

## Physics 135a Physics For the Life Sciences

Welcome to Physics 135a. This is the first course in the 2-semester Physics series intended to meet the needs of students majoring in the Natural Sciences other than Physics, Chemistry, or Engineering and who are preparing to enter one of the health oriented professions.

The subject matter of this course includes classical mechanics, thermodynamics, waves, sound, and fluid physics. The goal of the course is to teach you how to approach and solve physical problems and how to develop an intuition for the important physical properties which affect a given situation.

The sequence of courses 135aL and 135bL is considered as a whole. In the succeeding course you will be expected to make use of material covered in this course.

### I. Course Instructor

<i>Instructor</i>	<i>Lecture</i>	<i>Office</i>	<i>Office Hours</i>	<i>e-mail</i>
Prof. Moh El-Naggar	MW 10 – 11:50 am	SSC 419	W 12 - 2 pm	<a href="mailto:mnaggar@usc.edu">mnaggar@usc.edu</a>

### II. Course Materials

#### II.A. Required for the Lecture

Important course information will be posted on the “Blackboard” course web site at [blackboard.usc.edu](http://blackboard.usc.edu). Note that there is a separate home page for the lab portion. On this page you will find notices, grades, extra reading/educational material, links to sites of interest, etc. Please visit this page regularly. If you find a grade has been entered incorrectly, please contact your professor immediately.

Giancoli *Physics: Principles with Applications*, 7<sup>th</sup> edition. This book is available in the USC Bookstore. If you purchase the physical textbook I recommend buying the edition “**with Mastering Physics**” which gives you an access code to use the Mastering Physics website. We will use this website for all the course’s homework (see below). If you don’t purchase a copy “with Mastering Physics”, you can always buy the Mastering Physics access separately online. Note that there are also likely other options besides the physical textbook (e.g. e-text with the Mastering Physics access, likely cheaper).

#### II.B. Required for the Laboratory

*Laboratory Manual for Physics 135aL*, Spring 2019 Edition. This manual is available on the lab blackboard page.

### III. Guide Lines

#### III.A. Prerequisites

The prerequisite for this course is a working knowledge of elementary algebra and trigonometry. Your text has a brief review in Appendix A.

#### III.B. Registration

Your registration for this course consists of three separate parts and **you must be registered**

***for one of each:*** a lecture, a “quiz” section and a laboratory. The only exception is if you have previously completed the laboratory **and** have received permission to carry its grade into the current semester. In that case you would register only for the lecture and “quiz.”

Associated with the lecture section is its own quiz section. The quiz time is reserved in order that a common time can be set aside for the midterms if needed. Quiz sections *do not meet every week*. The tentative dates for the midterms are indicated on the syllabus. The locations for each midterm will be announced before it is given. There are also laboratory sections, meeting once a week for three hours (these lab sections will not meet during the first week – see below). You may choose any laboratory section that suits your schedule, subject to availability.

### III.C. Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me as early in the semester as possible. DSP is located in GFS 120 and is open 8:30 am – 4:30 pm, Monday through Friday. Website for DSP: <http://dsp.usc.edu> and contact information: (213) 740-0776 (Phone), (213) 740-8216 (FAX), [ability@usc.edu](mailto:ability@usc.edu) (Email).

## IV. Grading

Your final course grade will be based upon the following components:

Component	Weight
In Class Participation	5%
Homework	20%
Laboratory	20%
Midterms	30%
Final Exam	25%

***In order to receive a passing grade in the course (D- or above), you must receive a passing grade in both the lecture and the laboratory portions. For example, failing the laboratory section will mean failing the entire course. Each semester a few students fail to complete the laboratory requirements and consequently fail the entire course. Please don't let this happen to you.***

All students in this course will be given the same homework assignments, the same laboratory projects, and the same examinations, and will be graded on a common scale. The letter grade will be assigned at the end of the semester after I tabulate and ponder all the combined scores of the exams, homeworks, in-class participation, and lab. Individual tests, quizzes, HWs, etc. will not be ‘curved’. The final cumulative score of all these components might be.

All regrade requests must be submitted **in writing within one week** after the graded work is returned to you. Write down a clear detailed explanation of why you think some appropriate credit was missed, along with the original work. Note that requests of the type "I think Problem X should be given more points, please check." will not be entertained.

### IV.A. In Class Participation

In addition to speaking up (asking and answering questions) in class, in-class participation will

consist of random ‘quizzes’. Most of these quizzes are actually group exercises, meaning you will be allowed (actually, encouraged) to discuss the problem with your classmates in class. In my experience, most students converge to the right answer in these in-class peer-instruction exercises.

#### **IV.B. Homework**

Homework assignments are to be done through the Mastering Physics (www.masteringphysics.com) site and submitted online. *All assignments are due on Monday nights at 11:59 pm.* Late homework will be accepted on Mastering Physics but penalized for each hour late by 4%. Online assignments are graded as you submit them. You will have unlimited attempts to arrive at the correct solution (except for multiple choice questions, obviously)! In computing your course grade, I will drop the lowest score for one assignment; if you fail to submit a particular homework, it will be counted as a zero and will therefore probably be dropped.

I expect that it will take you several hours to complete the homework sets. These homework sets are the central way you will learn physics. “Understanding” physics does not mean knowing the words or having read the book. Instead, “*understanding*” implies *having developed the ability to solve physics problems you have not seen before.*

Homework problems will range from the trivial to the difficult. Midterm and final examination questions will more closely resemble (and in isolated instances may be identical to) homework problems. Experience shows a strong positive correlation between total homework scores and total exam scores.

The counsel to do your own homework does *not* mean that you cannot work with other students in the class. To the contrary, we recommend students work together, where feasible, in deciding how to solve problems. Of course, working together does *not* mean simply copying solutions from each other. That action is a violation of academic integrity standards. There is, however, a large difference between simply copying and learning by cooperating. Take advantage of this opportunity.

#### **IV.C. Laboratory**

Questions concerning the laboratory should be referred to the Lab Director, Dr. Gökhan Esirgen, KAP B19, 740-1138, [esirgen@usc.edu](mailto:esirgen@usc.edu).

The Physics 135a laboratories will not meet during the first week of classes. The first introductory meeting will be during the second week of classes. You may be dropped from the lab section if you do not attend the first intro meeting and there is a waiting list for your section.

At every laboratory meeting you must have read your laboratory experiment prior to attending lab. Please follow the instructions of the laboratory director regarding the laboratory portion of this course.

The laboratory grade will be derived from your ability to perform experiments, lab write-up and analysis, and pre-laboratory quizzes.

If you miss a laboratory period, it is your responsibility to make arrangements with your TA to make up the missing experiment. Your TA will not make this arrangement for you. You cannot make up a missed experiment by attending a different laboratory section. TAs will not accept students in the laboratory who are not registered in their section without prior official arrangements.

#### **IV.D. Examinations**

There will be two midterm examinations and a final examination. The tentative schedule of

these examinations is given below. The midterms will cover material incrementally through the semester. The Final Exam will last 120 minutes and will be comprehensive of the entire semester.

**There are no make-up examinations for either of the midterms or the Final Exam.** Students with special examination requirements as documented by the Office of Disability Services and Programs (DSP) must present their documentation to their instructor as soon after the start of classes as is possible, and certainly no later than seven calendar days prior to the first midterm. See section III.C.

## **V. Assistance**

### **V.A. Lectures**

Don't underestimate the value of questions *during* the lecture period. Some students are reluctant to pose questions, which they fear may seem silly to either their cohorts or the instructor. Almost always, if one student asks a question, there are several others who have been bothered by the same thing. Often such questions tell the instructor what is not clear to the students. Stopping the lecture and getting everyone together on the issue is much more useful than simply letting a lecture continue without clarification.

A portion of each week's lecture time will be devoted to illustrative examples, including some from the assigned homework sets. This is natural considering that midterm questions frequently are derived from homework problems.

### **V.B. Lecturer Office Hours**

For more personal attention you can come to the office hours of your instructor listed on page 1 of this document. If at all possible, come to the regularly scheduled office hours listed there. However, if your schedule conflicts with this, it is possible to schedule an appointment at a different time by e-mailing your instructor with the request.

### **V.C. Your Laboratory T.A.**

All laboratory teaching assistants are graduate students, usually pursuing a Ph.D. in Physics. They are all capable of answering any question you have regarding the subject material. Usually your lab TA can answer your question immediately, whether at the beginning or the end of the lab period. However, some problems you pose may be ambiguous, and will require some thought, so that your TA will need some time to think. In either event, you should regard your laboratory TA as a resource not only for the laboratory, but also for all physics questions.

### **V.D. T.A. Office Hours - SGM 409**

For additional help, **TAs are available in ACB 431, 10 am to 4 p.m., Monday-Friday.** See the schedule at: <http://dornsife.usc.edu/physics/teaching-assistant-resources/> (click on TA Office Hour Schedule at this webpage).

### **V.E. Supplemental Instruction Program <https://dornsife.usc.edu/supplemental-instruction/>**

Supplemental Instruction (SI) is an academic program organized by the Dornsife College of Letters, Arts, and Sciences, designed to improve student performance in traditionally difficult courses. It is free and does not require academic credit. Each week there will be several sessions led by an SI leader who will be working together with the instructor and attending the same lectures as you do. For

further information, see the SI page above and/or contact an SI leader listed under the SI schedule for Physics 135a

### **V.F. Study Groups**

One of the most effective ways to learn new material is to teach it to others. To this end, we encourage you to work together in learning the material, and in doing homework. If you have friends also enrolled in the course, feel free to discuss homework problems, *approaches* to solutions, and even solutions, though again you are cautioned not to simply copy each other's work.

## **VI. Electronic Assistance**

### **VI.A. e-mail**

You can e-mail me to make appointments or to just ask more physics questions.

### **VI.B. Course Web Site**

<http://blackboard.usc.edu>

Everyone registered in the course should find a link to the course within your Blackboard account. Here you will find a copy of the syllabus, reading assignments, important news and announcements, additional educational material, exam solutions, etc

## **VII. Student Ombudsperson**

All courses in the Department of Physics & Astronomy have an assigned Student Ombudsman to serve students as a confidential, neutral, informal, and independent resource when they wish to discuss issues concerning their course without directly confronting their instructor. The Student Ombudsman for this course is Prof. Chris Gould, [gould@usc.edu](mailto:gould@usc.edu), 213-740-1101, SSC 204.

## **VIII. Academic Integrity**

Students who violate university standards of academic integrity are subject to disciplinary sanctions, including failure in the course and suspension from the university. Since dishonesty in any form harms the individual, other students and the university, policies on academic integrity will be strictly enforced. We expect you will familiarize yourself with the USC academic integrity guidelines.

The Trojan Integrity Guide (A Guide to Understanding and Avoiding Academic Dishonesty) can be found at:

<https://sjacs.usc.edu/files/2015/03/tio.pdf>

The Undergraduate Guide for Avoiding Plagiarism can be found at

<https://sjacs.usc.edu/files/2015/03/tig.pdf>

### **VIII. Important Dates for Spring 2019**

Jan. 7	Spring semester classes begin
Jan. 7-11	Late registration and change of program
Jan. 21	Martin Luther King Day, university holiday
Jan. 25	Last day to register and add classes
Jan. 25	Last day to drop a class without a mark of “W” and receive a refund
Feb. 18	Presidents’ Day, university holiday
Mar. 10-17	Spring Recess
Apr. 5	Last day to drop a class with a mark of “W”
Apr. 26	Spring semester classes end
Apr. 27-30	Study days

The exams are tentatively scheduled as follows. Please note that this is subject to change (e.g. we may decide to make use of the ‘quiz’ Tuesday section times during the midterm weeks rather than usual Wednesday lecture times):

<b>Wednesday Feb 13th</b>	<b>Midterm I, 10 am</b>
<b>Wednesday Mar 27th</b>	<b>Midterm II, 10 am</b>
<b>Monday May 6th</b>	<b>Final examination, 8:00 – 10:00 a.m. Location TBA</b>

## X. Spring 2019 Schedule

Below is a **tentative** schedule for the semester. We will not be covering every section in every chapter and the exact reading assignment and sections to skip will be posted on the course website as the semester progresses.

Week	Chapters	Reading	Homework
1 – 01/7	Ch. 1: Introduction Ch. 2: Kinematics in 1-Dimension	1 & 2	MP
2 – 01/14	Ch. 3: Vectors & 2-Dimensional Motion	3	MP
<i>21-Jan</i>	<i>HOLIDAY: MLK Day – No Class</i>		
3 – 01/22	Ch. 4: Motion & Force	4	MP
4 – 01/28	Ch. 5: Circular Motion & Gravity	5	MP
5 – 02/4	Ch. 6: Work & Energy	6	MP
6 – 02/11	Week of First Midterm		
<i>13-Feb</i>	<i>Midterm I – Chapters 1 through 6 Wednesday 10 am</i>		
<i>18-Feb</i>	<i>HOLIDAY: Presidents' Day – No Class</i>		
7 – 02/19	Ch. 7: Linear Momentum	7	MP
8 – 02/25	Ch. 8: Rotational Motion	8	MP
9 – 03/4	Ch. 9: Bodies in Equilibrium	9	MP
<i>11-Mar</i>	<i>Spring Recess No Class March 10-17</i>		
10 – 03/18	Ch. 10: Fluids	10	MP
11 – 03/25	Week of Second Midterm		
<i>27-Mar</i>	<i>Midterm II – Chapters 7 through 10 Wednesday 10 am</i>		
12 – 04/1	Ch. 11: Vibrations & Waves Ch. 12: Sound	11 & 12	MP
13 – 04/8	Ch. 13: Temperature	13	MP
14 – 04/15	Ch. 14: Heat	14	MP
15 – 04/22	Ch. 15: Thermodynamics	15	MP
<i>06-May</i>	<i>Final Exam - Chapters 1 thru 15 Monday 8:00 – 10:00 am</i>		