Spring 2023

PHYS 103 - 102: Physics II Lecture

Andrei Sirenko

Class Schedule: Section 102 CRN 15111
Day and Time: Monday 6:00 PM – 8:50 PM
Room: TIER 112
Delivery Mode: Face-to-Face (Delivery of instruction is structured around in-person classroom meeting times. Instruction is delivered in person and students are expected to attend class).

Instructor Information: **Prof. Andrei Sirenko**
Office: TIER 458
Office Hour: Monday 4 pm – 6 pm Phone:
973-596-5342
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General Information

- Description: Physics 103 is an algebra-based physics introductory college-level physics course in which students explore fluid statics and dynamics; thermodynamics; simple harmonic motion and waves; electrostatics; electrical circuits with capacitors; electromagnetism; reflection, mirrors, refraction, interference and diffraction. Through inquiry-based learning, students develop scientific critical thinking and reasoning skills.

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

FAILURE TO MEET 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.

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 in ***. The schedule is:

- **Common Exam 1**: Wednesday, February 15th 2023, 4:15 -- 5:45 PM
- **Common Exam 2**: Wednesday, March 22nd 2023, 4:15 -- 5:45 PM
- **Common Exam 3**: Wednesday, April 26th 2023, 4:15 -- 5:45 PM
- Comprehensive Final Exam May *** 6pm – 8:30 pm in *** 2.5 hours long

It is the student's responsibility to take the exam in the class that is scheduled.

Missed 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 the Dean of Students PRIOR to their absence. In order to be qualified to receive an "excused absence" for the common exam (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, the student should present this document to the **Dean of Students - (973) 596-3466, Room 255 Campus Center** for evaluation. BOTH the Physics 103 instructor and Dean of Students must concur in permitting a "excused absence" for the 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 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 final exam grade will be considered for giving a grade for the missed test. The instructor will evaluate the final exam questions from those chapters and normalize this portion of the student's grade for the missed common exam. Conflict common exams are usually held from 6:00 to 7:30 PM on exam days; contact Ms. Oertel (christine.a.oertel@njit.edu) for arrangements.

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 code to register to Pearson homework class: sirenko65584
Course name: PHYSICS 103 NJIT SPRING 2023 SIRENKO

LECTURE QUIZZES In-class quizzes covering the preceding or current work will be given during lectures and/or recitations at Canvas (https://canvas.njit.edu). Use your NJIT UCID and password to login.
The Lecture Quizzes scores count toward your final course grade. **There are no make-ups for in class activities**. Students missing a lecture quiz will receive a grade of zero for that item.

HERE ARE THE WEIGHTS TO BE USED FOR CALCULATING TERM AVERAGES:

- **45%** for all three common exams (15% each)
- **30%** for the final exam
- **15%** for the total of homework work
- **10%** for the in-class participation (canvas quizzes)

The cutoff percentages for various letter grades will be:

Percentage	Letter Grade
≥ 85%	A
≥75 %	B+
≥65 %	B
≥56 %	C+
≥50 %	C
≥45 %	D
< 45	F

Final grades are not negotiable: A score of 84.99% is a B+, not an A.

COURSE POLICIE

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.

Physics 103 (Section 102) Class Schedule for Spring 2023

	Topic	Text Study	Recommended Problems	
Week 1 Jan.16	Martin Luther King, Jr. Day (no class)			Intro
Week 2 Jan. 23	Elasticity, Density and Pressure, Fluids at Rest	Chapt. 9 Sect. 5-6 Chapt.10 Sect. 1-7	p. 256 pr. 40, 45, 50 p. 285 pr. 2, 12, 14, 19, 23, 27, 34	**A**
Week 3 Jan 30	Fluids in Motion	Chapt. 10 Sect. 8-10	p. 285 prob. 47, 48. 49, 50, 53, 80	**7**
Week 4 Feb 6	Temperature, Thermal Expansion, The Ideal Gas	Chapt. 13 Sect. 1-8	p.385 prob. 5, 12, 15, 19, 24, 31, 39, 78	**D**
Week 5 Feb. 13 Feb 15th EX1	Specific Heat, Calorimetry, Latent Heat	Chapt. 14 Sect. 1-5	p.408 pr. 2, 13, 14, 25, 27, 34	**E**
Week 6 Feb. 20	Transfer of Heat and Thermodynamics	Chapt. 14 Sect. 6 – 8 Chapt. 15 Sect. 1-7	p.408 pr. 38, 42, 43, 54 p. 438 pr. 1, 18, 19, 24, 32	**F**
Week 7 Feb. 27	Simple Harmonic Motion, Waves, Standing Waves	Chapt. 11 Sect. 1-12	p. 322 pr.3, 7, 8, 14,18, 27, 36, 37, 40, 49, 52	**G**
Week 8 March 6	Sound	Chapt. 12 Sect.1-7	p. 354 pr. 3, 4, 9, 14, 27, 28, 56, 63	**B1**
Week 9 March 13 – 18	SPRING RECESS			
Week 10 March 20 Mar 22nd EX2	Electric Charges, Electric Field, Electric Potential	Chapt.16 Sect.1-5, 7 Chapt. 17 Sect. 1-2	p. 468 pr. 2, 3, 19, 21 p. 496 prob. 3, 4, 6, 9	**W**
Week 11 March 27	Electric Current, Resistance, Electric Power	Chapt.18 Sect. 1-7	p.521 pr.1, 9, 13, 17, 28, 37, 47, 54	**J**
Week 12 April 3	Electric Circuits	Chapt.19 Sect. 1- 5, 7	p. 552 pr. 1, 4, 12, 15, 16, 77	**H**
Week 12 April 10	Light: Reflection, Mirrors, Refraction	Chapt. 22 Sect. 3-4 Chapt. 23 Sect. 1-3	p. 673 pr. 4, 9, 12, 25, 26, 28, 29, 72	**215**
Week 13 April 17	Light: Total Internal Reflection, Lenses	Chapt. 23 Sect. 4-8	p. 673 prob. 35, 36, 41, 43, 47, 48	**M**
Week 14 April 24 Apr 26th EX3	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	
Week 15 May 1st	Review for the FINAL EXAM			

Spring 2023 Academic Calendar

January	16	Monday	Martin Luther King, Jr. Day
January	17	Tuesday	First Day of Classes
January	21	Saturday	Saturday Classes Begin
January	23	Monday	Last Day to Add/Drop a Class
January	23	Monday	Last Day for 100% Refund, Full or Partial Withdrawal
January	24	Tuesday	W Grades Posted for Course Withdrawals
January	30	Monday	Last Day for 90% Refund, Full or Partial Withdrawal, No Refund for Partial Withdrawal after this date
February	13	Monday	Last Day for 50% Refund, Full Withdrawal
March	6	Monday	Last Day for 25% Refund, Full Withdrawal
March	13	Monday	Spring Recess Begins - No Classes Scheduled - University Open
March	18	Saturday	Spring Recess Ends
April	3	Monday	Last Day to Withdraw
April	7	Friday	Good Friday - No Classes Scheduled - University Closed
April	9	Sunday	Easter Sunday - No Classes Scheduled - University Closed
May	2	Tuesday	Friday Classes Meet
May	2	Tuesday	Last Day of Classes
May	3	Wednesday	Reading Day 1
May	4	Thursday	Reading Day 2
May	5	Friday	Final Exams Begin

May	11	Thursday	Final Exams End
May	13	Saturday	Final Grades Due
TBA			Commencement