Syllabus for Physics 223 Spring 2017
Oscillations and Waves

Instructor:
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Text
“Physics for Scientists and Engineers”, 4th ed., by Knight, including Workbook and MasteringPhysics license
Homework: MasteringPhysics: to register go to masteringphysics.com and use the class ID: PHYS223SPRING17HELLER
"Tutorials in Introductory Physics" by Lillian McDermott, Peter Shaffer and the Physics Education Group.

Tools
A scientific calculator will be required. Flash drives, colored pencils, a protractor, a ruler, and graph paper will be helpful.

Meeting Times
<table>
<thead>
<tr>
<th>Section 2:</th>
<th>TThF 10-10:50, SAM206</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>M 9-10:50, SAM206</td>
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<tr>
<td></td>
<td>W 9-10:50, SAM205 (lab)</td>
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Content
Rigid body rotation (Chapter 12), oscillations (Chapter 15) and waves and optics (Chapters 16-17 and 33-35 and parts of Chapter 31). If time permits, we will also explore chapter 32 (AC circuits).

Outcomes for Physics 223
1. Solve rotational dynamics problems.
2. Solve problems involving momentum and energy and their conservation for rotational motion.
3. Describe oscillations mathematically and solve problems involving simple harmonic motion.
4. Explain how waves originate and propagate in various media and how ubiquitous they are in our environment.
5. Explain wave-wave and wave-matter interactions, such as reflection, refraction, diffraction,

Note: This syllabus is subject to change. Please check online for the most recent version. I usually include your feedback on office hours etc.
interference, and the Doppler effect.
6. Solve problems with different types of waves such as waves on a string, sound waves, EM waves.
7. Draw ray diagrams to produce images produced by mirrors and lenses.
8. Use scientific methods, analyze physical systems, apply quantitative measures to answer questions, and solve problems through experiments and hands-on activities based on the principles introduced in Phys& 223.

**Assessment**
Exams: 65%.
Labs: 20%
Homework: 10% (online component 7%, workbook 3%)
Project: 5%

**Exams**
There will 4 exams. The exams will all count equally (no 'special' final exam). The lowest score will be dropped (this might be an exam that did not go well or an exam that you missed). There won't be a makeup exam for the first exam that you miss. Dates will be given as we progress through the quarter.

**Labs (also see at the end of the document)**
There will be weekly 2 hour labs. During this time, we will conduct an experiment, do a tutorial or go over problems together on the board.
1. **Attendance is mandatory**. If you are late or absent during the lab you may not receive the full score for that lab.
   Deductions for being late: 0-5 mins (2%), 5-10mins (5%), 10-20 mins (10%), absent but contributing to report (20%).
2. Lab reports are typically due at end of the week following the lab, specific dates and times will be given in class and/or on the website. I will give you details about what to turn in for each experimental lab. I will require ONE lab report per group unless I specifically say otherwise.
3. PreLabs: Occasionally, you will be required to do an assignment **before** you come to the lab. Typically, PreLabs are to be done INDIVIDUALLY, not one per group. Check web for details.
4. Lab report drafts are strongly encouraged but typically not required. They help you do your work efficiently and more effectively. You must turn in your draft on the Monday following the lab.
5. The lowest score on your lab write-ups will be dropped (details in class).
Homework
There will be three types of assignments:
1. Pre-Reading assignments: on MasteringPhysics, submission online. Designed to encourage you to read the chapter before it is covered in class. Solutions will NOT be posted. No late pass.
2. Homework assignments: on MasteringPhysics, submission online. Designed to reinforce and help you practice the concepts covered in class. Solutions will be posted on the website.
3. Workbook: these will turned in as a hardcopy. Should be done every day after class to help you practice daily. Will be collected roughly once a week. Solutions will be posted on the website.
All due dates will be posted on the class website.
Start working on your homework assignments as soon as we have covered the material in class. This will allow you to ask questions and work on difficult problems with others. I strongly recommend that you discuss problems with your classmates, however, your final work has to be your own, not a copy of somebody else’s work.
Note that late homework may not be accepted. If it is, there may be a deduction. If you have trouble finishing your work on time please let me know ahead of time, not after the due date.

Project
During the quarter you will propose, design, build, and present a physics-based project. All details will be announced on the website and in class.

Phys299
You are encouraged to sign up for Phys299. This class will allow you to better understand class material and help you with homework problems. Details will be announced in class.

Special Assistance

Students with documented disabilities who need course accommodations, have emergency medical information, or require special arrangements for building evacuation should contact the instructor within the first two weeks of class.

Title IX
Seattle Central College seeks to provide an environment that is free of bias, discrimination, and harassment. If you have been the victim of sexual harassment/misconduct/assault we encourage you to report this. For more information about your options at Seattle Central, please go to:
http://seattlecolleges.edu/HR/about.aspx

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How to Succeed in Physics 223
1. Attend class every day. If you miss class be sure to find out what you may have missed. Do not assume that the schedule will not change.
2. Read your text. Your text is very well written (for a physics text). Plan 3 pages/hour to really understand what is being said. Read with a pencil – do sample problems, summarize sections, etc.
3. Do your homework regularly and as soon as possible. You must practice daily in order to allow your mind time to absorb and organize the physics we are studying.
4. Hand in drafts of your lab reports. Students who take advantage of this service consistently score 10+ % higher on their labs.
5. Collaborate but don’t hide behind others. While working and studying in groups is encouraged, make sure to spend time on your own organizing your work or rewriting your homework or labs in your own words.
6. Ask for help as soon as you need it. Do not wait until you are really behind or confused. Feel free to drop by during office hours or email me with your questions.
7. Physics 299 meets weekly (depending on staffing). Consider enrolling in this problem solving course for physics students. Even if you are not enrolled in the class you are welcome to come to get help with your work. Also utilize the tutoring center.
8. If you have a personal/family emergency that is affecting your ability to work in or attend the class be sure to contact me as soon as possible so that we can discuss appropriate accommodations to help you to succeed in the class.

And let’s not forget ... ... to have fun 😊