ENGR 2325.001 - Statics
Summer I 2017

A. COURSE INFORMATION

Course number/section: ENGR 2325.001
Class meeting time: MTWR 10:00-11:55 a.m.
Class location: ECDC 219C
Course Website: TAMUCC BlackBoard

B. INSTRUCTOR INFORMATION

Instructor: Andrew Conkey Ph.D.
Office location: EN 210
Office hours: MTWR (12:00 -1:30 pm) when possible and by appointment
Telephone: 361-825-2559
E-mail: andrew.conkey@tamucc.edu
Appointments: By e-mail (use your islander email)

C. COURSE DESCRIPTION

This course will cover theory of engineering mechanics involving forces, moments, and couples on stationary structures; equilibrium in two and three dimensions; free body diagrams; truss analysis; friction; centroids; centers of gravity and moments of inertia. After the course, the students will be able to build up analytical capabilities for solving static force related engineering problems.

D. PREREQUISITES AND COREQUISITES

Prerequisites
PHYS 2425 - University Physics I
Corequisites
None

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook(s)
R.C. Hibbeler, “Engineering Mechanics Statics & Dynamics,” 14th edition, Pearson (Problems will be assigned from this text, earlier editions are fine for content)

Supplies
None.

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

By the end of this course, students should be able to:
1. Students will be able to draw complete free body diagram (FBD) and write appropriate equilibrium equations from the FBD including the support reactions on a structure. Students will display proficiencies by demonstrating following competencies:
   a. Describe position, forces, and moments in terms of vector forms in two and three dimensions.
   b. Determine rectangular and non-rectangular components of a force.
   c. Determine the resultant of a force system including distributed forces.
   d. Simplify system of forces and moments to equivalent systems.
2. Students will be able to apply the concepts of equilibrium to various structures. Students will display proficiencies by demonstrating the following competencies:
   a. Evaluate loading (forces and moments) in trusses, frames, and machines.
   b. Determine the internal forces and moments in a structure.
   c. Analyze systems that include frictional forces.

3. Students will be able to calculate moments, center of gravity, centroid, and forces for particular structures. Students will display proficiencies by demonstrating the following competences:
   a. Identify center of gravity and centroid for discrete particles and a body of arbitrary shape.
   b. Determine the resultant force of a pressure loading by a fluid.
   c. Calculate the moment of inertia for an area.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

Lectures, group discussions, home assignments, spreadsheet based calculations, textbook software for computer-aided solutions. The student is expected to have read/review the chapter before coming to the class.

H. MAJOR COURSE REQUIREMENTS AND GRADING

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework/In Class Exercises</td>
<td>10 %</td>
</tr>
<tr>
<td>Attendance</td>
<td>5%</td>
</tr>
<tr>
<td>Quizzes (3 or 4 a week)</td>
<td>15 %</td>
</tr>
<tr>
<td>Exam 1 (about June 7th)</td>
<td>15 %</td>
</tr>
<tr>
<td>Exam 2 (about June 18th)</td>
<td>15 %</td>
</tr>
<tr>
<td>Exam 3 (about June 26th)</td>
<td>15%</td>
</tr>
<tr>
<td>Exam 3/Final (June 30th)</td>
<td>25 %</td>
</tr>
</tbody>
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I. COURSE CONTENT/SCHEDULE(Tentative)

<table>
<thead>
<tr>
<th>DATE</th>
<th>TOPIC</th>
<th>CHAPTER(S)</th>
<th>ASSIGNMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>General Principles, vector operations</td>
<td>Chapters 1,2, 3P1</td>
<td>HW, Quiz</td>
</tr>
<tr>
<td>Week 2</td>
<td>Vector operations, equilibrium of a particle</td>
<td>Chapters 3P2, 4P1</td>
<td>HW, quizzes, exam1</td>
</tr>
<tr>
<td>Week 3</td>
<td>Moment operations, FBD of rigid bodies and equilibrium, trusses</td>
<td>Chapters: 4P2, 5, 6,</td>
<td>HW, quizzes, exam 2</td>
</tr>
<tr>
<td>Week 4</td>
<td>Internal forces, friction, center of gravity</td>
<td>Chapters: 7, 8, 9P1</td>
<td>HW, Quizzes</td>
</tr>
<tr>
<td>Week 5</td>
<td>Distributed loads, area moment of inertias, final exam review</td>
<td>Chapters 9P2, 10, review</td>
<td>HW, Quizzes, exam 3</td>
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<tr>
<td>June 30</td>
<td>FINAL EXAM</td>
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Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.
J. **COURSE POLICIES**

**Attendance/Tardiness**
Roll sheet will be passed out towards the end of class. Showing up and taking the quiz and leaving will not count as attending the class.

**Exams and Quizzes**

**Quizzes:** Quizzes will be closed book, closed notes and will cover concepts, vocabulary, and problems. Material will primarily focus on materials covered in past lecture. Content that is relevant to the learning outcomes could appear on any quiz after it is covered. There may be mini-projects assigned through the term and these will count as a quiz grade. A portion of the average quiz score between each exam will be included in the exam grade.

**Exams:** Exams will be closed book, closed notes, with use of only of a calculator. Exams will be a combination of concepts, vocabulary, short work out problems, and full work out problems similar to homework. Exams 1 and 2 will be scheduled to be about 1 hour in length. Exams will be administered at the beginning of the class for the scheduled day. The balance of the class on exam days will be lecture on new material.

Concerns with how material was graded for quizzes and exams must be submitted within three business days after quiz or exam was returned to the class. Submittal must have a cover page identifying what is to be reviewed and why the student feels it merits reviewing. This does not apply to quizzes or exams where totaling of points is an issue.

**Late Work and Make-up Exams**
Homework: Once homework has been returned, no homework will be accepted. Homework submitted after due date will be reduced by 25%. Multiple problems will be assigned, but only one or two will be submitted. Ones to be submitted will be announced at class day when homework is due.

Quizzes/Exams: Those excuses that fall under university approved will merit a makeup quiz. Missing a quiz due to illness will require evidence from a clinic and will be at discretion of the instructor. Make up exams and quizzes will not be the same as administered to the class.

**Homework Checklist**
Practices as discussed here also apply to exams, especially items 1), 2), and 3).
1) Homework and exam solutions should be submitted in organized, chronological, and neatly presented form. Block lettering is required on solutions.
2) Answers must be clearly presented and boxed. Boxing of just a number is an incomplete answer and will not be awarded points.
3) Appropriate units must be included on all answers. Failure to not include units will result in loss of points.
4) All problems need to be on an engineering paper.
5) At the top-center of each page of homework, write your name, the course number, the assignment number, and date.
6) Pages are to be numbered and stapled.

For further examples, please homework guidelines as provided.

**Student Collaboration**
Collaboration on homework is encouraged. It can help many of you to understand the ideas better if you explain them to each other. Collaboration to understand problems and concepts is how best to succeed in the working world. However, submitted work must be original and not a blatant copy of another’s work. Also, it is important that the student fully understands the material as there is no collaboration on quizzes or exams.
Electronic Device Use
Neither cell phone nor electronic devices, i.e. smart devices, except engineering calculator are allowed in the class. Students are required to turn off cell phone and all other electronic devices, i.e. smart devices of any nature, before the class starts. This is especially so during exams. No recording of any lectures is allowed without approval of the instructor or as mandated by disability services. Lecture material is protected under copyright rules.

Food, Drinking and Tobacco Use
No food is allowed in class. Drinking is permissible, but user needs to keep area dry, drink discreetly, and do it in a non-distracting way. As per university policy, the use of any tobacco or simulated tobacco product within any university buildings is not allowed.

K. COLLEGE AND UNIVERSITY POLICIES

- Academic Integrity (University)
University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

- Classroom/Professional Behavior
Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- Statement of Civility
Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- Deadline for Dropping a Course with a Grade of W (University)
The grade of W will be assigned to any student officially dropping a course. Please consult with the instructor before you decide to drop to be sure it is the best thing to do. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Should dropping the course be the best course of action, visit the Office of the University Registrar for the Course Drop Form that must submitted. No student is eligible to receive a W without completing the official drop process by this deadline. Please consult the Academic Calendar (http://www.tamucc.edu/academics/calendar/) for the last day to drop a course.

- Grade Appeals (College of Science and Engineering)
As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at
http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science and Engineering Grade Appeals webpage at http://sci.tamucc.edu/students/GradeAppeal.html. For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

  If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

  http://disabilityservices.tamucc.edu/

- **Statement of Academic Continuity**
  In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

L. **OTHER INFORMATION**

- **Academic Advising**
  The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

**GENERAL DISCLAIMER**

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.