**What is CIVL 3121?**

**Course Title:** Structural Analysis I

**Course Description:**
Analysis of statically determinate structures; reactions, shear, and moment; truss analysis; deflections; influence lines and moving loads.

**Prerequisites:** CIVL 2131 - Statics

**Corequisites:** CIVL 3322 - Mechanics of Materials

**Course Meetings:**
Tuesday/Thursday; 9:40 - 11:05 ES 114

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

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

**Class web site:** www.ce.memphis.edu/3121

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**Required Textbooks:**

*Structural Analysis*
Russell C. Hibbeler
Eighth Edition
Pentice-Hall, 2015

ISBN-10: 0133942848

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**Course Learning Outcomes**

<table>
<thead>
<tr>
<th>Course Learning Outcomes</th>
<th>PDo</th>
<th>Assessment Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Compute the determinacy and stability of structures.</td>
<td>a</td>
<td>Homework</td>
</tr>
<tr>
<td>2. Analyze truss structures</td>
<td>a, b, c, e, g, k</td>
<td>Exam and project</td>
</tr>
<tr>
<td>3. Determine the shear force and moment in beams and frames</td>
<td>a</td>
<td>Exam and project</td>
</tr>
<tr>
<td>4. Determine influence lines for beams</td>
<td>a</td>
<td>Exam</td>
</tr>
<tr>
<td>5. Compute deflections of beams using direct integration, conjugate beam and energy methods.</td>
<td>a, b, c, e, g, k</td>
<td>Exam and project</td>
</tr>
<tr>
<td>6. Application of analysis concepts to truss and beam design.</td>
<td>b, c, d, e, g, k</td>
<td>Projects</td>
</tr>
</tbody>
</table>

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**Course Learning Outcomes**

a) An ability to apply knowledge of mathematics, science, and engineering
b) An ability to design and conduct experiments and to analyze and interpret data in two or more of the following areas: environmental engineering, geotechnical engineering, hydraulics, and materials
c) An ability to design a civil engineering system, component, or process to meet specified performance, cost, time, safety, and quality needs, and objectives
d) An ability to function on multi-disciplinary teams
e) An ability to identify, formulate, and solve civil engineering problems
f) An understanding of professional and ethical responsibility
g) An ability to convey technical material through oral presentations and written papers and reports
h) The broad education necessary to understand the impact of engineering solutions in a global and societal context
i) A recognition of the need for professional licensure and a recognition of the need for and an ability to engage in life-long learning
j) Knowledge of contemporary issues
k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
Grading

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

<table>
<thead>
<tr>
<th>Components</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>10%</td>
</tr>
<tr>
<td>Individual Design Project</td>
<td>5%</td>
</tr>
<tr>
<td>Group Design Project</td>
<td>15%</td>
</tr>
<tr>
<td>2 Exams (20% each)</td>
<td>40%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
</tr>
</tbody>
</table>

Grading

Final letter grades will be based on the following scale which reflects the percentages as noted above.

<table>
<thead>
<tr>
<th>Exam/Homework/Projects</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100</td>
<td>A</td>
</tr>
<tr>
<td>87-89</td>
<td>B+</td>
</tr>
<tr>
<td>84-86</td>
<td>B</td>
</tr>
<tr>
<td>80-83</td>
<td>B-</td>
</tr>
<tr>
<td>77-79</td>
<td>C+</td>
</tr>
<tr>
<td>74-76</td>
<td>C</td>
</tr>
<tr>
<td>70-73</td>
<td>C-</td>
</tr>
<tr>
<td>69-69</td>
<td>D</td>
</tr>
<tr>
<td>Below 60</td>
<td>F</td>
</tr>
</tbody>
</table>

What is CIVL 3121?

Grading

- Regular attendance is necessary to maintain pace with the lectures and the progress of the class.
- If you must be absent, please make sure you know the assignment for the following class meeting and turn in any work due that day.

Make-up Work

- Generally, if a student misses an exam, a homework assignment, or a project deadline, a score of zero will be recorded.
- However, the student may be allowed to make-up an exam or turn in their homework late if a valid reason for the absence is presented to the instructor at the next class meeting.
- If the student must miss an exam because of a conflict in their schedule, the student must notify the instructor in writing at least two days prior to the absence.

Homework Format

- 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, the lowest 10% of all the homework assignments will be dropped for consideration in computing the homework average.

Homework Format

- All assignments are to be submitted on engineering paper. You may use any type of engineering paper as long as it has a background grid.
- If an alternate form of paper is used, the headings at the top of the page should be modified to match the printed partitions, however, the remainder of the instructions apply equally to either form.
Homework Format

This semester we will also be using:

Mastering Engineering for homework

Fall 2017 (MECAMP51942)

Homework Format

- Work should be done in pencil, and a lead hardness used which produces good contrast to the paper.
- Figures should be drawn with a straight edge and if appropriate, a circle template or compass. The layout and appearance of your work should be of professional quality.
- Work no more than one problem per page.

Individual Design Project – K’NEX structures
Individual Design Project – K’NEX structures

Group Design Project – Chipboard Beam

Any questions?