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Fall 2020

PHYS 103-101: General Physics

Andrei Sirenko

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COURSE SYLLABUS PHYSICS 103 FALL 2020

INSTRUCTOR: Andrei Sirenko, email: sirenko@njit.edu Office: TIER 458
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Office hours: Thursday, 4:00 pm – 5:00 pm ***Classes, Thursday, 6:00 pm – 9:00 pm*** **in CKB G-08**

This class is offered in the Converged Learning mode:
Delivery of instruction is independent of place, merging the physical and virtual classrooms. There is an attendance expectation and students can choose to attend class face-to-face or using real-time synchronous video conferencing technology. Instructor may require occasional proctored exams. (sometimes referred to as a synchronous distributed course).

Webex will be used for synchronous delivery of the course materials. Notifications will be sent to the registered Students on the day of the class.

PRE-REQUISITES AND CO-REQUISITES:

- **Pre-requisites: Phys 102 or Phys111 with grade C or better**
- **Co-requisites: Phys 103A (the lab course) unless a waver is provided by the Physics Dept Office. For example, the Lab 103A may be rescheduled for the next Semester.**

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

COURSE MATERIAL:

- **Textbook**: "Physics: Principles with Application, Seventh Edition by Douglas C. Giancolli, Prentice Hall, ISBN – 13: 978-0-321-62592-2

- **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.

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. The attendance is in the classroom or via WebEx.

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 may have more information on tutoring.

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, and the homework score.

COMMON EXAMS Three common exams will be given during the semester. The schedule is:

- **Common Exam 1**: Thursday, October 08 7:15 – 8.50 PM
- **Common Exam 2:** Thursday, November 05 7:15 – 8.50 PM
- **Common Exam 3:** Thursday, December 03 7:15 – 8.50 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. See instructions at the end of the file.

COURSE CODES TO REGISTER TO HOMEWORK CLASSES with PROF. SIRENKO

Section 101 – CRN 94615
Instructor's ID in Mastering Physics: sirenko08656

PHYSICS 103 NJIT FALL 2020 SIRENKO

FINAL EXAM **Comprehensive Final Exam will be given** during Final Exam Period.

Here are the weights to be used for calculating term averages:

- **45%** for all three common exams (15% each)
- **30%** for the final exam
- **25%** for the total of homework

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.
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.

IMPORTANT DATES:
NOVEMBER 26, THANKSGIVING
FINAL EXAM PERIOD – DECEMBER 14 -21

	Topic	Text Study	Recommended Problems	
Week 1 Sept.3	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 Sept.10	Fluids in Motion	Chapt. 10 Sect. 8-10	p. 285 prob. 47, 48. 49, 50, 53, 80	**A**
Week 3 Sept.17	Temperature, Thermal Expansion, The Ideal Gas Law	Chapt. 13 Sect. 1-8	p.385 prob. 5, 12, 15, 19, 24, 31,39, 78	**7**
Week 4 Sept. 24	Specific Heat, Calorimetry, Latent Heat,	Chapt. 14 Sect. 1-5	p.408 prob. 2, 13, 14, 25, 27, 34, .	**D**
Week 5 Oct. 01	Transfer of Heat	Chapt. 14 Sect. 6 - 8	p.408 prob. 38, 42, 43, 54	**E**
Week 6 Oct. 08	Thermodynamics	Chapt. 15 Sect. 1-7	p. 438 prob. 1, 18, 19, 24, 32,	**F**
Week 7 Oct. 15	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 Oct. 22	Sound	Chapt. 12 Sect.1-7	p. 354 prob. 3, 4, 9, 14, 27, 28, 56, 63	**B1**
Week 9 Oct. 29	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 10 Nov. 05	Electric Current, Resistance, Electric Power	Chapt.18 Sect. 1-7	p.521 prob.1, 9, 13, 17, 28, 37, 47, 54	**J**
Week 11 Nov. 12	Electric Circuits	Chapt.19 Sect. 1- 5, 7	p. 552 prob. 1, 4, 12, 15, 16, 77	**H**
Week 12 Nov.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**
Nov.26 Thanksgiving	No classes			

Week 14 Dec. 03 Thanksgiving	Light: Total Internal Reflection, Lenses	Chapt. 23 Sect. 4-8	p. 673 prob. 35, 36, 41, 43, 47, 48	**M**
Week 15 Dec. 10	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 Dec. 14 – Dec. 21	REVIEW FOR FINAL and THE FINAL EXAM			

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Student Registration Instructions

To register for PHYSICS 103 NJIT FALL 2020 SIRENKO:

1. Go to https://www.pearson.com/mastering.
2. Under Register, select **Student**.
3. Confirm you have the information needed, then select **OK! Register now**.
4. Enter your instructor's course ID: sirenko08656, and **Continue**.
5. Enter your existing Pearson account **username** and **password** to **Sign In**.

   You have an account if you have ever used a MyLab or Mastering product.

   - » If you don't have an account, select **Create** and complete the required fields.
6. Select an access option.

   - » Enter the access code that came with your textbook or that you purchased separately from the bookstore.
   - » If available for your course,
     - Buy access using a credit card or PayPal.
     - Get temporary access.

   If you're taking another semester of a course, you skip this step.
7. From the You're Done! page, select **Go To My Courses**.
8. On the My Courses page, select the course name **PHYSICS 103 NJIT FALL 2020 SIRENKO** to start your work.

To sign in later:

1. Go to https://www.pearson.com/mastering.
2. Select **Sign In**.
3. Enter your Pearson account **username** and **password,** and **Sign In**.
4. Select the course name **PHYSICS 103 NJIT FALL 2020 SIRENKO** to start your work.

To upgrade temporary access to full access:

1. Go to https://www.pearson.com/mastering.
2. Select **Sign In**.
3. Enter your Pearson account **username** and **password,** and **Sign In**.
4. Select **Upgrade access** for **PHYSICS 103 NJIT FALL 2020 SIRENKO**.
5. Enter an access code or buy access with a credit card or PayPal.

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