

Physics 11 – Fall 2020 (any Physics 9 students please see me ASAP)

Professor Jerome C. Licini, 610 758-5137, LL408, JCL3@Lehigh.edu, <http://www.lehigh.edu/~jcl3>.

Please record...

Recitation instructor and section number:

Their contact information:

REMOTE STRUCTURE:

- The lecture content is remote and asynchronous, so you can watch the content presentations at your convenience. However, I do plan to have a Zoom session at every scheduled lecture time (10:45am and 12:10 pm on Mondays and Wednesdays) for review/question/workshop. In case of conflict with your usual lecture time, rather than missing entirely, please try to attend the other lecture time for that day. Zoom lecture attendance and participation will count towards your course grade. As a last-case alternative, those Zoom sessions will be recorded so you may watch them later.
- The recitation time is remote and SYNCHRONOUS. Please do not schedule anything in conflict with that time. If a conflict develops during the semester, please let us know since we would then try to move you to a different recitation section. Zoom recitation attendance and participation will count towards your course grade.
- Please note that if you happen to be on-campus or near campus, in-person meetings with the instructional staff will be possible in small groups and individually.
- Written homework will be due twice each week. Due to the difficulty of getting us all together at one time, my current plans are to have several quizzes, two midterm exams (during Lehigh's traditional "4 o'clock weeks"), and then a three-hour final exam. If I can figure out an alternative structure, I may transition to shorter and more frequent exams.

REMOTE CAPABILITIES: These are the expected capabilities - if you have difficulties with any of these, please contact me or your recitation instructor. You will need access to the CourseSite website. Content will be provided primarily via videos on the Panopto platform. You should work out how to convert images to PDF files - this capability is built into both the iOS and Android operating systems, and a variety of free apps are available. You will be submitting your written work on homework, quizzes, and exams via PDF files to CourseSite. You are expected to be visible during Zoom sessions, so you will need to use a device with a camera - please note that you can supply a photo to replace the background of your location. A printer could be helpful but not absolutely required.

COMMUNITY EXPECTATIONS: To meet the challenge of teaching and learning during the COVID-19 pandemic, we as Lehigh instructors and students will be adopting new forms of instruction and interaction; following new guidelines around classroom behaviors; enhancing communications; and doing our best to be patient, flexible, and accommodating with each other. In remote synchronous meetings, students are expected to attend just as they would any other Lehigh class. Zoom classes work best when all students come to class ready to participate and follow the instructor's guidelines regarding use of web-cameras. You may be asked to turn your camera on during active learning sessions in Zoom. If you have a strong preference not to do so, please contact your instructor to let them know. (If you are worried about the view of the room behind you, you can upload a background photo.) Students should respect the in-classroom privacy of their instructors and fellow students by not taking screenshots or recording class sessions. Some instructors will record Zoom sessions; however, any recorded live sessions will be shared only with students in the class and will be deleted at the end of the semester. If you attend any events in person, Lehigh has established a policy requiring everyone to wear face coverings when in public spaces inside buildings on our campus and to maintain social distance. This policy applies to our physical classroom. Thank you in advance for following this rule. Students who do not wear a face covering during in-class meetings will be reminded to put their face covering on. If they do not do so, they will be asked once again to do so or leave the classroom.

Textbook: "University Physics, Volume 1," Hugh D. Young and Roger A. Freedman, Fourteenth Edition, Pearson Addison-Wesley, 2014 or 2016 (ISBN-13: 9780133978049). You should feel free to use either a hardcopy or an electronic version (see below). Make sure your purchase includes chapters 1-14 and 17-20. If this is your first-ever course in Physics, you may also want to consider the Student Solutions Manual (ISBN13: 9780133981711) which contains full solutions for half of the odd-numbered problems. If you order direct from Pearson, the cost should be about \$50 which might even include free FedEx ground shipping from NJ in 1-2 days.

Reading Assignments are an essential part of the asynchronous content!

Attendance at all course meetings is required for continued enrollment in the course under University policy (see section 3 of Rules and Procedures).

Written Homework will be due by 10am on lecture days (Monday and Wednesday, beginning Wed Aug 26) by submitting your PDF files to a designated CourseSite folder. Keeping in mind that your goal is to be able to solve physics problems by yourself on the exams: 1) The assignments are graded primarily on whether you've made a serious effort instead of numerical accuracy, so it is far better to actually work on the problems than to copy somebody else's perfect solution, and 2) Start working on the assignments **early** so that if you get stuck, you have time to discuss the problems with your classmates or your recitation instructor.

Quizzes (tentative): Quizzes are given in recitation. The quiz questions are typically similar to homework problems. Only your highest five quiz scores are used in the computation of your course grade. Missed quizzes count as a zero.

Exams (tentative): Two midterm exams will be given during "4 o'clock quiz" weeks. The exams will be "closed book" but you will be supplied with equation sheets and you will receive information about bringing in a page of your own notes. The final exam will be cumulative. **Absolutely no cell phones** or other network-capable devices (iPad, eBook reader, Apple Watch, etc.) are permitted.

No makeups. Because we only use the top five quiz scores, one or two zeros from missed quizzes will simply be discarded. Missed midterm exam scores will be created using your score on the corresponding problems on the cumulative final exam. (This method yields a replacement score that can be accurately normalized to the performance of the class as a whole.) **As soon as the Registrar announces the Common Hour Exam schedule, please reserve 4:25-5:40pm on those days.** Requesting a makeup for the final exam require supporting documentation, endorsement from the Dean of Students office, and a petition to the Committee on Standing of Students. Students with an unusually high level of medical issues or conflicts should contact Prof. Licini.

Course grading (tentative): **There is no Lehigh University standard mapping of percentages to letter grades!** The curve will be set so that the average letter grade is approximately a B+. Rather than guess about your performance, please talk to your recitation instructor or Professor Licini.

Course Grading: (tentative)	Midterm Exam 1	100	(Athletes: Please send sports evaluation forms to your recitation instructor only.)
	Midterm Exam 2	100	
	Written homework	100	
	Recitation Quizzes (best 5)	50	
	Lecture Zoom Attendance	50	
	Recitation Zoom Attendance	50	
	Final Exam	200	
	<hr/> TOTAL	<hr/> 650	

CONTENTS: Physics 11 “Introductory Physics I” is the four-credit “content” portion of the first semester of Lehigh University’s calculus-based two-semester introductory physics sequence, designed primarily for science and engineering students. In Physics 11, we cover two broad subject areas, MECHANICS (including kinematics, Newton’s laws, energy, momentum, rotational mechanics (kinematics / dynamics / energy / angular momentum), statics, gravity, and oscillations) and THERMODYNAMICS (including specific heat, latent heat, calorimetry, heat transfer, kinetic theory, the First and Second Laws of Thermodynamics, entropy, and application to thermodynamic machines).

Prerequisites/Corequisites: Physics 11 requires simultaneous enrollment in (or prior credit for) a first-semester calculus course from the set of Math {21, 31, 51, 75, or 76}.

Other related courses: Physics 12 “Introductory Physics I Laboratory” is the separately scheduled one-credit laboratory course, which should typically be taken during the same semester as Physics 11. The second-semester continuation course which covers electromagnetism, waves, and optics is Physics 21 “Introductory Physics II” with its accompanying Physics 22 laboratory. An alternative course sequence, Physics 10 and 13 are offered with a more biological orientation and slightly lower math expectations. There is one-credit online enhancement available to those students with a particular interest in physics and current or prior enrollment in Physics 11 – ask me about Physics 072-010 “Advanced Topics in First-Semester Physics.”

Structure: During each of the 14 weeks, we meet for two 50-minute lectures and two 50-minute small-group recitations (primarily problem-solving practice, coaching, and evaluation).

FINAL COMPETENCIES:

- 1) Students demonstrate competence with the mathematical tools and techniques required (units, conversions, exponential notation, significant figures, algebra, quadratic equations, simultaneous equations, geometry, trigonometry, vector components, scalar and vector products, basic differentiation and integration of polynomial and trigonometric functions, and interpreting and creating graphs).
- 2) Students demonstrate competence at analyzing word problems into underlying physical principles, visual depictions, equations, and graphs as appropriate.
- 3) Students understand the relationships between kinematic quantities and can use them to analyze and predict constant acceleration motion in one and two dimensions.
- 4) Students understand the different types of forces and Newton’s Laws relating net force to acceleration and can use them to analyze and predict motion using free-body diagrams, including situations with friction and circular motion.
- 5) Students understand combining the basic quantities above into more abstract quantities of work, kinetic energy, potential energy, impulse, and linear momentum, and can use them to solve problems using conservation laws.
- 6) Students understand that the same principles of kinematics, dynamics, and conservation laws apply to rotational motion and can use them to analyze and predict rotational motion.
- 7) Students develop an appreciation for how basic physics principles are applied to more complex systems of statics, gravity, and oscillations as an example for their future professional work.
- 8) Students understand the macroscopic and microscopic nature of heat, its First and Second Laws, and the thermal properties of matter, and can use them to analyze cyclic processes of an ideal gas and thermodynamic machines.

Accommodations for Students with Disabilities:

Lehigh University is committed to maintaining an equitable and inclusive community and welcomes students with disabilities into all of the University’s educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact Disability Support Services (DSS), provide documentation, and participate in an interactive review process. If the documentation supports a request for reasonable accommodations, DSS will provide students with a Letter of Accommodations. Students who are approved for accommodations at Lehigh should share this letter and discuss their accommodations and learning needs with instructors as early in the semester as possible. For more

information or to request services, please contact Disability Support Services in person in Williams Hall, Suite 301, via phone at 610-758-4152, via email at indss@lehigh.edu, or online at <https://studentaffairs.lehigh.edu/disabilities>.

The Principles of Our Equitable Community:

Lehigh University endorses The Principles of Our Equitable Community http://www.lehigh.edu/~inprv/initiatives/PrinciplesEquity_Sheet_v2_032212.pdf We expect each member of this class to acknowledge and practice these Principles. Respect for each other and for differing viewpoints is a vital component of the learning environment inside and outside the classroom.

Religious holidays: (<https://chaplain.lehigh.edu/religious-holidays-policy-and-calendar>)

1. Inform your instructor that you will be absent from class due to observance of religious holidays.
 2. Arrange with the instructor to complete assignments or any required make-up work.
- (Dates for many religious holidays are posted on the Chaplain's web page listed above.)

WE FULLY ENFORCE ALL UNIVERSITY STANDARDS FOR ACADEMIC INTEGRITY.

STATEMENT ON IRRESPONSIBLE ACADEMIC BEHAVIOR: (after Prof. Barry Bean, Biology)

There are many forms of irresponsible behavior that can ruin opportunities for you or for others in this course; there is no room and no excuse for bad behavior. Examples of irresponsible behavior cover a wide range, and include cheating, plagiarism, creating hazards or disruptions, slacking on responsibilities, unfairly exploiting the efforts of others, etc. Appropriate penalties should be expected. Offenders may lose points from their course totals, and serious offenders may be dropped from the course. Further explanation and guidelines on academic integrity at Lehigh can be found on the University Student Conduct System web page (<http://studentaffairs.lehigh.edu/conduct>) and on the Provost's Academic Integrity Site (<http://www.lehigh.edu/~inprv/faculty/academicintegrity.html>). It is firm policy in this course that cheating or plagiarism are unacceptable violations of academic integrity, and will earn an F as the semester grade in the course. **ALL EXAMS AND QUIZZES ARE REQUIRED TO BE STRICTLY YOUR OWN INDIVIDUAL WORK!**

HOMEWORK COLLABORATION POLICY: (after Prof. Edwin Kay, CSE)

Learning on homework assignments allows for healthy cooperation and collaboration. In grappling with the course work, the SHARING of ideas is educationally useful. The COPYING of ideas is destructive, fraudulent, and unacceptable. It is difficult to know where to draw the line between educationally useful sharing of ideas and the educationally destructive copying of ideas. I will paraphrase Roger D. Eastman of Loyola College (attributing the source material!): "I encourage you to help each other with homework assignments, but I also want you to understand where the help should stop. Don't take someone else's solution to copy or "for reference," or give yours for copying or "for reference." If you want to show someone your solution to illustrate the trouble you are having, that's fine; if you want to brainstorm about what the assignment requires and how to approach it, that's fine; if you want to share your knowledge of physics, that's fine; but letting someone copy your solution line by line, in fact or spirit, is not fine." Working together on troublesome areas, then continuing individually is a good technique. It is okay to tell the other person what is wrong and coach them toward solving the problem, but do not simply provide the correct equations.

Please note that the homework grading policy is designed so that making a serious attempt earns most of the points. In fact, indicating on your homework where you get stuck or have trouble will INCREASE the chance that you will get some notes of advice from the grader that will actually help you learn how to solve that type of problem. Submitting a copy of someone else's perfect solution will lead to LOWER exam scores since you will be unprepared to work the problems on your own.