

CE 584
Concrete Materials and Properties
Spring 2007

Instructor: Dr. Ghassan Chehab
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Lecture TTh 11:15-12:30; 207 Thomas

Office Hours: Tuesday: 1:00-3:00
 You are welcome to make appointments for visit outside of office hours.

ANGEL: The ANGEL system will be used for communication, postings, and other applications as the need arises. Utilizing ANGEL for group collaboration is encouraged.

Text: “Concrete”, 2nd Edition, 2003, Mindess and Young

Evaluation Activities and Grading:

Activity	Grade	Comments
Written exam	35%	Date to be agreed upon, comprehensive and in class
Research paper presentations	15%	10 min. presentations, total of 3 papers on recent research topics related to course content
Field/Research group project	35%	Groups formed in class; requires either site visits or lab-related work
Quizzes and assignments	15%	To be announced in class

Course Goal: The goal of the course is to introduce graduate students and seniors to the properties, behavior, and application of Portland cement concrete. The format emphasizes latest research and hands-on learning.

Course Objectives: The course objectives are summarized as follows:

- Provide an overview of concrete materials;
- Describe concrete macro- and micro-structure;
- Discuss concrete durability, distresses, remediation, and rehabilitation;
- Discuss production and construction practices;
- Relate concrete material properties to strength and performance in the context of building structures and transportation infrastructure;
- Describe concrete material behavior and characterization
- Update students on recent advances, latest research, and pertinent technologies;

Course Outline:

- Overview
- Composition of Concrete Mixtures
- Properties of Fresh Concrete
- Concrete Durability and Strength
- Concrete Production and Construction
- Testing of Hardened Concrete
 - Mechanical Properties
 - Non-Destructive Methods
- Concrete in Super- and Infra-structure
- Advances in Concrete
 - Specialty Mixtures
 - Repair Materials
 - Advanced Construction Processes
 - Applications and Products
- Concrete Behavior and Characterization