CE 2343-001 Structural Analysis 25816
Spring 2020 Syllabus

Lecture Session: TR 9:00am – 10:20am
Liberal Arts Bldg, LART 107

Instructor: Prof. Joanne Moyer (jmmoyer@utep.edu)
Office Location: A 212
Office Phone #: (915) 747-7456
Office Hours: Monday & Wednesday 10:00am – 12:00pm
Thursday 1:30pm – 3:00pm
Or by appointment

WHAT SHOULD YOU EXPECT FROM ME AS THE INSTRUCTOR?

1. I will provide you with clear instructions on class expectations.
2. I will check my e-mail at least three times per week and will answer back to you as soon as possible.
3. I will leave myself open to suggestions about improvement of the class and class related activities.
4. I will do all I can to enhance your learning and success in this class.
5. If any changes in the course are to be implemented, I will ensure that the class is notified in a timely manner.

REQUIRED MATERIALS:

Textbook: Structural Analysis
10th Edition by: R.C. Hibbeler, 2018

Assignments: Pearson: Mastering Engineering
Course Name: CE 2343-001 Structural Analysis 25816
Course ID: STRUCTMOYER25816

https://www.pearsonmylabandmastering.com/northamerica/masteringengineering/

Calculator: Only NCEES approved calculators will be permitted, as these are what is allowed for the Fundamentals of Engineering exam. Visit the NCEES website (http://ncees.org/exams/calculator/) for more information. No phones. The following are a few of the suggested calculators:
It is your responsibility to get acquainted with the features of the calculator you decide to use. I recommend that you use this calculator for all your work (including other courses) since this will help you learn how to use all the features of your calculator.

CELL PHONES:
Please be courteous, and turn off your cell phones during the class lectures.

COURSE OBJECTIVES:
The objectives of CE 2343 are:

1. Identify structural form, components, applicable loads, and requisite analysis assumptions
2. Rapidly assess simple structures for stability and determinacy (review)
3. Apply mechanics principles to solve static equilibrium problems (review)
4. Solve for forces in statically determinate trusses (review)
5. Draw shear and moment diagrams for beams and frames (review)
6. Draw influence lines for reactions, forces, shears and moments
7. Determine internal forces in arches and cables
8. Estimate deflections in beams, frames, and trusses
9. Solve for simple statically indeterminate structures using classical methods
10. Develop an understanding of current structural engineering practice
11. Document structural calculations and understand the responsibility of an engineer
12. Use the internet as a resource to obtain information in support of structural analyses
13. Use and interpret results of structural analysis software

GRADING POLICY:

| Grading Scheme: | Exams: | 10% for Mid-term 1 |
| | | 10% for Mid-term 2 |
| | | 10% for Mid-term 3 |
| | Final Exam: | 20% |
| | Quizzes: | 15% |
| | Assignments: | 15% |
| | Term Project | 20% |
Grading Structure:  
A \geq 89.5  
89.5 > B \geq 79.5  
79.5 > C \geq 69.5  
69.5 > D \geq 59.5  
59.5 > F

ATTENDANCE & CLASS PARTICIPATION:

*Students are expected to attend all lecture sessions.* Those who fail to attend classes regularly are inviting scholastic difficulty and, with the approval of the Dean of the College of Engineering, may be dropped from the course with a grade of F for repeated (4 or more) unexcused absences.

ASSIGNMENTS:

*Assignment problems will be assigned via Pearson: Mastering Engineering. Assignments will be available weekly beginning Friday and will be due the following Friday before midnight.* Past experience clearly shows that a student's grade is strongly dependent upon the effort that is put into working and understanding the homework. We encourage that you team up with your other classmates for this activity. Please note that each student is responsible to complete the homework assignment individually.

QUIZZES:

Weekly quizzes will be administered in class every Tuesday. Quizzes may be given at the beginning, middle or end of the class. No additional time nor make up quizzes will be given to late attendees or those who leave early. The quizzes may be conducted through blackboard and/or handouts. The quizzes will cover material from the previous week. Quizzes are closed book – closed notes. The lowest quiz grade will be dropped from your grades. Be sure to prepare and be ready to take quizzes on Tuesday’s.

EXAMS:

Three mid-term exams will be given. You must take the exams during the scheduled exam periods. These dates are announced on the first day of class although the dates may be changed according to the progress of the class.  
Your lowest exam score will be replaced with your final exam grade, assuming that the final exam grade exceeds your prior scores.  
*In accordance with University regulations, students who miss examinations will receive grades of zero.* Exceptions to this rule will be made only on a carefully considered individual basis and only if the student contacts the instructor before the exam. If you know in advance that you are going to miss an exam, it is your responsibility to inform the instructor before the exam.
Make sure that you do not have a cell phone or any other electronic item with you during the exams.

*The mere possession of a disallowed calculator, any cell phone or any other electronic item on or near you during tests is the ground for dismissing you from the exam with a grade of zero.*

**FINAL EXAM:**

The final exam is a **closed book-closed note** comprehensive exam. Every student is required to take the final exam at the end of the semester. Your lowest exam score will be replaced with your final exam grade, assuming that the final exam grade exceeds your prior scores.

**COURSE PORTFOLIO:**

Students are encouraged to prepare a course portfolio documenting all materials relevant to the course. The portfolio shall contain Power Point lecture notes, class notes, handouts, exams, homework assignments, study notes, and any relevant materials accumulated during the semester. I believe that you will benefit from the portfolio years later when you need to review the learned subjects for advanced courses or professional engineer licensure exam.

**PERSONS WITH DISABILITY:**

UTEP seeks to provide reasonable accommodations for all qualified individuals with disabilities, including learning disabilities. This university will adhere to all applicable federal, state, and local laws, regulations and guidelines with respect to providing reasonable accommodations as required affording equal educational opportunity. It is the student's responsibility to register with Center for Accomodation and Support Services (CASS) in the East Union Bldg., Room 106 within the first two weeks of classes, and inform the faculty member to arrange for appropriate accommodations.

*Center for Accomodation and Support Services (CASS) can also be reached in the following ways:*
  
  **Web:** [http://sa.utep.edu/cass/](http://sa.utep.edu/cass/)
  **Monday thru Friday 8:00a.m.-5:00p.m.**
  **Union Building East Room 106**
  **Phone:** (915) 747-5148
  **cass@utep.edu**
POLICY ON CHEATING:

Students are expected to be above reproach in all scholastic activities. Students who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and dismissal from the university. Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student, or the attempt to commit such acts. The Department of Civil Engineering has established the Honor Code because it has an obligation to the State and the public to prevent students from entering the profession who are not honest and trustworthy in their academic efforts. This Honor Code Policy allows the Department to recommend disciplinary action to the University Student Conduct Office and to remove students from the Department who have violated the Honor Code. This Honor Code is consistent with the Student Conduct and Discipline Chapter of the Student Affairs Section of the Handbook of Operating Procedures of the University of Texas at El Paso.

All students should sign the Honor Code Agreement and submitted to the Civil Engineering office for record keeping and be deeply familiar with the Honor Code Policy published in our website: [http://ce.utep.edu/honorcode.htm](http://ce.utep.edu/honorcode.htm)

SEE NEXT PAGE FOR TENTATIVE SCHEDULE
**TENTATIVE SCHEDULE:**

**NOTE:** Schedule may be modified to accommodate particular needs as the semester progresses. If the student misses a class, it is his/her responsibility to acquire specific material covered and/or assignments made for that class period. It is to the students benefit that they read and study the chapters and sections as outlined in this calendar to reinforce the material that is presented in the class.

<table>
<thead>
<tr>
<th>Week</th>
<th>DATES</th>
<th>CLASS TOPICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan. 21-Jan. 23</td>
<td>Syllabus, Chapter 1/Chapter 2</td>
</tr>
<tr>
<td>2</td>
<td>Jan. 28-Jan. 30</td>
<td>Chapter 2</td>
</tr>
<tr>
<td>3</td>
<td>Feb. 4-Feb. 6</td>
<td>Chapter 3 (Project group members &amp; topic due - Feb 4)</td>
</tr>
<tr>
<td>4</td>
<td>Feb. 11-Feb. 13</td>
<td>Chapter 4</td>
</tr>
<tr>
<td>5</td>
<td><strong>Feb. 18- Feb. 20</strong></td>
<td><strong>Exam 1/Chapter 5</strong></td>
</tr>
<tr>
<td>6</td>
<td>Feb. 25–Feb. 27</td>
<td>Chapter 5/Chapter 6</td>
</tr>
<tr>
<td>7</td>
<td>March 3–March 5</td>
<td>Chapter 6</td>
</tr>
<tr>
<td>8</td>
<td>March 10–<strong>March 12</strong></td>
<td>Chapter 7/Exam 2 (Report rough draft due – March 13)</td>
</tr>
<tr>
<td>9</td>
<td><strong>March 17–March 19</strong></td>
<td>Spring Break</td>
</tr>
<tr>
<td>10</td>
<td>March 24–March 26*</td>
<td>Chapter 7/Chapter 8</td>
</tr>
<tr>
<td>11</td>
<td>March 31-April 2</td>
<td>Chapter 8/Chapter 9</td>
</tr>
<tr>
<td>12</td>
<td>April 7-April 9</td>
<td>Chapter 9/Chapter 10</td>
</tr>
<tr>
<td>13</td>
<td>April 14–April 16</td>
<td>Chapter 10 (Presentation rough draft due – April 13)</td>
</tr>
<tr>
<td>14</td>
<td>April 21–April 23</td>
<td>Chapter 11</td>
</tr>
<tr>
<td>15</td>
<td>April 28–April 30</td>
<td>Chapter 11/Exam 3</td>
</tr>
<tr>
<td>16</td>
<td>May 5–May 7</td>
<td>Project Presentations/Project Report due May 7</td>
</tr>
</tbody>
</table>

**Tuesday, May 12**  
Final Exam: 10:00am – 12:45pm

*Note: March 27th Withdrawal Deadline*
TERM PROJECTS (CHOOSE 1):

Term Project #1: Explain a Structural Failure
In all aspects of life, learning from a failure is critical to progressing. Structural Analysis is no different, though the consequences may be substantial. Throughout history, many structures have failed. Engineering practice has a responsibility to react. As up and coming engineers, you need to learn from history and ensure that mistakes are not repeated. The overarching purpose of this project is to expose you to structural failures, the circumstances that bring them about, the consequences, and the role of the engineer throughout.

Select a structural failure to research. Some suggestions include:
- Kansas City Skyway
- I-35W in Minneapolis
- I-5 Skagit River
- Florida International University Bridge
- Silver Bridge

You can select any failure you like. The above are just suggestions.

The report and PowerPoint presentation will discuss the circumstances that led to the failure that may not be strictly engineering related – like decisions which led to a situation where failure was likely. You should discuss the consequences of the failure, the influence on engineering practice, and the role of the engineer in this failure and in preventing future failures. Incorporate concepts that were learned and discussed in the course.

Term Project #2: Explain a Structural Marvel
Structural marvels are able to capture the eye of cause non-engineers to be in awe. Structural Analysis is the reason for this captivation. Throughout history, many structures have made us wonder. As up and coming engineers, you need to learn from history and learn from the good as well as the bad experiences in engineering. The overarching purpose of this project is to expose you to structural marvels, the circumstances that bring them about, their influence on future structures, and the role of the engineer throughout.

Select a structural marvel to research. Some suggestions include:
- Pyramids of Giza
- Millau Viaduct
- National Stadium (Bird’s Nest)
- Empire State Building
- Golden Gate Bridge

You can select any marvel you like. The above are just suggestions.
The report and PowerPoint presentation will discuss the circumstances that cause the structure to be an engineering marvel – like decisions and difficulties that may were encountered. You should discuss the influence on engineering practice, and the role of the engineer in this marvel. Incorporate concepts that were learned and discussed in the course.

Deliverables for the Project:

Report shall consist of a Title Page, Abstract, Introduction, Discussion, Conclusion, Recommendations. Concepts covered should include, not limited to, the following:

- Description of the structure
- Role in engineering history
- Why it failed/why it’s a marvel
- Concepts discussed in class and how applied in this particular case
- Recommendations to prevent further failures/recommendations to follow for future engineering marvel projects

The presentation should be ten minutes or less and will be peer evaluated.

Class Presentations will be on May 5th & 7th, 2020. Attendance is mandatory for peer evaluation. Your PowerPoint presentation and report shall be submitted via blackboard.

You may work alone or in groups up to four, and you may choose your engineering failure or engineering marvel. The group will email me their desired project topic for approval. Each group must have a different topic. The presentation and the report will be group work. The following are the deadlines for the project:

1. Email name of group members/individual groups & topic – Due Feb 4, 2020 – Email
2. Rough draft of report – Due March 13th, 2020 – Submit via blackboard
3. Rough draft of presentation – Due April 13th, 2020 – Submit via blackboard
4. Report – Due May 7, 2020 - Submit via blackboard
5. Presentation – Due May 5/7, 2020 - In class presentation/Submit via blackboard
**Project Grading Criteria:**

<table>
<thead>
<tr>
<th>Report</th>
<th>Max Pts Allowed</th>
<th>Pts Earned</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Submitted on Time</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Reports looks professional - title page, abstract, intro, etc., overall organization</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Description of the scenario</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Discuss the role of engineer</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Discuss causes of failure/marvel</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Implement concepts from class</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Recommendations for future engineers</td>
<td>20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Presentation                                                           |                |            |          |
| 1. Professionally presented                                           | 20             |            |          |
| 2. Summarize scenario                                                 | 20             |            |          |
| 3. Discuss role of engineer                                            | 30             |            |          |
| 4. Causes of failure/marvel                                            | 30             |            |          |
| 5. Implement concepts from class                                       | 30             |            |          |
| Peer evaluations                                                       | 20             |            |          |
| **Total Points**                                                      | **300**        |            |          |

**FINAL COMMENT:**

I wish you all the best in the course. Please do not hesitate to ask questions in class, or if necessary, to see your professor outside of class. Any specific comments that students have on how the course might be improved are particularly welcomed, especially during the semester.