Physics/Physics-Engineering 260: Engineering Statics
Spring 2017
TuTh 11:00 a.m. - 12:15 p.m. in SSN 190

Course description: This course applies the basic laws of mechanics, beginning with vector algebra and Newton's Laws, to static (stationary) systems. We start out with the basic equations of forces in three dimensions and particles, and then move onto rigid bodies and more complicated engineering structures. Towards the end in the course we deal with slightly more advanced topics including centroids, moments and products of inertia, and forces in beams. This course is a prerequisite for more advanced engineering courses such as Mechanics of Materials, Structures, and Dynamics.

Instructor: Dr. Robert Thornton
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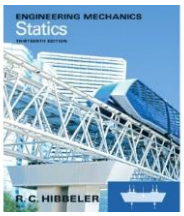
Office hours: W 10-11:00 AM OR 5:30-6:30 p.m. (see *courses.wcupa.edu/RThornton* for details); TuTh 1:30-3:30 PM; also by appointment

Textbook (required): Engineering Mechanics: Statics, **13th** Edition, by R.C. Hibbeler (photo below).

Course Web page: Syllabus and related material will be on D2L.

Grading:
Midterm exams (4 × 15% each): 60%
Short in-class "pop" quizzes: 10%
Homework: 5%
Final Exam: 25%
Total: 100%



Attendance: Attendance is an important part of the class. Attendance is enforced by pop quizzes, which comprise 10% of your final grade. Excused absences are limited to those due to participation in University- sanctioned events (see policy in the WCU undergraduate catalog) or those accompanied by written confirmation from a doctor, the Dean of Students, etc. If you are sick, you MUST obtain a doctor's note. Finally, whether your absence is excused or unexcused (or if you are late to class), you will be responsible for any material covered and any announcements that were made in class that day.

Homework: Homework will be assigned in class. If you miss class, please do not email to to ask if anything was assigned - either stop by my office hours or ask another student. There will be approximately one, maybe two, homework assignments per week. The assignments will consist primarily of selected problems from the textbook. Points will be deducted from assignments handed in late, and no credit will be given once solutions have been posted. You are encouraged to hand in the assignments on time as solutions will be posted shortly after the problems are due. Please do not dismiss the importance of homework assignments simply because they comprise only 5% of your total grade - doing homework problems is one of the primary ways to learn the material, and is critical for doing well on tests. (The reason for the homework being worth only 5% of your grade, by the way, is due to rampant student copying of solutions). No homework assignments will be accepted over email.

In-class short (pop) quizzes: To insure that students are keeping up with the reading and homework, short, unannounced, in-class quizzes will be given periodically. THESE QUIZZES ARE GIVEN TO HELP YOU LEARN THE MATERIAL ON TIME. The quizzes will be very similar to assigned homework problems, yet another reason to keep up with (and not cheat on) the homeworks. To facilitate grading and return quizzes promptly, the in-class quizzes will be graded based on the following scale:

- 0 (missing or totally wrong)
- 1 (something there, mostly wrong)
- 2 (good try, partly right)
- 3 (almost, but not quite, correct)
- 4 (100% correct)

In-class exam policy: There will be four tests over the course of the semester. An unexcused absence on the day of a test will result of a grade of zero for that test. Excused absences are limited to those due to participation in University sanction events (see policy in the WCU undergraduate catalog) or those accompanied by written confirmation from a doctor, the Dean of Students, etc. If you are sick, you MUST obtain a doctor's note BEFORE the test. I do not give make up tests. If you have an excused absence on the day of one of the tests, additional problems on the missed test material may be put on your final exam. You may only miss one exam due to an excused absence. You are encouraged to bring a calculator to the exams, but the calculator cannot be a part of a cell phone, iPod, etc. (i.e., it must be ONLY a calculator).

Final Exam Policy: The final exam is cumulative and mandatory. Missing the final exam will result in a zero for the exam unless EXTREME circumstances apply. Even in that case, extra questions will be added to the make-up final.

Reading: Students are expected to keep up with the assigned reading in the textbook. Again, pop-quizzes will be given to enforce this.

Disability: West Chester University is committed to making accommodations for persons with disabilities. Please make your needs known by contacting your instructor and the Office of Students with Disabilities. Sufficient notice is needed in order to make the accommodations possible. The University desires to comply with the ADA of 1990.

Intellectual Property Statement:
The instructor for this course utilizes copyrighted materials under the "Freedom and Innovation Revitalizing United States Entrepreneurship Act of 2007" (Fair Use Act). Apart from such copyrighted materials, all other intellectual property associated with this course is owned and copyright protected by the instructor, including, but not limited to, lectures, course discussions, course notes and supplementary materials posted or provided to students authored by the instructor, assessment instruments such as quizzes and exams, and Power Point presentations. No recording, copying, storage in a retrieval system, or dissemination in any form, whether electronic or other format, by any means of the intellectual property of the instructor, either in whole or in part, is permitted without the prior written permission of the instructor. When such permission is granted, it must specify the utilization of the intellectual property and all such permissions and waivers shall terminate on the last day of finals in the semester in which this course is held.

Links and references to on-line resources provided by the instructor may lead to other sites. The instructor does not sponsor, endorse or otherwise approve of any information appearing in those sites, nor is responsible for the availability of, or the content located on or through, external sites. Apart from materials used in accordance with the Fair Use Act, the instructor takes no responsibility for material that is otherwise offered at web sites and makes no warranty that such material does not infringe any third party rights. However, should any of this type of material be present and this fact is brought to the attention of the instructor, they will remove references to it from course materials.

Public Safety: All students are encouraged to sign up for the University's free WCU ALERT service, which delivers official WCU emergency text messages directly to your cell phone. For more information and to sign up, visit www.wcupa.edu/wcualert. To report an emergency, call the Department of Public Safety at 610-436-3311.

Course Schedule on Next Page →

Physics 260, Spring 2017, Course Schedule

Schedule: (This schedule is tentative; I will try to follow it as closely as possible!)

Class	Day	Date	Reading	Topic	HW due
1	Tu	Jan 24	Ch 1/2	Units & Force Vectors in 2D	
2	R	Jan 26	Ch 2	Forces in 3D	2.3,2.6,2.29
3	Tu	Jan 31	Ch 2/3	Dot prod & Equilibrium of a particle in 2D & 3D	2.33,2.49,2.69,2.83,2.89,2.95,2.102,2.115
4	R	Feb 2	Ch 4	Moments in 2D & 3D	
	Fri	Feb 3			3.3,3.23,3.35, 3.43,3.51,3.57
5	Tu	Feb 7	Ch 4	Moments in 3D, Couples	4.5, 4.19
6	R	Feb 9		Exam 1 (Ch 1-3)	
7	Tu	Feb 14	Ch 4	3D couples & their simplification	4.34, 4.51, 4.53, 4.63
8	R	Feb 16	Ch 4	Further simplification of couples	4.74, 4.78, 4.87
9	Tu	Feb 21	Ch 4	Equilibrium of Rigid Bodies in 2D	4.90, 4.97, 4.109, 4.121
10	R	Feb 23	Ch 5	2-force and 3-force members	5.2, 5.3, 5.5
11	Tu	Feb 23	Ch 5	Equilibrium of Rigid Bodies in 3D	5.11, 5.23, 529, 5.44
12	R	Mar 2	Ch 6	Structures – Method of Joints	
	Fri	Mar 3			5.65,5.70,5.75,5.82
13	Tu	Mar 7	Ch 6	Structures – Method of Sections	6.6, 6.9, 6.17
14	R	Mar 9		Exam 2 (Ch 4 & 5)	
15	Tu	Mar 14		**Spring Break**	
16	R	Mar 16		**Spring Break**	
	Tu	Mar 21	Ch 6	Frames	6.30, 6.41, 6.47
	R	Mar 23	Ch 6	Machines	
	Fri	Mar 24			6.62,6.67,6.81,6.91,6.102
17	Tu	Mar 28	Ch 7	Internal Forces (Section 7.1 only)	
18	R	Mar 30		Exam 3 (Ch 6)	
19	Tu	Apr 4	Ch 8	Friction (8.1 & 8.2)	7.7, 7.18, 7.28
20	R	Apr 6	Ch 8	Friction (8.2 & 8.3)	
21	Tu	Apr 11	Ch 8	Friction (8.5)	8.6,8.13
22	R	Apr 13	Ch 9	Centroid & COG – primitives only	8.61, 8.82,8.85, handout problem
23	Tu	Apr 18	Ch 9	Centroid & COG – integration	
24	R	Apr 20	Ch 10	Moments of Inertia	
	Fri	Apr 21			9.4, 9.7, 9.31, 9.47, 9.65
25	Tu	Apr 25	Ch 10	Moments of Inertia	10.2,10.20,10.24,10.51
26	R	Apr 27	Ch 7	Bending moment diagrams	
	Fri	Apr 28			10.85,10.86,10.97,10.109
27	Tu	May 2		Exam 4 (Ch 8, 9, & 10)	
28	R	May 4		Review	
	Tues	**May 9**		**Final Exam 10:30-12:30**	