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PHYS 3301

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Syllabus

PHYS 332/PHYS3301 – Classical Mechanics

- Instructor: Dr. Rhett Allain
- Office: Pursley 115
- Office Hrs: M-F 7:30-9:30
- email: rallain@selu.edu
- phone: 985-549-2894
- Textbook: Classical Mechanics – Taylor

Course Objectives

The goal of this course is to study the motion of objects. In particular, we will use Newtonian mechanics as well as Lagrangian mechanics to model the motion of objects.

Grading

Your grade in this course will be based on around 8 standards as well as a final exam. The weighting will be:

- Standards = 70%
- Final Exam = 30%

The final exam will be comprehensive. Test dates for the standards will be posted on the course website.

Standards

Instead of breaking the material up by chapter, I will use standards. The general idea is that there are certain ideas in which you should be able to demonstrate your understanding. Your grade for these standards will be based on in class tests for most standards (there are a couple of out of class standards). The in-class standards will look very similar to a traditional test. After the in-class test, you will have the opportunity to demonstrate your understanding with a video reassessment (see details below).

Tentative Standards (subject to change):

- Newtonian mechanics with different coordinate systems

- Numerical calculations
- Newtonian mechanics with non-constant forces
- Conservation of momentum and angular momentum
- Work-Energy with potential energy
- Calculus of variations
- Lagrangian mechanics

Note: although the textbook includes oscillations in the first half of the book, this will not be covered as it is a topic in the second semester of classical mechanics.

Video Reassessment

Part of the plan is that your course grade should be based on your understanding of the standards and not just your performance on the in-class tests. If you wish to improve your score on any standard, you can submit a video in which you go over the solution of a problem that demonstrates your understanding. Here are some important notes.

- The video must be under 5 minutes.
- The video must include your explanation (with your voice).
- You pick the problem. Choosing a good problem is part of demonstrating your understanding.
- A link to the video should be emailed to me (rallain@selu.edu) within 2 weeks of the in-class standard. Be sure to include in the email: your name, the standard, and a description of the question you are solving – along with the link to the video.
- After submitting the video, I will reply with a score. You may continue to re-submit another video for this standard until the last day of class (assuming you submitted the first video within the 2-week window).

Homework

I will post suggested homework for each chapter. Homework is for practice and will not be graded.