

Technical College of the Lowcountry  
921 Ribaut Road  
Beaufort, SC 29901



Instructor: Rick Eckstrom  
Industrial Technology Division  
Building 16, Room 132  
Phone: 843-470-8386  
Fax: 843-470-8413  
[rleckstrom@tcl.edu](mailto:rleckstrom@tcl.edu)

## CET 215 SOIL MECHANICS FUNDAMENTALS

### Course Description

This course is an introduction to soils and their engineering properties, including classification and foundations  
2 Cr (2 lec/pres, 0 lab, 0 other)

### Course Focus

The course covers soil types, properties of soils, soil exploration, and compaction. Also covered is the stress distribution in soils and shallow and deep foundations. Lateral earth pressure is discussed

### Text and References

Liu, Cheng & Evett, Jack, **Soils and Foundations**, 7th ed. Prentice Hall

Published: 2008  
ISBN 978-0-13-222138-2

### Course Goals

The following list of course goals will be addressed in the course. These goals are directly related to the performance objectives.

1. understand soil categories
2. perform Atterberg soil limits test
3. perform mechanical grain size analysis
4. perform hydrometer grain size analysis
5. classify soil type using AASHTO classification system
6. classify soil type using the unified soil classification system
7. compute water content
8. calculate soil phase relationships
9. review soil field investigation
10. understand horizontal/vertical stress relationship
11. understand standard penetration test
12. understand field vane test
13. review cone penetration test
14. understand flat dilatometer test
15. calculate vertical soil stress
16. perform sand cone field density test
17. calculate soil specific gravity
18. perform compaction test
19. understand soil compaction techniques
20. review soil permeability

21. understand direct shear test
22. calculate internal angle of friction using triaxial testing
23. compute relationship between failure plane angle and internal angle of friction
24. calculate shear strength of soil
25. use building code presumptive load-bearing capacities
26. calculate load capacity using bearing equations
27. calculate pile bearing capacity
28. use engineering-news pile driving formula
29. calculate at rest lateral earth pressure
30. calculate active earth pressure
31. calculate passive earth pressure
32. review design of retaining walls

### **Student Contributions**

The student is expected to be prepared for class and to be in class on time. Test materials are weighed heavily in favor of lecture materials. The student will complete all assignments. The student is required to observe and practice all lab safety rules. All cell phones and pagers must be silenced during class.

### **Course Evaluation**

The grade scale is as follows:	90 – 100 =	A
	80 – 89 =	B
	70 – 79 =	C
	60 – 69 =	D
	Below 60 =	F

Course grades will be determined from the following weighting scheme:

Attendance/Notebook Review/Homework completion	20%
Quizzes	60%
Final	20%

### **Course Schedule**

The class meets for 1 lecture/lab for 1:40 hours per week for sixteen weeks.

Approved by: Kenneth Flick Developed/Revised: 08-19-2013  
 Ken Flick, Division Dean for Business/Industrial Division

### **ADA Statement**

The Technical College of the Lowcountry provides access, equal opportunity and reasonable accommodation in its services, programs, activities, education and employment for individuals with disabilities. To request disability accommodation, contact the counselor for students with disabilities at (843) 525-8228 during the first ten business days of the academic term.

### **Academic Misconduct**

There is no tolerance at TCL for academic dishonesty and misconduct. The College expects all students to conduct themselves with dignity and to maintain high standards of responsible citizenship.

It is the student's responsibility to address any questions regarding what might constitute academic misconduct to the course instructor for further clarification.

The College adheres to the Student Code for the South Carolina Technical College System. Copies of the Student Code and Grievance Procedure are provided in the *TCL Student Handbook*, the Division Office, and the Learning Resources Center.

### **Attendance**

The College's statement of policy indicates that students must attend ninety percent of total class hours or they will be in violation of the attendance policy.

- Students not physically attending class during the first ten calendar days from the start of the semester must be dropped from the class for NOT ATTENDING.
- Students taking an online/internet class must sign in **and** communicate with the instructor within the first ten calendar days from the start of the semester to indicate attendance in the class. Students not attending class during the first ten calendar days from the start of the semester must be dropped from the class for NOT ATTENDING.
- Reinstatement requires the signature of the division dean.

In the event it becomes necessary for a student to withdraw from the course **OR if a student stops attending class, it is the student's responsibility to initiate and complete the necessary paperwork.** Withdrawing from class may have consequences associated with financial aid and time to completion.

When a student exceeds the allowed absences; the student is in violation of the attendance policy. The instructor **MUST** withdraw the student with a grade of "W", "WP", or "WF" depending on the date the student exceeded the allowed absences and the student's progress up to the last date of attendance *or* under extenuating circumstances and at the discretion of the faculty member teaching the class, allow the student to continue in the class and make-up the work. This exception must be documented at the time the allowed absences are exceeded.

Absences are counted from the first day of class. There are no "excused" absences. All absences are counted, regardless of the reason for the absence.

- A student must take the final exam or be excused from the final exam in order to earn a non-withdrawal grade.

A copy of TCL's **STATEMENT OF POLICY NUMBER: 3-1-307 CLASS ATTENDANCE (WITHDRAWAL)** is on file in the Division Office and in the Learning Resources Center.

**Hazardous Weather**

In case weather conditions are so severe that operation of the College may clearly pose a hardship on students and staff traveling to the College, notification of closing will be made through the following radio and television stations: WYKZ 98.7, WGCO 98.3, WGZO 103.1, WFXH 106.1, WWVV 106.9, WLOW 107.9, WGZR 104.9, WFXH 1130 AM, WLVH 101.1, WSOK 1230 AM, WAEV 97.3, WTOC TV, WTGS TV, WJWJ TV, and WSAV TV. Students, faculty and staff are highly encouraged to opt in to the Emergency Text Message Alert System. [www.tcl.edu/textalert.asp](http://www.tcl.edu/textalert.asp)

**Emergency Text Message Alert**

Students, faculty and staff are highly encouraged to opt in to the Emergency Text Message Alert System. Participants receive immediate notification of emergency events and weather cancelations via text messaging on their cell phones. Participants can also opt in to receive non-emergency news and announcements. Go to [www.tcl.edu](http://www.tcl.edu). On the homepage, click on “emergency TextAlert at TCL” and fill out the form or go to [www.tcl.edu/textalert.asp](http://www.tcl.edu/textalert.asp)