PHYSICS 213: FLUIDS AND THERMAL PHYSICS (Spring 2017)

Syllabus

Instructor: Dr. Patrick Moylan
Office: 327 Woodland
Office Hours: W 12:20-1:10 p.m., F 3:20-5:10 p.m. and by appointment.
Phone: 215-881-7571
Email: pjm11@psu.edu

Meeting Time / Place: MWF 1:25P - 3:20P / 119 Woodland
Lab: (during class time)


Instructor’s Website: www.personal.psu.edu/pjm11/

Course Description: First part of the third semester of an introductory college physics course for science and engineering majors. Course includes following topics: stress/strain, fluids, oscillations and waves, sound, temperature, heat, laws of thermodynamics, kinetic theory of gases.

Grade Weighting: Quizzes & Class Participation & Homework (15%) + Labs (15%) + Midterm Exam (35%) + Comprehensive Final Exam (35%)

Letter Grades: Scores from each of the above areas will be curved and compared to a standard grading scale: A (95-100), A- (90-94), B+ (83-89), B (77-82), B- (74-76), C+ (70-73), C (63-69), D (57-62), F (<57) (I do not give minus grades for the final score, except in the case of As.)

Quizzes: We shall usually have a weekly quiz usually similar to some of the homework problems which were assigned or on some material which was covered on the previous class days. There will be no makeup quizzes unless I have prior notification of your intended absence, and for this only in unusual circumstances (e.g. doctor’s excuse). Quizzes will usually be at the start of the class and will also serve as a record of attendance.

Class Participation: Class participation will come from positive contributions to classroom discussions, extra contributions, blackboard presentations and conduct. (ABSOLUTELY NO ELECTRONIC DEVICES TO BE USED DURING MY LECTURES, UNLESS RELATED TO COPYING THE LECTURES. Violations will be deducted from homework grade.)

Homework: Homework will consist of two types: computer graded (WEB ASSIGN) and homework which is to be usually turned into me for grading. I strongly suggest you work hard at completing all homework since gives you practice for the exams. The web assign homework can be found at the following web site: www.webassign.net

Homework assignment deadlines, exam dates, lab announcements etc. will usually be listed on CANVAS or: www.personal.psu.edu/pjm11/

Exams: Exam problems will generally be similar to the homework problems. Each exam will typically consist of approximately 4 or 5 problems (depending on the scope of the material covered) plus some conceptual questions (usually multiple choice) and some derivations. The final exam will be cumulative. There will be no make-up exams. If you miss the midterm exam then your grade on the final exam will count as your grade on the
midterm exam. You will be permitted to use one 3x5 index card for exams. It must only contain formulas without explanations of terms, and it cannot contain worked out problems. I will inspect your card during the exam. All exams will (hopefully) be taken in a large classroom like 121 Woodland.

**Academic Integrity:** Any form of cheating on exams or quizzes will be dealt with harshly. From me it will result in a grade of F for the course, and it may also result in possible expulsion from the University. All electronic devices (cell phones, calculators) are forbidden for use in exams unless stated to the contrary by me. See the Abington College Academic Integrity Policy (on my web page) for more information about possible consequences and what constitutes violations of academic integrity.

**RULES ON LABS AND ACTIVITIES**

- No lab make-ups except in exceptional circumstances (e.g. serious illness usually requiring a doctor's excuse).

- Each student is expected to write his own lab reports, and do his own activities and pre-labs, even if they were performed jointly by a group of students. Labs, activities and pre-labs usually count 100 points each. **Students are required to keep lab, activities and other handouts (like lecture notes) in a notebook.** I will inspect the notebook at the end of the course, and give a grade of up to 100 points (worth 1 lab grade) for it.

- Some labs or activities may involve the use of symbolic computational software like *Math Cad or Maple,* and *Scientific Workplace.*

- Many labs will also use DATA SUDIO. The computers in the lab room (123 W) are equipped with this software.

- I will try to correlate labs with the lectures as much as possible, so as to supplement and reinforce the lecture material.

- In general, it is required to turn in the activities, lab write-ups etc. for grading on the next class day after the last day they are performed. Handing them in to me late will result in a penalty (grade reduction) of 20% for each day after the due date.

- Part of the lab grade will come from your grade on the handouts called *Activities;* some lab activities, called *pre-labs,* usually consist of problems like the homework problems, but which deal with material explicitly preparing the student for a lab. The same penalty for turning in labs late applies to turning in the pre-labs and activities late.

**Format for Experimental Reports (ONLY FOR FORMAL WRITE-UPS):**

Name
Group’s Name

1. Title of Experiment

2. Purpose

3. Procedure (brief description of what you did)

4. Data and Results (include in this all graphs, sample calculations of relevant quantities like % errors etc.)

5. Conclusions
# Tentative Course Outline for Physics 213 (SPRING 2017)

<table>
<thead>
<tr>
<th>WEEK OF</th>
<th>TOPIC</th>
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<tbody>
<tr>
<td>Jan. 9</td>
<td>Chapter 12: Elasticity, Chapter 14: Fluids</td>
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<tr>
<td>Jan. 16</td>
<td>Chapter 14 cont., Chapter 16: Waves (NO CLASS JAN. 16—MLK DAY)</td>
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<td>Jan. 23</td>
<td>Chapter 16 cont.</td>
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<td>Jan. 28</td>
<td>Chapter 17: Sound</td>
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<td>Jan. 30</td>
<td><strong>MIDTERM EXAM</strong>, Chapter 18: Temperature, &amp; Heat and 1st Law of Thermodynamics</td>
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<td>Feb. 6</td>
<td>Chapter 19: Kinetic Theory of Gases (Feb. 17 LATE DROP DEADLINE)</td>
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<td>Feb. 13</td>
<td>Chapter 20: Entropy and Second Law of Thermodynamics</td>
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<td>Feb. 20</td>
<td>Chapter 20 cont.</td>
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**FINAL EXAM** FRIDAY, FEB. 24, 1:25 PM - 3:20 PM (tentative)

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# LIST OF LABS

1. ARCHIMEDES PRINCIPLE
2. WAVES ON A STRING
3. SPEED OF SOUND I: Kund’s Tube
4. SPEED OF SOUND II: Air Columns
5. SPECIFIC HEAT OF H₂O AND RELATED EXPERIMENTS