COURSE SYLLABUS

PHYSICS 103

SPRING 2016

INSTRUCTORS:  
David Gamarra, email: dag22@njit.edu,  
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Office TIER 410

Office hours for section 102: Friday, 4:00 – 5:30 PM or by appointment.  
Office hours for sections 006 and 008:  Tuesday, 10:00 – 11:25 AM  
Thursday, 2:30 -3:55 PM

PRE-REQUISITES AND CO-REQUISITES:

- Pre-requisites: Phys 102 with grade C or better
- Co-requisites: Phys 103A (the lab course) unless previously taken

FAILURE TO MEET EITHER CO-Requisites or PRE-Requisites will result in student being dropped from class.

COURSE MATERIAL:


   - Classroom Response System called “iClickers”: Ask your professor if he will be using an “iClicker”. They are available in the NJIT bookstore. If they are used in your class, please bring your clicker to each class.

   - Mastering Physics Homework System: Be sure that your textbook is sold bundled with a Mastering Physics student access code card. Each student must enroll in the course specified by his/her instructor. Homework assignments will be posted on-line. Students login, download and solve the assigned problems, and submit answers to the automated grading system.

NOTE: THE LABORATORY COURSE, PHYS 103A, MUST BE TAKEN CONCURRENTLY WITH PHYS 103 THE STUDENT MUST REGISTER FOR BOTH THE LEC/REC AND THE LAB COURSE. WITHDRAWAL FROM EITHER COURSE WILL CAUSE A SIMULTANEOUS WITHDRAWAL FROM BOTH COURSES. FOR THE LABORATORY COURSE YOU WILL NEED PHYS 103A LAB MANUAL 6th EDITION

ATTENDANCE:  It is expected that students will attend all lectures and recitations. Attendance will be taken at all classes and exams. More than 3 unexcused absences (in total) are 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. Do not simply stop attending and taking exams: that forces the instructor to assign a course grade of "F".

HELP:  Visit or email your instructors 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 available through the CAPE organization, and possibly elsewhere.

GRADING:  Your final letter grade in Phys 103 will be based on a composite score for term’s work that includes the common exam scores, the final exam, lecture quizzes or iClickers, and the homework score.

1) Common Exams  Three common exams will be given during the semester.

   - Common Exam 1: Wednesday, February 23  
     4:15 – 5:45 PM
   - Common Exam 2: Wednesday, March 23  
     4:15 – 5:45 PM
   - Common Exam 3: Wednesday, April 20  
     4:15 – 5:45 PM

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 103 instructor AND to the Dean of Students - (973) 596-3466, 2nd floor Campbell Entry. BOTH the Physics 103 instructor and Dean of Students must concur in permitting a "make-up" common exam. Students who miss common exams that do not present documentation within 7 days of the common exam will receive a score of zero for the
2) **Lecture Quizzes** In-class I-Clicker Questions/quizzes covering the preceding or current work will be given during lectures and/or recitations. Those scores count toward your final course grade. **There are no make-ups for in class activities.** Students missing an I-Clicker question/quiz will receive a grade of zero for that item.

3) **Homework** Homework assignments will be posted on-line using the Mastering Physics Homework System. You will need the course ID when you set up your login on the Mastering Physics web site and enroll in your section of the course. Please register for the correct section. login: [www.masteringphysics.com](http://www.masteringphysics.com). Homework due dates will be announced. The recommended problems from the text (see syllabus) will be discussed during the recitation class.

**Course ID to enroll to homework class:**

**Section 102 - GAMARRAPHYS103**

4) **Final Exam** Comprehensive Final Exam will be given during Final Exam Period.

**Final Letter Grades:** Here are the approximate weights to be used for calculating the composite score:

- 51% for all three common exams (17% each)
- 29% for the final exam
- 12% for the total of homework work
- 8% for the all in-class quizzes/Iclickers

The cutoff percentages for various letter grades will be in the range of 80% for A, 75% for B+, 68% for B, 60% for C+, 52% for C, 51% for D and F below 48%. **Final grades are not negotiable:** A score of 79.999999% is a B+, not an A.

**HONOR CODE STATEMENT:** NJIT has a zero-tolerance policy for cheating of any kind and for student behavior that disrupts learning by others. 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, assignment, quiz, etc. for the course.**

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. Creating noise or otherwise interfering with the work of the class will not be tolerated.

**LEARNING OUTCOMES:** For this course you can expect to be assessed on the following learning outcomes:

1. Comprehend the meaning of equations governing the fluid at rest and fluid in motion. Understand the extension of conservation of energy and mass equations to fluid dynamics.
2. Define temperature scales.
3. Understand the phenomena of thermal expansion and Ideal Gas Law.
4. Understand the concept of heat and comprehend the meaning of equations governing the calorimetry and heat transfer.
5. Understand the basics concepts of thermodynamics.
6. Comprehend the meaning of equations governing oscillations and mechanical waves and apply those concepts to solve related problems.
7. Understand the concept of electric charge, electric field, electric potential, and electric current. Apply those concepts to solve simply circuits.
8. Understand the basic concepts of geometrical optics and learn how to apply them for lenses and optical fibers.
9. Comprehend the wave theory of light and apply it understand the phenomena of interference and diffraction.

**IMPORTANT DATES:**

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<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>March 13 - 20</td>
<td>Spring Recess</td>
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<tr>
<td>May 3, Tuesday – Friday</td>
<td>Classes Meet</td>
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<tr>
<td>May 4 – 5</td>
<td>Reading Day 1</td>
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<tr>
<td>May 6 – 12</td>
<td>Final Exam Period</td>
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Any changes to the syllabus will be consulted with students.

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<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Text Study</th>
<th>Recommended Problems</th>
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<tr>
<td>1 Jan</td>
<td>Introduction, Solids, Density and Pressure, Fluids at Rest</td>
<td>Chapt. 9 Sect. 5-6 Chapt. 10 Sect 1-7</td>
<td>p. 285 prob. 2, 12, 14, 19, 23 27, 34, Intro</td>
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<td>2 Jan</td>
<td>Fluids in Motion</td>
<td>Chapt. 10 Sect. 8-10</td>
<td>p. 285 prob. 47, 48.49, 50, 53, 80 A</td>
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<td>3 Feb</td>
<td>Temperature, Thermal Expansion, The Ideal Gas Law</td>
<td>Chapt. 13 Sect. 1-8</td>
<td>p.385 prob. 5, 12, 15, 19, 24, 31,39, 78 7</td>
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<td>4 Feb</td>
<td>Specific Heat, Calorimetry, Latent Heat,</td>
<td>Chapt. 14 Sect. 1-5</td>
<td>p.408 prob. 2, 13,14, 25, 27, 34, D</td>
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<td>5 Feb</td>
<td>Transfer of Heat</td>
<td>Chapt. 14 Sect. 6 - 8</td>
<td>p.408 prob. 38,42, 43, 54 E</td>
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<td>6 Feb</td>
<td>Thermodynamics</td>
<td>Chapt. 15 Sect. 1-7</td>
<td>p. 438 prob. 1, 18, 19, 24, 32, F</td>
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<td>7 Mar</td>
<td>Simple Harmonic Motion Waves, Standing Waves</td>
<td>Chapt. 11 Sect. 1-12</td>
<td>p. 322 prob.3, 7, 8, 14,18, 27, 36, 37, 40, 49, 52, B1</td>
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<tr>
<td>8 Mar</td>
<td>Sound</td>
<td>Chapt. 12 Sect.1-7</td>
<td>p. 354 prob. 3, 4, 9, 14, 27, 28, 56, 63 W</td>
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<td>9 Mar</td>
<td>Electric Charges, Electric Field, Electric Potential</td>
<td>Chapt. 16 Sect.1-5,7 Chapt 17 sect. 1-2</td>
<td>p. 468 prob. 2, 3, 19, 21, p. 496 prob. 3, 4, 6, 9 J</td>
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<tr>
<td>10 Mar</td>
<td>Resistance, Electric Current, Electric Power</td>
<td>Chapt. 18 Sect. 1-7</td>
<td>p.521 prob.1, 9, 13, 17, 28, 37, 47, 54 H</td>
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<td>11 Apr</td>
<td>Electric Circuits</td>
<td>Chapt. 19 Sect. 1- 5, 7</td>
<td>p. 552 prob. 1, 4, 12, 15, 16, 77 215</td>
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<td>12 Apr</td>
<td>Light: Reflection, Mirrors, Refraction</td>
<td>Chapt . 22 Sect 3-4 Chapt. 23 Sect. 1-3</td>
<td>p. 673 prob. 4, 9, 12, 25, 26, 28, 29, 72 K1</td>
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<td>13 Apr</td>
<td>Light: Total internal Reflection, Lenses</td>
<td>Chapt. 23 Sect. 4-8</td>
<td>p. 673 prob. 35, 36, 41, 43, 47, 48 M</td>
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<td>14 Apr</td>
<td>Interference, Diffraction Grating, Thin Films Interference</td>
<td>Chapt. 24 Sect. 1,3-8</td>
<td>p. 707 prob. 1, 4, 7, 33, 38, 54, 81, 82, 84 N</td>
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