PHY 163 is the third part of the course Advanced Principles of Physics. It will cover the following topics: geometric optics, interference and diffraction of waves, special (and general) relativity and introductory quantum mechanics as well as some selected topics in atomic physics, nuclear physics, condensed matter physics and elementary particle physics.

I. Course Instructor

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Office</th>
<th>Office Hours</th>
<th>Phone</th>
<th>e-mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. K. Pilch</td>
<td>SSC 326</td>
<td>TTh 4:00-5:00</td>
<td>740-1145</td>
<td><a href="mailto:pilch@usc.edu">pilch@usc.edu</a></td>
</tr>
</tbody>
</table>

and by appointment

I.A. Course Home Page

http://physics.usc.edu/Classes/163

II. Course Materials

II.A. Required for the Lecture


II.B. Required for the Laboratory

Laboratory Manual for Physics 153/163 (USC Department of Physics, 2000), $8.00.

This manual is sold only in SGM 407, the Department of Physics and Astronomy Undergraduate Office, not in the Bookstore, between the hours of 8:30 a.m. and 5:00 p.m., Monday through Friday, from January 10. Checks or Money Orders only please!

Science Notebook (National Notebook 43-645).

Any equivalent notebook with quadrille ruled pre-numbered pages bound into the notebook, with identically numbered pages for copies (either carbon copies for carbonless forms) is acceptable.

II.C. Additional Materials

Classroom handouts with notes or copies of articles and book chapters to complement the discussion in the main textbooks.

III. Administrivia

III.A. Prerequisites

PHY 161/151 and 152/162. A reasonable familiarity with calculus and algebra at the level of MATH 125/6 and 226 will be assumed.
III.B. Registration

Your registration for this course consists of three separate parts: a lecture, a "quiz," and a laboratory. You must register for one of each. (The only exception is if you have previously completed the laboratory and have received permission to carry its grade into the current semester, then you would register only for the lecture and the "quiz.")

<table>
<thead>
<tr>
<th>Section</th>
<th>Time/Day</th>
<th>Instructor</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lec 65330D</td>
<td>2-3:50 TTh</td>
<td>Dr. Pilch</td>
<td>SLH 102</td>
</tr>
<tr>
<td>Qz 65331D</td>
<td>5-6:30 W</td>
<td>Dr. Pilch</td>
<td>TBA</td>
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</table>

Associated with the lecture section is the quiz section. The quiz time is reserved for the course and laboratory midterms and occasional review and/or homework sessions. The dates of the midterms will be announced later (mid February and late March). The location of each midterm will be announced shortly before it is given.

There are also laboratory sections, meeting once a week (SGM 217) for three hours. You may choose any laboratory section which suits your schedule.

IV. Grading

Your grade will be determined according to the following distribution:

- Homework sets: 15%
- Two midterms: 35%
- Final: 30%
- Laboratory: 20%

The percentages are approximate; class participation and progress during the semester will also be taken into account.

IV.A. Homework

Homework problem sets will be assigned approximately every week and must be turned in at the beginning of the lecture, not at the end, on the day they are due. There will be no exceptions to this rule. Please make sure to staple together multiple homework sheets, as all work submitted as loose, or clipped together pages will not be graded.

Homework assignments and dates due will be posted on the course Home Page.

Please take care to prepare complete and legible homework solutions. The credit will be given only if a reader can follow the arguments. Specifically, be sure to show all intermediate steps and use words, not just equations, to explain the solution. Try to figure out whether the solution to a problem makes sense, e.g., whether the units are correct, the order of magnitude is reasonable or whether the dependence on a given variable appears logical.

These points are made not just for the ease of grading, but more importantly because only this way will you be sure that you have fully mastered the problem.

The same requirements of completeness and clarity will apply to the grading of exam problems.

Solutions to homework assignments will be handed out in class and posted on the World Wide Web.

Your homework grade will be a cumulative total over all homework sets.
IV.B. Examinations
There will be two midterm exams and a final. The midterm exams will be given during the quiz period. The midterms will cover material incrementally through the semester:
The Final Exam will be comprehensive of the entire semester with 25% and 25% of problems on the material covered in the midterm exams I and II, respectively, and 50% of problems on the remaining material
A significant fraction of problems on the midterms and on the final will resemble homework problems and/or examples discussed in class. Some of them may even be exactly the same.
All exams will be closed-book, but you will be allowed to bring one sheet (both sides) of notes. If you cannot attend an exam you must contact the instructor before the exam. There will be NO make-up examinations for either the midterms or the Final Exam!

IV.C. Laboratory
Physics is an experimental science and therefore the laboratory is a very important part of this course. The policy of the department is that a failing grade in the lab implies a failing grade in the course.
The laboratory policies are clearly spelled out in the introduction to the Lab Manual. Read it carefully.
Questions concerning the laboratory should be referred to the Lab Director, Kristin Sabo (KAP B19, e-mail ksabo@usc.edu, tel. 0-1138).

V. Electronic Assistance
Everyone in this class has a convenient access to the USC Network. All you need is an account and a keyboard. Just dial from your home, or use any computer in any one of the many user rooms located around the campus.

V.A. E-mail
You are encouraged to use e-mail to make appointments to speak privately with your instructor, or to just ask questions about physics that you don’t want to ask publicly.

V.B. World Wide Web http://physics.usc.edu/Classes/163
The World Wide Web home page for the course is at the URL listed above, but you can reach it from the USC home page by following obvious links through the Department of Physics and Astronomy.
Under this home page you will find a copy of the syllabus, homework assignments, important announcements, and images of solutions to homework sets as well as examinations from previous semesters. All the machines in all of the user rooms on campus are configured to allow simple access to this facility.

V.C. Grades Reporter
You can get your current grades in Physics 163 any time, anywhere. The Department of Physics has implemented a Grades Reporter that can be accessed electronically. By sending e-mail to phys163grades, from any machine on campus that supports your e-mail account, you will receive, in return, e-mail containing your currently recorded grades, along with your rank and corresponding class averages. In your request you need not put anything in the subject or body of
the message. The simple act of sending a message will generate the reply. To obtain this service you must advise your instructor of your e-mail address - otherwise the Grades Reporter will tell you that it does not know who you are. If the Grades Reporter responds with what you believe to be an incorrect grade, then discuss this with your instructor immediately, or send him e-mail directly.

VI. Miscellaneous

VI.A. Your Feedback

Any comments that would make this course more effective will be very much appreciated. You can contact your instructor directly before/after the class or during his office hours or send him an e-mail (if you prefer from an account of your friend not registered in this course). You can also talk to your T.A. and ask him to convey your comments to the instructor.

In particular, if you find that the lectures are too slow or too fast, too easy or too difficult, if you cannot read the handwriting on the blackboard and/or hear/understand the instructor, please let him know. Similarly, if you find something particularly useful, let him know as well.

VI.B. Course evaluation

The official course evaluation will be administered at the end of the semester. The time will be announced in advance. Please take part in this process.

VI.C. 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 academic integrity guidelines found in the current SCampus.

VI.D. Important Dates

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<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>January 17</td>
<td>Martin Luther King Day, University Holiday</td>
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<tr>
<td>January 28</td>
<td>Last day to register and add classes</td>
</tr>
<tr>
<td>February 1</td>
<td>Last day to drop a class without mark of W</td>
</tr>
<tr>
<td>February 21</td>
<td>Presidents' Day, University Holiday</td>
</tr>
<tr>
<td>March 13-18</td>
<td>Spring recess</td>
</tr>
<tr>
<td>April 7</td>
<td>Last day to drop a class with mark of &quot;W&quot;</td>
</tr>
<tr>
<td>April 28</td>
<td>Spring Semester classes end</td>
</tr>
<tr>
<td>May 4</td>
<td>Final Exam (2:00-4:00)</td>
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