

CE 310 -Construction Materials

Prerequisites: MAE 243, 3

Credit hours - 3, contact hours - 44

Instructor: John Zaniewski, ESB 651c, Office hours: TR 10:00 to 12:00

Text: *Materials for Civil and Construction Engineers*, Mamlouk and Zaniewski, **Third edition**, Prentice Hall 2011

Objective: All civil engineers must know the properties of the materials used for the infrastructure. This course introduces each of the commonly used materials with respect to their behavior, performance and constructability.

Elective course for BSCE

Expected Learning Outcomes - Upon successful completion of this course students will:

Goals by topic	student outcome
Understand the selection of materials for civil engineering projects and works.	A
Be knowledgeable of the physical, chemical and mechanical behavior of materials used in civil engineering projects.	
Understand the properties of ferrous materials and the effect of alloying agents and heat treatments on their behavior.	
Know the significant properties of aggregate materials as needed for Portland cement concrete and asphalt concrete.	
Be able to perform a Portland cement concrete mix design and understand how mix quantities affect the properties of concrete. Understand the production, placement, finishing and curing of Portland cement concrete.	C,K
Be able to perform an asphalt cement concrete mix design and understand how mix quantities affect the properties of hot mix asphalt. Understand the production, placement, finishing and curing of Portland cement concrete.	C,K
Understand the properties of wood needed for civil engineering design.	
Have a basic understanding of the use of composite materials in civil engineering.	

Assignments: The reading assignments are indicated on the attached sheet. Quizzes may be used to assess preparedness, if you are not in class on the day of a quiz, it is assumed you are not prepared. Homework will be assigned during the semester. All assignments are due at the beginning of class. Assignments turned in after the beginning of class will lose 10% of their value per workday late. Late assignments will not be accepted after the material is returned to the class.

Attendance: You are expected to attend all classes. You are expected to come to class on time. If you have a specific problem with attendance notify me prior to class, unless the emergency is such that this is not possible. In the event of an emergency, notify me as soon as possible.

Grading: Final grades will be based on 90%, 80%, 70%... corresponding to A, B, C,... The instructor reserves the right to curve up. **To pass this class, you must earn a 60% average on the tests and final.** Once this criterion is met, grades will be based on a weighted average: Homework and quizzes 40%, Tests 40%, and Final 20%

Once the assignment is returned, you must rework any incorrect material and resubmit the assignment. Grades *will not be recorded* until each answer is correct. Of course, this policy does not apply to the final exam. Late material will lose 10% of the value of the assignment per workday late.

Class Session	Topic	Reading
1	Introduction to Civil Engineering Materials	Ch 1
2	Introduction to Civil Engineering Materials	
3	Measurements	
4	Nature of Materials	Ch 2
5	Nature of Materials	
6	Nature of Materials	
7	Steel	Ch 3
8	Test 1	
9	Steel	Ch 3
10	Steel	
11	Steel	
12	Aggregates	Ch 5
13	Aggregates	
14	Aggregates	
15	Aggregates	
16	Portland Cement	Ch 6
17	Portland Cement	
18	Portland Cement	
19	Portland Cement Concrete	Ch 7
20	Test 2	
21	Portland Cement Concrete	
22	Portland Cement Concrete	
23	Portland Cement Concrete	
24	Portland Cement Concrete	
25	Test 3	
26	Asphalt Binders	Ch 9
27	Asphalt Binders	
28	Asphalt Binders	
29	Asphalt Concrete	
30	Asphalt Concrete	
31	Asphalt Concrete	
32	Asphalt Concrete	
33	Wood	Ch 10
34	Test 4	
35	Wood	
36	Wood	
37	Wood	
38	Wood	
39	Composites	Ch 11
40	Composites	
41	Composites	
42	Composites	
43	Composites	
44	Review	
	Final Exam: per university schedule	

Social justice statement:

West Virginia University is committed to social justice. I concur with that commitment and expect to foster a nurturing learning environment based upon open communication, mutual respect, and non-discrimination. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color or national origin. Any suggestions as to how to further such a positive and open environment in this class will be appreciated and given serious consideration.

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with Disability Services (293-6700).