CE-UY 3161 SPRING 2018
MATERIALS ENGINEERING LAB
Friday 8:00 AM – 10:50 AM
Friday 11:00 AM – 1:50 PM

Location: RH 413

Instructor:
Prof. Weihua Jin,
6 MetroTech Center, Email: wjin@nyu.edu, Phone: 646-997-3632
TA - Halim Kerim Bas
6 MetroTech Center, Email: halim.bas@nyu.edu, Phone: 646-379-8761

Learning Objectives:
By completing this course, students will be able to:

- Identify different engineering materials and their engineering properties
- Justify the selection of a testing method for measurement of certain engineering properties of these materials
- Perform standard tests on engineering materials
- Understand the underlying principles of material testing
- Evaluate the results of these tests and effectively communicate these results in an academic format

References:

1. ASTM C231/C231M – 14 Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
5. ASTM C78/C78M – 15b Standard Method for Flexural Strength of Concrete
8. ASTM C566 – 13 Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying
15. ASTM C403/C403M – 16 Standard Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance
Labs to be covered:

- Lab Introduction and Safety Training
- Tensile Test of Metals – Steel and Aluminum
- Sieve Analysis, Image Based Particle Size Analysis (QICPIC), Specific Gravity Measurement, Moisture Content Measurement, Absorption Capacity Measurement of Fine Aggregates
- Sieve Analysis, Bulk Unit Weight Measurement, Moisture Content Measurement, Absorption Capacity Measurement of Coarse Aggregates
- Slump of Freshly Mixed Portland Cement Concrete
- Air Content of Freshly Mixed Portland Cement Concrete by Pressure Method
- Tensile Test of Polymers and Composites – Polyethylene, Polypropylene, Polyvinylchloride, Nylon 6/6, Glass Fiber Reinforced Resin, Carbon Fiber Reinforced Resin
- Heat of Hydration Test of Portland Cement
- Setting Time Test of Portland Cement
- Time of Setting of Concrete by Penetration Resistance
- Compressive Test of Concrete
- Flexural Test of Concrete
- Rapid Chloride Permeability Test of Concrete
- Lab Project

Reports:

Individual reports must be submitted on all labs. Reports are supposed to include the following sections

- Cover Page
- Table of Contents
- Introduction
- Theory
- Experimental Apparatus and Procedure
- Results and Discussion
- References

Grading:

<table>
<thead>
<tr>
<th>Section</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>Overall Presentation of the Lab Reports</td>
<td>(20%)</td>
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<tr>
<td>Theory</td>
<td>(25%)</td>
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<tr>
<td>Experimental Apparatus and Procedure</td>
<td>(15%)</td>
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<tr>
<td>Results and Discussion</td>
<td>(20%)</td>
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<tr>
<td>Lab Contribution</td>
<td>(20%)</td>
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Overall grade for the course will be based on the average grade of lab reports.

Late Submission:

One time 2-day late submission is allowed without penalty. Other late submission is not allowed.