

**INTRODUCTORY PHYSICS LAB 1**  
**COURSE 21:750:205**  
**Fall 2020**

**Course Description:**

This lab course complements General Physics (203) and University Physics (213). In this class we will design and conduct experiments to reflect the process through which practicing scientists generate new knowledge, allowing you the opportunity to develop scientific and experimental skills as you construct new physics knowledge and test physical theories for yourselves. Learning is an active process so participation is essential. This course will take place online using a combination of synchronous and asynchronous elements.

**Learning Goals:**

1. Develop skills in science practices and an understanding of how physics knowledge is constructed. This learning goal aligns with General Education learning outcome #5: understand and use methods and forms of inquiry specific to the natural sciences.
2. Build conceptual and tactile understandings of physical phenomena.
3. Gain facility representing physical phenomenon in multiple ways including graphs, diagrams, mathematical expressions, and sketches.
4. Develop skills analyzing and representing data using MatLAB.

**Instructors:**

<b>Name</b>	<b>Email</b>	<b>Office Hours</b>
Joshua Rutberg	<a href="mailto:jr1316@rutgers.edu">jr1316@rutgers.edu</a>	Weeknights 6:00PM – 6:30PM <a href="https://rutgers.zoom.us/my/jr1316">https://rutgers.zoom.us/my/jr1316</a>
Masoud	<a href="mailto:nm831@newark.rutgers.edu">nm831@newark.rutgers.edu</a>	Fridays 4:00PM – 5:00PM <a href="https://rutgers.zoom.us/my/nm831">https://rutgers.zoom.us/my/nm831</a>
Tao	<a href="mailto:st962@rutgers.edu">st962@rutgers.edu</a>	Weekdays 10:00 AM – 11:00 AM <a href="https://rutgers.zoom.us/my/st962">https://rutgers.zoom.us/my/st962</a>
Armin Kalita	<a href="mailto:armin.kalita@rutgers.edu">armin.kalita@rutgers.edu</a>	Thursdays 1:00PM – 3:00PM
Mohammadreza Nouri		TBD
Matias Almeida		TBD
Evaristo Villaseco	<a href="mailto:ev259@scarletmail.rutgers.edu">ev259@scarletmail.rutgers.edu</a>	TBD
Estelle Epstein	<a href="mailto:emk34@newark.rutgers.edu">emk34@newark.rutgers.edu</a>	Mondays 12 – 1, Fridays 1 – 2 <a href="https://rutgers.zoom.us/my/emk34">https://rutgers.zoom.us/my/emk34</a>

**Meeting Times:**

Section	Meeting Time	Instructor
01	Tuesday 9:00 – 10:50	Rutberg
02	Tuesday 11:00 – 12:50	Masoud
03	Tuesday 1:00 – 2:50	Kalita
04	Tuesday 3:00 – 4:50	Tao
05	Wednesday 12:00 – 1:50	Masoud
06	Wednesday 4:00 – 5:50	Rutberg
07	Thursday 9:00 – 10:50	Nouri
08	Thursday 11:00 – 12:50	Villaseco
10	Thursday 3:00 – 4:50	Almeida
11	Friday 11:00 – 12:50	Epstein
12	Friday 1:00 – 2:50	Masoud

**Recommended Materials:**

1. Laptop, desktop computer, or tablet with reliable internet connection.
2. MatLAB (downloaded version or web version). Free for Rutgers Students.
3. Some common household items for experiments.

**Curriculum Overview:**

This is an online course. Each week you will work through a series of experiments either by yourself or with your lab group (preferred) with the goal of inventing and testing new models about how the physical world works. You may work through these experiments at your own leisure, provided they are finished before class meets the following week. In class groups will share their findings and we will work together as a community of scientists to make sense of our experimental results.

**Calendar:**

Week of	Phenomenon to be Investigated
8/31	Introduction to MatLAB
9/7	Motion
9/14	Forces & Motion
9/21	Friction
9/28	Circular Motion
10/5	Air Resistance
10/12	Linear Momentum & Impulse
10/19	Work & Energy
10/26	Newtonian Gravitation
11/2	Collisions
11/9	Vibrational Motion
11/16	Torque
11/23	No Lab (Thanksgiving)
11/30	Gases

## Grading

### Grade Category Breakdown

	%
Participation	50
Assignments	50

### Overall Grade Breakdown

	%
A	90.0+
B+	87.0 - 89.9
B	80.0 – 86.9
C+	77.0 – 79.9
C	70.0 – 76.9
D (not passing)	60.0 – 69.9
F (not passing)	< 60.0

**Participation:** Each week, you will work in groups to put together a slideshow which outlines what you did in each experiment and what you found. Refer to the rubrics for each kind of experiment on Canvas to help identify what should be included in these slides. Each member of the group is expected to write in a separate color. These slides will be submitted prior to each class meeting. Groups will then be expected to share their findings with the class and have discussions about each experiment. These slideshows and presentations are graded on completeness and the extent to which each group member participated, **not on the accuracy of the findings.**

**Assignments:** Each week there will be one or two assignments which will be submitted and scored using relevant rubrics. Always read through the assignment rubric before submitting your work. The due dates for these assignments will be posted on Canvas. If there is some reason that you will not be able to complete your work on time, it is your responsibility to notify your instructor ahead of time. **No late work will be accepted without prior approval from your instructor.** Note that confusion about how to submit assignments through Canvas is **not** an excuse for late work. Do not wait until the last minute to submit your assignments.

### Resubmission Policy

You will be allowed to resubmit all assignments after receiving feedback from your instructor. These resubmissions must be submitted **within one week** of having your original assignment scored. The grade you receive on the resubmission will completely replace the grade you received for the original report. If you are having difficulty interpreting the feedback you are receiving from the rubrics, make use of your instructor's office hours or schedule a time to talk privately with them about your work.

### Attendance & Other Course Policies

You are expected to attend all class meetings. If you are having any issues which may affect your attendance or participation in class, please contact your instructor to work out a solution. Even if you will not be able to attend a class meeting, you are still responsible for working with your group on the preparation of their slides and all assignments due that week.

For religious holidays, please report your absence using the Self-Reporting Absence Application: <https://sims.rutgers.edu/ssra/>. Your absence will be excused.

Grade disputes must be brought to the instructor within 2 weeks of receiving the grade.

### **Rutgers Academic Integrity Policy**

Academic Integrity: As an academic community dedicated to the creation, dissemination, and application of knowledge, Rutgers University is committed to fostering an intellectual and ethical environment based on the principles of academic integrity. Academic integrity is essential to the success of the University's educational and research missions, and violations of academic integrity constitute serious offenses against the entire academic community.

- Academic Integrity Policy: <http://academicintegrity.rutgers.edu/academicintegrity-policy/>

### **Disability Services**

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, you must complete and submit the Registration Form, schedule and complete an intake meeting, and submit appropriate documentation. If your request for reasonable accommodations is approved, you will receive a Letter of Accommodations (LOA), which you should present privately to the instructor as early in the semester as possible. Accommodations are not retroactive and are effective only upon submission of the LOA to the instructor. Please begin the process by completing and submitting the Registration Form, Applying for Services, available at the website below.

- Applying for Services: <https://ods.rutgers.edu/students/applying-for-services>
- Documentation Guidelines: <https://ods.rutgers.edu/students/documentationguidelines>
- Letter of Accommodations (LOA): <https://ods.rutgers.edu/myaccommodations/letter-of-accommodations>
- Office of Disability Services (ODS) Suite 219, Paul Robeson Campus Center (973) 353-5315 [odsnewark@rutgers.edu](mailto:odsnewark@rutgers.edu)

### **Religious Holiday Policy**

Students are advised to provide timely notification to instructors about necessary absences for religious observances and are responsible for making up the work or exams according to an agreed-upon schedule.

### **Counseling Services**

Counseling Center Room 101, Blumenthal Hall, (973) 353-5805 or <http://counseling.newark.rutgers.edu/>.

### **Students with Temporary Conditions/Injuries**

Students experiencing a temporary condition or injury that is adversely affecting their ability to fully participate in their courses should submit a request for assistance at: <https://temporaryconditions.rutgers.edu>.

### **Students Who are Pregnant**

The Office of Title IX and ADA Compliance is available to assist students with any concerns or potential accommodations related to pregnancy: (973) 353-1906 or

[TitleIX@newark.rutgers.edu](mailto:TitleIX@newark.rutgers.edu).

### **Gender or Sex-Based Discrimination or Harassment**

Students experiencing any form of gender or sex-based discrimination or harassment, including sexual assault, sexual harassment, relationship violence, or stalking, should know that help and support are available. To report an incident, contact the Office of Title IX and ADA Compliance:

- (973) 353-1906 or [TitleIX@newark.rutgers.edu](mailto:TitleIX@newark.rutgers.edu).
- To submit an incident report: <http://tinyurl.com/RUNReportingForm>.
- To speak with a staff member who is confidential and does NOT have a reporting responsibility, contact the Office for Violence Prevention and Victim Assistance: (973) 353-1918 or [run.vpva@rutgers.edu](mailto:run.vpva@rutgers.edu)