Instructor: Dr. Warren Christensen  
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Tutorial Instructor: Dr. John Buncher  
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Office: 216B South Engineering  
Phone: 319-389-2697

Class: MWF 11-11:50pm in STEM 130/2, Recitations W/Th, see your schedule.

Coffee Hours: Tuesday 1-3pm and Thursday 9-11 am in the Union (downstairs by the Bakery)

Office Hours: Office meeting times will happily be arranged by contacting me via phone or email (both given above). Learning Assistants will also hold office hours, times TBD.

Physics 251 course consists of two components: lecture and tutorials. Your participation in the tutorial component is required for the successful completion of Phys 251. Laboratory course (Phys 251L) is a separate course linked to Phys 251. Please contact your laboratory instructor for more information about the laboratory component.

Learning Goals of lecture and tutorial components:
- To develop the ability to discuss your thinking with your peers in and out of class
- To use conceptual tools, such as free-body diagrams, in a variety of circumstances as a tool for correctly framing a physical situation
- To approach, solve, and understand a wide variety of physics problems with and without numerical solutions
- To develop conceptual understanding alongside problem solving skills

Brief Outline: We will begin with a study of linear motion and mechanics (forces, masses and acceleration). We will learn that conservation laws (e.g. energy and momentum) provide a wonderful and powerful alternative for understanding physics and solving problems. We will continue with applications and extensions of these fundamentals, including gravitation, rotational motion, statics, and fluids. We will finish up the semester with a look at principals and limitations of energy transfers in the context of thermodynamics.

Assignments and grading:

10% – Prelectures & Checkpoints: Approximately two Prelectures and Checkpoints will be assigned per week. Each is due by 6:00am, before class on the date due. They are to be completed online on the link provided via blackboard.

25% – Tutorials and Tutorial Homework (see below for the specific information)
- 5% - tutorial pretest participation
- 5% - tutorial session attendance
- 15% weekly written tutorial homework

25% – Homework: Assignments will be completed online using FlipItPhysics. 15% of your total grade (60% of your homework grade) will be determined by the correct answers you provide on FlipItPhysics. The remaining 10% will be determined by the worked out problems that you hand-in.
40% – Exams: There will be three unit exams worth 25% of your final grade. The lowest unit exam score will be dropped from the three; however no makeup exams will be allowed. The cumulative final exam is on Wednesday, May 11th @ 8:00 am and is worth 15% of your total grade. Approximately 20% of problems on each exam will be based on the material emphasized in tutorial.

Tutorial component of the course

During each tutorial session you will work in small groups on worksheets that emphasize the main concepts in the course. Tutorial instructors do not lecture but ask questions designed to help you find your own answers. You are expected to construct answers for yourselves through discussions with classmates and the tutorial instructors. Since discussions require active participation, a small portion of the final grade for the course is based on students' participation in the tutorial sessions. The emphasis in the tutorials is not on solving the standard quantitative problems, but on the development of important physical concepts and scientific reasoning skills.

The tutorials comprise an integrated system of pretests, worksheets, homework assignments, and exam problems.

Tutorial pretests

There will be short weekly pretests that will be administered on the web. Pretests will not be graded; however, completion of these pretests will be a factor in determining your final grade. Pretests usually cover material that has been presented in lecture, but are intended to start you thinking about the concepts that will be addressed in tutorial later in the week. Pretests also inform the instructors and TAs about the difficulties that many students may be having with the course material. The link to the current online pretest will be emailed to you every week and posted in the Blackboard.

Tutorial pretest participation will contribute 5% to your final grade.

Tutorial sessions

In tutorials you will be working in groups of three or four on worksheets provided by tutorial instructors. The worksheet problems will help you improve your understanding of important physics concepts that are particularly challenging for introductory students.

Tutorial attendance and participation will contribute 5% to your final grade.

Tutorial Homework

Tutorial homework will be assigned each week and collected before the next tutorial session. The homework associated with the tutorial reinforces and extends the material covered in the worksheets and lecture. The tutorial homework handouts will be posted in the Blackboard. One problem from each assignment will be graded in detail.

Tutorials homework will contribute 15% to your final grade.
Final Grades:

Your final grade will be based on your total score as described above. If you earn one of the percentages shown below, you will receive the grade written on its right.

- > 89.5%: A
- 89.4% > 79.5%: B
- 79.4% > 69.5%: C
- 69.4% > 59.5%: D
- 59.4% > 0% : F

Materials:
- Smartphysics Access Card
- Any Calculus-based Physics Textbook
- Voting Paper – Bring to class everyday
- Scientific calculator (Simple ~ $10 calculator is fine)

How can I succeed in this class? (probably the most important thing to read)

Being "good" at physics comes with practice. You should expect to spend two hours outside of class for every hour inside class. I know many courses say that, but I mean it. Homework problems often involve two steps: deciding which principles of physics apply to the problem, and then determining the answer (which may involve calculations.) I encourage you to talk about these solutions with your friends. The most important thing to talk about is not which number to put where (the calculation is the easy part), but the reasoning that helps you decide what to do with the numbers. Please, get help early if you are struggling with any aspect of the course.

Using BlackBoard

Go to: http://bb.ndsu.nodak.edu

Blackboard account information:
- Your Blackboard User ID is the same as your NDSU Electronic ID.
- Your default Blackboard password is your NDSU e-mail password.

From now on, after you log in, do the following:
Click on the “Courses” tab at the top.
Then click on “163-NDSU-P05121: University Physics All Sections” to access the course website.

Blackboard will be used primarily for course announcements, sharing links for videos, and posting grades.

Using Prelectures and Checkpoints and Homework

To access Prelectures and Checkpoints:
Go to http://flipitphysics.com. Enter your access card number and information. Please spell your name and Student ID number correctly!
Course Access key is “gobison”. (heck yeah!)
**Academic Dishonesty:**

Academic dishonesty is unacceptable and may result in automatic failure. All work in this course must be completed in a manner consistent with NDSU University Senate Policy, Section 335: Code of Academic Responsibility and Conduct. (http://www.ndsu.nodak.edu/policy/335.htm)

**Disabilities:**

Any students with disabilities or other special needs who need special accommodations in this course are invited to share these concerns with the instructor as soon as possible.

***Please note that the statements in this syllabus are subject to change as the semester progresses. Any changes will be announced in class and posted on the Blackboard course page. Even if you are not present in class for a particular announcement, you are still responsible for knowing about any changes that may occur.***