

PHYSICS 130: GENERAL PHYSICS I

WEST CHESTER UNIVERSITY
FALL 2020

SYLLABUS

UPDATED: August 18, 2020

INSTRUCTOR

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OFFICE HOURS

Day	Time
Monday	8:30–10:00 am
Monday	11:00 am–12:00 pm
Thursday	2:00–3:00 pm
Friday	8:30–10:00 am

SECTION 03 DETAILS

The format for the course is *remote-synchronous*. The official course meeting times are

Day	Time
Monday, Wednesday, Friday	1:00–1:50 pm
Wednesday	2:00–2:50 pm

Although unlikely, I reserve the right to hold synchronous activities, including assessments, during any of these times.

The course has been designed to have only two meetings per week:

Activity	Day	Time
Open Zoom meeting (optional)	Monday	1:00–1:50 pm
Synchronous discussions & quizzes	Friday	1:00–1:50 pm

In addition, the final exam will be given synchronously during the official final exam period assigned by the Registrar's Office: **Friday, December 11, 1:00–3:00 pm.**

COURSE DESCRIPTION

Physics 130: General Physics I is an algebra-based introductory course in mechanics. Topics include kinematics, forces, energy, momentum, rotational motion, oscillations, waves, fluids, and thermodynamics. In less technical language, we will learn the mathematical description of motion (kinematics), how forces give rise to changes in motion (dynamics), and a number of applications. Laboratory (2 hours per week) provides hands-on exploration of the physical laws and concepts discussed in class. Discussion section (1 hour per week) provides guided problem-solving exercises. This course is part of a two-semester sequence designed for students pursuing programs in biological and health sciences, as well as programs outside the sciences – consult the [WCU Undergraduate Catalog](#) to determine which physics sequence is appropriate for your program.

PREREQUISITES

This course uses mathematics, including algebra, trigonometry, and basic graphing skills, on a daily basis. Students who have not completed a “pre-calculus” math course in high school or college may not be prepared for this course. If you are concerned about your preparedness, please consult with me prior to the drop/add deadline of **Monday, August 31**.

TIME COMMITMENT

This is a 4 credit-hour course. There are 4 hours of class and 2 hours of laboratory each week. In addition, this course requires (on average) 4-6 hours of reading, assignments, and studying outside of scheduled class time each week.

STUDENT LEARNING OUTCOMES

PHY 130 is approved as a WCU General Education Science Distributive course, and as such meets the following General Education Goals:

Gen Ed Goal #1: Communicate effectively

Gen Ed Goal #2: Think critically and analytically

Gen Ed Goal #3: Employ quantitative concepts and mathematical methods

More specifically, after successfully completing this course a student will be able to:

1. **Mathematically describe mechanical systems** using the language of kinematics.
2. **Recognize concepts of physics** in action within mechanical systems, including force, energy, momentum, harmonic motion, and wave phenomena.
3. **Analyze mechanical systems** through visualization, modeling, algebra, as well as diagrammatic and graphical techniques.
4. Assemble the above elements in order to **solve multi-part problems** and **formulate quantitative predictions** for physical experiments.

Student learning outcomes will be met and assessed through the following activities:

- **Communicate effectively:** This course develops a student’s ability to *express oneself effectively in common college-level written forms* (Gen Ed SLO #1a).

In class, peer instruction and think-pair-share exercises give students practice communicating physical concepts in plain language. Homework assignments develop a student’s ability to describe physical systems in the mathematical language of kinematics. Laboratory activities, performed in groups of 2-3 students, provide further practice explaining physical systems with brevity and mathematical precision. Effective written communication is assessed through short-answer conceptual questions on laboratory assignments.

- **Think critically and analytically:** This course develops a student's ability to *construct and/or analyze arguments in terms of their premises, assumptions, contexts, conclusions, and anticipated counter-arguments* (Gen Ed SLO #2b), as well as *reach sound conclusions based on a logical analysis of evidence* (Gen Ed SLO #2c).

In mechanics, critical thinking most often takes the form of identify/analyze/predict: a student must (i) identify the aspects of physical system which determine its motion, (ii) analyze the system using physical concepts and mathematical relations, and (iii) develop a quantitative prediction for the system's behavior. Interactive video assignments, lecture, in-class "concept quizzes", and homework problems all work to develop a student's skill in this process. For example, a common in-class activity is to propose a brief experiment and ask students to formulate a prediction for the outcome of that experiment. The experiment is then performed, and students are asked to analyze the assumptions and logic that led to their prediction. Student achievement in this critical thinking process is assessed through multiple choice questions on in-class quizzes and the final exam.

Critical and analytical thinking is also developed in the lab. Laboratory exercises ask students to synthesize experimental results and physical reasoning in order to construct explanations of observed behavior, formulate predictions for future experiments, and critically assess the quality of their data. Student achievement in these skills is assessed through written Lab Exercises and Post-Lab Assignments.

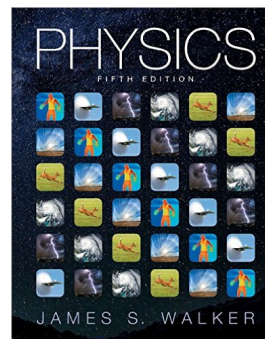
- **Employ quantitative concepts and mathematical methods:** This course develops a student's ability to *employ quantitative methods to examine a problem in the natural or physical world* (Gen Ed SLO #3a), as well as *apply the basic methods and thought processes of the scientific method for natural/physical science in a particular discipline* (Gen Ed SLO #3b).

As a course in mechanics, essentially every element of this course involves quantitative methods and problem-solving. Quantitative tools such as algebra, trigonometry, and vectors are employed in every aspect of the course. Lecture presentation and textbook material train students in the following problem-solving skills: organizing information, visualizing and diagramming, recognizing concepts, strategizing solutions, combining mathematical relations, and assessing results. Weekly laboratory sessions allow students to actively apply the scientific method in order to explore physical phenomena and verify their predictions. For instance, in a lab on projectile motion students are tasked with predicting the distance a ball will travel when shot out of a launcher. Students determine the initial launch speed of the ball empirically, then utilize their measurement to model the ball's flight and ultimately predict the ball's landing position. Students then critique and refine their analysis based upon the accuracy of their result. While quantitative problem-solving is an ingredient in every aspect of the course, it is primarily assessed through multiple choice questions problems posed on in-class quizzes and the final exam, as well as through written Lab Exercises.

COURSE MATERIALS

This course has 3 required course materials:

1. **TEXTBOOK:** The course textbook is *Physics, 5th Edition*, by James S. Walker. An e-text of this book is accessible on [Mastering Physics](#) (see below). You may also upgrade to a physical copy at additional cost – contact the [WCU campus store](#) for details.
2. **MODIFIED MASTERING PHYSICS:** This course uses the online platform [Mastering Physics](#) for readings, assignments, and additional study materials. You may access [Mastering Physics](#) by clicking on the link on the homepage of our [D2L](#) site.



Access to [Mastering Physics](#) is provided via the *Inclusive Access* program. Every student enrolled in PHY 130 will be charged for a (24-month) subscription to [Mastering Physics](#) for *Physics 5/e*, by Walker. This charge will appear on your Bursar's Office account. More information about the *Inclusive Access* program is contained in an email sent to your WCUPA email account from the [WCU campus store](#). Questions about *Inclusive Access* should be directed to inclusiveaccess@wcupa.edu.

If you already have an active subscription for [Mastering Physics](#) for *Physics 5/e*, by Walker, then you may opt out of *Inclusive Access* and will not be charged by the Bursar's Office. One way to opt out is to use the link provided in the email sent to your WCUPA email account from the [WCU campus store](#). There may also be an opt out link on when you login to [Mastering Physics](#) via [D2L](#).

The *Inclusive Access* program provides the lowest available cost for a [Mastering Physics](#) subscription. There is no way to share a subscription with another person, or transfer a subscription from one person to another.

Your [Mastering Physics](#) subscription does not include access to other Mastering products. However, PHY 140 uses the same textbook as PHY 130, so students who complete PHY 140 within 24 months may use the subscription they purchase now.

An active subscription to [Mastering Physics](#) is a course requirement. Students who are not enrolled in [Mastering Physics](#) will not be able to access assignments, and will not be offered quizzes or exams.

If you experience any technical problems with [Mastering Physics](#), check your [system requirements](#) and consult the [get started](#) page. I recommend that you always use a “real computer” (not a mobile device) and the [Mozilla Firefox](#) web browser when working on [Mastering Physics](#).

3. **CALCULATOR:** You will need a stand-alone calculator that can compute powers, trigonometric functions, and operate in scientific notation.

Your laboratory section may require additional materials; consult your lab section syllabus.

ASSESSMENT

This course follows the official WCU scale for grades:

Grade	Quality Points	Percentage	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	0.00	<60	Failure

Refer to the [WCU Undergraduate Catalog](#) for description of NG (No Grade), W, Z, and other grades. Elements of the course will contribute to the course grade as follows:

Percent	Category
15%	Laboratory
15%	Homework
50%	In-class quizzes (10% each for 5 highest scores)
20%	Final exam

15% **LABORATORY:** The lab grade is determined by the instructor of your lab section. Refer to your lab section syllabus for details.

15% **HOMEWORK:** Homework assignments are completed on [Mastering Physics](#). There is a homework assignment corresponding to each lecture (e.g., Homework 3 covers material from Lecture 3). Assignments are due every week at **11:59 pm on Tuesday evening**. Consult the [Course Schedule](#) for details.

Each homework question is worth 1 point, and your total homework grade for the course is simply: $100 \times (\text{points earned}) / (\text{points available})$. You are allowed **six attempts** to solve each problem for full credit; after these attempts the problem will close and you will receive partial or no credit. Any work completed prior to the deadline will be counted – you do not have to complete the assignment to receive partial credit.

Answers to homework problems are available on [Mastering Physics](#) shortly after the assignment deadline. I am happy to discuss any problem during office hours.

50% IN-CLASS QUIZZES: There will be 6 quizzes offered during scheduled class time. The tentative dates for these quizzes are listed on the [Course Schedule](#). Quizzes are not offered at alternate times, unless an exam conflicts with an event which is recognized by the WCU [Excused Absences Policy](#)– see [Excused Absences](#) below. Quizzes are “closed book”: the only aids allowed are a stand-alone calculator and the course equation sheet. The equation sheet is updated throughout the term; the most recent version is available on [D2L](#).

Quiz scores may be scaled (“curved”) to conform to a standard distribution of grades. Failure to take a quiz results in a 0 score.

When calculating your course grade, I will “drop” your one lowest quiz score.

20% FINAL EXAM: The comprehensive final exam is scheduled for the time listed on page 1. The final exam is “closed book” in the same manner as the in-class quizzes. Final exam scores may be scaled (“curved”) to conform to a standard distribution of grades. Failure to take the exam results in a 0 score. There is no final exam “exemption.”

All grades are posted on the [D2L](#) grade book.

Although unlikely, I reserve the right to alter the assessment scheme in order to accommodate for unforeseen circumstances or to better serve the learning objectives of the course. Due dates of assignments as well as the dates of quizzes may change.

ATTENDANCE POLICY

Attendance is not a graded item in this course. The University requires that I report attendance periodically throughout the term. Students who fail the course while having a record of poor attendance may receive a “Z” grade – see the WCU [Title IV Federal Financial Aid Compliance Policy](#).

If you miss a synchronous class activity then it is your responsibility to make up the missed learning opportunity by reviewing course materials on your own. Missing class does not excuse you from completing other aspects of the course on time.

EXCUSED ABSENCES

This course adheres to the WCU [Excused Absences Policy](#). If you are unable to perform an aspect of the course due to a conflict recognized by this policy (which includes University-Sanctioned Events) you must notify me in advance so that we can make arrangements. **Documentation verifying your participation in the event must be submitted via D2L** (path: Assessments>Assignments>Documentation for excused absences).

ACCOMMODATION

If you require additional accommodation for any aspect of the course you must notify me in advance so that we can make arrangements. Depending on the accommodation, you may need to provide documentation.

- **OSSD:** If you have an ongoing medical condition which effects your ability to meet the course expectations then you should register with the [Office of Services for Students with Disabilities](#) (OSSD). **To receive accommodation you must submit your OSSD letter via D2L** (path: Assessments>Assignments>OSSD letters of accommodation).
- **HEALTH/WELLNESS CONDITIONS:** If you have a medical condition which causes you to miss at least three consecutive school days then you may seek accommodation from [Student Assistance](#).
- **PERSONAL EMERGENCIES:** Rarely, a personal emergency can arise which prevents a student from meeting course expectations. In such a rare circumstance I am happy to work with the student in order to make appropriate arrangements. In most cases, I require that [Student Assistance](#) act as a liaison and provide confidential verification of the emergency.

POLICIES ON LATE OR MISSED WORK

If you suspect that you will not be able to meet a course deadline you should notify me in advance so that we can discuss possible resolutions. The default policies on late and missed work are as follows:

- **HOMEWORK:** I **can** provide individual extensions on homework assignments, though I do not recommend it. Extensions are not automatic. You must request an extension at least 24 hours before the deadline so that I have time to change your deadline on [Mastering Physics](#).
- **QUIZZES:** Quizzes are not offered at alternate times, unless a quiz conflicts with an event which is recognized by the WCU [Excused Absences Policy](#)– see [Excused Absences](#) above. Failure to take a quiz results in a 0 score. Note that when calculating course grades I drop the one lowest quiz score – see [Assessment](#) above.
- **FINAL EXAM:** This course follows the WCU [Final Exam Policy](#). The time and date of the final exam are set by the Registrar and can change. The final exam is not offered at alternate times. There is no final exam “exemption.”

COURSE SCHEDULE

The [Course Schedule](#) provides a tentative schedule of course activities. This schedule may be updated in order to better meet our needs or accommodate unforeseen circumstances. An up-to-date [Course Schedule](#) is available on [D2L](#) (path: Content>Syllabus).

You are expected to be available to attend lab every week of term. The tentative lab schedule (included on the [Course Schedule](#)) includes weeks without a lab, but that schedule may change.

The final exam time and date are arranged the by the Registrar's Office and can change. You should plan to be available the entire Final Exam Period (**December 7-11, 2020**).

D2L, EMAIL, AND ALL THAT

- **COURSE PLATFORMS:** All course documents are maintained on the course [D2L](#) and [Mastering Physics](#) sites. I use the [D2L](#) announcement tool to make class-wide announcements. You are responsible for regularly checking these course platforms. I may not announce in class changes to course content on these platforms. As with all technology, these platforms can have glitches and service outages. For this reason, check these platforms frequently and do not leave assignments to the last minute.
- **EMAIL:** I use email for individual correspondence and for time-sensitive class-wide communications. Except in the event of a technical failure or an emergency, I will only use WCUPA email accounts (mine and yours) to correspond.
- **COMMUNICATION:** All electronic communication should be written with appropriate language and etiquette. Please consult the guide [here](#).
- **RECORDING:** This course uses technology for virtual meetings. The use of such technology is governed by federal privacy laws, including FERPA. **Students do not have permission to record virtual meetings or any other audio or visual correspondence related to this course or the instructor.** See [Accommodation](#) above and [Intellectual property](#) below.

ADDITIONAL RESOURCES

- **PHYSICS TUTORING:**
 - Physics tutoring is available through the [Learning Assistance & Resource Center](#). This service is free, but availability is limited.
 - In the past, WCU physics majors have offered free tutoring through the Society of Physics Students (SPS). If this occurs this semester, details will be announced on [D2L](#).

- Some physics majors also offer one-on-one private tutoring for a fee. If this occurs this semester, details will be announced on [D2L](#).
- RECOMMENDED FOR THE MCATS:
 - *MCAT Physics and Math Review*, by The Princeton Review. This is not a good text for learning physics, but it does provide an efficient review for the MCAT exam.

ACADEMIC INTEGRITY

Students are expected to follow all WCU rules and guidelines on academic integrity as described in the [WCU Undergraduate Catalog](#). Here are a few relevant issues for this class:

- ONLINE PLATFORMS: [D2L](#), [Mastering Physics](#), and [Zoom](#) are extensions of the classroom and as such all WCU rules regarding student behavior apply on these platforms. Do not violate the copyrights of these sources. Do not misrepresent your identity on these platforms, either by impersonating someone else or by allowing another person to impersonate you.
- COLLABORATION: Students are encouraged to study together and collaborate on assignments. However, you should go through the process of solving each homework problem yourself. Submitting answers which you have not yourself obtained is fraud.
- ONLINE RESOURCES: Students are welcome to use online resources to help them complete assignments. However, “resources” does not include specific solutions to assigned problems, whether found online or elsewhere. Submitting answers which you have not yourself obtained is fraud.

Students who violate WCU rules of academic integrity will receive an [Academic Integrity Violation Report](#), and may receive a failing grade (F) in the course.

INTELLECTUAL PROPERTY

The instructor utilizes copyrighted materials under the Freedom and Innovation Revitalizing the 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 copyrighted by the instructor, including, but not limited to, lectures, course discussions, course notes, slides, assessment instruments such as exams, and supplementary materials posted or provided to students authored by the instructor. No recording, copying, storage in a retrieval system, or dissemination in any form by any means of the intellectual property of the instructor, in whole or in part, is permitted without 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 the semester in which this course is held.

Statements Common to All WCU Undergraduate Syllabi



COVID-19 STATEMENT

Part of West Chester University's response to the COVID-19 pandemic was to switch the vast majority of instruction to remote. This decision was made out of an abundance of caution to protect the health of all members of the WCU community. Faculty have been asked to make every effort to adapt their courses to this novel situation while still meeting the critical learning outcomes of the course. Students are asked to discuss any problems with the new course format and schedule directly with their instructors. Patience and flexibility on everyone's behalf are critical to our community's navigation of this public health crisis.

For this particular course, the following alternative modalities are being utilized:

- Laboratory activities are completed remotely through both synchronous and asynchronous activities.
- Lecture activities are completed remotely through both synchronous and asynchronous activities.
- Assessment activities are completed remotely through both synchronous and asynchronous activities.
- Office hours are completed remotely through both synchronous and asynchronous communication.

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. 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 <https://www.wcupa.edu/universityCollege/ossd/>. In an effort to assist students who either receive or may believe they are entitled to receive accommodations under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, the University has appointed a student advocate to be a contact for students who have questions regarding the provision of their accommodations or their right to accommodations. The advocate will assist any student who may have questions regarding these rights. The Director for Equity and Compliance/Title IX Coordinator has been designated in this role. Students who need assistance with their rights to accommodations should contact them at 610-436-2433.

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 comply with the requirements of Title IX of the Education Amendments of 1972 and the University's commitment to offering supportive measures in accordance with the new regulations issued under Title IX, the University requires faculty members to report incidents of sexual violence shared by students to the University's Title IX Coordinator. 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: <https://www.wcupa.edu/admin/diversityEquityInclusion/sexualMisconduct/default.aspx>

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.

PHY 130-03, Fall 2020 — Schedule

- Homework is due Tuesdays at 11:59 pm ET.
- Fridays are synchronous class meetings.
- Mondays are optional “open zoom” meetings.

Week	Date	Day	#	Lesson	Reading	Lab
1	24-Aug	M	—	Course orientation	—	
1	25-Aug	T				
1	26-Aug	W	L1	Physical quantities	1.1-1.5	Lab orientation
1	26-Aug	W	L2	Position, problem solving	2.1, 1.6, 1.8	
1	28-Aug	F	D1	Graphs	—	
2	31-Aug	M	L3	Velocity & speed	2.2, 2.3	
2	1-Sep	T		Due: Homework 0, 1, 2		
2	2-Sep	W	L4	Acceleration	2.4	1a. Introduction
2	2-Sep	W	L5	Uniform acceleration	2.5-2.7	& Data Analysis
2	4-Sep	F	D2	Uniform acceleration	—	
3	7-Sep	M	—	NO CLASS — Labor Day	—	
3	8-Sep	T		Due: Homework 3, 4, 5		
3	9-Sep	W	L6	Trigonometry & vectors	Suppl., 3.1-3.4	1b. Repeated
3	9-Sep	W	L7	More vectors!	—	Measurements
3	11-Sep	F	—	QUIZ 1: 1D kinematics	—	
4	14-Sep	M	L8	Vector kinematics	3.5, 4.1	
4	15-Sep	T		Due: Homework 6, 7		
4	16-Sep	W	L9	Projectile motion	4.2-4.5	2. 1d Kinematics
4	16-Sep	W	L10	Uniform circular motion	Suppl.	
4	18-Sep	F	D3	Projectile motion	—	
5	21-Sep	M	L11	Forces, Newton's laws	5.1-5.3	
5	22-Sep	T		Due: Homework 8, 9, 10		
5	23-Sep	W	D4	Free body diagrams	5.5	3. Free fall
5	23-Sep	W	L12	Weight, normal, Newton's 3rd	5.4, 5.6, 5.7	
5	25-Sep	F	—	QUIZ 2: 2D kinematics	—	

Week	Date	Day	#	Lesson	Reading	Lab
6	28-Sep	M	L13	Friction	6.1	
6	29-Sep	T		Due: Homework 11, 12		
6	30-Sep	W	L14	Tension	6.2-6.4	4. Projectile
6	30-Sep	W	L15	Centripetal forces	6.5	Motion
6	2-Oct	F	D5	Force workshop	—	
7	5-Oct	M	L16	Springs & energy	6.2	
7	6-Oct	T		Due: Homework 13, 14, 15		
7	7-Oct	W	L17	Work	7.1, 7.3	5. Newton's
7	7-Oct	W	L18	Work-energy theorem	7.2	2nd Law
7	9-Oct	F	—	QUIZ 3: Forces	—	
8	12-Oct	M	L19	Potential energy	8.1, 8.2	
8	13-Oct	T		Due: Homework 16, 17, 18		
8	14-Oct	W	L20	Conservation of energy	8.3	NO LAB
8	14-Oct	W	L21	Linear momentum	9.1-9.3	
8	16-Oct	F	D6	Conservation of energy	—	
9	19-Oct	M	L22	Conservation of linear momentum	9.4, 9.5	
9	20-Oct	T		Due: Homework 19, 20, 21		
9	21-Oct	W	L23	Rotational kinematics	10.1, 10.2	6. Energy
9	21-Oct	W	—	Flex day	—	Conservation
9	23-Oct	F	D7	Conservation of linear momentum	—	
10	26-Oct	M	L24	Rolling	10.3, 10.4	
10	27-Oct	T		Due: Homework 22, 23		
10	28-Oct	W	L25	Moment of inertia	10.5, 10.6	7. Momentum
10	28-Oct	W	L26	Torque	11.1, 11.2	
10	30-Oct	F	—	QUIZ 4: Energy & momentum	—	
11	2-Nov	M	L27	Static equilibrium	11.3, 11.4	
11	3-Nov	T		Due: Homework 24, 25, 26		
11	4-Nov	W	L28	Angular momentum	11.6, 11.7	8. Angular
11	4-Nov	W	L29	Simple harmonic motion	13.1, 13.2, 13.4	Dynamics
11	6-Nov	F	D8	Static equilibrium	—	

Week	Date	Day	#	Lesson	Reading	Lab
12	9-Nov	M	L30	Applications of SHM	13.5, 13.6	
12	10-Nov	T		Due: Homework 27, 28, 29		
12	11-Nov	W	L31	Waves	14.1, 14.2	9. Springs
12	11-Nov	W	L32	Sound & Doppler effect	14.4, 14.6	& Oscillations
12	13-Nov	F	—	QUIZ 5: Rotation	—	
13	16-Nov	M	L33	Interference	14.7	
13	17-Nov	T		Due: Homework 30, 31, 32		
13	18-Nov	W	L34	Standing waves	14.8	10. Standing
13	18-Nov	W	—	Flex day	—	Waves
13	20-Nov	F	D9	Wave graphs	—	
14	23-Nov	M	—	NO CLASS — Thanksgiving break	—	
14	24-Nov	T	—	NO CLASS — Thanksgiving break	—	
14	25-Nov	W	—	NO CLASS — Thanksgiving break	—	NO LAB
14	25-Nov	W	—	NO CLASS — Thanksgiving break	—	
14	27-Nov	F	—	NO CLASS — Thanksgiving break	—	
15	30-Nov	M	L35	Fluids	15.1-15.3	
15	1-Dec	T		Due: Homework 33, 34		
15	2-Dec	W	L36	Buoyancy	15.4, 15.5	NO LAB
15	2-Dec	W	D10	Archimedes Principle	—	
15	4-Dec	F	—	QUIZ 6: Oscillations & waves	—	
16	7-Dec	M	—	Review for final exam	—	
16	8-Dec	T		Due: Homework 35, 36		
16	9-Dec	W	—	No CLASS — Finals week	—	NO LAB
16	9-Dec	W	—	No CLASS — Finals week	—	
16	11-Dec	F	—	FINAL EXAM: 1:00-3:00 pm ET	—	