Instructor: Omar Rodea, P.E., (orodea@filanc.com)
Office: E-425 / E-421J
Phone: 760-466-0515
Office Hours: T-TH 7:00 – 7:45AM, appointments accepted (for over the phone assistance only)
Time: T-TH 8-9:15am
Room: E-201
Office Hours: T-TH 7:00 – 7:45 AM, appointments accepted (for over the phone assistance only)

Grading:
Homework 20%  A>=94%; A->=90%
Projects: 25%  B+>=87%; B>=84%; B->=80%
Quizzes 25%  C+>=77%; C>=74%; C->=70%
Final Exam (or Project): 30%  D+>=67%; D>=64%; D->=60%

Basis of grading:

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Pre-requisites:
CIV E-321 (Structural Analysis I), CIV E-462 (Geotechnical Engineering + 463 Lab)

Course Description
Design of structures for temporary support of work under construction or constructed work, including shoring, braced excavations, scaffolding and formwork. Influence of codes and standards on the design process, selection of degrees of safety, and concepts of liability.

Expected Outcomes:
This class has several specific outcomes that relate to the overall program outcomes as indicated below. Other program outcomes may be related to this class, but the one(s) below is (are) the most important contribution(s) for this course:

PROGRAM OUTCOME: Design a complex system or process to meet desired needs within realistic constraints such as economic, social, political, ethical, health and safety, manufacturability, sustainability and project schedule
RELATED COURSE OUTCOMES: The student should be able to
1) Identify the types of temporary facilities that will be needed during the progress of a construction project, and categorize them by their function in supporting construction loads, supporting partially completed works, providing personnel protection, supporting the management and maintenance of production, or providing protection of the environment.
2) Design shoring and falsework to support soils, construction equipment, partially supported works, or other temporary loads during construction.
3) Design formwork for simple concrete elements given design input variables, and describe how to obtain these variables in the general case.

PROGRAM OUTCOME: Solve well-defined engineering problems related to construction engineering.
RELATED COURSE OUTCOMES: The student should be able to
1) Calculate earth pressures on excavation support structures for different support strategies.
2) Calculate loads on buildings and other structures during construction.

Text:
We will use the American Concrete Institute (ACI) reference known as the SP-4, Formwork for Concrete", 7th edition, by M.K. Hurd for part of this class. The book is available at a substantial discount through the university. I will make a combined purchase, and all students will be required to reimburse the expense within the first week once final price is defined.
Additional online resources/texts will also be assigned, including the current versions of: Caltrans “Trenching and Shoring Manual” and the FHWA (Federal Highway Administration) Manual for Design and Construction Monitoring of Soil Nail Walls. These documents are available for free from the web-sites of the respective agencies.

**Class Policies**

**Homework and Projects**

All assigned work will be due on the assigned date at the time noted in the assignment. *Late work will not be accepted.* The assignments are to be done individually, except when noted. Work may best be done in several sittings, and it should not be expected that they can be successfully completed quickly the night before they are due. For assignments that are to be done individually, students may discuss the assignments with other classmates, but not copy solutions; the solutions must be written up independently. Collaboration is encouraged and will occur, but copied work will receive a grade of zero. Each student is expected to understand and be able to explain their work.

Solutions for the assignments must be presented in a **neat, well organized, and professional manner** as follows:

- Pencil and engineering paper used (printed copy from mathcad or other software is acceptable, subject to all other criteria).
- Writing on only one side of the paper. *All pages stapled.*
- Course name, date, student's name, and page # shown at the top of each sheet.
- Problem number and a problem statement given before each problem. The problem statement should include the essence of what is given and what is to be determined. A figure/drawing should be included when appropriate and/or requested.
- Problem solution presented in a logical, orderly fashion, including fundamental equations used and sufficient, but brief, text to explain the procedure used.
- All calculations shown, and ALL CALCULATIONS INCLUDE APPROPRIATE UNITS AND UNIT ARITHMETIC.
- Answers in bold, underlined or boxed. The answers must include the correct units and the proper number of significant digits.

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<thead>
<tr>
<th>Criteria</th>
<th>Levels of Achievement</th>
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<tbody>
<tr>
<td><strong>Professional</strong></td>
<td><strong>Unacceptable (not graded)</strong></td>
</tr>
<tr>
<td>1. Presentation</td>
<td>Course #, assignment #, date, and name on first page. Page numbers provided on each sheet. Pencil and engineering paper used on one side only. Stapled in upper left corner.</td>
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<tr>
<td>2. Organization</td>
<td>Problem organized as: given, find, sketch (if needed), and solution. Answers in bold, underlined or boxed.</td>
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<td>3. Neatness</td>
<td>Writing is dark, clear, printed, legible, and presented with a professional appearance. Any attachments are equally professional.</td>
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<td>4. Clarity and Logical Presentation of Solution</td>
<td>Solution presented in a logical, orderly fashion, including fundamental equations used and sufficient (but brief) text to explain procedures, assumptions, and answers. Solution is easy for someone else to follow. <strong>Calculations are shown.</strong></td>
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**Quizzes**
There will be quizzes throughout the semester to check your progress. Quizzes may be announced a day or two ahead of time in class or via blackboard, or may be unannounced. It is the student’s responsibility to obtain information about scheduled quizzes and arrange to be present. Quizzes will typically consume about 30 minutes or less, and additional work will take place in class either before or after. **There will be no makeup quizzes. Ever.** I will drop the lowest quiz score for each person to allow for bad days, illness, car problems...

**Mid-Term & Final Exam**
A take home project(s) will be assigned mid-way on the semester to evaluate the first half of the class.
There will be a final exam to evaluate the second half of the class. It will be a sit down exam or a Take Home Project (TO BE DETERMINED).
Both are mandatory, and you will be responsible for everything in the reading, lectures, class notes, exercises, homework, handouts, quizzes, class assignments, or other related documents.

**In Class**
Changes or supplements to this syllabus will most likely occur. When this happens, I will announce changes in class, but it may only happen once. You are responsible for these changes even if you were not present for or did not hear the announcement. During class I will ask questions about the material being discussed. You are expected to be prepared to answer if called upon. I will give you a number of opportunities to work together on the material in class. I expect you to participate, and failure to actively participate can have consequences for your grade. Professional and courteous behavior in all interactions with the instructor and fellow students is expected. Cell phones shall be turned off during class. Please do not make a habit of coming late or leaving early.

**Blackboard**
I will make use of blackboard as a means of communicating with you, posting class notes and assignments, and so on. The materials will be available at blackboard.sdsu.edu, accessed under your Red ID and your Web Portal password. **It is your responsibility to make sure that the email address in Web Portal is an active, frequently checked account.**

**University Sanctioned Activities**
Some students may participate in university sponsored activities (such as intercollegiate athletics or student government) which may require them to miss class. These students, and ONLY these students, may be given the chance to make up graded work they miss as a result of travel, **ONLY if all of the following conditions are met.**
1. Students participating in University-sanctioned activities need to identify themselves prior to missing class.
2. Students must provide me a copy of their travel schedule (on letterhead of the sponsor) indicating the SDSU organization sponsor and my contact to verify.
3. Missed work will be rescheduled at a convenient time on a case-by-case basis. In general, the student should expect to make up work very shortly before their departure.