit
 Conventional Methodology Instructional Method
 22035—0—Spring 2020
 TR 0925-1040, EMCS 218

The structure of these evaluations is as follows:

Evaluation	Slide Set or Homework Set
HS 1	1-5
HS 2	6-8
Test 1	HS 1 and 2
HS 3	9, 10
HS 4	11, 12
Test 2	HS 3 and 4
HS 5	13, 14
Final Exam	HS 5

The links with the textbooks are given with the course slide downloads on the instructor's website.

Course Policies

- Due date for homework assignments will be announced when assignment is given, and posted on UTC Learn. Five (5) points taken off each day for late submission.

Homework assignments themselves are also posted on UTC Learn as well, along with the solutions when everyone is done. Homework must be turned in electronically. The following must be adhered to for you to receive full credit:

- Ideally, the homework should be in **one** Adobe Acrobat pdf file, Version 7.0 or earlier. UTC Learn accepts Word files and even images. If you opt for images they must be in order!
- The file name must include your name and the assignment designation.
- It must be submitted via the UTC Learn system. This is for your protection as much as mine: the submission time is noted, which establishes whether your homework was on time or late.
- If you scan your homework, make sure your scans are legible and have enough contrast to be read. (If your homework isn't legible before you scan it, take care of that first.) Bad camera phone photos are a sure way to reduce credit on homework.
- Paper submissions, or email submissions, are not acceptable.
- Letter Grading System:
 - 90 – 100: A
 - 80 – 90: B
 - 70 – 80: C
 - 60 – 70: D
 - < 60: F

University of Tennessee at Chattanooga
College of Engineering and Computer Science
ENCE 3610 - Soil Mechanics (3)
CECS Differential Course Fee, Upper Division Credit
Conventional Methodology Instructional Method
22035—0—Spring 2020
TR 0925-1040, EMCS 218

- Attendance is required with the exception of special arrangements made before class as the only excused absences.
- When applicable, all problems must include a figure. All figures are to be neat and legible. Also when applicable, all problems must include a) Given b) Find c) Solution. On the first page of each problem set or test, in the upper right hand corner write a) Your Name, b) Course Number and c) Problem Set or Test Number. *Any problem set or test that does not follow these rules or is not neat will receive reduced credit.*
- On the first page of each problem set or test, in the upper right hand corner write the following:
 - Your Name
 - Course Number
 - Problem Set or Test Number.
- Each time you use an equation, tell me what it is: don't just put a bunch of numbers on the page and expect anyone to know what you did. This too will result in reduced credit.
- You are encouraged to work homework with someone but your turned in work must be your own work.
- All quizzes and exams are open book(s) and open notes. You obviously may use a calculator, but no laptops or any other internet-accessing devices (iPhone, iPad, iPod Touch, Droid, etc.) can be used during a quiz or exam (see following paragraph for penalty.)
- Honor Code Pledge: I pledge that I will neither give nor receive unauthorized aid on any test or assignment. I understand that plagiarism constitutes a serious instance of unauthorized aid. I further pledge that I exert every effort to ensure that the Honor Code is upheld by others and that I will actively support the establishment and continuance of a campus-wide climate of honor and integrity.
- You are studying now so that you may enter and practice the engineering profession later. The engineering profession is highly regarded by the public because those who practice it do so with ethical and social consciousness. The same is expected of students in this course. Any direct copying of homework, tests or exams will be considered a violation of the honor code and a course grade of "F" will be given

University of Tennessee at Chattanooga
College of Engineering and Computer Science
ENCE 3610 - Soil Mechanics (3)
CECS Differential Course Fee, Upper Division Credit
Conventional Methodology Instructional Method
22035—0—Spring 2020
TR 0925-1040, Sim Center Auditorium

Student Outcome Objectives

1. An ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental and economic factors
3. An ability to communicate effectively with a range of audiences
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies