Course Syllabus
PHYS 101
Principles of Physics I

General Information

Instructor
Chris Cothran
Regents Hall, room 122
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Office hours: MTWR 1:00-2:00pm

Description
This is the first semester of a calculus-based introduction to physics, particularly suited to the needs of premed students and science majors. Potential physics majors should consider the PHYS 151/152 offering from the Physics Department offered in the Fall/Spring. The overall goal of the course is to introduce the fundamental ideas that form the foundation of physics, and to show that this framework of ideas can be used to explain the behavior of a wide variety of complex physical systems.

The course will cover the traditional introductory topics, including kinematics, Newton's Laws, momentum, energy, rotational dynamics, gravitation, oscillations, fluids, and thermodynamics.

This syllabus describes the course offered during the first 2019 summer session, running from June 3 to July 5.

Prerequisites
You must have completed, or be currently enrolled in, Calculus I. Mastery of high school algebra, geometry, and trigonometry is expected.

Textbook
Physics for Scientists and Engineers: A Strategic Approach with Modern Physics, Fourth Edition by Randall Knight

A modified MasteringPhysics subscription is also required. The textbook and subscription is offered as a bundle by the University bookstore. Note that you *must* purchase a "modified" MasteringPhysics activation code rather than a traditional MasteringPhysics activation code.

Other resources
Canvas (`http://canvas.georgetown.edu`) will be used to manage distribution of all course content.

Lecture

Lecture will be held every day of the week MTWRF from 8:30am to 10:00am in room 502, Reiss Science Building.

The lecture period will be comprised of a combination of traditional lecture and active student participation. Student involvement will include small group collaborative work to improve conceptual understanding and build problem solving skills.

You are expected to come prepared to participate in class. At minimum, this means you have completed the assigned reading.

Part of your final grade is determined by your attendance and participation in lecture.

Recitation

You will meet twice a week for recitation, in the same room as lecture. There are two sections available: MW 10:15am to 11:15am and TR 10:15am to 11:15am.

Recitation focuses on further development of your quantitative problem solving skills. The work you do in these sessions is for practice only and will not be collected for a grade. You are expected to work collaboratively in small groups. An instructor and/or teaching assistant will be present to guide your thinking should you get stuck.

There are graded recitation homework assignments. You must explain or show the reasoning you used to solve each problem; just having the right answer is not enough. Homework for MW recitations are due the following M, and for TR the following T. The due date for the last week of recitation is in class on Fri.

Homework

The online *modified* MasteringPhysics system will be used for homework problems. You need a registration access number to use the system.

All homework due dates are listed in the online MasteringPhysics schedule.

Laboratory

The laboratory component is a separate course, PHYS 103. See the syllabus for that course for further information.

Exams

There are three equally weighted in-class exams scheduled as follows:

Exam	Time and date
1	8:30–10:00am Friday 6/14/2019
2	8:30–10:00am Monday 6/24/2019
3	8:30–10:00am Friday 7/5/2018

Grading

The following weighting is used to compute your final numerical grade:

Exam 1	25%
Exam 2	25%
Exam 3	25%
MasteringPhysics homework	12%
Recitation homework	11%
Lecture participation and attendance	2%

Your numerical grade (not rounded) is translated into a letter grade according to:

A range	$\geq 90\%$
B range	$\geq 80\%$
C range	$\geq 70\%$
D range	$\geq 60\%$
F	$< 60\%$

The + and – letter grade distinctions fall within 2% of the boundaries listed above; *i.e.*, an A– will be assigned to a numerical grade greater than or equal to 90% and less than 92%, etc.

Policies

Summer commitment
This course is your highest priority. Completing this course in five weeks requires an extreme level of dedication. No accommodation will be granted if you choose to miss class *e.g.* for vacation or family gatherings: you are responsible for completing all assignments on time.

Rescheduling exams and assignment due dates
A request to reschedule an exam will be considered ONLY for the most extreme circumstances (*e.g.*, severe illness, death in the family, legal obligation, religious holidays, etc). Likewise for assignment due dates. It is your responsibility to notify the instructor *in advance*.

Late assignments
To encourage you to complete all work, late assignments will be accepted but penalized to no less than half credit.

Collaborative work
You will be working collaboratively with other students in this course. You are encouraged to discuss assignments with your fellow students and with the instructors and TAs, but you should first try them on your own. This is essential for you to learn, as it will allow you to organize your thoughts and identify areas of difficulty.

Please keep in mind, however, that you must turn in your own work. If two students turn in nearly identical solutions, neither will get credit. Copying someone else's work without understanding it is not only a violation of the Honor System (`http://honorcouncil.georgetown.edu`), but also a way to guarantee poor performance on exams.

Sexual misconduct
Georgetown University and its faculty are committed to supporting survivors of sexual misconduct, including relationship violence, sexual harassment and sexual assault. University policy requires faculty members to report any disclosures about sexual misconduct to the Title IX Coordinator, whose role is to coordinate the University's response to sexual misconduct. Georgetown has a number of fully confidential professional resources who can provide support and assistance to survivors of sexual assault and other forms of sexual misconduct. These resources include:

Jen Schweer, MA, LPC
Associate Director of Health Education Services for Sexual Assault Response and Prevention
(202) 687-0323
jls242@georgetown.edu

Erica Shirley
Trauma Specialist, Counseling and Psychiatric Services (CAPS)
(202) 687-6985
els54@georgetown.edu

More information about campus resources and reporting sexual misconduct can be found at: `http://sexualassault.georgetown.edu`.

Schedule

Date	Lecture	Reading assignment	Recitation
June 3	Introduction, motion	Ch. 1	motion diagrams
4	Kinematics, vectors	Ch. 2, 3	motion diagrams
5	Projectile motion, forces intro	Ch. 4	kinematics
6	Newton's Laws	Ch. 5	kinematics
7	1D dynamics	Ch. 6	—
10	Newton's 3rd Law	Ch. 7	statics
11	2D dynamics	Ch. 8	statics
12	Work and kinetic energy	Ch. 9	dynamics
13	Potential energy	—	dynamics
14	**EXAM 1**	—	—
17	Energy conservation	Ch. 10	energy
18	Impulse and momentum	Ch. 11	energy
19	Rotational motion	Ch. 12.1–12.5	momentum/rotations
20	Rotational dynamics	Ch. 12.5–12.8	momentum/rotations
21	Angular momentum	Ch. 12.9–12.11	—
24	**EXAM 2**	—	—
25	Gravity	Ch. 13	gravity
26	Fluids	Ch. 14	gravity
27	Oscillations	Ch. 15	fluids/oscillations
28	Phases of matter	Ch. 18	—
July 1	First law of thermodynamics	Ch. 19	fluids/oscillations
2	Micro/macro connection	Ch. 20	thermodynamics
3	Engines	Ch. 21	thermodynamics
4	**HOLIDAY**	—	—
5	**EXAM 3**	—	—