

Physics 105 Section 001 and 003 – Course Outline
Fall 2009

Dr. Ken Ahn
483 Tiernan Hall
973-596-5227 (office)
kenahn@njit.edu, kenahn7@gmail.com

Lecture for Section 001 and 003: Monday 4-5:25 Tiernan Lecture Hall 2
Recitation for Section 001: Thursday 10-11:25 at **FMH 313**
Recitation for Section 003: Thursday 11:30-12:55 at **FMH 319**

Office hours: Tuesday 2:00-3:00 or by appointment

Course Website: <http://web.njit.edu/~kenahn/09fall/phy105-001003.htm>
(linked at <http://web.njit.edu/~kenahn>)

COURSE OBJECTIVES

Welcome to Physics 105! *Active* learning is the most important objective of this course. Here are some critical outcomes that are intended:

- Improvement of physical intuition, analytical reasoning and problem-solving skills.
- Understanding the basic principles governing elementary mechanics. Topics include scalar and vector quantities, rectilinear motion, equilibrium and Newton's laws of motion, friction, work and energy, impulse, and momentum.
- Insight to the scientific process: experience with theory surrounding commonly observed phenomena, experimentation, and interpretation pertinent to the fundamental laws of mechanics and conservation laws.

COURSE MATERIAL

Textbook:

“NJIT Physics 105 / 106 -- Physics for Scientists and Engineers Enhanced College Physics” by Serway/Faughn/Jewett/Vuille (Publisher: Thomson)

(First part -- before brown partition -- abbreviated as B1, Second part -- after brown partition -- abbreviated as B2,)

Physics Laboratory Manual (available in the campus bookstore)

iClicker: Everyone in this section is required to bring his or her own iClicker for every class, which can be purchased from NJIT Bookstore. Each lecture and recitation, there will be quiz problems that should be answered only with iClickers.

COURSE REQUISITES

LABORATORY COURSE: The associated laboratory course, **Physics 105A**, must be taken concurrently unless you have previously taken and passed Physics 105A. The grading for the laboratory is separate from the course/recitation/workshop and the grades are assigned by the laboratory instructors. Please refer to the website <http://physics.njit.edu/classes/physlab> for the laboratory schedule and additional information concerning the labs.

WORKSHOP: Physics-A Workshop, **Physics 105W**, is an integral component of the Phys 105 course/recitation offered in the current semester and it must be taken concurrently. The grade earned in Phys 105W contributes to the final grade for the Phys 105 course. *Therefore, it is the student's responsibility to register for the workshop.*

**YOU MUST BE REGISTERED FOR ALL COMPONENTS OF THE COURSE:
LECTURE/RECITATION (Phys 105)**

**PHYSICS WORKSHOP (Phys 105W)
LABORATORY COURSE (Phys 105A)**

WITHDRAWAL FROM ANY OF THESE WILL CAUSE A SIMULTANEOUS WITHDRAWAL FROM ALL OTHER Phys 105 COURSES.

ATTENDANCE:

Attendance at lectures, recitations and workshops is mandatory.

Attendance records are periodically reported to the Dean of Freshman Studies throughout the semester. Students with absences need to discuss the reasons for their absences with the Dean.

HOMEWORK:

Homework problems will be assigned and graded at the Homework Service at Texas University.

You need to get UT EID (not UCID) and sign up for the course:

1. Visit <http://cns.utexas.edu/quest/support/student/>
2. Follow "Off Campus Student Enrollment"

(Unique # for the course is 50103)

After the instructor approves your enrollment, you can download, do the HW, and submit your answers:

1. Visit <https://quest.cns.utexas.edu/student>
2. Click "Get Started" and log in with your UT EID.
3. Under "My Course Tab", click "Phys 105 - 001, 003"
4. Click the assignment
(For some browsers, a bar appears at the top saying "To help protect security,". Then, right click the bar and "download file".)
5. Save or open your homework (pdf file format).
6. You get your homework!
7. You can print, or retrieve the same HW later. Check out the due date.
8. On the right side of this web page, you can submit your answers.
(For some browsers, you may need to scroll to the right to see this.)
9. You can log out and submit your answers later till the due date.

Check "Help" tab for useful info on the HW system.

GRADING:

Commitment and preparedness are critical to success in Physics 105. Reading assigned material and completing homework assignments will positively affect your performance.

The final grade in Phys 105 will be composed of the following items:

- 1) **Common Exams:** Three common exams will be given during the semester. The test schedule is given below. The problems in the Common exams will be a combination of multiple-choice and workout type problems. (15% each; 45% total)

Exam Schedule:

Common Exam 1	Friday, October 2nd	8:30 – 9:55 am
Common Exam 2:	Friday, October 30th	8:30 – 9:55 am
Common Exam 3:	Friday, November 20th	8:30 – 9:55 am

- 2) **Lecture and iClicker Quizzes (7 %):** A short quiz will be given at the beginning of each **Monday** lecture. Quiz using iClicker will be also given during each class.
- 3) **Homework:** (8%).
- 4) **Workshop:** The Workshop instructor will evaluate student performance at the Workshops and will report the attendance and the grades to the course instructor weekly. (10%)
- 5) **Final Exam:** A comprehensive test on the semester's work will be given during the Finals week. (30%)

The following grade scale will be used to assign percentage of points earned to a letter grade for the course: NOTE GRADES LESS THAN 50% are FAILING.

C or better grade is required to take further physics courses. If you get D in Physics 105, you cannot take Physics 106.

A 80+
 B+ 75-79
 B 70-74
 C+ 65-69
 C 55-64
 D 50-54
 F < 50

RESOURCES:

Students are encouraged to meet with their instructor during posted office hours. In addition, the Physics Learning Center, located in 401T, is open to all students and provides tutoring by faculty and experienced students. A schedule is posted outside of 401T.

Use Interactive Learning System: <http://www.cp7e.com> (from Thomson Brooks/Cole)

Honor Code Violations/Disruptive Behavior:

NJIT has a zero-tolerance policy regarding cheating of any kind and student behavior that is disruptive to a learning environment. Any incidents will be immediately reported to the Dean of Freshman Studies. In the cases the Honor Code violations are detected, the punishments range **from a minimum of failure with a letter grade “FX” (not just F)** in the course plus disciplinary probation up to expulsion from NJIT with notations on students' permanent record. Avoid situations where honorable behavior could be misinterpreted.

No eating or drinking is allowed at the lectures, recitations, workshops, and laboratories.
 Cellular phones must be turned off during the class hours.

PHYSICS 105 TEXT READING ASSIGNMENTS and RECITATION PROBLEMS

Lecture	Subject	Reading Assignment	Recitation Problems
<i>Aug. 31 - Sept 4</i> 1	Introduction.	B1, Ch.1	B1: 1, 9, 14, 17, 21, 22, 27, 31, 35, 39, 43
<i>Sept 8- Sept 11</i> 2	(No classes Monday Sept. 7 – Labor Day) Motion in One Dimension.	B1, Ch. 2	B1: 1, 5, 6, 7, 11, 19, 20, 21, 27, 29, 32
<i>Sept 14 – Sept 18</i> 3	Vectors	B1, Ch. 3, S. 1-3	B1: 2, 3, 5, 6, 7, 11, 15, 17, 24, 27, 32, 58, 59
<i>Sept 21 – Sept 25</i> 4	Projectile Motion	B1, Ch 3, S. 4-5, B1	B1: 2, 6, 12, 13, 14, 16, 19, 26, 27, 29, 30

Relative Velocity

Sept 28 – Oct 2

5	The Laws of Motion	B1, Ch. 4, S. 1-4	B1: 2, 8, 9, 11, 14, 16, 17
---	--------------------	-------------------	-----------------------------

Common Exam 1: Fri, October 2nd (B1, Chapters 1 – 3)

Oct 5 – Oct 9

6	Applications of Newton's Forces of Friction.	B1, Ch 4, S. 5-6	B1: 35, 36, 37, 38, 45, 46, 47, 48, 49, 58, 63
---	--	------------------	--

Oct 12 – Oct 16

7	Circular Motion Centripetal Forces	B2, Ch. 6, S. 1-2	B2: 1, 5, 7, 8, 9, 10, 15, 17, 53
---	---------------------------------------	-------------------	-----------------------------------

Oct 19 – Oct 23

8	Other Applications of Newton's Laws	B2, Ch. 6, S. 3-4	B2: 21, 23, 43, 44, 50, 52, 53, 55, 61
---	--	-------------------	--

Oct 26 – Oct 30

9	Work. Kinetic Energy & The Work-Energy Theorem. The Scalar Product of Two Vectors.	B1, Ch. 5, S. 1-2 B2, Ch. 7, S. 3	B1: 1, 7, 8, 9, 12, 17, 18
---	---	--------------------------------------	----------------------------

Common Exam 2: Fri, October 30th (B1: Ch. 4 ; B2: Ch. 6)

Nov 2 – Nov 6

(11/3: Last day to withdraw from class)

10	Gravitational Energy Spring Potential Energy. Potential Energy.	B1, Ch. 5, S. 3-4 B2, Ch. 7, S. 6	B1: 5, 6, 7, 13, 18, 19, 60, 63, 68, 69
----	---	--------------------------------------	---

Nov 9 – Nov 13

11	Systems & Energy Conservation	B1, Ch.5, S. 6 B2, Ch. 8, S.1-4	B1: 28, 31, 32, 32, 33, 34, 35, 45 B2: 3, 7, 8, 13, 15, 17
----	----------------------------------	------------------------------------	---

Nov 16 – Nov 20

12	Power Work done by a Varying Force	B1, Ch. 5, S. 6 B2, Ch. 8, S. 5	B1: 48, 51, 53, 54 B2: 28, 29, 30, 32, 34, 37, 38, 43, 44, 45
----	--	------------------------------------	--

Common Exam 3: Fri, Nov 20th (B1: Ch.5, B2: Ch. 7 & 8)

Nov 23 – Nov 25

13	Collisions and Impulse Conservation of Momentum.	B2, Ch. 9, S. 1-3 B1, Ch. 6, S.1-4	B1: 1,2, 4,, 14 , 16,17,20 B2: 1, 2, 4, 6, 13, 14, 15, 20, 21
----	--	---------------------------------------	--

Thanksgiving Recess Nov. 26-29 - No Classes Scheduled

11/24 (Tuesday) follows Thursday schedule

Nov 30 – Dec 4

14	Collisions in Two Dimensions. Center of Mass. Motion of a System	B2, Ch. 9, S. 4-6	B1: 27, 28, 30, 32, 37, 40, 41, 48 B2: 27, 28, 31, 35, 36, 37, 41, 42, 44, 67
----	--	-------------------	--

Of Particles.

Dec 7 – Dec 9

15 Review for Final

Dec 10 – Reading Day

Dec 11 – Dec 17

Final Exam (Comprehensive); date to be announced