Physics 213
Modern Physics
Fall 2017

This page is still under construction

Instructor: David Newman
Office: 112 Reich
Office Phone: 474-7858
Home Phone: 458-8576 (if all else fails!! But please not after 11 PM)
Email: denewman@alaska.edu

Office Hours:
Monday 4:15-5:15pm in 112 NSCI
Wednesday 2:30-4:30pm in 112 NSCI

Semester schedule (calendar)

Homework

Review/Problem Sessions

Formula sheet Final Exam

Web Projects (under construction)

Links to Web info (to help with your project)

Link to Auroral Forecast at the GI

This syllabus is located at: http://ffden-2.phys.uaf.edu/213_fall_2015.html

Course Syllabus

In approaching this (and all) classes, please note the following ancient chinese proverb:

Teachers can open the door,
but you must enter by yourself.
**Prerequisites:** Calculus and Physics 211. Algebra, trigonometry and calculus will be used extensively.

**Materials Needed:**

<table>
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<tr>
<th>Required</th>
<th>Texts</th>
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<tr>
<td><strong>Physics for Sci &amp; Engrg w/Mod Physics 3rd Ed., Knight</strong> or <strong>University Physics, 2nd edition,</strong> Bauer and Westfall</td>
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<td><strong>Modern Physics, 3rd Edition,</strong> Kenneth Krane</td>
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Calculators: No calculators may be used during exams or quizzes. Otherwise, buy yourself a nice one. A basic, simple scientific calculator with trigonometric, exponential, and logarithmic functions is all that you need.

**Lectures:** 1:00pm MWF in 138 Reich. *The lectures supplement but do not substitute for the reading.* Lectures will cover the major topics, emphasizing and discussing the important points. They are not sessions to regurgitate material already written in the text. Your personal participation is important, and it is critical that you read the assigned material before lecture. Time permitting, several Friday lectures will cover special topics beyond the scope of the text. These will be announced beforehand.

**Homework:** There will be approximately one homework assignment per week. The assignment will be given out (and posted on the web) on Wednesdays and will be due in on the following Wednesday by 5:00. Place your homework in the appropriate box in the Physics Department Office. You are encouraged to work with others on the homework, but make sure the paper you turn in is not simply copied from someone else. These assignments help me assess your understanding of the material, and will count toward your final grade. **Late problem sets will in general not be accepted.** Only a selection of problems will be graded each week, totaling about 25 points each.

**Quizzes:** 8 short quizzes will be given in class during the semester. They will be closed book and no calculators allowed (or needed). All difficult formulas needed will be given and the quiz will be similar to some of the recent homework. The quizzes will be announced in class and on the schedule page at least one week in advance.

**Project:** There will be a project due worth a maximum of approximately 10% of the course grade. The project will be in the form of a web page on a topic in physics that you find interesting and we agree on together. These topics could include biographies of important scientists, scientific projects and scientific ideas. The topic must be agreed to by Oct 5th and must be competed by Nov. 25th. They will be graded both for presentation and content. More details will be discussed in class.

**Labs:** There is a lab associated with this course. **ALL** labs and reports must be completed to get a passing grade for the lab. **A PASSING GRADE IN THE LAB IS NECESSARY TO PASS THE COURSE.** Questions about the lab should be directed to the teaching assistant in charge of your lab or Jeanie Talbot (Rm 114) or as a last resort me.

**Hour Exams:** Exams will be given during the Friday lecture as follows:

- **Oct. 6,** approx. Chapters 23, 24, 22 Knight and chapter 1 Krane
- **Nov 10,** approx. Chapters 2-7  Krane

The exams will be closed-book, but you will be given one side of an 8 1/2 x 11-inch sheet with most of the needed equations. No calculators are allowed. The exams will be graded and handed back the following week. Solutions will be discussed and posted.

**Final Exam:** The final exam will be at 1:00 pm on Fri., Dec 15. It will cover the entire course (Chapters 22-24 Knight and 1-7 +?? Krane), with some emphasis on the more recent material. You will be provided a formula sheet 8 1/2 x 11-inch with all the needed formulas.
Grading: The course grade will consist of the following components (though I reserve the right to make grade adjustments based on performance trends):

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>2 hour exams</td>
<td>30%</td>
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<tr>
<td>Final exam</td>
<td>25%</td>
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<tr>
<td>Homework</td>
<td>10%</td>
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<tr>
<td>Quizzes</td>
<td>10%</td>
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<tr>
<td>Project</td>
<td>10%</td>
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<tr>
<td>Lab</td>
<td>15%</td>
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I grade on a curve however to satisfy university requirements, above 95% will be at least an A, above 85% will be at least a B above 75% will be at least a C, above 65% will be at least a D (in most cases the actual curve is significantly lower!).

Contacting Me: I have office hours 4:15-5:15 Mondays and Wednesday 2:30 - 4:30. You can drop by at other times if I'm not busy, or make an appointment. I am never available before class.

Special Needs: The Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. We will work with the Office of Disabilities Services (203 WHIT, 474-7043) to provide reasonable accommodation to students with disabilities.

Plagiarism etc: Plagiarism and cheating are matters of serious concern for students and academic institutions. This is true in this class as well. The UAF Honor Code (or Student Code of Conduct) defines academic standards expected at the University of Alaska Fairbanks which will be followed in this class. (Taken from the UAF plagiarism web site, which has many links with good information about this topic)

Complaints and Concerns: You are always welcome to talk to me about anything, however, if you have a non-subject matter question or concern that cannot be resolved by me, contact the department chair, Dr. Wackerbauer, Physics Department Office, room 104 REIC.

Alternate References: To see the same topics explained differently, try the following:

Physics for Scientists and Engineers, Serway and Jewett.

Fundamentals of Physics, 8th edition, Halliday Renick and Walker.

The Feynman Lectures on Physics, Richard Feynman (a great set of books...and rather deep)

Here is a good web site on how to study physics which might be of interest and use: How to study physics

General Advice: Physics is not something you read and memorize, rather it is something you learn how to do. Try the following study procedure:

1. Read the chapter prior to lecture, so that you will know what it's about.
2. Listen carefully to the lecture and take notes.
3. This is crucial: Do not go back and read and re-read the chapter until you "understand it." Rather, start working problems, going back through the chapter to clarify points as they come up. I suggest you try to answer all "Checkpoint" problems in the text and the questions at the end of the chapter. If you understand these, you've probably understood the salient points of the chapter.
4. Think! Don't simply try to fit the problems into the form of another problem, think through the problem first.

NEW

Links to interesting sites:

Relativity animation this is a fly through of a city at regular and relativistic speeds.