

Fall 2013 Physics 121 Course Syllabus

Instructors:

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Office hours will be posted on instructor's schedules. Other times by appointment

Pre-requisites (all with grade of C or better):

- Physics 111, 111H, or 105-106, and Math 111, 111H, or Math 132 (Calculus-I)

Co-requisites::

- Physics 121A (the lab course) and Math 112 (Calculus-II) or Math 133.

Physics 121A Laboratory must be taken along with Physics 121 unless you passed it previously. **If you drop Physics 121 you automatically drop the lab (and vice versa, no exceptions).** The Lab is otherwise a totally separate course from Physics 121 in that the lab instructors set the requirements and grades. The lab manual (Physics 121A Laboratory Manual 4th Edition) should be purchased at the bookstore. The most up-to-date lab schedule is at <http://physics.njit.edu/students/lab-handbook.php>.

Materials for Physics 121:

- **Primary text (Abbreviation: Y&F): "University Physics", 13th Edition**, authors **Young & Freedman** (Pearson 2012). We use Chapters 21 to 31, which are offered in bound, 3 hole binder, and E-text editions.
- **Mastering Physics Online Homework System:** An access code kit is needed to use the online homework, E-text and other materials. We are not using "Quest" or "WebAssign".
- Each student must purchase a text/code kit bundled package and must also enroll in the Mastering Physics course specified by his/her instructor by means of a course identifier.
- The NJIT bookstore will stock the cheapest bundle of the text Volume 2 (chaps 21-37, bound) with the access code and E-text kit (**ISBN = 0321928814 or 9780321928818**). Students who need to take Phys 234 may be better off with the full binder edition (**ISBN =0321898117**). Any version of the text containing Chapters 21 – 31 is OK; Any access code kit bought separately must be for the right text, specified above.
- Automatically graded homework assignments and tutorials will be posted on-line in Mastering Physics. Specific information will be available directly from all the instructors, and/or their web sites.
- **Classroom Response System** called **"iClickers" will not be used**
- **Web Sites:** Instructors may post lecture notes, problems, grades, etc. on their web sites. So check there often.

Learning Outcomes: This course is the second of the calculus-based introductory Physics series.

- You can expect to be assessed on learning outcomes by means of 3 common exams, a final exam, in-class quizzes, scores on homework assignments, and a small class participation component.
- The subject matter areas you will be assessed on encompass classical electricity and magnetism up to AC circuits, not including Maxwell's Equations and beyond. These include electric charge, electric and magnetic fields, forces on stationary and moving charges and currents due to electrostatic and magnetic fields, electrostatic potential and potential energy, Gauss' Law, capacitance, current, resistance, DC circuits, the Biot-Savart Law, Ampere's Law, Faraday's Law, inductance, RC circuits, LR circuits, LCR circuits (including Phasor diagrams and resonant oscillations).
- In any/all of the above subject areas, you should be able to:
 - recall and use the conceptual and mathematical definitions and be able to explain them.
 - comprehend the conceptual and mathematical relationships between quantities used.
 - use symmetry arguments, sketches and diagrams, graphs, field maps, algebra, trigonometry, and basic integral and differential calculus methods in interpreting material using reasoned arguments and also in interpreting and setting up text-book-level problems.
 - comprehend and manipulate equations and techniques developed in the text, lectures, problem examples, and in the course of working problems.

- apply the skills above in solving textbook-level problems with quantitative, symbolic, or conceptual answers.
- critically evaluate the soundness and precision of your own answers. Explain and interpret your solutions to problems in a way that shows understanding. Identify and appraise the range of applicability of your results, and their limitations.

Final Letter Grades will be based on a **composite score** for the term's work that includes the common exam scores, the final exam, in-class quizzes, and the term's homework score. Here are the approximate weights to be used for calculating the composite score:

- **48%** for all three common exams (16% each)
- **32%** for the final exam
- **20%** for the total of homework plus short in-class quizzes. Homework will be worth about **14%**, at instructors' discretion. In-class quizzes will be worth **6%**.

Negative credit may be given for being late, creating noise or otherwise interfering with the work of the class.

The cutoff term averages for various letter grades will be in the approximate range of: **80% for A, 72% for B+, 63% for B, 56% for C+, 50% for C, and D or F below 50%.**

Examinations: There will be three Common Exams plus a comprehensive Final Exam. The schedule is:

- **Common Exam 1:** Monday, October 7 4:15 – 5:45 PM
- **Common Exam 2:** Monday, November 4 4:15 – 5:45 PM
- **Common Exam 3:** Monday, November 25 4:15 – 5:45 PM
- **Comprehensive Final Exam** during December 2.5 hours long

In-class quizzes covering the preceding or current work may be given during lectures and/or recitations. The grades count toward your final course grade. There will be no make-up quizzes and normally no make-up common exams.

Students who miss a common exam usually receive a score of zero for that exam. Students that miss two common exams automatically fail the course. Students who expect to be absent from a common exam should discuss their situation with their instructor PRIOR TO their absence. In order to qualify for a (rare) "make-up" common exam a student needs to document the reason for not being able to take the test as scheduled. Under NJIT standard policy, the documentation should be presented to the student's Physics 121 instructor AND to the Dean of Students - (973) 596-3466, 2nd floor Campbell Entry. BOTH the Physics 121 instructor and Dean of Students must concur in permitting a "make-up" common exam. Students who miss common exams and do not present documentation within 7 days of the common exam will receive a score of zero for that common exam.

Attendance will be taken at all classes and exams. More than 3 unexcused absences (in total) is excessive.. If you have excusable absences contact your instructor or the Dean of First year Students. If you must withdraw from the course, do it officially through the Registrar. If you simply stop attending and taking exams your instructor will have to assign a course grade of "F".

Help: Visit or email your instructor if you are having trouble with the course; do not simply hope for a miracle and fall further behind. The Physics Dept. office on the 4th floor of Tiernan has specific information on tutoring. Physics tutoring is also available through the CAPE organization, and possibly elsewhere.

Honor Code Violations or Disruptive Behavior: NJIT has a zero-tolerance policy for cheating of any kind and for disruptive student behavior. Violations will be reported to the Dean of Students. The penalties range from a minimum of failure in the course plus disciplinary probation up to expulsion from NJIT. Avoid situations where your own behavior could be misinterpreted as dishonorable. **Students are required to agree to the NJIT Honor Code on each exam.**

Turn off all cellular phones, wireless devices, computers, and messaging devices of all kinds during classes and exams. Please do not eat, drink, or create noise in class that interferes with the work of other students or instructors.

Assignments Pages 4 and 5: Page 4 lists the topics covered, text readings, and homework assignments weekly throughout the term; some of the information may be tailored to your own class's schedule. Page 5 lists the Mastering Physics homework assignment due dates. Do the homework: it is almost impossible to succeed in physics courses without working a lot of problems.

Each work unit begins with a lecture and includes a related tutorial and homework assignment that is usually due and covered in recitation class during the following week.

- Read the assigned sections of the text before the lecture covering that material.
- Download instructor's lecture notes if provided and bring them to class.
- Submit the weekly tutorial and homework assignments before they are due. Tutorial assignments will not be counted in your homework score – they are just for learning. The online system shows the due dates.
- **Students who do not submit homework are automatically lowering their average by 12 - 16%.**
- The solved practice problems mentioned (PP's – not part of Mastering) are optional. The Spring 2013 homework solutions are also posted in the same place, as a second set of practice problems. The url is:

<http://web.njit.edu/~janow/Physics 121 Fall2013/Phys 121Janow Fall2013.html>.

Specific information for the Mastering Physics homework system: You may create an account on the system immediately, but you may not be able to sign up for the course your instructor is using until you have a valid Mastering Physics access code. So acquire one early, and contact your instructor if this is a problem. Your instructor will announce a Mastering Physics course identifier for your use when enrolling in your specific class. Use your NJIT email address as the logon ID for your account..

- The Mastering Physics login is <http://www.masteringphysics.com>. Click on "Student" in the upper left of the box. Respond "yes" that you have an access code, and create an account if you do not already have one. Input your name exactly as it appears on NJIT's records: last name first, followed by a comma and your first and possibly middle name. Likewise, enter your 9 digit NJIT ID where indicated. For your own reference record the unique course number announced by your instructor, and your Login ID and Password.
- Instructors cannot access forgotten logins or passwords.

Physics 121 Syllabus for Fall 2013 (Rev. 2.0)

with Assignments Schedule for Sections 001,003,013,015

** PP = Practice Problems (see <http://web.njit.edu/~janow> then navigate)

Lecture Classes and Topics	Text (Y&F) Readings	Assignments & Recitation Topics** (exact due dates to be announced)	Labs
Monday, Sept 02	No Class	Labor Day	
Sep 2 (Week 01) Lecture 01: Vectors, Intro to Fields Lecture 02: Electric Charge & Force	Instr. Notes Sec. 21.1 - 3	Lecture 02 during Recitation Classes Begin HW01, HW02, PP02 RH: 1.32,1.35, 1.43, 1.46. 1.51,1.72, 6.12, 13.6, 13.32, 13.43	INTRO MATLAB 1
Sep 9 (Week 02) Lecture 03: Electric Field	Sec. 21.4 - 7	REC: HW01/HW02 Begin HW03, PP03. RH: 21.4, 21.5, 21.7,21.13, 21, 19, 21.21, 21.67, 21.73, 21.80	MATLAB II
Sep 16 (Week 03) Lecture 04: Gauss' Law	Sec. 22.1 – 5	REC: HW03. Begin HW04, PP04 RH: 21.26, 21.28, 21.31, 21.33, 21.40, 21.45, 21.54, 21.58, 21.61, 21.95, 21.98	201
Sep 23 (Week 04) Lecture 05: Electric Potential	Sec. 23.1 - 5	REC: HW04. Begin HW05, PP05 RH: 21.1, 22.4, 22.7, 22.9, 22.11, 22.13, 22.15, 22.17, 22.25, 22.28, 22.35, 22.43	202
Common Exam 1: October 07 Monday, 04:15 – 5:45 P. M.		Covers Lectures & HW 01, 02, 03, 04 Vectors & Fields + Ch. 21 + Ch. 22.1-5	
Sept 30 (Week 05) Lecture 06: Capacitance	Sec. 24.1– 6	REC: HW05. Begin HW06, PP06. RH: 23.2, 23.5, 23.11, 23.13, 23.16, 23.19, 23.24, 23.32, 23.37, 23.39, 23.41	203
Oct 7 (Week 06) Lecture 07: Current, Resistance, DC Circuits, Intro to Kirchoff's Rules	Sec. 25.1 - 5, Sec. 26.1 - 2	REC: HW06. Begin HW07, PP07 & PP08A RH: 24.1, 24.5, 24.9, 24.14, 24.16, 24.22, 24.24, 24.26, 24.30, 24.34, 24.38, 24.42	205
Oct 14 (Week 07) Lecture 08: Multi-loop and RC Circuits	Sec. 26.2 - 5	REC: HW07. Begin HW08, PP08B. RH: 25.2, 25.4, 25.9, 25.13, 25.15, 25.17, 25.30, 25.32, 25.37, 25.41, 25.44, 25.47, 26.2, 26.8, 26.11	215
Oct 21 (Week 08) Lecture 09: Charges & Currents in Magnetic Fields	Sec. 27.1 - 8	REC: HW08. Begin HW09, PP09 RH: 26.20, 26.25, 26.27, 26.38, 26.41, 26.49, 26.53, 26.63, 26.67, 26.91	216
Common Exam 2: November 04 Monday, 04:15 – 5:45 P. M.		Covers Lectures & HW 05, 06, 07 Chapters 23, 24, 25, & 26.1	
Oct 28 (Week 09) Lecture 10: Sources of Magnetic Field. The Biot-Savart Law, Amperes Law	Sec. 28.1- 7	REC: HW09. Begin HW10, PP10	217
Monday, November 04		Last Day to Withdraw	
Nov 04 (Week 10) Lecture 11: Faraday's Law of Induction	Sec. 29.1 - 5	REC: HW10. Begin HW11, PP11,	212
Nov 11 (Week 11) Lecture 12: Inductance, RL Circuits	Sec. 30.1 – 4	REC: HW11. Begin HW12, PP12.	210
Common Exam 3: November 25 Monday, 04:15 – 5:45 P. M.		Covers Lectures & HW 08, 09, 10 Chapters 26.2-5, 27, 28	
Nov 18 (Week 12)* Lecture 13: LC & LCR Circuits, EM Oscillations, AC Circuits Lecture 14: AC Circuits, Resonance	Sec. 30.5 - 6 Sec. 31.1 – 2 Sec. 31.3 - 8	Begin HW13, Begin HW14, PP13/14 Friday Schedule on Wed 11/27	223
Nov 26 (Thursday schedule)		REC: HW12	223
Nov 28 – Nov 29		Thanksgiving: Thurs/Fri 11/28 & 29	218
Dec 04 to Dec 11 (Week14)		HW13 and HW14	221
Reading Day: Thursday Dec 12	No classes	Optional Review Sessions	
Final Exam Period: Dec 13 to Dec 19		Comprehensive exam: Chapters 21 - 31	

Physics 121 Fall 2013

Preliminary Mastering Physics Homework Dates Sections 001, 003, 013, 014 *

Homework Assignment	Date Available in Mastering	Date Due @11:55 PM (Latest Submission)	Date Solution Posted
HW01	09/03/13	09/18/13	
HW02	09/09/13	09/18/13	
HW03	09/11/13	09/25/13	
HW04	09/18/13	10/02/13	
HW05	09/25/13	10/09/13	
HW06	10/02/13	10/16/13	
HW07	10/09/13	10/23/13	
HW08	10/16/13	10/30/13	
HW09	10/23/13	11/06/13	
HW10	10/30/13	11/13/13	
HW11	11/06/13	11/20/13	
HW12	11/13/13	12/04/13	
HW13	11/20/13	12/07/13	
HW14	11/25/13	12/11/13	

***May be updated online**