

# Physics 101: Major Concepts in Physics I Fall 2017

## General Information

Course Time and Place: Mon. and Wed. 2:15PM-3:35PM in Stolkin Auditorium, Physics Building  
 Course Instructor: Professor Jen Schwarz  
 Course Instructor Office: PB229a  
 Course Instructor Phone Number: 607-342-0876  
 Course Instructor E-mail: phy101.fall2017@yahoo.com  
 Course Instructor Office Hours: Mondays 12PM-1PM, Wednesdays 4PM-5PM  
 Course Website: jmschwarztheorygroup.org/phy101/  
 Course Administrator: Patricia Whitmore, PB111, pawhitmo@syr.edu  
 Course TAs: Abhilash Yallappa Dombara (ayallapp@syr.edu), Kyungeun Kim (kkim10@syr.edu),  
 Kenneth Ratliff (krratlif@syr.edu), Hangyi “Patrick” Wu (hwu107@syr.edu)

## Professor Schwarz’s Top 7 Reasons to Take PHY101

The following list was inspired by comedian David Letterman’s Top Ten List, which has since become extinct with Letterman’s retirement. Since I do not have a staff of writers backing me, I decided to stop at seven items. Perhaps all of you can fill in the rest.

- (7) So you can tell your friends if the scene from *Breaking Bad* where a confiscated laptop locked up in a police station can have its potentially incriminating hard drive erased by an electromagnet sitting in a truck parked outside is actually plausible.
- (6) So when you are in a room crowded with people and want to create some space between yourself and those surrounding you, you can easily start talking about acceleration, energy, stirling engines, and other physics concepts and watch the retreat happen.
- (5) So you can watch your instructor potentially bash their nose in, lay on a bed of nails, crash into class in a rocket car, and perform many other daredevil stunts.
- (4) So you can answer the question, How many physicists does it take to change a lightbulb? and many other related (and not so related) questions.
- (3) For those of you who want to become doctors, you want to do well on the MCATs....don’t you?
- (2) Physics makes things such as computers and cell phones possible and, therefore apps such as Snapchat, Twitter, and Poshmark possible as well.
- (1) If you are ever in a sticky situation, like Matt Damon was in *The Martian*, you will be able to “science the crap out of this” to get out of it. Problem-solving is a universal skill needed in life. Physicists are expert problem solvers.

On a more serious note, the goal in this course is for you to learn something essential about how our “world” works in terms of a few fundamental laws. Note that world is in quotation marks because we will sometimes abstract away some of the intricacies of the actual world and play with an idealized world, i.e. accuracy is usurped by simplicity. So, you will learn about the basic objects of which the world is made, what rules govern their behavior, and how are the parts related to one another. This process will take us through some key conceptual issues in mechanics, electricity and magnetism, and thermal physics. This journey will not only help you build your scientific understanding of the world around you, it will help you hone the skills necessary for critical thinking and problem solving

in general. And we all love to solve problems, don't we! :)

No prior knowledge of physics is required, but some prior knowledge of elementary algebra and trigonometry will be useful.

Finally, PHY101 is on the Basic List in Natural Sciences and Mathematics of the Liberal Arts Core, and satisfies the requirement for a course with a laboratory.

## Textbook

The required textbook for the course is a book with the very original title *Physics*, Third Edition, by Giambattista, Richardson, and Richardson. It has the image of a gymnast on the cover. All of the homework will be assigned from the questions in the back of each chapter so it would be in your best interest to have easy access to a copy. Also, as I lecture, I will list the relevant chapters since most of my lectures will draw on inspiration from reading this book.

If you purchased an access code from the campus store or would like to purchase the ebook directly, you can go to: <http://connect.mheducation.com/class/j-schwarz-schwarz-fall-2017> and click on register now.

## Clickers

To fully participate in lectures you must get an electronic clicker (Turning Technologies ResponseCard RF LCD). They are available at the SU Bookstore for \$ 59.99, bundled together with 4 year license that you may need if you take any other class in which the clickers will be used. If you already have a clicker, or get an old one, you can purchase 1 or 4 year licenses separately.

The lecture hall is wired to receive signals from any seat. *Your responses will be recorded and used to assign your participation grade. Each clicker has a unique Device ID (see the back of the clicker), which you will register with your name on the course website.* Please be aware that this is different than registration at the manufacturer's web page.

## Rationale Behind Lab Fee

To support the laboratory, you have been charged a course fee. This fee helps pay for (i) handouts and lab manuals which are distributed to you, and (ii) supplies, small pieces of apparatus, and maintenance for the laboratory equipment. Thanks!

## Grading

**Grades will be calculated based on your scores on various course activities in the following proportions: In-class exam 1: 15 percent; In-class exam 2: 15 percent; Final exam: 30 percent; Homework: 15 percent; Labs: 15 percent, Participation: 10 percent.**

Your course grade will be determined from your total score at the end of the semester. Again, while no late homework or lab reports will be accepted, the lowest homework assignment grade and the lowest lab report grade will be dropped. And again, anyone missing more than three lab grades will receive a lab score of zero. With regards to participation, along as you answer approximately 80 % of the clickers questions, you will receive full credit.

You will be able to access your grades throughout the semester on Blackboard.

## Lectures

We will meet twice a week in Stolkin (except for the weeks of Labor Day and Thanksgiving). Attending these lectures is important. Since I write the exams, attending the lectures helps you get into the mind of Professor Schwarz so that you will be much better prepared for the exams. Another reason is that your answers to clicker questions during each lecture will be factored into your participation grade. A third reason is that the book goes in depth on many topics. I will direct you to the things you should focus on in the book, i.e. I will make your life easier by guiding you through the book.

*Given that there are almost 300 students in the class, talking or distracting other students in any other way during the lectures in Stolkin will not be tolerated. Violators will be asked to leave the lecture hall and their course grade will be lowered.*

## Homework

There will be 10 homework assignments during the course. The assignments will be posted on the course website. Attending lectures will help you complete the homework since I will be taking you through practice problems in lecture. Homework will generally be due on Mondays right before the beginning of class, with the exception of the first homework assignment on Chapter 1. Boxes will be available at the front of Stolkin to turn it in. Each box will list a TA name. Please learn your TAs name very soon so that you can place your homework in the appropriate box.

No late homework will be accepted for any reason. Homework submitted after the deadline will receive zero points. Your lowest homework score will be dropped. Please do not wait until the last minute to start the homework. See your TA or visit the Physics Clinic well before the homework is due if you are having problems.

I encourage you to find other classmates to study with. Working with friends can be very helpful in learning a new subject. However, the preparation of the homework assignment must be individual work. There is a difference between discussing the work and merely copying someone else's work.

## Labs

Most weeks will have a lab session in addition to the two lectures. You will have the opportunity to apply your knowledge to a set of experiments, as well as ask your TA about any difficult concepts encountered in class or in your homework. At the end of each week's lab you will also hand in answers to a few questions based on the lab activity of that week. It will be graded as well. Like homework, no late labs will be accepted but your lowest lab grade will be dropped. Also, anyone missing more than three lab grades will receive a lab score of zero.

*Labs will be begin on the third week of classes—the week of September 10.*

## Exams

There will be three in-class exams (September 27, October 30, and November 29). No make-up in-class exams will be given. Instead, your lowest in-class exam score will be dropped.

The final exam for the course will be held on Thursday, December 14, 2017 from 5:15 PM to 7:15 PM. It cannot be missed. There will be no make up final.

All material taught in this class, including lectures, labs, homework, clicker questions, and lecture demonstrations is subject to be covered on the in-class exams and the final exam.

As for exam protocol, seats will be assigned and posted in the lobby of Stolkin Auditorium before each exam. I.D.'s may be checked, so please bring your SU I.D. card. During exams you are not allowed to wear headphones, or allowed to communicate with anyone in the classroom except for the course instructors and exam proctors. Cell phones must remain off at all times during exams. All questions concerning the grading of exams should be referred to your TA.

## General Tips

**Set aside time to study** Please set aside anywhere from 4-6 hours a week outside of lectures and labs for studying. Most lectures will build on previous material, so it is important not to fall behind.

**Attend the lectures** I will be exposing you to new concepts throughout the course. They are not always simple. While the book is rather clear, I will relate the new concepts to more familiar ones when possible. These connections are important and will serve to unify the course.

**Not only attend, but actively participate in lecture and lab** Ask questions, ask questions, ask questions. Need I say more?

**Do the homework** Lectures will help set the stage, but only by answering questions and doing the problems effectively does the deep understanding arrive! Get help early and often.

## Physics Clinic

The SU Physics clinic, located at PB112, is a place to ask your pressing physics questions. The Physics Clinic hours are Mon-Thu 9am-9pm, Fri 9am-6pm, and is staffed by a teaching assistant. See: <http://web.physics.syr.edu/syllabi/clinic-pdfs/physicsclinicschedule.pdf> for the schedule. Each PHY101 TA will be at the Physics Clinic two hours a week. You can visit your TA there at that time, or visit other TAs teaching other courses but can definitely help you with PHY101 at all operating hours. It is a great resource. Please use it.

## Academic Integrity

Syracuse University's academic integrity policy reflects the high value that we, as a university community, place on honesty in academic work. The policy defines our expectations for academic honesty and holds students accountable for the integrity of all work they submit. Students should understand that it is their responsibility to learn about course-specific expectations, as well as about university-wide academic integrity expectations. The university policy governs appropriate citation and use of sources, the integrity of work submitted in exams and assignments, and the veracity of

signatures on attendance sheets and other verification of participation in class activities. The policy also prohibits students from submitting the same written work in more than one class without receiving written authorization in advance from both instructors. The presumptive penalty for a first instance of academic dishonesty by an undergraduate student is course failure, accompanied by a transcript notation indicating that the failure resulted from a violation of academic integrity policy. The presumptive penalty for a first instance of academic dishonesty by a graduate student is suspension or expulsion. SU students are required to read an online summary of the university's academic integrity expectations and provide an electronic signature agreeing to abide by them twice a year during pre-term check-in on MySlice. For more information and the complete policy, see <http://academicintegrity.syr.edu>.

## **Disability Statement**

If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), 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. <http://disabilityservices.syr.edu/>.

## **SU Religious Observances Policy**

The 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 holydays 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/My Religious Observances from the first day of class until the end of the second week of class.

## **Lecture/Lab Etiquette**

Please

(1) arrange to come to lecture on time and stay until the end; the slamming of the auditorium doors is very annoying to your classmates,

(2) *Given that there are almost 300 students in the lecture, talking or distracting other students in any other way during the lectures in Stolkin will not be tolerated. Violators will be asked to leave the lecture hall and their course grade will be lowered.* Please note that these two sentences occur earlier in the syllabus to emphasize their importance.

(3) do not catch Pidgeys or shop on Poshmark in lecture or lab,

(4) do not use your cellphones for anything else, either.