ENGR 2325 - Statics

Spring 2015

A. COURSE INFORMATION

Course number/section: ENGR 2325.001
Class meeting time: MWF, 9:00-9:50 AM
Class location: ECDC 219C
Course Website: https://bb9.tamucc.edu

B. INSTRUCTOR INFORMATION

Instructor: Jinha Jung
Office location: EN 320
Office hours: MWF, 10:00 - Noon
Telephone: 361-825-3294
e-mail: jinha.jung@tamucc.edu
Appointments: By e-mail

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)

Optional Textbook(s) or Other References

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 forces in trusses, frames, and machines.
   b. Determine the internal forces 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. MAJOR COURSE REQUIREMENTS AND GRADING

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
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</thead>
<tbody>
<tr>
<td>Homework</td>
<td>10 %</td>
</tr>
<tr>
<td>Quizzes</td>
<td>20 %</td>
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<tr>
<td>Midterm 1</td>
<td>20 %</td>
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<tr>
<td>Midterm 2</td>
<td>20 %</td>
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<tr>
<td>Final</td>
<td>30 %</td>
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H. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>DATE (BY DAY OR WEEK)</th>
<th>TOPIC</th>
<th>CHAPTER(S)</th>
<th>ASSIGNMENTS</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>General Principles</td>
<td>Chapter 1</td>
<td>HW</td>
</tr>
<tr>
<td>Week 2-3</td>
<td>Force Vectors</td>
<td>Chapter 2</td>
<td>HW</td>
</tr>
<tr>
<td>Week 4-5</td>
<td>Equilibrium of a Particle</td>
<td>Chapter 3</td>
<td>HW &amp; Midterm 1</td>
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<td>Week 6-7</td>
<td>Force System Resultant</td>
<td>Chapter 4</td>
<td>HW</td>
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<tr>
<td>Week 8-9</td>
<td>Equilibrium of a Rigid Body</td>
<td>Chapter 5</td>
<td>HW</td>
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<tr>
<td>Week 10-12</td>
<td>Structural Analysis</td>
<td>Chapter 6</td>
<td>HW &amp; Midterm 2</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.

I. COURSE POLICIES

Attendance/Tardiness
I will not take attendance after the beginning of the semester, but there will be occasional quizzes at the beginning of lectures to help students prepare for midterms and final. Although attendance is not taken in this class, I encourage all students to attend all classes and arrive on time.

Late Work and Make-up Exams
Late work is not going to be accepted. Late homework will only be accepted for cause and preferably with prior notice; death in family, car accident, hospitalized, doctor appointment, etc. Homework will be accepted if it is placed in my mailbox or e-mailed to me by the deadline. Make-up exams are only arranged with 1-week prior notice. No make-up exam will be arranged after each exam.

Homework Checklist
1) Homework and exam should be submitted in organized and neatly presented form.
2) Circle or box the answers to each problem.
3) Appropriate units must be included on all answers.
4) All calculations need to be on an engineering paper.
5) At the top of each page of homework, write your name, the course number, the assignment number, and date.
6) Pages are to be numbered and stapled.

Student Collaboration
I strongly encourage collaboration on homework. It will 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.

Extra Credit
Extra credit questions/problems will be in some of the tests and homework.

Electronic Device Use
Neither cell phone nor electronic devices except engineering calculator are allowed in the class as well as in the laboratory. Students are required to turn off cell phone and all other electronic devices before the class starts.

J. COLLEGE AND UNIVERSITY POLICIES
• **Academic Integrity (University)**
  It is expected that university students will demonstrate a high level of maturity, self-direction, and ability to manage their own affairs. Students are viewed as individuals who possess the qualities of worth, dignity, and the capacity for self-direction in personal behavior.
  See Full University Policy at http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity

• **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.

• **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 by Friday, April 10, 2015. No student is eligible to receive a W without completing the official drop process by this deadline. Visit the Office of the University Registrar for the Course Drop Form that must be submitted. After April 10, 2015 a student will not be allowed 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**
Disability Services (DS) is the hub for coordinating services and accommodations to ensure accessibility and utilization of all programs for all Texas A&M University-Corpus Christi students with disabilities. Our services are designed to meet the unique educational needs of enrolled students with documented permanent or temporary disabilities. DS provides intake and consultation services to students seeking to register with our office. DS reviews an individual’s documentation of disability and assesses eligibility for services and the determination of reasonable accommodations. For more information visit the Disability Services Office at 116 Corpus Christi Hall or go to http://disabilityservices.tamucc.edu/

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.