



蘇州大學  
Soochow University

# CEN 285 Materials Science for Civil Engineers

Fall 2023

**Course Credits:** 4

**Contact Hours:** 56 hours

**Instructor:** TBA

**Email:**TBA

## **COURSE OBJECTIVES**

This is a comprehensive course designed to provide civil engineering students with a fundamental understanding of materials used in civil engineering projects. The course covers a wide range of topics, including properties of construction materials, material testing methods, material selection criteria, and sustainability considerations. Students will learn how to evaluate, analyze, and select appropriate materials for different civil engineering applications.

Upon Completion of this Course, students will be able to:

1. Understand the properties and behavior of various materials used in civil engineering
2. Apply material selection criteria based on project requirements and constraints
3. Gain practical knowledge of material selection and usage in civil engineering projects
4. Perform basic material testing and interpret test results
5. Apply material selection criteria based on project requirements and constraints

## **PREREQUISITES**

CHM 110 General Chemistry

## **GRADING**

Grades will be determined by accumulating points, with 100 points being the maximum, as follows:



ITEM	POINTS
Labs	40 Points
Midterm 1	15 Points
Midterm 2	15 Points
Final Exam	30 Points
Total	100 Points

Late submissions will be graded at the end of the course. Grades will be assigned according to the following rule:

$$A \geq 90 > B \geq 80 > C \geq 70 > D \geq 60 > F.$$

We reserve the right to make adjustments to the overall grading policy.

## COURSE MATERIALS

### Required Texts:

Michael S. Mamlouk; John P. Zaniewski, *Materials for Civil and Construction Engineers*, 4th Edition, Pearson, 2017.

### Recommended (Optional) Texts or Other Materials:

None

## COURSE TOPICS

MODULE	TASKS
Module 1	<b>Topics:</b> Topic 1: Materials Engineering Concepts Topic 2: Temperature and Time Effects Topic 3: Nature of Materials Topic 4: Lattice Defects <b>Assessments:</b> Lab#1
Module 2	<b>Topics:</b> Topic 5: Steel Topic 6: Sectional Shapes Topic 7: Aggregate Uses Topic 8: Portland Cement, Mixing Water, and Admixtures <b>Assessments:</b> Lab#2



Module 3	<b>Topics:</b> Topic 9: Properties of Hydrated Cement Topic 10: Portland Cement Concrete Topic 11: Mixing Concrete for Small Jobs Topic 12: Measuring Air Content in Fresh Concrete <b>Assessments:</b> Midterm#1 Lab#3
Module 4	<b>Topics:</b> Topic 13: Masonry Topic 14: Asphalt Binders and Asphalt Mixtures Topic 15: Performance Grade Specifications and Selection Topic 16: Recycling of Asphalt Concrete <b>Assessments:</b> Midterm#2 Lab#4
Module 5	<b>Topics:</b> Topic 17: Wood Topic 18: Thermal Conductivity Topic 19: Composites Topic 20: Properties of Composites <b>Assessments:</b> Final Exam

## ATTENDANCE

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1) Class attendance is required. Missing classes without permission will lead to decrease in overall grade.

Missing less than two classes: no penalty.

Missing more than two classes: 7% will be taken off from the overall grade.

If the instructor reports a student's frequent missing of class to the Soochow University Academic Administration Office, the student might get a written warning and might be prohibited from attending final exam.

2) Participants in this course are expected to arrive in class promptly and adequately prepared. The primary objective of this course is to critically engage with the readings and the subject matter. Therefore, course participants are expected to have completed the reading prior to class and prepare thoughtful reflections/commentaries to share with fellow colleagues.



## **LEARNING REQUIREMENTS**

- 1) Late assignments are not acceptable and are subjected to grade deductions.
- 2) Assignments submitted in the wrong format will be counted as not submitted.
- 3) Failure to submit or fulfill any required course component results in failure of the class.
- 4) Make-up for midterm and final exams only with valid excuses, as defined by the University.
- 5) In order to earn a Certificate of Completion, participants must thoughtfully complete all assignments by stated deadlines and earn an average quiz score of 50% or greater.

## **TECHNOLOGY POLICY**

The use of electronic devices in class is distracting, both for the user and for the rest of the class. Only non-programmable calculators can be used in the tests and exam. Any attempts to use cell phones and other electronic communication devices will be seemed as cheating. Laptops are discouraged, unless you use them for activities DIRECTLY related to the course (eg., note taking, reading course documents).

## **ACADEMIC INTEGRITY POLICY**

Soochow University highly values the academic integrity and aims to promote the academic fairness, honesty and responsibility. Any academic dishonesty behaviors and any attempts to cheats and plagiarism will be reported to the university administration office. A written warning and the relevant penalties will be imposed. The record might be shown on the official university transcript.

## **DISABILITY ACCOMMODATION**

Soochow University is committed to maintaining a barrier-free environment so that students with disabilities can fully access programs, courses, services, and activities at Soochow University. Students with disabilities who require accommodations for access to and/or participation in this course are welcome.

Note:



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Please contact the University Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material.