**Course Title:** Civil Engineering Measurements

**Course Description:**
Theory of measurements, linear measurements, angles, topographic surveys, and mapping with applications in Civil Engineering: emphasis on individual and group problem solving, techniques of data collection and analysis, and project documentation.

**Course Meetings:**
- **Lecture:**
  - Tuesday/Thursday, 1:00 - 1:55pm, ET 233
- **Lab:**
  - Wednesday: 2:20 - 5:20pm, ES 114
  - Thursday: 2:20 - 5:20pm, ES 114
  - Friday: 2:20 - 5:20pm, ES 114

**Instructor:**
Dr. Charles Camp, Office: ES 106B
Phone: 678-3169 (office)
Email: cvcamp@memphis.edu

**Office hours:** An "open door policy" or by appointment

**Required Textbooks:**
- *Strategies for Creative Problem Solving*
  by Fogler and LeBlanc
  Prentice Hall

- *Design and Control of Concrete Mixtures*
  Portland Cement Association 2016

**Required Computer:**

**Web site:** [www.ce.memphis.edu/1101](http://www.ce.memphis.edu/1101)
Course Learning Outcomes

At the successful completion of this class, the student should be able to demonstrate:

1. Recognize and apply basic instrumentation and measurements typical to those used in Civil Engineering practice
2. Recognize the limitations, constraints, and applicability of various field and laboratory data collection methods
3. Application of the spreadsheets to solution of engineering problems
4. Application of problem solving strategies to the analysis, design, and evaluation of engineering problems
5. Write and present technical reports supporting engineering decision making
6. Demonstrate the ability to work in a group

Grading

The final grades for the course will be based on the following percentages:

<table>
<thead>
<tr>
<th>Components</th>
<th>Percentages</th>
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<tbody>
<tr>
<td>Homework</td>
<td>10%</td>
</tr>
<tr>
<td>Mid-Term Exam</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
<td>25%</td>
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<tr>
<td>Project #1</td>
<td>15%</td>
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<tr>
<td>Project #2</td>
<td>15%</td>
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<tr>
<td>Project #3</td>
<td>15%</td>
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</tbody>
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Exam/Homework/Projects | Grade    |
------------------------|----------|
90-100                  | A        |
87-89                   | B+       |
84-86                   | B        |
80-83                   | B-       |
77-79                   | C+       |
74-76                   | C        |
70-73                   | C-       |
60-69                   | D        |
Below 60                | F        |

TopHat — interactive learning environment

Attendance in both the lecture and lab portions of the class is required. Every unexcused absence from lecture is a reduction in the final class average of 2 points.

We will use TopHat to record attendance.

Every unexcused absence from a lab is a reduction of 25% on the student's individual grade for that lab section.
Homework

- Homework is due at the beginning of class on the due date.
- Late homework will not be accepted for any reason.
- To account for a missed assignment, even with an valid excuse, two homework assignment will be dropped in computing the final homework average.

Make-up Work

- Due to the nature of the class, make-up work will be very difficult to complete.
- Should the student think that they should be allowed to make-up missed work they must document, in writing, their reason(s) for being allowed to make up the missed work or to have an absence excused.
- The student will be required to submit documentation for missing the class session and should be ready to provide such evidence at the time the request is made.
- It will be up to the discretion of the instructors if work may be made up or if the absence is excused.

Project #1 – Topographic Model

- The objective of this project is develop a topographic model of a site (the one assignment to you in lab).
- Typically, the first step in a topographic survey is to measure the elevation of a series of point within the area.
- From the elevation data develop a contour map using at least a 1 foot contour interval.

- Using a geographical Information system (GIS) develop a topography model of your site.
- Use GIS tools to construct contour lines
- Using aerial images as back grounds.
- Include a horizontal and vertical scale, your group name and logo, and a north arrow.
What is CIVL 1101?

Project #1 – Topographic Model

- Construction Engineering
- Environmental Engineering
- Geotechnical Engineering
- Structural Engineering
- Transportation Engineering
- Urban Planning
- Water Resources

Project #2 – Concrete Strength

The objective of this competition is to develop the strongest concrete cylinders as measured by the average normal stress (compression stress).

The concrete strength problem poses several challenges to the participants: selection of an appropriate concrete mix based on strength and workability; use of admixtures, selection of a curing environment, and the analysis of the results.
Project #3 – Water Filtration Design

The objective of this project is to design and construct, within given constraints, a granular-media filter that would treat as much water as possible (maximize volume) while removing as many suspended particles as possible (minimizing turbidity levels) for a given amount of time.

Coagulation and Flocculation
Influent water
Sedimentation
Gravity Filter
Turbidimeter

What is CIVL 1101?

Technical Communications
- Construction Engineering
- Environmental Engineering
- Geotechnical Engineering
- Structural Engineering
- Transportation Engineering
- Urban Planning
- Water Resources

Technical Communications
- E-mail is a very useful tool for intra- and inter-group communications
- The instructors in CIVL 1101 will use the university e-mail system to communicate with students
- If normally you use another e-mail account, then you need to go to http://iam.memphis.edu to make sure that mail sent to your U of M account is automatically forwarded to the account you do use.
What is CIVL 1101?

Any questions?