This is a first course in “theoretical” physics, which focuses on the mechanical behavior of particles, systems of particles, rigid bodies, and continua. The hidden agenda is to get you used to thinking of nature in terms fundamental concepts and calculation techniques.

INSTRUCTOR: Jim Napolitano  SC 1W07  x8019  email: napolj@rpi.edu
Office Hours: Wednesday 2-4pm (SC 1C13) or by appointment

GRADUATE: Chris Persichilli  email: persic@rpi.edu
TA/GRADER: Office Hours: Thursday 4-6pm (HB Huntington Library)

UNDERGRAD: Tom O’Connor  email: oconnt5@rpi.edu
MENTOR: Office Hours: Monday 2-4pm (Bray Room SC 1W01)

WEB PAGE: http://www.rpi.edu/dept/phys/Courses/PHYS4330/

MEETINGS: Tue & Fri  SA 5510  2:00-3:50

(See course web page for details)

GRADING POLICY: Grades will be determined as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework assignments</td>
<td>35%</td>
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<tr>
<td>Best ten of thirteen quizzes</td>
<td>45%</td>
</tr>
<tr>
<td>Final exam (not optional)</td>
<td>20%</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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where the cutoffs for course grades A, B, C, and D are 90%, 80%, 70%, and 60% respectively. I expect to make some use of “grade modifiers”, that is ± after the grade. I may make other adjustments to the overall grading scheme if there are special circumstances.

Homework assignments are posted on the course website. Unless there are special circumstances, all problems will be graded equally.

The quizzes will all carry the same weight. If the average on any one quiz is less than 75%, then I will add points to everyone’s grade to achieve that average.

I believe the curve makes it unfair to borderline students if the final is optional, so everyone must take the exam. As with the quizzes, I will add points if necessary to get a 75% average.

LEARNING OUTCOMES

Upon successfully completing the course students will demonstrate an ability to apply concepts and theories of Theoretical Mechanics of particles and continua in problem solving tasks, as well as the ability to make use of physical principles along with mathematics to describe classical mechanical phenomena. The examinations will emphasize these abilities, as well as the raw knowledge associated with this subject.
PREREQUISITES

I assume a physics preparation equivalent to PHYS1150/PHYS1250 Physics I/II Honors and a math preparation equivalent to MATH2010 Multivariable Calculus and Matrix Algebra and MATH2400 Introduction to Differential Equations. It will also be useful if you have taken MATH4600 Advanced Calculus, or if you are taking it concurrently with this course.

The syllabus (available at the course web page) details sections of each of the references that are relevant to that day’s material. Nevertheless, I will not be following any book in particular, so your class notes should in fact be your primary reference. Always be sure to ask questions, either in or out of class, if something is not clear to you.

COURSE FORMAT

The course syllabus (available at the course web page) details day by day, the topics we will cover, textbook references to the material, homework due, and quiz dates. All homework is due at the start of Tuesday’s class at 2pm, except for one assignment due on Friday 14 October. If you have a problem getting the homework in on time, please tell me well ahead of class. I hope to stick to the schedule as originally posted, but if I make some changes, I will change the posting and notify everyone by email.

Friday classes (starting 9 Sept) will begin with an open book 30-minute quiz. After a ten minute break, we will start on new material. Tuesday class time will usually be split between two 50-minute lectures, with a ten minute break in between. Regardless of the day, I urge you to come to class prepared and ready to ask questions.

The quizzes will cover material only through the homework assignment due on the previous Tuesday. They are open book because I do not want you to have to memorize anything, but please don’t make the mistake of thinking you don’t need to study. That’s not to say that open book tests are intrinsically more difficult than closed book, though. Other than relying on you to know where to look up things like formulas or data, I don’t take this into account when making up the quiz. You might find it helpful to make up a crib sheet anyway, or use stickies to mark places in your book that you use a lot.

The final exam will be open book. You are welcome to bring your textbook, notes, calculators, or other materials. You may also bring your laptop computers, but I will design the exam so that they will be of little or no use to you. (Of course, communicating with another human during the exam is forbidden.)

ACADEMIC INTEGRITY STATEMENT

I want you all to collaborate with each other on homework as much as possible, and to come for help during office hours, help sessions, or at any mutually convenient time. However, it is very important for me to trust that you are handing in your own work. (Just the same, it is important that you trust me to organize and teach a quality course for you.) If you want to look over the Rensselaer Handbook of Student Rights and Responsibilities regarding Academic (Dis)Honesty, that might be a good idea. However, to put it simply,. . .

Don’t copy someone else’s homework, and don’t cheat on exams. If I suspect you of either, I will ask for an explanation. If your explanation is unsatisfactory, you will be given a grade of zero and reported to the Dean of Students. If this happens more than once, you will be given an F for the course.