

Three Rivers Community College

Introduction To Civil Engineering and Materials CIV K 101

B 107: T, 5:45 – 8:30

Fall 2012

Instructor; Donald Gerwick, P.E., L.S.

Office 205W 505.5

Email: dgerwick@trcc.commnet.edu and don@gerwickmereen.com

Office Hours: M, 4:00- 4:45, T 4:00 – 5:30; W 4:00 – 4:45

Additional Days and Times by Appointment are Available

Text – **Basic Construction Materials**, 8th edition, Theodore W. Marotta

This course will familiarize students to the field of civil engineering and engineering materials. The discussion of engineering materials past and present as well as the function of the civil engineer and how their role influenced history. Engineering materials such as aggregates, concrete, asphalt, steel, wood and other traditional, as well as, newer materials will be studied. Students will examine the physical properties, the composition, and the many uses of engineering materials in our daily lives.

Students will be introduced to the “greening” of civil engineering techniques and methodologies. Sustainable infrastructures as well as our landscapes will be explored. Students will learn about the important role that civil engineers play in our everyday lives and how civil engineers developed our infrastructure from the beginning of time to the present and beyond to meet the challenges of the future. In class exercises during the semester will include construction of section models of road bases, mixing concrete and experiments with wood.

Learning Outcomes –

- Students will gain a fundamental understanding of basic engineering materials.
- Students will gain an understanding of the role(s) of the civil engineer in society.
- Students will gain an insight to the changing technologies for more sustainable design.

Chap. 1 – Introduction – All sections;

Additional Lecture material; Roots of Engineering -the roles of “civil engineering” in the transformation of humans from “hunter-gathers” to an agrarian society.

Text Homework (HW) Chap 1 – 1-3, 1-7, 1-8, 1-9, 1-12, 1-15, 1-18

Chap. 2 – Aggregates – All sections; in class exercises with soils related to size, texture, etc. with a sieve test being performed.

Additional Lecture material; Roots of Engineering - the roles of “civil engineering” in the growth of societies, particularly the introduction of water transportation, drainage, sanitation, and constructed roads.

Text HW Set 1 - 1, 2, 3, 5, 7a & 7b, 8, 9
 Set 2 – 15, 17, 19, 21

Quiz 1 Chapters 1 & 2 and Lecture Material

Chap. 3 – Asphalt – All sections

Text HW Set 1 – 1, 2, 4, 6, 8
 Set 2 - 14, 20, 22, 24

Quiz 2 - Chapter 3 and Lecture Material

Chap. 4 – Portland Cement Concrete – All sections; students will develop and make a concrete mix

Additional Lecture material; Roots of Engineering Continued-the roles of “civil engineering” in the growth of societies, particularly the introduction of water transportation, drainage, sanitation, and constructed roads.

Text HW Set 1 – 1, 2, 4, 6, 8, 10
 Set 2 - 13, 16, 27, 28

Quiz 3 - Chapter 4 and Lecture Material

Chap. 5 – Iron and Steel – All sections

Additional Lecture material; Roots of Engineering - The roles of “civil engineering” with an introduction of “structural” design in the middle ages. Development of steel, steam, portland cement, railroads and the “industrial” revolution.

Additional Lecture material and discussion on – The Crumbling of America – The loss and demise of our infrastructure.

Text HW Set 1 – 1, 2, 4, 5, 8, 9
 Set 2 – 10, 12, 13, 15, 16

Paper – Trace and discuss the role of engineering in an area to be chosen by the students.
Hand out to be supplied, due Tuesday, Dec. 4th.

Quiz 4 - Chapter 5 and Lecture Material

Chap. 6 – Wood- All sections – in class exercise to determine density and species of various wood samples.

Additional Lecture material – Emerging technologies and sustainable design.

Text HW Set 1 – 1, 2, 3, 5, 7, 9, 10
 Set 2 – 11, 13, 16, 19, 20, 22

Quiz 5 - Chapter 6 and Lecture Material

Final Grade – The students final grade will be based on the weighted average of 5 quizzes and 2 papers taken during the semester which will account for 90% of your grade. Assigned homework and class participation will make up the remaining 10% .

Home Work (HW) – Home work assigned on a Tuesday and 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

None turned in = 0

Minimal Attempt = 1

Moderate Attempt and Poor Results = 2

Moderate Attempt and Fair results = 3

Good Attempt and Largely Correct results = 4

Late home works, unless otherwise excused, will be marked at 25% off.

“Lab” Grades; As there is no formal lab associated with this course we will engage in a number of “mini” labs associated with various materials. Write ups for these mini labs will be part of your homework grade. Missed labs generally cannot be made up, and will receive a “0” grade, unless arrangements have been made with the instructor.

Quizzes – Students will 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).

Students must have their **calculators, cell phones will not be allowed** as a substitute; failure to bring a calculator may 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.

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 students responsibility to determine what assignments that may have been missed.

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 contact Student Services for assessment.