

Course Syllabus for PY 211, College Physics I

Sections 001, 002 and 003

Spring Semester 2015

Posted on the Moodle course site for PY 211 (<https://wolfware.ncsu.edu/>)

Course Description

PY 211 is a 4 credit hour course. It is the first semester of a two-semester introductory sequence in non-calculus physics, with laboratory. Major topics include mechanics, heat, wave motion, sound and fluids. Students will learn to apply fundamental physics principles to explain and predict the outcome of natural phenomena.

Prerequisites

MA 107 or 111 or 121 or 131 or 108 or 141 with a C- or better, or 480 on the SAT Subject Test in Mathematics Level 2 or the NCSU Math Skills Test, or 2 or better on an AP Calculus exam. Credit is not allowed for more than one of PY 201, PY 205 or PY 211.

Lecture Time and Location

001: Mon/Wed/Fri 8:05-8:55 am in Riddick 451
002: Mon/Wed/Fri 9:10-10:00 am in Riddick 451
003: Mon/Wed/Fri 10:15-11:05 am in Riddick 451

Instructor Information

Dr. xxxxxx
Office: Riddick xxxx
Office ph: 919-5xx-xxxx
xxxxx@ncsu.edu

Office hours: Mondays, Wednesdays, and Fridays 1:30 – 2:30 pm
and by appointment

Textbook

This course uses a free on-line textbook: *College Physics* by Urone/Hinrichs, 1st Edition, published by Openstax College. The free electronic copy can be downloaded from: <http://openstaxcollege.org/textbooks/college-physics>. Printed copies may also be purchased from the Openstax College website or the NCSU bookstore.

Expectation of students

- Attend class and participate actively.
- Read the textbook.
- Keep organized class notes.
- Complete homework assignments and take the opportunity to learn from those assignments.
- Continuously evaluate your own mastery of the material, and seek help immediately whenever necessary.
- Be courteous to the other students in the class, which means not playing on your laptop or electronic devices, not talking out of turn, arriving and leaving class on time.

Tutorial Centers

There are a few different tutoring options:

- The Physics Department provides a walk-in tutorial center staffed by physics TAs. It is open Monday through Friday and is located in Riddick 319A. The tutorial center hours are Mon through Thu 11:00 am to 5:00 pm.
- The Undergraduate Tutorial Center (UTC) also offers several free physics tutoring options, including tutoring by appointment, walk-in tutoring and Supplementary Instruction (SI).

The SI schedule is TBD. For tutoring by appointment, students must attend an orientation, if they have not attended one in a previous semester, and submit an application. Orientation sessions begin Jan 12. See the UTC website for the complete orientation schedule and other details about any of these tutoring options: <http://tutorial.ncsu.edu/>.

Clickers

TurningPoint Response Cards (otherwise known as “clickers”) will be used in this course. Clickers may be purchased from the NCSU Bookstore. New and old versions of the TurningPoint clickers may be used (RF, XR, and NXT). Clickers will be used to poll students to confirm understanding of material, for taking attendance and for taking quizzes (at the discretion of the instructor). Students must only use their own clicker and may not “click in” for other students.

Alternatively, students may use their smartphones with the Responseware app. See Course Costs below for more information.

Note: Clickers will be used to take attendance. It is the student’s responsibility to make sure their clicker is in good working order (functioning, good batteries, etc), and that they bring their clicker to each class. Students that do not “click in” will be counted as absent from class.

Course Costs

Two WebAssign licenses are required, one for course homework and one for laboratory assignments (which includes an electronic lab manual). The WebAssign licenses can be purchased from WebAssign at <https://www.webassign.net/ncsu/>. Note, that there isn’t a “class key” code. If you log in with your NCSU login and password, you should then see the lecture class and your lab section, and you can purchase the license for each. The license costs are:

- Laboratory license \$48.95/semester
- Course license: \$32.95/semester or \$50.90/multi-term

A “clicker” is required. New “clickers” may be purchased from the Bookstore for \$50, and can be sold back for about half of that fee. Alternatively, students may use their smartphones with the Responseware app. This app can be purchased for \$9 to \$40 depending on the length of the license. Details may be found here: <http://oit.ncsu.edu/clickers>. Once you have purchased a license to use with Responseware, the device number can be found by logging into <https://account.turningtechnologies.com/account/>.

A scientific calculator is required (any make and model).

Laboratory

Registration:

- You must register for the laboratory section of PY211 separately from the class section.

- If you are retaking PY211, you must retake the laboratory as well, even if you previously passed the laboratory component (at NCSU or another institution). The reason for this is that the laboratory supports the lecture class to help students learn physics principles and succeed in the course.
- If you have difficulty registering for a lab section, contact Mr. Keith Warren:
<http://www4.ncsu.edu/~ckwarren/>.
- Per departmental policy, lab section changes are only permitted up through Friday of the first week of classes (if classes begin on a Wednesday, Friday of the same week is still the last day to change sections).
- If you need to change your lab section, use the "Edit" tab in MyPack Portal rather than the "Swap" tab. Complete instructions can be found [here](#). If you do not follow this procedure, you may be inadvertently dropped from the lecture class.

Attending Lab:

- Each lab section meets every other week. The even numbered lab sections (202, 204, etc.) will begin the week of Jan 12, and the odd numbered lab sections (201, 203, etc.) will begin the week of Jan 19. The complete schedule can be found on the physics lab website:
<http://www.physics.ncsu.edu/classes/pylabs.php>.
- Each lab consists of:
 - A Prelab assignment - to be completed in WebAssign before attending each lab.
 - An In-lab experiment - with assignments on WebAssign.
 - A Post Lab assignment - also to be completed on WebAssign.
- Before attending each lab, including the first lab, students must complete the Prelab assignment. Students should also print any data sheets and bring them to each lab. The lab manual is available electronically on WebAssign. Click "My eBooks" to access the manual.
- Formal lab reports are not required in PY211 labs.
- Because each lab is performed over a two week period, there are occasions when a lab is performed before the concepts of the lab have been presented in the lecture. Lab TA's are aware of this and will discuss necessary concepts before the lab. In addition, the concepts of the lab are discussed in the introduction of the Lab Procedure.

Grading:

- The final lab grade is worth 10% of the overall course grade.
- Students must obtain a minimum final lab grade of 50% to pass the course.

Questions:

- In general, lab questions and issues should first be directed to your lab TA and then to the Lab Director, if necessary. Contact information for all lab TAs and the Lab Director can be found on the lab website: <http://www.physics.ncsu.edu/classes/pylabs.php>.
- Refer to the lab website for additional information about labs:
<http://www.physics.ncsu.edu/classes/pylabs.php>.

Homework and Using WebAssign

Due Dates: Homework assignments will be given on WebAssign. As a general rule, assignments will be due on Mondays and Thursdays at midnight, though the due dates may be adjusted on occasion. You should anticipate that homework assignments will be due during the last week of classes ("dead week").

Submissions: Students will be allowed four submissions without penalty, except for true/false and multiple choice questions, which may be less. The number of allowed submissions for each question can be seen by clicking on the "points" link above the question.

Extensions: Students will be allowed to extend the due date of any assignment by 48 hrs from the original due date, without penalty. This extension can be obtained automatically through WebAssign, after the

original due date has passed. If an extension is needed after the automatic extension period has ended, students must use the “Manual” extension request link on the assignment. As a general rule, there will be a 25% penalty for any additional points received after the automatic extension period has ended, though each late extension requests will be evaluated on a case-by-case basis by the instructor. No manual extensions will extend beyond 11:59 pm on April 24th (the last day of classes).

Benefit: Putting quality time into homework assignments is a critical step in learning physics principles and problem solving techniques. For this reason, the extension rules above are very lenient. Students are strongly encouraged to complete all of the homework assignments with the goal of learning the underlying principles of each problem. In addition, one homework problem will typically be used on each test.

Homework Grade: All assignments will count, i.e. none will be dropped. The final homework grade will be calculated by dividing the total number of points obtained by the total number of points available.

Significant figures: One of the biggest problems that students have with WebAssign is that an answer is not accepted because it has been rounded off too much. The solution is to do all calculations and enter answers to at least 4-significant figures. When this is done, the vast majority of the time that an answer is marked wrong, it is because there is a calculation error, not because of rounding.

Absences and Scheduled Makeup Work

Students will only be excused from class or an exam for officially excused absences according to university policy (<http://policies.ncsu.edu/regulation/reg-02-20-03>), such as a documented illness, a family emergency or a conflict with a required university-sponsored event. Conflicts with university-sponsored events should be discussed with the instructor in advance.

If a mid-term exam is missed for one of these accepted reasons, either a make-up exam will be given or the results from an applicable portion of the final exam will be used, at the discretion of the instructor.

Exams

There will be 3 mid-term exams and a final exam. The mid-term exams will be given 7:30-9:00 PM on Wednesday evenings.

Exam dates:

- Test 1 – Wed Feb 04, 7:30-9:00 PM
- Test 2 – Wed Mar 04, 7:30-9:00 PM
- Test 3 – Wed Apr 15, 7:30-9:00 PM
- Final Exam – Wed May 06, 6:00-9:00 PM

All tests and the final exam will be given in the following locations:

- Section 001 - TBD
- Section 002 - TBD
- Section 003 - TBD

Other information:

- Practice tests will be made available before each test.
- Students may bring their own equation sheet to each test. The information written down for each test should be limited to half of one side of an 8½” x 11” sheet of paper. With each test, students may bring an additional equation sheet, or in other words, for test 1, they get ½ a side of a sheet of paper; for test 2, they get 1 side of a sheet of paper; for test 3, they get 1½ sides of a sheet of paper, and for the final exam, they get both sides of a sheet of paper.
- Each exam will include a homework problem (or an aspect of a homework problem).
- Each exam (except the first one) will include one question from the preceding exam.
- The mid-term exams will typically consist of 20 multiple-choice problems, worth 5 points each. The final exam will typically consist of 30 to 40 multiple-choice problems, all equally weighted.

What to bring to each exam:

- Your own equation sheet (per above specification)
- A calculator
- Spare calculator batteries
- A #2 pencil

During an exam, students may not use (for example):

- A textbook or other notes except equation sheet.
- A cell phone for any purpose.

Grade Computation and Policies

Students are graded solely on how well they demonstrate knowledge and mastery of the material through test, homework, lab and final exam grades, as shown in the weighting scale below. Mid-term and final exam grades will not be curved. Final course grades will be evaluated at the end of the semester, but a curve is unusual, and students should not anticipate that final course grades will be curved.

Attendance & In-class Quizzes	3%
3 Mid-term Exams	42% (14% each)
Lab	10%
Homework.....	15%
Final Exam	30%

If the lowest mid-term exam grade is lower than the student's final exam grade, then *that* mid-term grade will be replaced with the average of that mid-term and the final exam grades. If the final exam grade is lower than any of the test grades, then no adjustments will be made.

Final Grades are on the Plus/Minus system. Numeric grades will be rounded to the nearest whole number, and letter grades will be assigned as follows:

97 ≤	A+	≤	100
93 ≤	A	<	97
90 ≤	A-	<	93
87 ≤	B+	<	90
83 ≤	B	<	87
80 ≤	B-	<	83
77 ≤	C+	<	80
73 ≤	C	<	77
70 ≤	C-	<	73
67 ≤	D+	<	70
63 ≤	D	<	67
60 ≤	D-	<	63
0 ≤	F	<	60

In accordance with university policy, a student who has elected to take the class with the S/U grading system will receive a grade of "S" if their final average is a "C-" or better on the letter grade system, and students with a final average lower than "C-" will receive a grade of "U".

Information about and requirements for auditing a course can be found at <http://policies.ncsu.edu/regulation/reg-02-20-04>.

Incomplete grades (IN) are typically only given when a student misses the final exam due to a documented illness, family emergency or conflict with a required university-sponsored event. Students encountering personal difficulties during the semester are urged to consult with their advisors and with the Student Counseling Center: <http://healthcenter.ncsu.edu/counseling-center/>. The burden of fulfilling

an incomplete grade is the responsibility of the student. The university policy on incomplete grades is located at <http://policies.ncsu.edu/regulation/reg-02-50-03>.

Academic Integrity

Academic integrity is taken very seriously in this class. Students may neither give nor receive unauthorized assistance during a quiz or exam. While students may receive help with physics principles when working on homework and lab assignments, all problems must be completed alone unless otherwise instructed. Students are required to comply with the university policy on academic integrity found in the Code of Student Conduct found at <http://policies.ncsu.edu/policy/pol-11-35-01>.

Also, see <http://policies.ncsu.edu/policy/pol-11-35-01> for a detailed explanation of academic honesty.

Your signature on any test or assignment indicates you have neither given nor received unauthorized aid on the test or assignment.

Electronically-Hosted Course Components

Students may be required to disclose personally identifiable information to other students in the course, via electronic tools like email or web-postings, where relevant to the course. Examples include online discussions of class topics, and posting of student coursework. All students are expected to respect the privacy of each other by not sharing or using such information outside the course.

Accommodations for Disabilities

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, student must register with the Disability Services Office (<http://www.ncsu.edu/dso>), 919-515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation at <http://policies.ncsu.edu/regulation/reg-02-20-01>.

Non-Discrimination Policy

NC State University provides equality of opportunity in education and employment for all students and employees. Accordingly, NC State affirms its commitment to maintain a work environment for all employees and an academic environment for all students that is free from all forms of discrimination. Discrimination based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation is a violation of state and federal law and/or NC State University policy and will not be tolerated. Harassment of any person (either in the form of quid pro quo or creation of a hostile environment) based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation also is a violation of state and federal law and/or NC State University policy and will not be tolerated. Retaliation against any person who complains about discrimination is also prohibited. NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at <http://policies.ncsu.edu/policy/pol-04-25-05> or http://www.ncsu.edu/equal_op/. Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 919-515-3148.

Student Evaluations

Online class evaluations will be available for students to complete during the last week of class. Students will receive an email message directing them to a website where they can login using their Unity ID and complete the evaluation. All evaluations are confidential. Evaluation website: <https://classeval.ncsu.edu>

More information about ClassEval: <http://upa.ncsu.edu/eval/clev/students-info>.

Supporting Fellow Students in Distress

As members of the NC State Wolfpack community, we each share a personal responsibility to express concern for one another and to ensure that this classroom and the campus as a whole remains a safe environment for learning. Occasionally, you may come across a fellow classmate whose personal behavior concerns or worries you. When this is the case, I would encourage you to report this behavior to the NC State Students of Concern website: <http://studentsofconcern.ncsu.edu/>. Although you can report anonymously, it is preferred that you share your contact information so they can follow-up with you personally.

Miscellany

- This course does not fulfill a General Education Program co-requisite.
- This course does not require special transportation for field trips.
- This course does not have any special safety or risk considerations.

Course Calendar

Dates		Sections	Topics
Jan 05	M		
Jan 06	T		
Jan 07	W	Ch1	Introduction; Math Review
Jan 08	H		
Jan 09	F	Ch1; 2.1-2.3	More Math Review; Displacement; Velocity/Speed
Jan 12	M	2.3-2.4	Velocity/Speed; Trip Problems; Acceleration
Jan 13	T		
Jan 14	W	2.5-2.7	1D Kinematics; Free Fall
Jan 15	H		
Jan 16	F	2.8; 3.1-3.3	Motion Diagrams; Vectors
Jan 19	M	MLK Holiday	
Jan 20	T	MLK Holiday	
Jan 21	W	3.1-3.3	Vectors; 2D Motion
Jan 22	H		
Jan 23	F	3.4	2D Kinematics; Projectile Motion
Jan 26	M	3.4-3.5	Projectile Motion; Relative Velocity
Jan 27	T		
Jan 28	W	3.5; 4.1-4.2	Relative Velocity; Forces; 1st Law
Jan 29	H		
Jan 30	F	4.3	2nd Law; Net Force; Mass
Feb 02	M	Ch1-4.3	Test 1 Review
Feb 03	T		
Feb 04	W	4.3	Gravitational Force TEST 1 (Chapter 1-4.3)
Feb 05	H		
Feb 06	F	4.4-4.5	3rd Law; Normal Force
Feb 09	M	4.5-4.7	Tension; Applications
Feb 10	T		
Feb 11	W	4.7	Slope; More Applications
Feb 12	H		
Feb 13	F	5.1-5.2	Friction; Drag
Feb 16	M	5.3; 6.1	Elasticity (Stress & Strain); Angular Variables
Feb 17	T		
Feb 18	W	6.2-6.3	Centripetal Acceleration & Force
Feb 19	H		
Feb 20	F	6.4-6.5; 7.1	Centrifugal "Force"; Newton's Law of Gravity; Energy
Feb 23	M	7.2	Energy Conservation; KE; Work
Feb 24	T		
Feb 25	W	7.3-7.6	Potential Energy; Gravitational PE; Conservation of Energy Equation
Feb 26	H		
Feb 27	F	7.6	Spring PE; Internal Energy; Conservation of Energy Applications

Mar 02	M	Ch4-Ch7	Test 2 Review
Mar 03	T		
Mar 04	W	7.7; 8.1-8.2	Power; Momentum; Impulse TEST 2 (Chapter 4-7)
Mar 05	H		
Mar 06	F	8.3; 8.5	Conservation of Momentum; Recoil; Perfectly Inelastic Collisions
Mar 09	M	Spring Break	
Mar 10	T		
Mar 11	W		
Mar 12	H		
Mar 13	F		
Mar 16	M	8.4-8.5	Elastic & Inelastic Collisions
Mar 17	T		
Mar 18	W	9.1-9.3	Torque; Static Equilibrium
Mar 19	H		
Mar 20	F	9.4-9.5; 10.1-10.2	Center of Mass; Rotational Kinematics
Mar 23	M	10.3-10.4	Moment of Inertia; Rotational Dynamics; Rotational KE
Mar 24	T		
Mar 25	W	10.5	Angular Momentum; Conservation of angular Momentum
Mar 26	H		
Mar 27	F	16.1-16.3	Simple Harmonic Motion
Mar 30	M	16.3-16.6	Elastic SHM
Mar 31	T		
Apr 01	W	16.3-16.6	Pendulum SHM
Apr 02	H	Spring Holiday	
Apr 03	F		
Apr 06	M	16.9-16.10	Waves; Superposition
Apr 07	T		
Apr 08	W	17.1-17.2	Sound
Apr 09	H		
Apr 10	F	17.3-17.4	Intensity; Doppler Effect
Apr 13	M	Ch8-17.4	Test 3 Review
Apr 14	T		
Apr 15	W	17.5	Wave interference; Resonance; More Review? Test 3: Chapter 8-10, 16, 17 (thru 17.4)
Apr 16	H		
Apr 17	F	17.5-17.6	Standing Waves on a String and in Air Column; Beats
Apr 20	M	11.1-11.4	Fluids; Density; Pressure; Depth
Apr 21	T		
Apr 22	W	11.5-11.7	Pascal's Principle; Pressure Measurement; Archimedes' Principle
Apr 23	H		
Apr 24	F	12.1-12.3	Flow Rate; Bernoulli's Equation
May 06	W	Final Exam 6-9pm - Comprehensive	