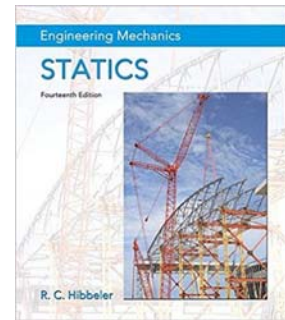


**PHY 260 – Engineering Statics
Spring 2020**

Professor: Dr. Kevin Aptowicz
Email: kaptowicz@wcupa.edu
Office Hours: M – 8:30 am to 9:30 am
 W – 8:30 am to 11:30 am
 R – 2:30 pm to 3:30 pm

Phone: 610-436-3010
Office: SSS 227



Required Materials:

Engineering Mechanics: Statics, **14th** Edition, by R.C. Hibbeler
 A Scientific Calculator

Course Description: Composition and resolution of forces, equivalent force systems, equilibrium of particles and rigid bodies, centroids and center of gravity, analysis of simple structures, internal forces in beams, friction, moments and products in inertia, and methods of virtual work.

Course Student Learning Outcomes:

- Student can solve fundamental problems in engineering statics. Please refer to the Hibbeler textbook to view fundamental problems. Note that the end of each section has a list of fundamental problems. This subsection is titled *Fundamental Problems*.

Applicable Programmatic Student Learning Outcomes:

- Outcome A - Knowledge and understanding of the concepts and principles of physics: B.S. Physics who graduate from West Chester University will possess a general knowledge of physical phenomenon and applications of these phenomenon. Knowledge areas will include classical mechanics, electricity and magnetism, thermodynamics, statistical physics, and quantum mechanics.

Applicable General Education Student Learning Outcomes: Although this is not a designated general education course, the contents of the course does lend itself to some of the general education goals:

- Communicate effectively (via providing clear solutions)
- Employ quantitative concepts and mathematical methods
- Think critically and analytically

Meeting & Assessing Student Learning Outcomes: Student learning outcomes will be achieved by interactive lectures and students working on assigned problems outside of class time. The primary form of assessment of the student learning outcomes will be exams.

Attendance Policy: Attendance is an important part of the class. Attendance will be taken at the start of each class period. 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.

Problem Sets: Problem sets will be assigned at the end of each class session. If you miss class, please do not email to ask if anything was assigned - either stop by my office hours or ask another student. The assignments will consist primarily of selected problems from the textbook. The problem sets are due to following class period. 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. No homework assignments will be accepted over email. **When working on the problem sets, your focus should be on learning the material.** Understanding 90% of a problem but getting it wrong is better than understanding 10% of the problem and getting it right.

Warm-up problems: To incentivize students to keep up with the problem sets. I will randomly call on students to start the class by providing a solution to a problem from the problem set. The goal is for the student to have a basic understanding of the problem, not to have a mastery of it. Poor performance of these warm-up problems could negatively impact your attendance & preparation grade.

Evaluation & Grading:

60% - Midterm exams (4 × 15% each)

10% - Attendance & Preparation

5% - Problem Sets

25% - Final Exam

Total: 100%

A letter grade will be assigned based on performance in the course according to the following scale:

Grade	Quality Points	Percentage Equivalents	Interpretation
A	4.00	93-100	Excellent
A-	3.67	90-92	
B+	3.33	87-89	Superior
B	3.00	83-86	
B-	2.67	80-82	
C+	2.33	77-79	Average
C	2.00	73-76	
C-	1.67	70-72	
D+	1.33	67-69	Below Average
D	1.00	63-66	
D-	0.67	60-62	
F	0	< 60%	Failure

Refer to the Undergraduate Catalog for description of NG (No Grade), W, Z, and other grades.

Exam Policies: 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).

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

Class	Day	Date	Reading	Topic	Sections
1	Tu	Jan 21	Ch 1/2	Background & Adding Forces	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3
2	R	Jan 23	Ch 2	Cartesian vector notation	2.4, 2.5, 2.6, 2.7, 2.8
3	Tu	Jan 28	Ch 2/3	Dot prod & Equilibrium of a particle in 2D & 3D	2.9, 3.1 3.2, 3.3, 3.4
4	R	Jan 30	Ch 4	Moments in 2D & 3D	4.1, 4.2, 4.3, 4.4
5	Tu	Feb 4		Exam 1 (Ch 1-3)	
6	R	Feb 6	Ch 4	Moments in 3D, Couples	4.5, 4.6
7	Tu	Feb 11	Ch 4	3D couples & their simplification	4.7, 4.8
8	R	Feb 13	Ch 4	Further simplification of couples	4.8, 4.9
9	Tu	Feb 18	Ch 5	Equilibrium of Rigid Bodies in 2D	5.1, 5.2, 5.3
10	R	Feb 20	Ch 5	2-force and 3-force members	5.4, 5.5, 5.6
11	Tu	Feb 25	Ch 5	Equilibrium of Rigid Bodies in 3D	5.7
12	R	Feb 27	Ch 6	Structures – Method of Joints	6.1, 6.2
13	Tu	Mar 3		Review Day / Snow Day	
14	R	Mar 5		Exam 2 (Ch 4 & 5)	
	Tu	Mar 10		Spring Break	
	R	Mar 12		Spring Break	
15	Tu	Mar 17	Ch 6	Structures – Method of Sections	6.3, 6.4
16	R	Mar 19	Ch 6	Frames	6.5
17	Tu	Mar 24	Ch 6	Machines	6.6
18	R	Mar 26	Ch 7	Internal Forces (Section 7.1 only)	7.1
19	Tu	Mar 31		Exam 3 (Ch 6)	
20	R	Apr 2	Ch 8	Friction	8.1, 8.2
21	Tu	Apr 7	Ch 8	Friction	8.3
22	R	Apr 9	Ch 8	Friction	8.5
23	Tu	Apr 14	Ch 9	Centroid & COG – primitives only	9.1
24	R	Apr 16	Ch 9	Centroid & COG – integration	9.2
25	Tu	Apr 21	Ch 10	Moments of Inertia	10.1, 10.2, 10.3
26	R	Apr 23	Ch 10	Moments of Inertia	10.4, 10.8
27	Tu	Apr 28	Ch 11	Virtual Work	11.1, 11.2, 11.3
28	R	Apr 30		Exam 4 (Ch 7, 8, 9 & 10)	
	Tu	May 5		Final Exam 8 am -10 am	

Statements Common to All WCU Undergraduate Syllabi:



ACADEMIC & PERSONAL INTEGRITY

It is the responsibility of each student to adhere to the university's standards for academic integrity. Violations of academic integrity include any act that violates the rights of another student in academic work, that involves misrepresentation of your own work, or that disrupts the instruction of the course. Other violations include (but are not limited to): cheating on assignments or examinations; plagiarizing, which means copying any part of another's work and/or using ideas of another and presenting them as one's own without giving proper credit to the source; selling, purchasing, or exchanging of term papers; falsifying of information; and using your own work from one class to fulfill the assignment for another class without significant modification. Proof of academic misconduct can result in the automatic failure and removal from this course. For questions regarding Academic Integrity, the No-Grade Policy, Sexual Harassment, or the Student Code of Conduct, students are encouraged to refer to the Department Undergraduate Handbook, the Undergraduate Catalog, the *Ram's Eye View*, and the University website at www.wcupa.edu.

STUDENTS WITH DISABILITIES

If you have a disability that requires accommodations under the Americans with Disabilities Act (ADA), please present your letter of accommodations and meet with me as soon as possible so that I can support your success in an informed manner. Accommodations cannot be granted retroactively. If you would like to know more about West Chester University's Services for Students with Disabilities (OSSD), please visit them at 223 Lawrence Center. The OSSD hours of Operation are Monday – Friday, 8:30 a.m. – 4:30 p.m. Their phone number is 610-436-2564, their fax number is 610-436-2600, their email address is ossd@wcupa.edu, and their website is at www.wcupa.edu/ussss/ossd.

EXCUSED ABSENCES POLICY

Students are advised to carefully read and comply with the excused absences policy, including absences for university-sanctioned events, contained in the WCU Undergraduate Catalog. In particular, please note that the "responsibility for meeting academic requirements rests with the student," that this policy does not excuse students from completing required academic work, and that professors can require a "fair alternative" to attendance on those days that students must be absent from class in order to participate in a University-Sanctioned Event.

REPORTING INCIDENTS OF SEXUAL VIOLENCE

West Chester University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to meet this commitment and to comply with Title IX of the Education Amendments of 1972 and guidance from the Office for Civil Rights, the University requires faculty members to report incidents of sexual violence shared by students to the University's Title IX Coordinator, Ms. Lynn Klingensmith. The only exceptions to the faculty member's reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project. Faculty members are obligated to report sexual violence or any other abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred to the person designated in the University protection of minors policy. Information regarding the reporting of sexual violence and the resources that are available to victims of sexual violence is set forth at the webpage for the Office of Social Equity at http://www.wcupa.edu/_admin/social.equity/.

EMERGENCY PREPAREDNESS

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, visit www.wcupa.edu/wcualert. To report an emergency, call the Department of Public Safety at 610-436-3311.

ELECTRONIC MAIL POLICY

It is expected that faculty, staff, and students activate and maintain regular access to University provided e-mail accounts. Official university communications, including those from your instructor, will be sent through your university e-mail account. You are responsible for accessing that mail to be sure to obtain official University communications. Failure to access will not exempt individuals from the responsibilities associated with this course.