

Course Syllabus for PY 212, College Physics II

Spring Semester 2015

Posted on the Moodle course site for PY 212 (<https://wolfware.ncsu.edu/>)

Course Description

PY 212 is a 4 credit hour course. It is the second semester of a two-semester introductory sequence in non-calculus physics, with laboratory. Major topics include electricity, magnetism, light and modern physics. Students will learn to apply fundamental physics principles to explain and predict the outcome of natural phenomena.

Prerequisites

PY 211 or PY 205. Credit is not allowed for both PY 212 and PY 202 or PY 208.

Lecture Time and Location

002: Tue/Thu 11:45-1:00 in Riddick 321

003: Tue/Thu 1:30-2:45 in Riddick 321

004: Tue/Thu 3:00-4:15 in Riddick 321

Instructor Information

Dr. xxxxxxxx xxxxxx

Office: Riddick xxx

Office ph: 919-5xx-xxxx

xxxxxxx@ncsu.edu

Office hours: Mondays 10:15 – 11:30 am

Wednesdays 1:30 – 2:45 pm

Students are encouraged to stop by my office during these office hours anytime they like. No appointment is necessary. Students may also schedule an appointment outside of these office hours.

Friday is the best day for appointments.

Textbook

This course uses a free on-line textbook: *College Physics* by Urone/Hinrichs, 1st Edition, published by Openstax College. The free electronic copy and may be downloaded from: <http://openstaxcollege.org/textbooks/college-physics>. Resources for students, such as answers to textbook problems, may also be downloaded from this website. Printed copies of the textbook 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 10 AM – 4 PM MWF and 11 AM – 5 PM Tue/Thu.
- The Undergraduate Tutorial Center (UTC) also offers several free physics tutoring options, including tutoring by appointment, walk-in group tutoring and Supplementary Instruction (SI). For tutoring by appointment, students must attend an orientation, if they have not attended one during a previous semester, and submit an application. See the UTC website for the complete orientation schedule and other details about any of these tutoring options: <http://tutorial.ncsu.edu/>.

The SI schedule is:

Mon 3:00-3:50 PM SAS 1108

Tue 4:30-5:20 PM DAN 214

Thu 4:30-5:20 PM DAN 214

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.

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/>. Note that the App requires you to enter a “Session ID”. The Session ID is different each class, so it will be announced each class when we get ready to use clickers.

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

Laboratory

Registration:

- You must register for the laboratory section of PY 212 separately from the class section.
- If you are retaking PY 212, 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 PY212 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 email a request to their instructor. 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.

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. As a general rule, your answer must be within 1% of the correct answer. One way to insure that your answer is within this tolerance is not to round any of your calculations by any more than 4-significant figures, and to enter your answer with at least 4-significant figures (you can always use more significant figures, but not less). When this is done, you should assume that an answer is marked as incorrect because of 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 7:00-8:30 PM on Wednesday evenings.

Exam dates:

Test 1 – Wed Feb 4, 7:00-8:30 PM

Test 2 – Wed Mar 4, 7:00-8:30 PM

Test 3 – Wed Apr 15, 7:00-8:30 PM

Final Exam – Wed May 6, 6:00-9:00 PM

(BASED ON COMMON EXAM TIME, NOT CLASS MEETING TIME)

All tests and the final exam will be given in Dabney 222.

Other information:

- Practice tests will be made available before each test.
- Students may bring their own equation sheet to each test. Students may write anything they like on their equation sheet, but it is strongly recommended that it be focused fundamental equations, concepts and procedures. The amount of information on the equation sheet should be limited as follows:
 - Test 1: Half of one side of an 8½" x 11" sheet of paper
 - Test 2: One whole side of an 8½" x 11" sheet of paper
 - Test 3: One whole side and ½ of the other side of an 8½" x 11" sheet of paper
 - Final Exam: Both sides of an 8½" x 11" 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 scientific calculator (any type)
- Spare calculator batteries
- At least two #2 pencils

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

- A textbook or notes, except their equation sheet.
- A cell phone or any communicating device 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.

Attendance results will be posted regularly on WebAssign (typically once a week). Students will have one week after attendance scores have been posted to notify the instructor of any discrepancies.

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		
Jan 08	H	18.1-18.2	Math and Physics I; Electric Charge; Insulators & Conductors
Jan 09	F		
Jan 12	M		
Jan 13	T	18.3-18.4	Coulomb's Law; Electric Field
Jan 14	W		
Jan 15	H	18.5; 18.7	Electric Field Lines; Conductors in Electrostatic Equilibrium
Jan 16	F		
Jan 19	M	MLK Holiday	
Jan 20	T	19.1-19.3	Electric Potential & Potential Energy; Elect Potential of a Point Charge
Jan 21	W		
Jan 22	H	19.4-19.5	Equipotential Lines; Capacitance & Capacitors
Jan 23	F		
Jan 26	M		
Jan 27	T	19.5-19.7	Dielectrics; Capacitors in Series & Parallel; Energy Stored in Capacitors
Jan 28	W		
Jan 29	H	20.1-20.2	Electric Current; Ohm's Law; Simple Circuits
Jan 30	F		
Feb 02	M		
Feb 03	T	Chapters 18 & 19	Test 1 Review
Feb 04	W	Test 1 (Chapters 18 & 19)	
Feb 05	H	20.3-20.4	Resistance; Electric Power & Energy
Feb 06	F		
Feb 09	M		
Feb 10	T	20.5	AC & DC Current
Feb 11	W		
Feb 12	H	21.1-21.2	Resistors in Series & Parallel; EMF
Feb 13	F		
Feb 16	M		
Feb 17	T	21.3; 21.6	Kirchhoff's Rules; RC Circuits
Feb 18	W		
Feb 19	H	22.1-22.5	Magnets; Magnetic Fields; Magnetic Force on a Moving Charge
Feb 20	F		
Feb 23	M		
Feb 24	T	22.7-22.8	Magnetic Force on a Wire; Torque on a Current Loop; Motors
Feb 25	W		
Feb 26	H	22.9-22.11	B-field by Currents; Ampere's Law; Force Between Parallel Conductors
Feb 27	F		

Mar 02	M		
Mar 03	T		Test 2 Review
Mar 04	W		Test 2 (Chapters 20-22)
Mar 05	H	23.1-23.2	Induced emf and Magnetic Flux; Faraday's Law and Lenz's Law
Mar 06	F		
Mar 09	M		
Mar 10	T		
Mar 11	W		Spring Break
Mar 12	H		
Mar 13	F		
Mar 16	M		
Mar 17	T	23.3; 23.5-23.7	Motional emf; Generators; Back emf; Transformers
Mar 18	W		
Mar 19	H	23.9-23.12	Inductance; RL Circuits, RLC Circuits
Mar 20	F		
Mar 23	M		
Mar 24	T	24.1-24.4	Maxwell's Equations; EM Waves; EM Wave Spectrum; EM Wave Energy
Mar 25	W		
Mar 26	H	25.1-25.5	Light rays; Reflection & Refraction; Total Internal Reflection; Dispersion
Mar 27	F		
Mar 30	M		
Mar 31	T	25.5-25.6	Dispersion; Lenses
Apr 01	W		
Apr 02	H		
Apr 03	F		Spring Holiday
Apr 06	M		
Apr 07	T	25.7	Mirrors
Apr 08	W		
Apr 09	H	26.4-26.6	Optical Instruments
Apr 10	F		
Apr 13	M		
Apr 14	T		Test 3 Review
Apr 15	W		Test 3 (Chapters 23-26)
Apr 16	H	29.1-29.3	Photoelectric Effect; Photon Energy; EM Spectrum
Apr 17	F		
Apr 20	M		
Apr 21	T	29.5-29.8	Particle-Wave Duality; Wave Nature of Matter; Uncertainty Principle
Apr 22	W		
Apr 23	H		TBD
Apr 24	F		
May 06	W		Final Exam 6-9pm - Comprehensive