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 problem modeling and analysis, and problem-solving skills.
- Understanding the basic principles governing elementary mechanics. Topics include scalar and vector quantities, 1-D and 2-D motion, Newton's laws relating forces and motion, friction, equilibrium, work and energy, impulse, and momentum.
- Insight to the scientific process: modeling observed phenomena and in Physics 105/106, applying fundamental laws of mechanics and dynamics to commonly observed phenomena.

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 blue partition -- abbreviated as B1, Second part -- after blue partition -- abbreviated as B2,)

Physics Laboratory Manual (available in the campus bookstore)

Supplemental: Textbook instructional website – follow directions from your textbook insert.

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)

ATTENDANCE:
Attendance at lectures, recitations and workshops is REQUIRED.
Attendance will be taken with the in-class quiz for lectures and with a sign-in sheet for recitation.

HOMEWORK:
Homework problems can be found on the attached list

GRADING:
Commitment and preparedness are critical to success in Physics 105. Reading assigned material and completing homework assignments will positively affect your grade.
DO NOT ALLOW yourself to get into a situation where you don’t understand the material for more than one week. If you let things slip, you will have a lot of trouble catching up.

Attending the lecture and recitation is not enough. Take notes in class and recitation. Read the relevant sections in the textbook. DO the homework. Homework is an important part of your grade.

YOU NEED A MINIMUM C GRADE in 105 to pass to 106. This is a CSLA rule enforced by the registrar.

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, February 18th 8:30 – 9:55 am
   Common Exam 2: Friday, March 25th 8:30 – 9:55 am
   Common Exam 3: Friday, April 15th 8:30 – 9:55 am

2) Lecture Quizzes: A short lecture quiz will be given during each lecture. (7%)

3) Homework: (8%). Homework is due at the beginning of each lecture.

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. TOTAL GRADE <55% WILL NOT LET YOU PASS TO 106.

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

RESOURCES:
1. Students are encouraged to meet with their instructor during office hours or by appointment to discuss any difficulty.
2. Students are encouraged to ask questions during lecture and recitation
3. Use the interactive learning system provided by the publisher – web site (http://www.cp7e.com from Thomson Brooks/Cole) instructions are provided with your textbook.

Phys 105 - Policy for Make-up Exams, Quizzes, HW - Fall 2010
LECTURE QUIZZES: There is no make-up for the lecture quizzes. Students missing a Lecture quiz receive a grade of zero for that quiz. The lecture quizzes are intended to assess the study habits of the students on the new concepts and to help them stay in step with the flow of the course. Any make-up offer will give an unfair advantage to those students since it will give them extra time to study.

Homework assignments: must be turned in by the assigned cutoff date (typically Mondays at 1PM). All Homework must be turned in via the online service. No paper copies will be accepted. No late homework will be accepted.

Common Exams: The general policy is that students who miss a common exam will receive a score of zero for that Exam. That score will be included in the calculation of your final grade. Students that miss two common exams automatically fail the course. Students who anticipate an absence from a common exam should discuss their situation with their instructor PRIOR TO their absence. In order to be qualified to receive a "make-up" common exam score (a very rare occurrence), the student should present documentation for not being able to take the test as scheduled. As is the standard policy of NJIT, this
documentation should be presented to the student’s Physics 105 instructor AND to the Dean of Students - (973) 596-3466, 2nd floor Campbell Entry. BOTH the Physics 105 instructor and Dean of Students must concur in permitting a "make-up" common exam. Students who miss common exams that do not present documentation with 7 days of the common exam will receive a score of zero for the common exam.

In the event that the above qualification is met, a separate make-up test for the missed common quiz will not be offered. Instead, the part of the final exam relevant to the contents of the missed test will be considered for giving a grade for the missed test. The instructor will look at the final exam questions from those chapters and normalize this portion of the student’s grade for the missed common quiz.

**Final Exam:** The standard institution policy applies to the make-ups for the final exam. In order to get an incomplete (I), the student should have met all the course requirements with a C average standing for the completed part of the semester’s work. Any requests for taking the final at a different time is an anomaly and the student should be sent to the Dean of Students if he/she has a documented reason.

**Honor Code Violations/Disruptive Behavior:**

NJIT has a zero-tolerance policy regarding cheating of any kind and disruptive student behavior. 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 in the course plus disciplinary probation up to expulsion from NJIT with notations on students' permanent record.

No eating or drinking is allowed at the lectures, recitations, workshops, and laboratories. **Cellular phones, PDAs, laptop and other electronic equipment must be turned off during the class hours and during exams.**

**PHYSICS 105 WEEKLY TEXT READING ASSIGNMENTS and RECITATION PROBLEMS**

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Subject</th>
<th>Reading Assignment</th>
<th>Recitation and Assigned Problems</th>
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<tbody>
<tr>
<td>Jan 17 – Jan 21</td>
<td>Introduction.</td>
<td>B1, Ch.1</td>
<td>B1: 1, 2, 9, 12, 14, 17, 22, 25, 26, 27, 31, 34, 35, 38, 39, 40, 42, 43</td>
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<td>Jan 24 – Jan 28</td>
<td>Motion in One Dimension.</td>
<td>B1, Ch. 2</td>
<td>B1: 1, 2, 5, 6, 8, 11, 12, 18, 19, 21, 22, 26, 27, 21, 22, 26, 27, 31</td>
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<td>Jan 31 – Feb 4</td>
<td>Vectors</td>
<td>B1, Ch. 3, S. 1-3</td>
<td>B1: 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 16, 17, 22, 24, 27, 31, 31, 58, 59</td>
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<td>Feb 7 – Feb 11</td>
<td>Projectile Motion</td>
<td>B1, Ch 3, S. 4-5, B1</td>
<td>B1: 19, 20, 21, 25, 26, 28, 30, 32, 38, 39, 40, 41, 42, 43, 72, 73</td>
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<tr>
<td>Feb 14 – Feb 18</td>
<td>The Laws of Motion</td>
<td>B1, Ch. 4, S. 1-4</td>
<td>B1: 2, 3, 4, 6, 9, 10, 11, 12, 13, 14, 17, 19, 20, 21, 24</td>
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<tr>
<td>Common Exam 1: February 18th (B1, Chapters 1 – 3)</td>
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<td>Feb 21 – Feb 25</td>
<td>Applications of Newton’s Forces of Friction.</td>
<td>B1, Ch 4, S. 5-6</td>
<td>B1: 29, 32, 34, 35, 36, 37, 38, 41, 43, 45, 47, 52, 54, 57, 63, 67</td>
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Feb 28 – Mar 4  
7  Circular Motion  B2, Ch. 6, S. 1-2  B2: 1, 2, 3, 4, 5, 7, 9, 11, 14, 15, 16, 17, 19, 53, 54  
    Centripetal Forces

Mar 7 – Mar 11  
8  Other Applications of Newton’s Laws  B2, Ch. 6, S. 3-4  B2: 20, 21, 23, 25, 26, 32, 37, 44, 50, 52, 55, 59, 60, 61

Mar 13 – Mar 19  Spring Recess

Mar 21 – Mar 25  
9  Work.  B1, Ch. 5, S. 1-2  B1: 1, 3, 5, 7, 8, 9, 11, 16, 17, 18  
    The Scalar Product of Two Vectors.

Common Exam 2: ; March 25 th (B1: Ch. 4 ; B2: Ch. 6)

Mar 28 – April 1  
10  Gravitational Energy  B1, Ch. 5, S. 3-4  B1:19, 20, 21, 22, 23, 24, 25, 26, 31, 59, 60, 68, 69  
    Spring Potential Energy  B2, Ch. 7, S. 6
    Potential Energy.

April 4 – April 8  
11  Systems & Energy Conservation  B1, Ch. 5, S. 6  B1: 28, 29, 32, 33, 34, 35, 36, 39, 45  
    The Scalar Product of Two Vectors.

April 11 – April 15  
12  Power  B1, Ch. 5, S. 6  B1:47, 48, 51, 52, 53, 54, 55
    Work done by a Varying Force  B2, Ch. 8, S. 5  B2: 28, 29, 30, 32, 34, 35, 36, 38, 40, 43, 44, 45

Common Exam 3: April 15th (B1: Ch.5, B2: Ch. 7 & 8)

April 18 – April 22  
13  Collisions and Impulse  B1, Ch. 6, S. 1-4  B1: 1, 2, 3, 4, 8, 14, 15, 16, 17, 20  
    Conservation of Momentum.  B2, Ch. 9, S.1-3  B2: 1, 2, 4, 6, 13, 14, 15, 20, 21

April 25th Good Friday-No Classes Scheduled

April 25 – April 29  
14  Collisions in Two Dimensions. Center of Mass. Motion of a System Of Particles.  B1, Ch.6, S. 1-4  B1:25, 27, 28, 30, 32, 37, 40, 41, 48  
    B2. Ch.9, s. 4-6  B2: 27, 28, 31, 35, 36, 37, 38, 41, 42, 44, 67

May 2 – May 3 --- (May 3 follows Friday Schedule, last day of classes)
15  Review for Final

May 5th – May 11th  Final Exam (Comprehensive); date to be announced