

Physics 106 Course Syllabus – Fall 2006

Lecture/Recitation Faculty:

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Office hours:
Tuesday 12:30 – 2:00 pm
Thursday 1:30 – 3:30 pm

Pre- and Co-requisite Courses:

- Phys 105 or the equivalent is prerequisite, Math 104 is a co-requisite. Calculus and vectors will be used.
- All students must register for a lecture and recitation section, a workshop section, and a section of the laboratory course. Withdrawal from any of these causes withdrawal from all parts of Physics 106.

Course Materials:

- Primary text (FOP): Fundamentals of Physics, Volume 1, Seventh Edition, Halliday, Resnick and Walker (Wiley, New York, 2004). Physics 106 uses Chapters 10 - 14, and 15. (Abbreviation: FOP)
- University of Texas Homework System: Each student must register by obtaining a guest UT ID and password (<https://hw.utexas.edu/roster.html>) and by also signing up for the course using the course number provided by his/her instructor. Students who have a UT ID and password already can reuse it. Homework assignments will be posted on-line. Students login at <https://hw.utexas.edu>, download assignments, solve the problems, and submit answers to the automated grading system. Specific information will be provided by the instructors and also below.
- Web Sites: Instructors will use the course web site <http://web.njit.edu/Phys106-Fall-2006.htm> for posting lecture notes, problems, exam results, study materials, etc. So go there often.

Laboratory - Physics 106A: The laboratory must be taken concurrently with Physics 106 unless you took it and passed it previously. If you drop Physics 106 you automatically drop the lab - no exceptions. Otherwise, Physics 106A Lab is a totally separate course from Physics 106. Students receive separate lab grades and the lab instructors set the requirements and policy. The lab manual (Physics Laboratory Manual II) can be purchased at the bookstore; you can check the lab schedule at <http://physics.njit.edu/classes/physlab/>

Workshops: You must register for a session of Physics 106W and attend regularly. The workshops help you learn how to solve problems in an informal, collaborative group session staffed by faculty and student TA's. It is an integral part of Physics 106. Your workshop grade will be counted in your overall Physics 106 grade. You will not receive a separate numerical course grade for workshop, but a pass/fail will be recorded.

Assignments: The weekly text, practice problem, and homework assignments are listed in the schedule below.

- The weekly text readings are in FOP (Halliday & Resnick). Read each assigned section before the Lecture covering the material in it. Download instructor's lecture notes if available and bring them to class.
- It is almost impossible to succeed in this course without working a lot of problems. There is a set of "practice problems" posted for you on-line, with solutions. These will not be graded, but they are a good way to get up to speed before doing the online homework and they are a favorite source of exam questions.
- Each student must download the homework problem assignments from the University of Texas homework system and submit the solutions online before each assignment is due. Late work will not be accepted. In general, you will have about a week after homework is assigned to submit it.
- Homework scores count for 8% of your final grade in the course. Students who do not turn in the homework are automatically lowering their class average by up to 8%.
- Homework due dates will be announced by each instructor. They depend on the class schedule but will generally allow you at least one week-end to complete to complete.

Short Quizzes: Short quizzes covering the preceding week's work will usually be given during each lecture and/or recitation. The grades count toward your final course grade. There will be no make-up quizzes.

Examinations: There will be three Common Exams and a comprehensive Final Exam during the term. You will be allowed to use formula sheets and calculators. The schedule is above.

Grading: The final grade will be based on a composite score that includes each common exam, the final exam, the lecture quizzes, homework, and your workshop score. The weights we expect to use in calculating the composite score are:

- 45% for all three common exams (16% for each)
- 30% for the final exam
- 10% for the total homework grade
- 7% for the total lecture quiz grade
- 8% for the workshop grade, as reported by your workshop instructor

Attendance: Attendance at lectures, recitation classes, and workshops is mandatory. A total of 3 unexcused absences from lecture, recitation, and workshop in any combination can result in a student being dropped from the course. Instructors will take attendance regularly. The Dean of Students will be notified of excessive absences. Students with several excusable absences should contact the Dean of Freshman Studies. If you withdraw from the course, do it officially through the Registrar; do not simply stop attending and taking exams. Students who withdraw unofficially force the instructor to assign an "F" grade for the course.

Study Groups: Students find it helpful to form small, informal groups that study work on homework together. Talking about the concepts, logic, problem-solving methods, etc. with others makes it much easier to learn. Collaborative learning works and produces better grades. Socialization is a bonus but should not be the main activity.

Help: If you are having difficulty visit or email your instructor; do not simply hope for a miracle and fall further behind. The Physics Learning Center can provide ongoing help for those who need it. The Center (401 Tiernan) is staffed by faculty and specially trained Teaching Assistants. All Physics students are invited to use it. More information is available at the Physics Dept. office on the 4th floor of Tiernan. Tutors may also be available through the Residence Halls organization.

Honor Code Violations or Disruptive Behavior: NJIT policy is zero-tolerance for cheating of any kind and for student behavior that disrupts learning by others. Incidents will be immediately reported to the Dean of Studies. The penalties for violations range from a minimum of failure in the course plus disciplinary probation up to expulsion from NJIT with notations on a students' permanent record. Avoid situations where your own honorable behavior could be misinterpreted. Students will be required to agree to the NJIT Honor Code on each exam.

Courtesy: Please do not eat, drink, or create noise that interferes with the work of students or instructors. Cellular phones, wireless devices, notebook computers, and messaging devices of all kinds are useless during class meetings and exams and must be turned off.

Specific information for the UT homework system:

UT Guest ID Registration:

https://utdirect.utexas.edu/nlogon/eid_suite/essentials/create_eid.WBX?portal_role=O

UT HW Student Instructions: <https://hw.utexas.edu/bur/studentGuestEID.html>

Student Login Page (Univ. of Texas): <https://utdirect.utexas.edu/security-443/UTEIDLogon.wb>

UT EID Home Page (Forgotten Password): https://utdirect.utexas.edu/nlogon/eid_suite/general/

Your instructor will announce the 5 digit course number you need to use when you register for Physics 106 in the UT system.

If you already have a UT Guest login ID and password, you can continue to use it.

Fill out the following for your own future reference, and keep it someplace where you can find it:

- Unique course number to be announced by instructors: _____
- Your Login ID on the UT system (generated when you register with UT; case sensitive!): _____
- Your own password (selected upon registration with UT; confidential!): _____ ..
 - Note that NJIT instructors can not access your password.

Physics 106 Schedule and Assignments - Fall 2006

Date and Lecture Topic	Text Assignment	Homework Assignment	Lab
Week 1: Rotation concepts & variables. Motion diagrams, FBD's. Rotation kinematics.	FOP Chap. 10.1 to 5	U of Texas: HW01 Practice Problem Set 01	Intro
Week 2: Rotational dynamics: KE, rotational inertia, torque.	FOP Chap 10.6 to 8	U of Texas: HW02 Practice Problem Set 02	114
Week 3: Rotational dynamics: Newton's Second Law and examples.	FOP Chap 10.9	U of Texas: HW03 Practice Problem Set 03	2-4 OCS
Week 4: Rotational work and energy. Rolling. Force and energy in rolling.	FOP Chap 10.10, Chap 11.1 to 6	U of Texas: HW04 Practice Problem Set 04	12 OCS
Week 5: Vectors, angular momentum. Newton's 2 nd Law again.	FOP Chap 11.7 to 10	U of Texas: HW05 Practice Problem Set 05	OCS 2-3
Week 6: Systems, plane rotation, conservation of angular momentum, problems.	FOP Chap 11.11	U of Texas: HW06 Practice Problem Set 06	127 Parts 1&2
Week 7: Equilibrium I: static, center of gravity.	FOP Chap 12.1 to 5	U of Texas: HW07 Practice Problem Set 07	118
Week 8: Static Equilibrium II: methods and problem solving.	FOP Chap 12.1 to 5	U of Texas: HW08 Practice Problem Set 08	120
Week 9: Newton's Law of Gravitation: force law, Earth environment, potential energy, escape velocity.	FOP Chap 13.1 to 6	U of Texas: HW09 Practice Problem Set 09	M OCS
Week 10: Gravitation II: Kepler's laws and celestial motion.	FOP Chap 13.7 to 8 Read 13.9	U of Texas: HW10 Practice Problem Set 10	103
Week 11: Oscillations I. SHM and pendula	FOP Chap 15.1 to 6	U of Texas: HW11 Practice Problem Set 11	2-7 OCS
Week 12: Oscillations II: phasors, pendula, examples, discussion of resonance.	FOP Chap 15.7, 15.8,9 read only	U of Texas: HW12 Practice Problem Set 12	B
Week 13: Review of Physics 105 & 106.	Review FOP Chap 1 to 9	Review Assignments to be announced	C
Week 14: Review of Physics 106.	Review FOP Chap 10-13, 15	Review Assignments to be announced	G1-G2