

PHY101: General Physics I

Fall 2021, 4 credits

Section 001: MWF 9:15-10:15AM

Section 002: MWF 10:30-11:30AM

Cousins 236

Prerequisite: Advanced Functions - MAT130

Corequisite: Intro Physics Lab (PHY 101L)

Instructor: Dr. Mariel Meier

Office: Cousins 106

Phone: 404-364-8339

Email: mmeier@Oglethorpe.edu

Office hours: M 2:00-4:00PM, Th 9-11AM (But I have an open-door policy and am generally available when not in class). If you would like to schedule virtual office hours, please email.

Supplemental Instructors: Each section of the course will have a dedicated Supplemental Instructor. The Supplemental Instructors are there to provide you Socratic guidance during problem solving sessions – they are not there just to give you the answers! This is a time to come and review problems from class or from the homework. Please keep in mind that the SIs are there to guide and support you and your studying, they are **not** there to give you the answers to the homework. Any student who tries to pressure the SIs to give them inappropriate assistance will be reported to the honor council and banned from future SI sessions.

The SIs this semester are:

Section 001 – Nikki Wells

Section 002 – Brianna Daniels

The SIs will have a “special” set of problems that they will cover during 4 office hour sessions each week. Attendance at one of these sessions will earn you up to 3 points of extra credit on that week’s homework assignment (points don’t stack – you get a max of 3 points per assignment!).

Textbook: *University Physics for the Life Sciences 1st ed.* by Knight. (There are many options for how you obtain the textbook and MasteringPhysics access. For questions about this, please email me or contact the bookstore directly. The cheapest way is just to purchase Modified MasteringPhysics access through our course Canvas page, which will also provide you with an eText).

Additional Materials: Please obtain a scientific calculator for this course. You will not be allowed to use your cell phone as a calculator during exams. It is expected that all students will have a cellphone in class. If you do not have a cellphone, please inform me so that alternate arrangements can be made.

Modified MasteringPhysics Access: As stated above, MasteringPhysics is required for this course. MasteringPhysics can be accessed directly from our Canvas page, do not go to the MasteringPhysics website. You can do a 2-week trial if you need to wait for financial services or are unsure if you will remain in the course.

PHY101 and the “H” Designation This course may be converted into an Honors course if a student and faculty member agree on work to be completed to change a “regular” course into an “Honors” course, *and* if the course is approved during

the first few weeks of the semester by both the professor of the course and the Honors Committee. Generally, additional work required for honors credit will allow a student to demonstrate a reasonably high degree of achievement in independent research, creative and/or analytical/critical thinking, or successful integration of theory into practice. One or any combination of these elements, successfully demonstrated in work not required of the regular class members, will qualify as a means to “honorize” course content. Complete and submit the “Honors Credit Conversion Form” provided for this purpose by visiting the Honors Program website: <http://oglethorpe.edu/academics/honors-program/>. A course may not be converted to an “H” designation after the end of the third week of the semester.

Options for converting PHY101 into an “H” designation include incorporating calculus into your understanding of the physics or taking a more in-depth look at a specific application of physics in biology.

LEARNING OBJECTIVES OF THE COURSE

There are three primary objectives for this course. All activities for the course are designed to support these objectives.

- Develop a conceptual understanding of physics models that are applied to biological systems.
- Develop the ability to create pictorial and mathematical models of systems to predict the behavior and measurable properties of those systems.
- Develop mathematics confidence and quantitative reasoning skills.

The content for this course is divided up into five units. The first three units will develop fundamental physics concepts that are considered universal. We will then apply those concepts to understand two types of systems – fluids and gases.

COURSE REQUIREMENTS

1. *Reading and Pre-class Activities* – Before each class (except for review and exam days) you will have a section of the textbook assigned to read and a Mastering Physics activity to complete, which may include watching videos, working through the tutorials, and solving problems. The time you should expect to spend on these activities each day is approximately 1 hour. These activities will be graded for **COMPLETENESS** and not **CORRECTNESS**. **These assignments will be due by 9:00 PM the day before class (generally Sunday, Tuesday, and Thursday nights).**
2. *In-class Activities and Attendance* – Be an active participant in class. Asking and answering questions is an integral part of learning. Participating in classroom activities will help you understand the material and be directly reflected in the course exams. I will take attendance each class. I do not track, nor want to know about, your reason for being absent. You may have 6 absences from the course for any reason (sports, illness, sleeping-in). Each additional absence will result in a 10-point deduction to the final course grade. Arriving to class more than 10 minutes late will be considered an absence. *Obviously, we live in unique times. In the event of a mandated quarantine that forces you to miss class I will give you the opportunity to meet with either me or an SI via Zoom to review the class notes. If you attend these make-up sessions, you will not be considered absent.*
3. *Mastering Physics Exercise Sets* – Exercise will be assigned on Mastering Physics (accessed through Canvas). These exercise sets will consist of conceptual questions, problems, videos and tutorials that will give you an opportunity to practice applying the concepts discussed in class. You will be given 3 attempts at each problem,

with a small reduction in score for each attempt. **Exercise sets are due by 11:59 PM** on the due date specified on the course calendar and on Canvas. Exercise sets are expected to take you approximately 2 hours to complete. If you find that you are spending significantly more time on them, please reach out to me to discuss ways to improve your efficiency.

4. *Problem Sets* – Problem sets will require you to apply content knowledge from across all chapters (rather than just the chapter we are currently working on). Solutions to these problems will be evaluated using the provided problem-solving rubric (unless otherwise indicated) and will be evaluated both for your physics reasoning and your problem-solving skills. **Problem sets are due at the beginning of class** on the due date specified on the course calendar and on Canvas. Every effort will be made to return problem sets within two class meetings and solutions will be provided on Canvas. It is preferred that you submit your solutions on paper, however there will be the option to submit electronically.
5. *Midterm Exams* – There will be three midterm exams, each focused on a single unit of the course. The midterm exams will be mixed format with some short answer and some problem solving. You may have up to 2 hours to complete each midterm exam, and you may take it at any time between 8AM and 1PM on the exam day. Tentative exam dates are listed on the following schedule. I will notify you in class if any changes are necessary. There will be no make-up exams, except in extraordinary circumstances, to be discussed with me ahead of time if at all possible. In the final grade calculations for the course I will weight your midterm exams – your lowest exam will count as 20% of the total midterm exam grade; your second lowest will be 35%; your highest midterm exam grade will count as 45% of the total midterm exam component of the course grade. Any student scoring below a C- on the first exam will be expected to meet with me one-on-one to discuss study strategies and test preparation techniques.
6. *Final Exam* – The final exam will be cumulative with a focus on the final two units of the semester. The final will be completed during the regularly scheduled exam period (Section 001: Wednesday December 8^h at 8AM; Section 002: Friday December 10th at 8:00AM).

COURSE POLICIES

Technology in the classroom: Cellphones should be kept on the desk in silent mode. We will be using phones for our in-class polling. Students observed texting or using their phones for non-course related purposes will be asked to stow their phone for the remainder of the class. Laptops and tablets should not be used in class except when I have specified that we will need them for an activity, or if you have asked for permission to take electronic notes. If you use an eText and need access to the textbook during class, please inform me of this. If you are observed to be using your laptop or tablet for non-course related purposes, you will be asked to stow the device. If you have a documented reason for using technology in the classroom, please inform me. If you are reprimanded twice in one class period for improper use of technology, you will be marked absent for that class.

Assignment due dates: All assignments are due on the date specified on the syllabus and/or on Canvas. Late assignments will not be accepted unless the extended due date is discussed and agreed upon **before the original due date**. If you will be absent on a day that an assignment is due in class, you must arrange to turn in the assignment before the start of that class period.

Dropping the Course: The course may be dropped with a grade of W through Monday, October 25th (provided that the student's work to that point has been of passing quality). After this date the grade of W will be assigned only in the case of withdrawal from the University or prolonged illness.

Pivot to Remote Learning: It is my hope that we can make it through the semester entirely in-person. However, I recognize that the University may decide that we must move to remote learning to ensure the safety of our students, faculty and staff. In that situation, as little as possible will change about the course. We will continue to meet synchronously via Zoom. Classes will not be recorded and you will be expected to attend. I will use the Zoom whiteboard just like I would a whiteboard in class, and you will be put into breakout rooms for problem solving sessions. Problem sets will be submitted online – please make sure you have a way to scan and upload your work before the semester begins. Exams will be taken in a synchronous Zoom meeting.

EXPECTATIONS

Students should be prepared to question, learn and complete assignments in a timely and professional manner. For a four-credit hour course such as this, you should expect to spend **at least 8-12 hours per week** on the coursework, including attending class, reading the textbook, working homework problems, and studying for exams. Students are expected to be courteous and respectful to the instructor and fellow students in all written or verbal communications. In return the instructor will work to provide a respect filled environment in which every student can learn. The instructor will also give students timely and professional feedback (including graded assignments) and assistance in their learning.

There is a zero-tolerance policy for any form of academic dishonesty in this course. Disciplinary action will be taken against any student found guilty of academic dishonesty such as cheating or plagiarism. **If your words match those of others, I will assume you copied rather than composing the answers yourself.** The penalty for being dishonest in this way is far greater than simply getting a wrong answer. Those committing academic dishonesty will be subject to disciplinary action up to and including failing the assignment, failing the course, and/or expulsion from the course or college.

Academic Honesty: Persons who come to Oglethorpe University for work and study join a community that is committed to high standards of academic honesty. The honor code contains the responsibilities we accept by becoming members of the community and the procedures we will follow should our commitment to honesty be questioned.

The students, faculty and staff of Oglethorpe University expect each other to act with integrity in the academic endeavor they share. Members of the faculty expect that students complete work honestly and act toward them in ways consistent with that expectation. Students are expected to behave honorably in their academic work and are expected to insist on honest behavior from their peers.

Oglethorpe welcomes all who accept our principles of honest behavior. We believe that this code will enrich our years at the University and allow us to practice living in earnest the honorable, self-governed lives required of society's respected leaders.

Our honor code is an academic one. The code proscribes cheating in general terms and also in any of its several specialized sub-forms (including but not limited to plagiarism, lying, stealing and interacting fraudulently or disingenuously with the honor council). The Code defines cheating as "the umbrella under which all academic malfeasance falls. Cheating is any willful activity involving the use of deceit or fraud in order to attempt to secure an unfair academic advantage for oneself or others or to attempt to cause an unfair academic disadvantage to

others. Cheating deprives persons of the opportunity for a fair and reasonable assessment of their own work and/or a fair comparative assessment between and among the work produced by members of a group. More broadly, cheating undermines our community's confidence in the honorable state to which we aspire."

The honor code applies to all behavior related to the academic enterprise. Thus, it extends beyond the boundaries of particular courses and classrooms *per se*, and yet it does not extend out of the academic realm into the purely social one.

Examples of cheating include but are not limited to:

- 1.1 The unauthorized possession or use of notes, texts, electronic devices (including, for example, tablets, computers and smartphones), online materials or other such unauthorized materials/devices in fulfillment of course requirements.
- 1.2 Copying another person's work or participation in such an effort.
- 1.3 An attempt or participation in an attempt to fulfill the requirements of a course with work other than one's original work for that course.
- 1.4 Forging or deliberately misrepresenting data or results. Submitting results of an experiment, at which one was not present or present for less than the full time, as one's own.
- 1.5 Obtaining or offering either for profit or free of charge materials one might submit (or has submitted) for academic credit. This includes uploading course materials to online sites devoted, in whole or in part, to aiding and abetting cheating under the guise of providing "study aids." There is no prohibition concerning uploading exemplars of one's work to one's personal website or to departmental, divisional, University or professional society websites for purposes of publicity, praise, examination or review by potential employers, graduate school admissions committees, etc.
- 1.6 Violating the specific directions concerning the operation of the honor code in relation to a particular assignment.
- 1.7 Making unauthorized copies of graded work for future distribution.
- 1.8 Claiming credit for a group project to which one did not contribute.
- 1.9 Plagiarism, which includes representing someone else's words, ideas, data or original research as one's own and in general failing to footnote or otherwise acknowledge the source of such work. One has the responsibility of avoiding plagiarism by taking adequate notes on reference materials (including material taken off the internet or other electronic sources) used in the preparation of reports, papers and other coursework.
- 1.10 Submitting one's own work for a course that was previously submitted for the same course, or another course, without proper citation.
- 1.11 Lying, such as: Lying about the reason for an absence to avoid a punitive attendance penalty or to receive an extension on an exam or on a paper's due date; fraudulently obtaining Petrel Points by leaving an event soon after registering one's attendance and without offering to surrender the associated Petrel Point, or by claiming fictitious attendance for oneself or another; forging or willfully being untruthful on documents related to the academic enterprise, such as on an application for an independent study or on a registration form.
- 1.12 Stealing, such as: Stealing another's work so that he/she may not submit it or so that work can be illicitly shared; stealing reserve or other materials from the library; stealing devices and materials (such as computers, calculators, textbooks, notebooks and software) used in whole or in part to support the academic enterprise.
- 1.13 Fraudulent interaction on the part of students with the honor council, such as: Willfully refusing to testify after having been duly summoned; failing to appear to testify (barring a *bona fide* last-minute emergency) after having been duly summoned; testifying untruthfully.

Students pledge that they have completed assignments honestly by attaching the following statement to each piece of work submitted in partial fulfillment of the requirements for a course taken for academic credit:

"I pledge that I have acted honorably." (Followed by the student's signature)

The honor code is in force for every student who is enrolled (either full- or part-time) in any of the academic programs of Oglethorpe University at any given time. All cases of suspected academic dishonesty will be handled in accordance with the provisions established in this code. The honor council has sole jurisdiction in matters of suspected academic dishonesty. Alternative ways of dealing with cases of suspected academic fraud are prohibited. In cases of alleged academic dishonesty on the part of students, the honor council is the final arbiter. Reference the current Oglethorpe University Bulletin for information concerning all aspects of the honor code.

QUESTIONS & CONCERNS

If at any time you feel that you are falling behind the material, please email me. There are many ways we can work together to help you better understand the concepts and improve your quantitative analysis skills. It is my goal to make the material as accessible as possible, while still addressing the learning goals of the course. I welcome and encourage feedback to make the class run as smoothly and efficiently as possible.

Counseling Services: Free and confidential counseling services are available on campus. Licensed counselors are here to provide a space where you can get support and guidance privately about whatever is on your mind. For more information see their website, e-mail counselingcenter@oglethorpe.edu, or text inquiries to 1 (470) 231-5836.

Respect for Diversity: It is my intent that students from all diverse backgrounds and perspectives be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength, and benefit. It is my intent to present materials and activities that are respectful of diversity: gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. In addition, if any of our class meetings conflict with your religious events, please let me know so that we can make arrangements for you. If you would feel more comfortable discussing your concerns about this course with an outside person, Dr. Charlie Baube is the division chair (cbaube@oglethorpe.edu).

GRADING POLICY

Grading scale:

A.....90-100	(A-....90-92)
B.....80-89	(B-....80-82, B+....87-89)
C.....70-79	(C-....70-72, C+....77-79)
D.....60-69	(D+....67-69)
F.....0-60	

Note that Incomplete (I) is given only under the rarest of circumstances. Refer to section 6.20.2 of the 2020-2021 Bulletin for a summary of requirements.

Due to inherent uncertainties in evaluating student work, course grades are rounded to 2 significant figures before determining final grade. That is an 82.4 would result in an assigned grade of B-, while an 82.5 will result in an assigned grade of B. **I will not consider grade change requests at the end of the semester** however I do reserve the right to consider student effort for those who are right at those boundaries between grades – that is, a student who ends with a 82.4 but has been actively attending SI sessions and office hours or emailing questions may find that they have earned a B when all is said and done. I will never abuse that right by *lowering* student grades arbitrarily.

Your grade will be computed as follows:

Pre-class Activities	5%
Mastering Physics Exercise Sets	10%
Problem Sets	30%

Midterm exams (unevenly weighted, see description above)	30%
Final Exam	25%

Course Schedule PHY101(These dates are tentative and subject to change)

Mondays		Wednesdays		Fridays	
8/30	1.1-1.3: Why Physics	9/1	1.4: Proportional Reasoning	9/3	2.1-2.3: Describing Motion Week 1 Exercise Set due
9/6	NO CLASS – Labor Day	9/8	2.4-2.5: Linear Motion Problem Set 1 due	9/10	2.6: Units & Sig Figs Week 2 Exercise Set due
9/13	3.1, 3.4-3.5: Motion Math Problem Set 2 due	9/15	3.6-3.7: Gravity’s Effect	9/17	Angular Math Review Week 3 Exercise Set due
9/20	7.1: Circular Motion Problem Set 3 due	9/22	7.3: Describing Rotation	9/24	Exam Review Week 4 Exercise Set due
9/27	Unit 1 Exam	9/29	4.1-4.5: Intro to Forces	10/1	4.6-4.8: Free-body Diagrams Week 5 Exercise Set due
10/4	5.1-5.2: Mass & Weight	10/6	5.3: Interactions with Surfaces	10/8	5.5: Springs Week 6 Exercise Set due
10/11	7.2: Centripetal Force Problem Set 4 due	10/13	6.1-6.2: Torque	10/15	7.4: Rotational Dynamics Week 7 Exercise Set due
10/18	NO CLASS – Fall Break	10/20	Exam Review Problem Set 5 due	10/22	Unit 2 Exam
10/25	10.1-10.2: Intro to Energy	10/27	10.3-10.4: Forces and Energy	10/29	10.5: Power and Efficiency Week 9 Exercise Set due
11/1	11.1-11.4: Potential Energy	11/3	12.1-12.4: Heat Problem Set 6 due	11/5	12.5: Heat Transfer Week 10 Exercise Set due
11/8	14.1-14.3: Entropy	11/10	Exam Review Problem Set 7 due	11/12	Unit 3 Exam
11/15	9.1-9.3: Intro to Fluids	11/17	5.4, 9.4: Fluid Weirdness	11/19	9.5-9.7: Fluid Dynamics Week 12 Exercise Set due
11/22	9.8: The Circulatory System Problem Set 8 due	11/24	NO CLASS 📺	11/26	NO CLASS 📺
11/29	12.6-12.7: Ideal Gas	12/1	13.1-13.4: Kinetic Theory	12/3	13.7: Diffusion Week 14 Exercise Set due
12/6	Final Exam Review Day Problem Set 9 due	12/8	Final Exam – Section 001	12/10	Final Exam – Section 002

Important Dates

September 3rd – last day to add or drop a course

September 6th – Labor Day

October 18-19 – Fall Break

October 25 - last day to withdraw

November 24-26 - Thanksgiving Break

December 7 - Last day of classes

December 8 8:00AM-11:00AM – Final Exam for Section 001

December 10 8:00 AM – 11:00 AM -Final Exam for Section 002