Walters State Community College
Course Syllabus for ENGR 2110, “Engineering Statics”
2012 - 2013

Instructor: Dr. Sean M. Cordry, Associate Professor of Physics
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Dpt. Contact: (423) 585-6865 (Mrs. Sherry Woody), FAX: (423) 585-2762


Catalog Course Description: A study of forces, moments, vector quantities, static equilibrium with applications to structures, friction, center of gravity, and second moments. (Prerequisite: MATH 1920) 3 hours lecture

Welcome!
Hello, and welcome to “Engineering Statics.” This four-credit course begins your introduction to physics as an academic discipline. The class will be divided into four sections: Forces – Basics – a review of forces as vector quantities, Static Equilibrium – forces and moments in equilibrium, Forces and Structures – how structures respond to different forces, and finally, Geometry of Structures – computing important geometric quantities of structures.

Student Learning Outcomes
Here are your student learning outcomes; in other words, these are the things you should know how to do at the end of the semester.

1. Forces – Basics (Units, Vector Addition, Vector Scalar Products, Forces, Translational Equilibrium, Free-body Diagrams)
   a. Correctly solve a variety of vector mathematics problems involving addition and scalar products; provide an geometrical interpretation of the scalar product.
   b. Draw appropriate free-body diagrams, indicating the correct forces acting on the object of interest.
   c. Apply the concept of translational equilibrium to solve a variety of multi-force situations.

2. Static Equilibrium (Vector cross-product, Moments, Force-Couple Systems, Rigid-body Equilibrium)
   a. Correctly solve a variety of cross-product vector problems.
   b. Determine the net moment created by multiple forces acting on an object at different points of contact.
   c. Reduce complex force application scenarios to a force-couple system.
   d. Apply the concept of rotational equilibrium to solve a variety of multi-force situations.

3. Forces and Structures (Trusses, Method of Joints, Method of Sections, Internal Forces, Shear, Distributed Forces, Dry Friction, Wedges, Screws)
   a. Apply the Method of Joints and the Method of Sections to analyze the internal forces in simple trusses.
   b. Calculate the net force and moment on structures resulting from a distributed load.
   c. Explain the role of dry friction in wedges and screws; solve a variety of static problems involving friction.

4. Geometry of Structures (Center of Mass, Centroids, Moments of Inertia)
   a. Determine the center of mass for well-defined objects – including composite objects, using appropriate mathematical tools including the theorems of Pappus and Guldinus.
   b. Calculate the moment of inertia about various axes for a well-defined object.
Performance Indicators
In order to issue you a grade for your learning, I have to have some indicators that give me a basis for judging what you’ve learned. There will be reading quizzes, tests, homework, a laboratory grade, and a final exam. The table below shows how the various “events” will be incorporated into your final grade.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>%</th>
<th>Details</th>
<th>If missed (excused)…</th>
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<tr>
<td>Tests</td>
<td>60</td>
<td>Covers conceptual and definitive aspects of recent material. Tests are not cumulative. All tests must be taken to pass the course.</td>
<td>Missed tests are handled on a case-by-case basis. Students should provide notice at least a week in advance; generally, tests will be made-up within a week of the original test date.</td>
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<tr>
<td>Bridge Project</td>
<td>10</td>
<td>Details will be given at a later date. Students will construct a model bridge; additionally, they will make an oral presentation the history of that bridge.</td>
<td>Not applicable.</td>
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<tr>
<td>Final Exam</td>
<td>25</td>
<td>Comprehensive exam broadly covering all topics of course content.</td>
<td>Consultation with the department chair and the division dean will be required. Notice must be given two weeks in advance.</td>
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<tr>
<td>Course Journal</td>
<td>5</td>
<td>Purchase a dedicated, composition-style Journal for this course. You will use this notebook for recording the solutions and work to your homework problems; making notes, diagrams and conclusions from your lab experiences. You will be able to use this notebook during tests and the final exam.</td>
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The following performance levels will be used for issuing grades.

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<thead>
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<th>Grade</th>
<th>Minimum Percent</th>
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<tr>
<td>A</td>
<td>≥90</td>
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<tr>
<td>B</td>
<td>80</td>
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<tr>
<td>C</td>
<td>70</td>
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<tr>
<td>D</td>
<td>60</td>
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<td>F</td>
<td>&lt;60</td>
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If you feel that there has been an error in the grading of an individual test or assignment, please let me know within a week of getting it back; I will certainly correct any errors in grading, and I’m happy to consider giving additional credit where it is merited. If you are over-awarded credit, you may consider it a fortuitous gift of Chance; i.e., if you get five points, but only deserved two, I won’t take those extra three points away from you.

After one week of being returned, all assigned scores are “locked-in” and will not be changed.

Class Time and Classroom Expectations
My task is something like a museum guide: you will get a general idea about a museum display on your own, but the guide will point out the especially interesting aspects and overlooked details. Similarly, I will focus classroom time on the more difficult concepts and ideas. Most of the time I will try to have active things for us to do, so bring your calculator and come prepared to participate. It will be rare when I just give you a straight lecture where you will just sit and take notes.

My expectations for you are no different than you would have for yourself attending a concert: you would want to arrive on-time; you would want a good seat; you would want to pay close attention so you didn’t miss anything; you would expect others to allow you to enjoy the concert; in short, you would want to maximize your experience. So how do you maximize your experience in class? Be on time. Get a good seat. Pay close attention. Allow others to pay attention.

I also don’t expect any more or less from you than I do from myself:
1. **I’ll come to class ready.** You can too by reading the sections before class. I won’t be a textbook with lips, so you’ll need to keep up with the reading. **Always** start your reading by looking at the pictures first and then reading the summary; this will give your brain a mental map of the information that is coming in.
2. **I won’t sleep through class.** You should make sure you get plenty of rest. Studies show that a lack of sleep leads to memory retention problems and a decrease in analytical thinking ability.
3. **I will give you my full attention.** Please give me yours. “Texting” or “surfing the web” during class is rude and unacceptable. You have chosen to come to class. I will make it worth your time; you should too.

4. I’ll often have something to drink – and sometimes a snack, but I’ll always take care of my trash and leave the room clean. If you want to bring a snack or drink, that’s fine; just make sure that the next person to sit at your desk can’t tell.

5. **I won’t talk about you behind your back.** If I should do or say something that seems strange or out-of-line, please come talk to me about it. (If you feel awkward talking to me about it, please talk with Dr. Jeffrey Horner; he’ll keep your identity anonymous and relay your concern to me.)

**Always bring your calculator.**

I look forward to having a good semester with you. It will be a great adventure!

I reserve the right to make changes to this syllabus in the event that I might deem such necessary to enhance the learning experience of all students.

Sean M. Cordry
Additional Important Information

- Students should attend the first day of class or contact the instructor prior to the first class. Failure to do this may result in being dropped from the class.
- Plagiarism, cheating, and other forms of academic dishonesty are prohibited.
- Students with disabilities must register with Student Support Services (CCEN), Room 262 (phone 423-585-6892) if they need any special facilities, services, or consideration.
- Students in need of tutoring assistance are encouraged to contact the Office of Student Tutoring located in the College Center (CCEN), Room 261. The phone number is 423-585-6920.
- Students receiving any type of financial aid or scholarship should contact the Financial Aid Office before making any changes to their schedule. Schedule changes without prior approval may result in loss of award for the current term and future terms.
- Students who have not paid fees on time and/or are not correctly registered for this class and whose names do not appear on official class rolls generated by the Admissions and Records Office will not be allowed to remain in class or receive credit for this course.
- Cellular phone use during classroom interaction is prohibited. Cellular phones must be turned to the non-audible mode until after class, at which time calls can be received or checked. (See the Walters State Catalog/Handbook)
- For information related to the cancellation of classes due to inclement weather, please check the college’s Web site at www.ws.edu or call the college’s student information line, 1-800-225-4770, option 1; InfoConnect, (423) 581-1233, option 1045; the Sevier County Campus, (865) 774-5800, option 7; or the Greeneville/Greene County Center for Higher Education, (423) 798-7940, option 4. Also, please monitor local TV and radio stations for weather-related announcements. For additional information on this policy see the college catalog.
- In the event of a pandemic or other college declared critical event that impacts the college’s ability to proceed with academic course activities as planned, the college reserves the right to alter this course plan. In the event of a pandemic or other event, please refer to the college’s home web page, www.ws.edu or call InfoConnect, (423) 581-1233 for further information.
- Regular class attendance is a student’s obligation. (See the Walters State Catalog/Student Handbook) If for some reason a student misses class, it is his or her responsibility to see the instructor regarding missed assignments and/or activities and to be prepared for the next class. Excessive absences may substantially lower the semester grade. The college requires the instructor to keep accurate records and to report when students are not attending class.
- The wearing of hats and caps in class is not allowed! Students will be asked to remove their hats and caps.

WSCC Catalog Notification Statement:
All students attending Walters State Community College, regardless of the time and location of the class, must abide by the rules and regulations outlined in the current Walters State Catalog/Student Handbook and the current “Walters State Timetable of Classes.” A copy of the Catalog/Handbook and the “Timetable of Classes” may be obtained from the Admissions Office on the Main campus or at any of our off-campus sites. You may also access the Catalog/Handbook on-line at the following web address: http://www.ws.edu/catalog.

Alternative Teaching Plan
In the event of a pandemic or other college declared critical event, the lead faculty member for this course will use eLearn to communicate with the students. If the lead faculty member is affected by this event, another member from the teaching team will assume instruction for the course. The course will continue utilizing an online format of instruction and testing.

ATTENTION: The Natural Science faculty members are concerned with proper academic advising of students in ALL Pre-Professional programs. It is our explicit desire to help you with any advising problems you may encounter.