

Spring 2021

## PHYS 111-106: Physics I

Slawomir Piatek

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Office Hours: T & R, 2:30 OM – 3:30 PM

### CLASS SCHEDULE:

Thursday, 6:00 PM – 8:50 PM, TLH 1

And online at

<https://njit.webex.com/meet/piateknjit.edu>

**PREREQUISITE:** Math 131 (if not originally placed in Math 111)

**COREQUISITE:** Math 111 or Math 132, Phys 111A (see Note below).

### COURSE MATERIAL:

Access to electronic version of the textbook and online homework can be obtained through purchasing of:

**Mastering Physics with Pearson eText -- Standalone Access Card -- for University Physics with Modern Physics (by Young & Freedman), 15<sup>th</sup> edition, ISBN 13: 978-0-1351-5955-2** . Note: only the card for the 15<sup>th</sup> edition will allow you the access eText and homework; similarly you must login through **Pearsonmastering.com** (other addresses, even from the same publisher, can bring you to the wrong course). However, if you would also like a hardcopy version of the textbook, you can use any recent edition of the Young & Freedman's text. We use Chapters 1 to 13 which sometimes you can get separately from the rest.

Homework assignments will be posted on-line. Students login, download and solve the assigned problems, and submit answers to the automated grading system. Specific Information for the **Pearson Mastering (PM)** homework system are as follows:

You first create an account on the PM platform and then need a valid Pearson Mastering access code to sign up for the course.

**piatek42020**

For your own reference, record the unique course identifier announced by your instructor, and your login ID and password. Instructors cannot access forgotten logins or passwords.

### NOTE:

- A) If you have an approved medical accommodation from the Dean of Students, you are allowed to take the Phys 111A lab course online.**
- B) If you do not have an approved medical accommodation, then the Phys 111A 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 111 course without the lab, thus allowing one do the lab in a later semester and face-to-face.**

**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 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 4<sup>th</sup> 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 111 will be based on a composite score for term's work that includes the common midterm exam score, the final exam, lecture/recitation quizzes, and the homework score.

**1) Common Midterm Exam**    There will be one common midterm exam given during the semester. The exam schedule is as follows:

In-class quizzes covering the preceding or current work may 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 a quiz will receive a grade of zero for that item. The general policy is that students who miss the common midterm exam will receive a score of zero for that Exam. That score will be included in the calculation of your final grade. Students who anticipate an absence from the common midterm exam should discuss their situation with their instructor PRIOR TO their absence. In order to be qualified to receive a "make-up" common midterm 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 to the **Dean of Students - (973) 596-3466, Room 255 Campus Center.** BOTH the Physics 111 instructor and Dean of Students must concur in permitting a "make-up" common midterm exam. Students who miss the common midterm exam that do not present documentation within 7 days of the common midterm exam will receive a score of zero for the common midterm 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 portion of the final exam relevant to the contents of the missed test 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.

2) **Lecture Quizzes** A short quiz will be given during each lecture/recitation period.

3) **Homework** Homework assignments will be posted on-line using the Pearson Mastering Homework System, as described on the previous page.

4) **Final Exam** **Comprehensive Final Exam will be given** during Final Exam Period (May 7-13, 2021).

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

- **25%** for the Common Midterm Exam
- **35%** for the final exam
- **20%** for the total of homework work
- **20%** for the in-class quizzes

The cutoff percentages for various letter grades will be:

Percentage	Letter Grade
> 85%	A
85 - 80	B+
80 – 70	B
70 - 65	C+
65 - 55	C
55 - 50	D
< 50	F

Final grades are not negotiable: A score of 84.99% 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.

## **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 and Monitor**

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 and Monitor 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.
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](#)

**LEARNING OUTCOMES:** For this course, which is the first of the introductory Physics series, you can expect to be assessed on the following learning outcomes:

1. Manipulate vectors in components form and as magnitude/direction. Perform vector operations such as addition, subtraction, scalar, and cross products.
2. Recall the definitions and relationships involving position, velocity, speed, acceleration.
3. Apply the equations governing 1-D constant acceleration to mechanical systems for various initial conditions.
4. Apply the equations governing 2-D constant acceleration to mechanical systems for various initial conditions.
5. Comprehend the meaning of the equations governing net force and acceleration (Newton's Laws) for linear motion, and be able to manipulate them in conjunction with a free-body diagram to obtain any desired quantitative relationship.
6. Understand the extension of free-body diagrams and Newton's laws to rotational motion.
7. Understand the extension of free-body diagrams and Newton's laws to frictional forces.
8. Comprehend the definitions and application of work, energy, and conservation of energy principles to solving mechanical and non-conservative systems.
9. Comprehend the meaning of equations governing momentum, impulse, and collisions. Apply the equations governing momentum, impulse, and collisions mechanical systems for various initial conditions. Understand under what conditions momentum is conserved and how to use this relation to calculate unknown quantities based on physical relationships, initial conditions, and known quantities.
10. Define and calculate the center of mass of a system as well as the moment of inertia.
11. Extend the concepts and equations of 1-D constant acceleration to rotational motion for various initial conditions.
12. Understand the extension of linear motion equations to rotational motion. Comprehend the meaning of the equations governing rotational motion and acceleration, and be able to manipulate them in conjunction with a free-body diagram to obtain any desired quantitative relationship.
13. Understand the extension of work, energy, and conservation of energy principles to rotational motion.
14. Recall the definitions of angular momentum. Apply this concept to conservation of angular momentum.
15. Apply concepts of Newton's Laws to equilibrium of linear and rotational motion.
16. Understand the extension of conservation of energy and mass equations to fluid dynamics.
17. Understand the extension of Newton's Laws and energy concepts to gravitation.

TOPIC		TEXT STUDIES	NOTES
Week 1	01/18	Chapt. 1	
Units, Physical Quantities, and Vectors			
Week 2	01/25	Chapt. 2	
Motion in One Dimension			
Week 3	02/01	Chapt. 3	Optional: Sect. 3.5
Motion in Two Dimensions			
Week 4	02/08	Chapt. 4	
Newton's Laws of Motion			
Week 5	02/15	Chapt. 5	Optional: Sect. 5.5
Applying Newton's Laws I			
Week 6	02/22	Chapt. 5	
Applying Newton's Laws II			
Week 7	03/01	Chapt. 6	Refresh: scalar (dot) product
Work, Kinetic Energy			
Week 8	03/08	Chapt. 7	Optional: Sect. 7.5
Potential Energy, Conservation of Energy			
<b>Common Midterm Exam</b>	<b>04/05</b>		<b>Chapters 1 to 7</b>
Week 9	03/22	Chapt. 8	Optional: Sect. 8.6
Linear Momentum and Collision			
Week 10	03/29	Chapt. 9	
Rotation, Moment of Inertia			
Week 11	04/05	Chapt. 10 – Sections 1-6	Refresh: vector (cross) product
Dynamics of Rotational Motion			
Week 12	04/12	Chapt. 11 – Sections 1-3	
Static Equilibrium			
Week 13	04/19	Chap.12 – Sections 1-5	
Fluid Mechanics			
Week 14	04/26	Chap. 13	Optional: Sect. 13.6, 13.7
Universal Gravitation			
Week 15	05/03	REVIEW	
<b>Final Exam</b>	<b>TBA</b>		<b>Comprehensive Exam Chapters 1 to 13 with emphasis on 8 to 13</b>

## Spring 2021 Academic Calendar

January 18	Monday	Martin Luther King, Jr. Day
January 19	Tuesday	First Day of Classes
January 23	Saturday	Saturday Classes Begin
January 25	Monday	Last Day to Add/Drop a Class
January 25	Monday	Last Day for 100% Refund, Full or Partial Withdrawal
January 26	Tuesday	W Grades Posted for Course Withdrawals

February 2	Tuesday	Last Day for 90% Refund, Full or Partial Withdrawal, No Refund for Partial Withdrawal after this date
February 15	Monday	Last Day for 50% Refund, Full Withdrawal
March 8	Monday	Last Day for 25% Refund, Full Withdrawal
March 14	Sunday	Spring Recess Begins - No Classes Scheduled - University Open
March 21	Sunday	Spring Recess Ends
April 2	Friday	Good Friday - No Classes Scheduled - University Closed
April 5	Monday	Last Day to Withdraw
May 4	Tuesday	Friday Classes Meet
May 4	Tuesday	Last Day of Classes
May 5	Wednesday	Reading Day 1
May 6	Thursday	Reading Day 2
May 7	Friday	Final Exams Begin
May 13	Thursday	Final Exams End
May 15	Saturday	Final Grades Due
TBA		Commencement