Physics Syllabi

Spring 2020

PHYS 103-006: General Physics

Halina Opyrchal

Follow this and additional works at: https://digitalcommons.njit.edu/phys-syllabi

Recommended Citation
https://digitalcommons.njit.edu/phys-syllabi/143

This Syllabus is brought to you for free and open access by the NJIT Syllabi at Digital Commons @ NJIT. It has been accepted for inclusion in Physics Syllabi by an authorized administrator of Digital Commons @ NJIT. For more information, please contact digitalcommons@njit.edu.
COURSE SYLLABUS

PHYSICS 103

SPRING 2020

INSTRUCTOR: Halina Opyrchal, email: opyrchal@njit.edu, Office: TIER 454

Office hours: Tuesday, 10:00 – 11:20 AM  Friday, 10:00 -11:20 AM

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”: They are available in the NJIT bookstore. Please bring your clicker to each lecture 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.

CLASS ATTENDANCE: The NJIT attendance policy is the following: “It is expected that students will attend all classes. Your teacher will take attendance at all classes and exams. More than 3 unexcused absences (in total) are excessive

COUNSELING AND ACADEMIC SUPPORT: The Center for Counseling and Psychological Services is committed to assisting students experiencing high levels of personal challenge and stress. If you need accommodations due to a disability please contact Associate Director of Disability Support Services.

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: Final letter grades will be based on a term average for the semester’s work that includes the three common exam scores, the final exam, the homework score, and in-class quiz score.

COMMON EXAMS
- Three common exams will be given during the semester. The schedule is:
  - Common Exam 1: Wednesday, February 19  4:15 – 5:45 PM
  - Common Exam 2: Wednesday, March 25  4:15 – 5:45 PM
  - Common Exam 3: Wednesday, April 29  4:15 – 5:45 PM

HOMEWORK
- Homework assignments will be posted on-line using the Mastering Physics Homework System.
  Please register for your section using login: www.masteringphysics.com.

COURSE CODES TO REGISTER TO HOMEWORK CLASSES ARE
- Section 006 – PHYS103006SPR20
- Section 008 – PHYS103008SPR2020

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.

FINAL EXAM
- Comprehensive Final Exam will be given during Final Exam Period.
Here are the approximate weights to be used for calculating term averages:

- 48% for all three common exams
- 32% for the final exam
- 20% for the total of homework plus short in-class quizzes with the 20% value distributed at each instructors’ discretion and announced during the first week of class. Homework will be worth about 10% to 20%.

The conversion of term average values to letter grades will use the following cutoff values:

- 80% for A, 76% for B+, 66% for B, 56% for C+, 50% for C, and D or F below 50%.

COURSE POLICIES

In order to insure consistency and fairness in application of the NJIT policy on withdrawals, student requests for withdrawals after the deadline (end of the 10th week of classes) will not be permitted unless extenuating circumstances are documented through the Office of the Dean of Students. The course instructor and the Dean of Students are the principal points of contact for students considering withdrawing from a course. When a student invokes extenuating circumstances for any reason (late withdrawal from a course, request for a make-up exam, request for an Incomplete grade) the student will be sent to the Dean of Students Office. The Dean of Students will be making the determination of whether extenuating circumstances exist or not and will be notifying the instructor accordingly. Instructors should never request or accept medical or other documents from students; such documents need to be submitted by the student to the Dean of Students.

HONOR CODE

“Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: [http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf](http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf).

Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu”

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 mirrors, lenses and optical fibers.
9. Comprehend the wave theory of light and apply it the phenomena of interference and diffraction.
| Week 1 | Jan. 21 – Jan. 26 | Elasticity, Density and Pressure, Fluids at Rest | Chapt. 9 Sect. 5-6 Chapt.10 Sect. 1-7 | p. 256 prob. 40, 45, 50 p. 285 prob. 2, 12, 14, 19, 23 27, 34, Intro |
| Week 2 | Jan.27 – Feb. 02 | Fluids in Motion | Chapt. 10 Sect. 8-10 | p. 285 prob. 47, 48. 49, 50, 53, 80 A |
| Week 3 | Feb. 03 – Feb. 09 | Temperature, Thermal Expansion, The Ideal Gas Law | Chapt. 13 Sect. 1-8 | p.385 prob. 5, 12, 15, 19, 24, 31,39, 78 |
| Week 5 | Feb. 17 – Feb. 23 | Transfer of Heat | Chapt. 14 Sect. 6 - 8 | p.408 prob. 38, 42, 43, 54 E |
| Week 6 | Feb. 24 – March 01 | Thermodynamics | Chapt. 15 Sect. 1-7 | p. 438 prob. 1, 18, 19, 24, 32, F |
| Week 7 | March 02 – March 08 | Simple Harmonic Motion, Waves, Standing Waves | Chapt. 11 Sect. 1-12 | p. 322 prob.3, 7, 8, 14,18, 27, 36, 37, 40, 49, 52, G |
| Week 8 | March 09 – March 15 | Sound | Chapt. 12 Sect.1-7 | p. 354 prob. 3, 4, 9, 14, 27, 28, 56, 63 B1 |
| Week 9 | March 15 – March 22 | SPRING RECESS | | |
| Week 10 | March 23 – March 30 | Electric Charges, Electric Field, Electric Potential | Chapt.16 Sect.1-5, 7 Chapt. 17 Sect. 1-2 | p. 468 prob. 2, 3, 19, 21, p. 496 prob. 3, 4, 6, 9 W |
| Week 11 | March 31 – April 05 | Electric Current, Resistance, Electric Power | Chapt.18 Sect. 1-7 | p.521 prob.1, 9, 13, 17, 28, 37, 47, 54 J |
| Week 12 | April 06 – April 12 | Electric Circuits | Chapt.19 Sect. 1- 5, 7 | p. 552 prob. 1, 4, 12, 15, 16, 77 H |
| Week 13 | April 13 – April 19 | Light: Reflection, Mirrors, Refraction | Chapt. 22 Sect. 3-4 Chapt. 23 Sect. 1-3 | p. 673 prob. 4, 9, 12, 25, 26, 28, 29, 72, 215 |
| Week 14 | April 20 – April 26 | Light: Total Internal Reflection, Lenses | Chapt. 23 Sect. 4-8 | p. 673 prob. 35, 36, 41, 43, 47, 48 M |
| Week 15 | April 27 – May 04 | Interference, Diffraction Grating, Resolution | Chapt. 24 Sect. 1, 3, 4, 6 Chapt. 25 Sect. 7-9 | p. 707 prob. 1, 4, 7, 33, 38 p. 740 prob. 53, 55, 67, 83 N |
| Week 16 | May 05 | | | REVIEW FOR FINAL |

**SPRING RECESS – MARCH 15-22**
**GOOD FRIDAY – APRIL 10**
**MAY 5, TUESDAY FOLLOWS FRIDAY SCHEDULE**
**READING DAYS – MAY 6-7**
**FINAL EXAM PERIOD – MAY 09 -14**
Spring 2020 Academic Calendar

January 20 Monday  Martin Luther King, Jr. Day
January 21 Tuesday  First Day of Classes
January 25 Saturday  Saturday Classes Begin
January 31 Friday  Last Day to Add/Drop a Class
January 31 Friday  Last Day for 100% Refund, Full or Partial Withdrawal
February 1 Saturday  W Grades Posted for Course Withdrawals
February 3 Monday  Last Day for 90% Refund, Full or Partial Withdrawal, No Refund for Partial Withdrawal after this date
February 17 Monday  Last Day for 50% Refund, Full Withdrawal
March 9 Monday  Last Day for 25% Refund, Full Withdrawal
March 15 Sunday  Spring Recess Begins - No Classes Scheduled - University Open
March 22 Sunday  Spring Recess Ends
April 6 Monday  Last Day to Withdraw
April 10 Friday  Good Friday - No Classes Scheduled - University Closed
May 5 Tuesday  Friday Classes Meet
May 5 Tuesday  Last Day of Classes
May 6 Wednesday  Reading Day 1
May 7 Thursday  Reading Day 2
May 8 Friday  Final Exams Begin
May 14 Thursday  Final Exams End
May 16 Saturday  Final Grades Due