Three Rivers Community College

Soils – Syllabus

Lecture CIV K200; Lab CIV K 201
Spring 2011

Instructor; Donald W. Gerwick, P.E., L.S., C.F.M.
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Office Hours: T 4:00 – 5:30, W 3:00 – 4:45, R 4:00 – 5:00
Additional Days and Times by Appointment are Available

Class Location – B 107;
Times: Monday (Lecture) 5:20 pm – 8:05; Thursday (Lab) 4:00 p.m. -5:40

Text: **Soils and Foundations,** 7th edition; Cheng, Liu & Evett, Jack B.
Portions of the text will be utilized and will be augmented with additional materials as listed.

Studying the engineering properties of soils, applications to multidisciplinary fields will be investigated. A variety of labs will be conducted to assess engineering properties; how soil can be controlled and used to prevent degradation of natural environments; as a clarifier of degraded waters, as well as soils potential for positive and negative impacts on structures and other construction related projects. The course includes a design project involving design of a sanitary subsurface disposal system using the CT Health Code Technical Standards. (instructions for internet download will be provided with project hand out).

Course Outcomes – Students who successfully complete the course shall have a good understanding of the physical properties of soil as well as their behavior with respect to loads, shear and consolidation. Students will also gain a fundamental understanding of the movement of water through soils.

Portfolio - Each student will maintain a 3 ring binder portfolio of all labs. The portfolio will consist of your syllabus, all handouts, all homework, assignments and all lab instructions, lab notes, lab write ups and any and all other material associated with your labs. **Portfolio's will be handed in at the end of the semester and will NOT be returned**, so the student should make copies of all work that they would like to keep for themselves. Lab portfolio's will count for 25% of your lab grade; failure to turn in a portfolio by the date of the last class, will result on a "0" for that portion of the lab grade.

Chap. 1 - Formation of Natural Deposits – All Sections

Formation of soils with regards to sources, methods of creation and transportation modes and there impact on soil types.

Chap. 2 - Engineering Properties of Soil – All Sections

This chapter introduces the student to many of the basic properties of soil and much of the terminology that is used in the description of soils.

Quiz 1 – Chapters 1 & 2 and all lecture material.

Chap. 4 – Soil Compaction and Stabilization – All Sections

Chap. 5 – Water in Soil - Sections 5-1, to 5-4

Flow of water in soils
Laboratory and field methods for determination of permeability

Introduction to CT DEP seepage analysis
Connecticut Health Code peculation tests

Quiz 2

Chap . 6 – Stress Distribution in Soil – All Sections
Vertical Pressure below concentrated and uniformly loaded surfaces

Chap. 7 – Consolidation and Settlement – Sections 7.1 – 7.4
An Introduction to settlement and consolidation of clays

Chap. 8 – Shear Strength of Soil – All Sections

Quiz 3

Chap. 12 - Lateral Earth Pressure – Section 12.1 to 12.4

Chap. 13 – Retaining Structure – 13.1 to 13.5

Chap. 14 – Stability Analysis of Slopes – 14.1 to 14.4

Selected sections may be assigned with regard to Lateral Earth Pressure, Retaining Structures, and Slope stability.

Quiz 4

Chap. 3 – Soil Exploration – All Sections

Selected topics will be to introduced such as basic exploration methods with regards to soils. Emphasis on Soil Exploration, Standard Penetration and Cone Penetration and Vane Tests. Emphasis will be placed on “reading” and logging test holes using classification systems of chapter 2. Providing scheduling and opportunity allow, a field trip will be arranged to a site for observation of test holes.

Chap. 9 - Shallow Foundations

Introduction to loads on foundations; bearing capacity analysis and other aspects related to foundations.

Chap. 10 & 11

Introduction to Piles and Drilled Shaft Foundations – A brief overview, no assigned sections.

Quiz 5

Semester Project – In addition to regular soils labs there will be a class project which will be the design of soils "structure" which students will attempt to create a "failure" condition the some form of failure mechanism such as shear. Additional information will be distributed separately during the semester.

Final Grade – The students final grade will be based on the weighted average of all quizzes and 2 papers taken during the semester which will account for 85% of your grade. Assigned homework and class participation will make up the remaining 10 and 5% respectively. No work, makes ups or assignments shall be accepted after the last day of class.

Home Work (HW) – Home work assigned on a Tuesday will be due on the following Tuesday, unless otherwise modified in class; Homework will be turned in at the beginning of class. Students must SHOW ALL WORK FOR MATH RELATED PROBLEMS. HW will be graded and returned by the following Monday. Home work will receive a grade of 0, 1, 2, 3, or 4

Late home work, unless otherwise excused will be marked at 50% off (this includes HW turned in at the end of class.)

Lab Grades will be based on the weighted average of assigned lab write ups, lab projects and the students Lab Portfolio. Missed labs generally cannot be made up, and will receive a "0" grade, unless arrangements have been made with the instructor. If students want their field book returned they must turn it in for grading 2 weeks before final grades. All portfolio's are due no later than the last day of classes and will **NOT** be accepted after that. It is the students responsibility to turn in their portfolio's.

Quizzes – Students will be allowed one side of one 8 1/2 x 11 sheet of paper for formulas and conversion factors only (no definitions or other written notes)

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Students must have their **calculators, cell phones will not be allowed** as a substitute; failure to bring a calculator will result in lost points as many questions will be impossible to answer without one. Quizzes will be based on lecture material and all assigned sections of the text, and homework.

Quizzes will be assigned a value by the instructor; quiz grades will be the number of points earned on the quiz divided by the total value of the quiz. Points earned for each problem will be awarded in a similar manner as noted in the homework section. See Class Attendance regarding missed quizzes.

Class Attendance is expected, although, while students will not be penalized for non-attendance (with the exception as noted above for labs) they will be responsible for material covered in their absence. It

will be the student's responsibility to determine what assignments, quizzes or material that may have been missed, and to make arrangements to turn in missed work. If students miss a quiz they must be prepared to take the quiz the day they return to class unless other arrangements have been made in advance with the instructor. Should for any reason the quiz is not made up upon return to class it is the students responsibility to make arrangements to take a make up quiz.

Class Room Policies - Cell phones brought to class shall be off and out of site (no texting). Language and behavior that is disrespectful, or disruptive, to others is unacceptable; Students should refer to their Student Handbook for examples of such behavior as well additional school policies.

Academic Integrity – Unless indicated by specific assignments, by the instructor, for group projects, all work for assignments shall be that of the individual student. Cheating on quizzes or using the work of others without proper credit (plagiarism) for assignments, or other forms of academic dishonesty, as defined by the Student Handbook, is unacceptable. If, after evaluation of the potential infraction(s), consistent with the Student Handbook, a grade of "0" for the assignment may be assigned.

Disabilities – If you have a visible or hidden disability that may require classroom or test taking modifications you are encouraged to see me and to contact Student Services for assessment.