

# PHY 215: General Physics I –Mechanics

## Fall 2017 Course Syllabus

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### Contents

Course Objective .....	1
Course Details .....	1
Textbooks.....	2
Calendar (including exam dates) .....	2
Assignments, exams, and grading .....	4
Laboratory .....	5
Disability accommodation .....	5
Academic Integrity Policy:.....	6
Religious Observance Policy: .....	6

### Course Objective

This course is primarily about motions of objects and forces, which underlie these motions. Some particular examples of the motions you will study include "free fall", collisions between objects (such as cars), rolling and spinning.

The theory that describes the above phenomena was developed by Isaac Newton in the 17th century and is called "classical mechanics". Historically, this theory gave a foundation for development of all modern physics. Therefore, this course is an introduction to physics in general. Physics in turn provides a foundation for most other natural sciences and engineering.

### Course Details

This syllabus is posted at [https://jwlaiho.expressions.syr.edu/phy215/wp-content/uploads/sites/3/2016/08/Syllabus\\_PHY215\\_2017.pdf](https://jwlaiho.expressions.syr.edu/phy215/wp-content/uploads/sites/3/2016/08/Syllabus_PHY215_2017.pdf)

<i>Instructor</i>	This course is being taught by <b>Prof. John W. Laiho</b> <b>e-mail</b> (@syr.edu): jwlaiho <b>Telephone:</b> 315-443-0317 <b>Office and hours:</b> 313 Physics Bldg. Mondays, 11:00 am - 12:00 pm; you can also drop by at your convenience, or make a specific appointment.
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<i>Lecture times</i>	Tuesdays & Thursdays, 11:00 am-12:20 pm, Room 208, Second floor of the Physics Bldg.
<i>Credits</i>	3
<i>Prerequisites:</i>	Working knowledge of high school level algebra and trigonometry is required. Calculus will also be used (see co-requisites).
<i>Co-requisites</i>	(i) PHY 221 (General Physics I Laboratory) (ii) MAT 285 or MAT 295 (Calculus I). The math department runs Math Clinic in the Reading Room of Carnegie (hours posted on the door) if you need assistance with math.
<i>Recitation</i>	Your recitation section will meet for 55 minutes on Wednesdays and Fridays. Check your schedule for your room number and TA's name.
<i>Getting forms signed</i>	To add or drop this course, or to change recitation or laboratory sections, please speak with Patricia Whitmore, in Physics Building Room 111, phone # 315-443-5958
<i>Blackboard</i>	Course information is being posted at the course website <a href="http://jwlaiho.expressions.syr.edu/phy215">http://jwlaiho.expressions.syr.edu/phy215</a>
<i>Physics clinic</i>	A physics clinic is operated in room 112 of the Physics Bldg. You can drop by to get help with physics problems. The clinic hours will be posted soon at <a href="http://physics.syr.edu/syllabi/clinic-pdfs/physicsclinicschedule.pdf">http://physics.syr.edu/syllabi/clinic-pdfs/physicsclinicschedule.pdf</a> . The clinic is staffed by the recitation instructors of PHY 211, who do not usually have separate office hours, unless you make particular arrangements.

### Textbooks

- (i) *Physics for Scientists and Engineers, Vol 1, 4<sup>th</sup> edition*. Knight (Pearson, 2016). Available at SU Bookstore.

### Calendar (including exam dates)

The Date indicated in the table is the date of the Tuesday lecture in each week. The lecture topics on this calendar are provisional, and may change during the semester.

<i>Week</i>	<i>Date</i>	<i>Topic</i>	<i>Notes</i>
1	8/29	Units and 1D motion (Ch 1)	

2	9/5	1D Motion (Ch 2.1-2.7)	
3	9/12	Vectors and 2D Motion (Ch 3.1-3.4, Ch 4.1-4.2)	
4	9/19	Circular Motion (Ch 4.4-4.7)	
5	9/26	Midterm Exam, Relative Motion (Ch 4.3)	<b>Exam 1:</b> Tuesday, 9/26.
6	10/3	Forces and Newton's Laws (Ch 5-6)	
7	10/10	Newton's Laws (Ch 6)	<b>Exam 2:</b> Tuesday, 10/10.
8	10/17	Newton's Laws in 2d (Ch 7, 8.1-8.2)	
9	10/24	Newton's Laws + Momentum (Ch 8.3-8.5, 9.1-9.6)	
10	10/31	Energy and Work (Ch 10.1-10.7)	<b>Exam 3:</b> Thursday, 11/2.
11	11/7	Work and Power (Ch 11)	
12	11/14	Center of Mass (Ch 12.1-12.3)	<b>Exam 4:</b> Thursday, 11/16.
13	11/21	Thanksgiving Break	
14	11/28	Torque, Rotation, and angular momentum (Ch 12.4-12.8)	
15	12/5	Newtonian gravity (Ch 12.9-12.11, 13.1-13.6)	
16	12/14	<b>FINAL EXAMS</b>	<b>Final Exam:</b> 12/14, 3-5pm, Physics Building 104N

## Assignments, exams, and grading

### Prelecture assignments and Homework assignments

There are two types of assignments due for this class, which make up 25% of your grade. All assignments and due dates will be listed on the assignments calendar. The prelecture reading assignments are a set of assigned chapters for you to read before lecture, plus a short set of questions to test your understanding of the assigned reading. The questions must be completed using the online “Mastering Physics” platform. The assignments are **due at 10:30 am on Tuesdays and Thursdays** (i.e. a half-hour before lecture begins.) The lowest three prelecture grades will be dropped. The prelecture assignments are worth 5% of your total grade.

Homework assignments are longer assignments due once a week. All homework problems will be assigned online using “Mastering Physics”. You should fill in all of your answers online. The assignment is required to be completed by 5pm each Monday. The lowest two HW grades will be dropped. The regular homework assignments are worth 20% of your total grade.

*The benefit of the online grading is to allow you to get instant, accurate feedback about how you're doing on the problems.*

### Examinations

Four midterm examinations and one final examination will be given in this course. The dates and times are listed on the course calendar. You must show up to your scheduled exam time.

The midterm examinations occupy an entire lecture period of 80 minutes. The midterm exams are grouped in pairs. Each pair will cover the same material and will take place two weeks apart. Having two exams per topic gives students the opportunity to see the material in an exam setting more than once. The highest grade in each pair of exams will count towards the final grade, i.e. the lowest grade of each pair is dropped. The examinations are closed book. However, you may bring a single sheet (8.5x11 inches, of A4) of *handwritten* notes (no Xeroxes, etc.) to each examination. You can write on both sides of your sheet. The notes should be turned in with your exam. Please bring a calculator to the examinations.

If you miss multiple exams entirely for any reason, please consult the professor.

The final examination is cumulative and covers all the material in the course. You will be allowed 2 sheets of handwritten notes on the final examination, which is otherwise closed book. You must appear at your scheduled exam date and time. *You are responsible for making sure you come to the right exam.*

## Grading:

The distribution used in determining your final grade is:

Participation: 10%: 10% for recitation attendance

Assignments: 25%: 5% for prelecture assignments,

20% for Mastering Physics regular assignments,

Midterm Examinations (20% apiece, with the highest grade taken from each of two pairs of exams): 40%

Final Examination: 25%.

## Grading scale

Your course grade will be based on the following scale:

		A	93-100	A-	90-93
B+	87-90	B	83-87	B-	80-83
C+	75-80	C	70-75	C-	60-70
D	50-60				
F	0-50				

## Laboratory

You must co-register for the laboratory course PHY221 (1 credit hour) unless you passed it previously or your program does not require it. Your grade in PHY215 may be withheld if you don't co-register for the laboratory. PHY221 will provide you with hands-on experience with the physical phenomena discussed in this course (PHY215) and introduce you to the measurement process. The PHY221 course is graded separately. Prof. Sampere (E-mail: [smsamper@sy.edu](mailto:smsamper@sy.edu)) is in charge of the PHY221 course.

## Disability accommodation

If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), <http://disabilityservices.syr.edu>, located in Room 309 of 804 University Avenue, or call (315) 443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating

disability-related accommodations and will issue students with documented disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible.

### **Academic Integrity Policy:**

While you are encouraged to seek help on the homework assignments, it is a violation of the academic code to seek or give assistance during the exams. The instructor is the only person you can communicate with during the tests. Please do not make any changes or marks to the graded exams, if you want to preserve a right to appeal grading mistakes.

The Syracuse University Academic Integrity Policy holds students accountable for the integrity of the work they submit. Students should be familiar with the Policy and know that it is their responsibility to learn about instructor and general academic expectations with regard to proper citation of sources in written work. The policy also governs the integrity of work submitted in exams and assignments as well as the veracity of signatures on attendance sheets and other verifications of participation in class activities. Serious sanctions can result from academic dishonesty of any sort.

For more information and the complete policy, see [http://supolicies.syr.edu/ethics/acad\\_integrity.htm](http://supolicies.syr.edu/ethics/acad_integrity.htm).

### **Religious Observance Policy:**

SU's religious observances policy, found at [http://supolicies.syr.edu/emp\\_ben/religious\\_observance.htm](http://supolicies.syr.edu/emp_ben/religious_observance.htm), recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holy days according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes. For fall and spring semesters, an online notification process is available through MySlice/Student Services/Enrollment/MyReligious Observances from the first day of class until the end of the second week of class.

### **PHYSICS CLINIC:**

Physics Clinic is operated in room 104S of the Physics Building. Hours are posted on the door and at <http://physics.syr.edu/undergraduate/physicsclinicschedule.pdf>. The clinic is

staffed by graduate Teaching Assistants who can help you with this course. Preferably come to the clinic when one of the TAs assigned to this class holds his hours. However, this is not a requirement and you can drop in at any time for help.