



## CE 213 Civil Engineering Materials Lab.

**Code and Name:** CE 213 Civil Engineering Materials Lab.

**Credit Hours:** 1 (Lab. / Practical 2Hrs)

**Textbook:**

- Materials for Civil and Construction Engineers: Michael S. Mamlouk and John P. Zaniwski, Pearson, 2010, 3<sup>rd</sup> Edition

**Other References:**

- *Relevant international standards (ASTM, BS, AASHTO)*

- *Handouts: distributed from time to time to provide more information on the topic.*

**Course Description:**

The concepts, procedures, tools and equipment used to measure and evaluate engineering properties of civil engineering materials, including reinforcing steel, metals, aggregates, cement, polymers and timber.

**Pre-requisites:** None

**Co-requisites:** CE 210 Civil Engineering Materials

**Course Learning Outcomes:**

With relation to ABET Student Outcomes (From Fall 2019-SOs: 1-7)

1. Identify and solve the engineering problems based on the understanding of the physical and mechanical properties of materials behind the conducted experiments (1).
2. Conduct the experiments following the standard specifications as well as analyze and interpret data (6).
3. Demonstrate the ability to write clear technical lab reports (3).
4. Demonstrate the ability to work in a team environment. (5).

**Topics to be covered:**

- Introduction
- Volumetric mass & Density of materials
- Steel : Tensile test
- Steel : Impact test & torque test
- Aggregates : Sieve Analysis
- Aggregates : Abrasion (Los Angeles)
- Sand Equivalent test
- Cement : Specific Area (Blaine)
- Consistency & Setting time of the Portland Cement
- Mortar: Sample Preparation
- Mortar : Compression test & Flexure
- Wood : Compression test

**Grading Policy:**

The grading for the course is: 60% coursework and 40% Final Exam. The course work consists of two quizzes (14%), it also includes lab. reports (40%) and class participation (6%).

