

Spring 2021

## PHYS 103-006: General Physics

Andres Jerez

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**INSTRUCTOR:** Andres Jerez, email: jerez@njit.edu

**Office hours:** Monday, 11:00 am – 12:00 pm, and by appointment, online

**Lectures:** Wednesdays, 9:00 am – 10:20 am, Mondays, 2:30 pm – 3:50 pm Synch Online

### **PRE-REQUISITES AND CO-REQUISITES:**

- **Pre-requisites: Phys 102 or Phys111 with grade C or better**

**Co-requisites: Phys 103A (the lab course)** (Note: (A) If you have an approved medical accommodation from the Dean of Students, you are allowed to take the Phys 103A lab course online. (B) If you do not have an approved medical accommodation, then the Phys 103A lab course cannot be taken online and has to be face-to-face. (C) Because of the COVID19 issues, the Physics Department is allowing students to take the Phys 103 course without the lab, thus allowing one do the lab in a later semester and face-to-face.)

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

### **COURSE MATERIAL:**

- **Mastering Physics Homework System (REQUIRED):** Each student must enroll in the course specified by the instructor by obtaining access to Mastering Physics for Physics: Principles with Applications, 7<sup>th</sup> edition, by Douglas C. Giancoli Pearson Prentice Hall. There are several purchase options based on duration and whether or not the e-book is included. Please see this link <https://www.pearson.com/store/p/physics-principles-with-applications/P100002652957>  
Here are the instructor and course information needed for registration (See below for instructions on how to register for this particular section):
  - Instructor's Course ID: jerez62223
  - Course Name: Physics 103 006 Spring 2021Homework assignments will be posted online in Mastering Physics. Students login, solve the assigned problems, and submit answers to the automated grading system.
- **Textbooks:** The homework and the structure of the course follows Physics: Principles with Applications, 7<sup>th</sup> edition, by Douglas C. Giancoli Pearson Prentice Hall which can be obtained as an ebook with the Mastering Physics registration. It is not a requirement, as opposed to MasteringPhysics. However, I strongly encourage you to have access and use to a College Physics textbook. An alternative to consider may be the Openstax textbooks, <https://openstax.org/details/books/college-physics-ap-courses>

### **ELEMENTS OF THE COURSE:**

**CANVAS:** The Learning Management System at NJIT is [Canvas](#) . Lecture notes, some assignments, grades, exams, and additional course material will be managed through Canvas.

**LECTURES:** Lectures follow the [Synchronous Online Mode](#). 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 the Dean of 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."

### **EXAMS:**

**Common Exams** There will be three common exams during the semester. The exams will be given online, using Canvas, LockDown browser plus Webex for proctoring. The exam schedule is:

- Common Exam 1: Wednesday, Feb 17<sup>nd</sup> 4:15 – 5.45 PM
- Common Exam 2: Wednesday, March 24<sup>th</sup> 4:15 – 5.45 PM
- Common Exam 3: Wednesday, April 28<sup>th</sup> 4:15 – 5.45 PM

Final Exam: Online, TBA

**HOMEWORK:** assignments will be posted online using the Mastering Physics Homework System: [www.masteringphysics.com](http://www.masteringphysics.com) (see above).

**QUIZZES AND ASSIGNMENTS:** There will be quizzes during the lecture and other activities on the topics covered.

**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, quizzes and assignments, and the homework score.

- 45% for the three common exams (15% each)
- 30% for the final exam
- 10% for the total of homework work
- 15% for the quizzes and assignments

The cutoff percentages for various letter grades will be in the range of:

**80% for A, 76% for B+, 66% for B, 56% for C+, 50% for C, 40% for D, F below 40 %**

**LAST DAY TO WITHDRAW:** April 12<sup>th</sup>

### **ONLINE EXAMS, LOCKDOWN BROWSER AND WEBEX:**

*NJIT policy requires that all midterm and final exams must be proctored, regardless of delivery mode, in order to increase academic integrity. Note that this does not apply to essay or authentic based assessments. Effective beginning Fall semester 2019, students registered for a fully online course section (e.g., online or Hyflex mode) must be given the option to take their exam in a completely online format, with appropriate proctoring.*

In this course you will be required to use the following proctoring methods to ensure academic integrity for exams. Please see NJIT's response to questions about online proctoring [here](#). See below for more information about how exams will be proctored in this course.

#### **Webex**

Webex can be used to allow instructors to proctor exams themselves. Your instructor will schedule a Webex exam session and share the meeting information with you ahead of time. The exam in Canvas will be password-protected. You can connect to the Webex session with either your phone or computer. You can find links to download the mobile app from the App Store or Google Play Store at the bottom of [njit.webex.com](http://njit.webex.com).

When your instructor is ready to start the exam, they will provide the exam password in the meeting so all students can begin the Canvas quiz. Your instructor will then watch you, via the web camera, as you take the exam. Students are expected to remain connected to the Webex session until their exam is submitted. The session may also be recorded by your instructor.

In order to use Webex for proctored exams, you will need the following:

- High-speed internet connection
- Smartphone with camera, connected to Webex
- The process for connecting to Webex will be the same as when you connect for a class.

Tips for ensuring a smooth experience while using Webex:

- Connect to your Webex session before class starts.
- Log into Canvas before connecting to Webex.

#### **Respondus LockDown Browser**

Respondus LockDown Browser is a locked browser for taking assessments or quizzes in Canvas. It prevents students from printing, copying, going to another URL, or accessing other applications during a quiz. If a Canvas quiz requires that LockDown Browser be used, students will not be able to take the assessment or quiz with a standard web browser.

The webcam can be built into your computer or can be the type that plugs in with a USB cable. Watch this [short video](#) to get a basic understanding of LockDown Browser and the webcam feature. A student [Quick Start Guide \(PDF\)](#) is also available.

***Respondus Lockdown Browser does not work with Linux and Chromebooks at this time. Please visit the [Respondus Knowledge Base article on computer requirements](#) for additional information.***

The LockDown Browser integration requires students to:

- (1) manually start LockDown Browser,
  - (2) log into Canvas, and
  - (3) navigate to the quiz that requires LockDown Browser.
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1. Download and install LockDown Browser from [this link](#) .
  2. Once your download and installation has finished, locate the “LockDown Browser” shortcut on your desktop and double-click it. (For Mac users, launch “LockDown Browser” from the Applications folder.)
  3. You will be brought to the Webauth Authentication Service page, where you can log in with your NJIT UCID and password.
  4. From your Dashboard or under “Courses”, click on the course in which you have to take the exam that requires LockDown Browser.
  5. After you enter the course, find the exam and click on it.
  6. Click the “Take the Quiz” button. Once a quiz has been started with LockDown Browser, you cannot exit until the “Submit Quiz” button is clicked.

Questions or problems can be submitted via web form by going to: <https://servicedesk.njit.edu> and clicking on the "Report your issue online" link. You may also call the IST Service Desk with any questions at 973-596-2900.

[More Information and Tips on Ensuring a Smooth Experience](#)

**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.**

- Statement on Academic Integrity:
  - ***“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>.***

*Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. 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](mailto:dos@njit.edu)”*

**HELP:** Contact your instructor if you are having trouble with the course; do not simply hope for a miracle and fall further behind. There is online tutoring offered by the Physics Department. For information and appointments follow this link: <https://physics.njit.edu/physics-tutoring-sign-sheet>

**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.

**Instructions to register in Mastering Physics for Physics 103 006 Spring 2021:**

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: jerez62223, 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.
  1. If you don't have an account, select **Create** and complete the required fields.
6. Select an access option.
  1. Enter the access code that came with your textbook or that you purchased separately from the bookstore.
  2. If available for your course,
    1. Buy access using a credit card or PayPal.
    2. 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 103 006 Spring 2021** 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 103 006 Spring 2021** 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 103 006 Spring 2021**.
5. Enter an access code or buy access with a credit card or PayPal.

**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 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: Spring Break: March 14<sup>th</sup>-March 21<sup>st</sup>; FINAL EXAM PERIOD – May 7<sup>th</sup> to May 13<sup>th</sup>**

|                                | Topic  | Text Study  | Recommended Problems  | LAB                   |
|--------------------------------|--|---|---|-----------------------|
| Week 1<br>Jan 25               | Elasticity, Density and Pressure, Fluids at Rest     | Chapt. 9 Sect. 5-6<br>Chapt.10 Sect. 1-7          | p. 256 prob. 40, 45, 50<br>p. 285 prob. 2, 12, 14, 19, 23 27, 34, | <a href="#">Intro</a> |
| Week 2<br>Feb 1                | Fluids in Motion                                     | Chapt. 10 Sect. 8-10                              | p. 285 prob. 47, 48. 49, 50, 53, 80                               | <a href="#">A</a>     |
| Week 3<br>Feb 8                | Temperature, Thermal Expansion, The Ideal Gas Law    | Chapt. 13 Sect. 1-8                               | p.385 prob. 5, 12, 15, 19, 24, 31,39, 78                          | <a href="#">7</a>     |
| Week 4<br>Feb 15               | Specific Heat, Calorimetry, Latent Heat              | Chapt. 14 Sect. 1-5                               | p.408 prob. 2, 13, 14, 25, 27, 34                                 | <a href="#">D</a>     |
| Week 5<br>Feb 22               | Transfer of Heat                                     | Chapt. 14 Sect. 6 - 8                             | p.408 prob. 38, 42, 43, 54  | <a href="#">E</a>     |
| Week 6<br>March 1              | Thermodynamics                                       | Chapt. 15 Sect. 1-7                               | p. 438 prob. 1, 18, 19, 24, 32,                                   | <a href="#">F</a>     |
| Week 7<br>March 8              | 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,               | <a href="#">G</a>     |
|                                | SPRING BREAK   |   |   |                       |
| Week 8<br>March 22             | Sound  | Chapt. 12 Sect.1-7                                | p. 354 prob. 3, 4, 9, 14, 27, 28, 56, 63                          | <a href="#">B1</a>    |
| Week 9<br>March 29             | Electric Charges, Electric Field, Electric Potential | Chapt.16 Sect.1-5, 7<br>Chapt. 17 Sect. 1-2       | p. 468 prob. 2, 3, 19, 21,<br>p. 496 prob. 3, 4, 6, 9             | <a href="#">W</a>     |
| Week 10<br>April 5             | Electric Current, Resistance, Electric Power         | Chapt.18 Sect. 1-7                                | p.521 prob.1, 9, 13, 17, 28, 37, 47, 54                           | <a href="#">J</a>     |
| Week 11<br>April 12            | Electric Circuits                                    | Chapt.19 Sect. 1- 5, 7                            | p. 552 prob. 1, 4, 12, 15, 16, 77                                 | <a href="#">H</a>     |
| Week 12<br>April 19            | Light: Reflection, Mirrors, Refraction               | Chapt. 22 Sect. 3-4<br>Chapt. 23 Sect. 1-3        | p. 673 prob. 4, 9, 12, 25, 26, 28, 29, 72                         | <a href="#">215</a>   |
| Week 13<br>April 26            | Light: Total Internal Reflection, Lenses             | Chapt. 23 Sect. 4-8                               | p. 673 prob. 35, 36, 41, 43, 47, 48                               | <a href="#">M</a>     |
| Week 14<br>May 3               | Interference, Diffraction Grating, and REVIEW        | Chapt. 24 Sect. 1, 3, 4, 6<br>Chapt. 25 Sect. 7-9 | p. 707 prob. 1, 4, 7, 33, 38,<br>p. 740 prob. 53, 55, 67, 83      | <a href="#">N</a>     |
| Week 15<br>Dec. May 7th – 13th | THE FINAL EXAM                                       |   |   |                       |