

PHY2053C-0201 – College Physics I (Honors)

Instructor – Aniket Bhattacharya

Office location PSB 452

Office Hours- M 1:15 PM – 2:15 PM, W 12:45 PM- 1:45 PM, or by Appointment.

Please contact through UCF Webcourses or email: aniket.bhattacharya@ucf.edu for appointments.

Course Information:

Term: FA 2023

Course Number & Section: PHY2053C-0201 Honors

Course Name: College Physics I

Credit 3 Hours

Class Meeting Days: M, W, F

Class Meeting Time: 2:30 AM – 3:20 AM Class Location: PSB 0336

Course Modality: Face-to-Face Instruction (P)

Please note that there is a mandatory separate discussion section PHY2053C-0211 (M 8:30 AM- 9-20 AM, MSB 0306) followed by the Laboratory component for this course that you need to attend and will have a total 20% (5% discussion + 15% Lab) weight towards your total score. You should make every attempt to attend all the discussion and the lab sections. If you miss any lab please contact your GTA or the lab supervisor as soon as possible.

Graduate Teaching Assistant: Antonio Margoless, email: an348519@ucf.edu

Lab supervisor: Dr. Justin Reyes, email: Justin.Reyes@ucf.edu

Justin Reyes is overall in charge of all the lab sections. You should communicate to him for a makeup lab.

Course Description:

PHY 2053 is the first of a two-semester sequence in introductory physics offered primarily for students majoring in the biological sciences, pre-health professions, and information technology. Emphasis is placed on understanding major principles, and mathematics is used to clarify concepts. Students must have a good working knowledge of algebra and trigonometry. This is also one of the UCF General Education Program (GEP) courses. Thus, you are also expected to develop a broader perspective in relating your knowledge to other disciplines. The course is quite intense and will require you to invest considerable time in study and problem-solving.

Objectives:

Primary Objective: The major objectives of this course are for students to learn the fundamental principles of mechanics, develop solid and systematic problem-solving skills, and lay the foundations for further studies in science, pre-health professions, and engineering.

Secondary Objectives: PHY2053 is one of the UCF GEP courses. The purposes of the GEP courses are to introduce students to a broad range of human knowledge and intellectual pursuits, to equip them with the analytic and expressive skills required to engage in those pursuits, to develop their ability to think critically, and to prepare them for life-long learning. The GEP curriculum provides students with the intellectual, ethical, and aesthetic foundations necessary to make informed choices, accept the responsibilities of working and living in a rapidly changing world, and to lead a productive and satisfying life.

Prerequisites:

Prerequisites are MAC 1105 and MAC 1114. This includes but is not limited to algebraic expressions, higher order polynomials, exponential and logarithmic functions, circle arc length, circular functions, identities, inverse functions, function of angles, and triangle solving.

Text: OpenStax College PHYSICS, 2016 edition (required)

Print ISBN 1938168003 Digital ISBN 1947172018

Authors: Paul Peter Urone, Roger Hinrichs, Kim Dirks, and Manjula Sharma

www.OpenStax.org/details/college-physics

The free online textbook will be available through webcourse. If you prefer, you can also get a print version at a very low cost. Your book is available in web view and PDF for free.

Supplementary Materials: – In addition to this textbook, I will share additional slides and problems from my repository through webcourses. I will also keep copies of additional textbooks in the library reserve or the physics office.



Student Learning Outcomes:

By completing this course, you should be able to understand how simple laws of physics can explain a variety of physical phenomena occurring in every-day-life, such as the motion of a soccer ball, rockets, why roads are banked while in and out of the highway, rides in parks, etc. You will be able to translate a situation into a mathematical formula and learn how to solve it.

Course Activities:

As listed, the course will be taught in the Face-to-face (P) mode. The lecture slides, handouts, and homework problems will be posted every week. To remain up-to-date and do well, you must visit the course Webpage at least once daily. You will benefit by reviewing the lecture materials before attending the lectures, where we will work out end-of-the-chapter problems. You can always come to my office with any concerns and issues. Transparent and frequent communications are essential for the success of the course- both for the students and the instructor. I am a flexible and receptive person and open to criticism.

Homework (10 %): I will assign 4-5 homework problems from each chapter. Homework will be due on a lecture day. It must be submitted during the lecture period unless prior arrangement is made. You are encouraged to try additional end-of-the-chapter problems independently and seek my help as and if necessary.

Quizzes (10 %): There will be 6-8 quizzes. The lowest quiz will be dropped.

Tests (40 %): There will be three tests- (each 15%), approximately one test per three chapters. The tests will be given during the lecture period and will consist of 4-5 questions.

Comprehensive Final (20 %): The comprehensive final exam will take place per UCF final exam schedule (<https://exams.sdes.ucf.edu/2023/spring>) during the final exam week.

Extra incentive: The appropriate weight of the final exam will replace the lowest test score, if applicable. However, please note that skipping a test (to be replaced by the final) is not an option.

Discussion section (5%) – There is a separate discussion section for this course. Activities during discussion (participation, quiz, etc.) will constitute 5% of the total grade.

PHY2053 Lab (15%) – The mandatory lab component has a 15% weight for the total score to calculate your grade. The Lab and the discussion section both are run by the same graduate assistant.

Additional Information:

- You should have regular access to the internet and plan on logging into the webcourse to check uploads of lecture slides, lecture notes, and additional worked out problems, and to check the deadlines for homework, and test schedules.
- You should spend a couple of hours every day watching the slides and working through the worked-out problems independently before trying the assigned homework problems.
- I strongly encourage you to work out some problems of your own and discuss them with other students enrolled in this course.

Attendance/Participation:

Approximately 70% participation is necessary to do well in the course. Occasionally, I will take attendance. The course will be taught in a partially flipped mode. Lecture slides will be posted every week before the lectures. You will get benefitted by reviewing these materials before attending the lectures. During the lecture, we will work out problems similar to those assigned in homework and quizzes. These extra problems will prepare you better for the tests and the comprehensive final. Occasionally, there will be group activities that will benefit you to learn from someone else and help others to learn. Prior courses show a strong positive correlation between attending lectures and the test grade.

Make-up Exams and Assignments:

Please contact me before this 72-hour period is over if you have a grading dispute.

Per university policy, you are allowed to submit make-up work (or an equivalent, alternate assignment) for authorized university-sponsored activities, religious observances, or legal obligations (such as jury duty). If this participation conflicts with your course assignments, I will offer a reasonable opportunity for you to complete missed assignments and/or exams. The make-up assignment and grading scale will be equivalent to the missed assignment and its grading scale. In the case of authorized university activity, it is your responsibility to show me a signed copy of the Program Verification Form for which you will be absent, prior to the class in which the absence occurs. In any of these cases, please contact me ahead of time to notify me of upcoming needs. At the discretion of the instructor, the make-up may take any reasonable and appropriate form including, but not limited to the following: allowing a replacement exam, replacing the missed work with the same score as a later exam. All assignment and exam grades are final 72 hours after they have been given.

Assessment and Grading Procedures:

The following table shows the percentage weight distribution of each category's contribution to your final grade.

Homework	Quizzes	Discussion (*)	Tests	Final	Total
15%	10%	5%	45%	25%	100%

Please note that there is a separate discussion section PHY2053C-0211 for this course that you need to attend and will have a 5% weight towards your total score.

The following table shows the range of percentage score for a letter grade.

Letter Grade	A	A-	B+	B	B-	C+	C	D	F
Percentage score	> 90%	87%-90%	85%-87%	80%-85%	75%-80%	70%-75%	60%-70%	50%-60%	<50%

(*) Please note that there is a separate discussion section for this course

Course Schedule:

Examination schedules and coverage:

Please mark your calendar for the following test days:

Test1	September 18- lecture period (50 minutes)	Chapters 1, 2, 3
Test2	October 16- lecture period (50 minutes)	Chapters 4,5,6,
Test3	November 17- lecture period (50 minutes)	Chapters 8-10
Final	December 6, 2023, 1:00 PM – 3:50 PM	Chapters 1- 10

In addition, please visit the course schedule page for week-by-week approximate course progression and activities

Important Dates:

Classes begin: Monday, August 21, 2023

Late Registration on myUCF: Monday, August 21- Friday, August 25, 2023

Drop/swap deadline on myUCF: Friday, August 25, 2023, 11:59 PM

Last day of full refund: Friday, August 25, 2023, 11:59 PM

Add deadline on myUCF: Friday, August 25, 2023, 11:59 PM

Payment deadline: Friday, September 01, 2023

Withdrawal deadline: Friday, October 27, 2023, 11:59 PM

Grade forgiveness deadline: Saturday, December 02, 2023, 11:59 PM

Last lecture Friday Dec 01, 2023

Final exam: Wednesday, December 6, 2023, 1:00 PM – 3:50 PM

Holidays:

Thanksgiving Wednesday: November 22 – No Classes

Thanksgiving: Thursday Nov 23 – Saturday November 25 – No Classes

Veteran's Day: Friday November 10 – No Classes

Academic Integrity:

Students should familiarize themselves with [UCF's Rules of Conduct](#).

According to Section 1, "Academic Misconduct," students are prohibited from engaging in:

- Unauthorized assistance: Using or attempting to use unauthorized materials, information or study aids in any academic exercise unless is specifically authorized by the instructor of record. The
- unauthorized possession of examination or course-related material also constitutes cheating.
- Communication to another through written, visual, electronic, or oral means: The presentation of material that has not been studied or learned but rather was obtained through someone else's efforts and used as part of an examination, course assignment, or project.
- Commercial Use of Academic Material: Selling of course material to an extent person, student, and/or uploading course material to a third-party vendor without authorization or the express written permission of the university and the instructor. Course materials include but are not limited to class notes, Instructor's PowerPoints, course syllabi, tests, quizzes, labs, instruction sheets, homework, study guides, handouts, etc.
- Falsifying or misrepresenting the student's academic work.
- Plagiarism: Using or appropriating another's work without any indication of the source, thereby attempting to convey the impression that such work is the student's own.
- Multiple Submissions: Submitting the same academic work for credit more than once without the express written permission of the instructor.

Responses to Academic Dishonesty, Plagiarism, or Cheating

Students should also familiarize themselves with the procedures for academic misconduct in UCF's student handbook, [The Golden Rule](#). UCF faculty members are responsible for students' education and the value of a UCF degree, and so seek to prevent unethical behavior and respond to academic misconduct when necessary. Penalties can include a failing grade in an assignment or the course, suspension or expulsion from the university, and/or a "Z Designation" on a student's official transcript indicating academic dishonesty, where the final grade for this course will be preceded by the letter Z. For more information about the Z Designation, see <http://goldenrule.sdes.ucf.edu/zgrade> (<http://goldenrule.sdes.ucf.edu/zgrade>).

Course Accessibility Statement:

The University of Central Florida is committed to providing access and inclusion for all persons with disabilities. This syllabus is available in alternate formats upon request. Students with disabilities who need specific access in this course, such as accommodations, should contact the professor as soon as possible to discuss various access options. Students should also connect with [Student Accessibility Services](#) (Ferrell Commons, 7F, Room 185, sas@ucf.edu (<mailto:sas@ucf.edu>), phone (407) 823-2371). Through Student Accessibility Services, a Course Accessibility Letters may be created and sent to professors, which informs faculty of potential access and accommodations that might be reasonable.

Campus Safety Statement:

UCF is dedicated to keeping campus a safe place to learn, live, work, and play. It's important to remember that safety is a team effort. If you see something, say something. Please refer to the [campus safety page](#) for further information.

Copyright:

This course may contain copyright-protected materials such as audio or video clips, images, text materials, etc. These items are being used concerning the Fair Use doctrine to enhance the learning environment. Please do not copy, duplicate, download, or distribute these items. These materials are strictly reserved for this online classroom environment and for your use only. All copyright materials are credited to the copyright holder.

Third-Party Software and FERPA:

During this course you might have the opportunity to use public online services and/or software applications, sometimes called third-party software such as a blog or wiki. While some of these could be required assignments, you need not make any personally identifying information on a public site. Do not post or provide any private information about yourself or your classmates. Where appropriate, you may use a pseudonym or nickname. Some written assignments posted publicly may require personal reflection/comments. However, the assignments will not require you to disclose any personally identity-sensitive information. If you have any concerns about this, please contact your instructor.

Please visit next page for a tentative schedule for this course

Day/Week	Topics
Week1 Aug 21 – Aug25	Chapter 1: A brief historical survey, units, dimensions, scalars & vectors, vector algebra Aug 23 Ch 2.1 - 2.4 position, velocity, and acceleration vectors, average speed & velocity. kinematics in one dimension (1D) with constant acceleration
Week2 Aug 28 – Sep 01	Application of 1D kinematics, free fall, graphical analyses of velocity and acceleration Problem solving
Week3 Sep 04 – Sep 08	Kinematics in 2D: displacement, velocity, and acceleration vector Projectile motion, Problem solving
Week4 Sep 11 – Sep 15	Relative velocity in 1D and 2D, examples Sept 13 4.1-4.7 Newton's laws of motion, inertia, Types of forces
Week5 Sep 18 – Sep 22	Universal Law of Gravitation, Mass and weight Test-I: Sept 18 - Chapters 1, 2, 3 - duration 50 minutes
Week6 Sep 25 – Sep 29	The normal force, apparent weight, friction, Static and kinetic friction Application of Newton's Laws of motion: Problem solving
Week7 Oct 02 – Oct 06	Uniform circular motion, application, banked curve Satellites, weightlessness, geostationary orbits, Vertical circular motion, problem solving
Week8 Oct 09 – Oct 13	Definition of work, kinetic energy (KE) and potential energy (PE), Conservative forces, work-energy theorem, non-conservative forces, friction, dissipation, Power
Week9 Oct 16 – Oct 20	Impulse and momentum, Impulse-Momentum theorem, Conservation of linear momentum theorem, Collision in 1D & 2D; elastic and inelastic collisions, center of mass Test-II: Oct 16 - Chapters 4, 5, & 6 - duration 50 minutes
Week 10 Oct 23 – Oct 27	Rotational motion: angular displacement, velocity, angular velocity vector, rotational kinematics
Week 11 Oct 30 – Nov 03	Rotational and tangential acceleration, rolling motion torque, rigid-body in equilibrium, center of gravity
Week12 Nov 06-Nov 10	Newton's 2nd law for rotational motion, moment of inertia, Rotational work and Rotational KE, Angular momentum
Week13 Nov 13 - Nov 17	Oscillations and waves, simple harmonic motion, Hooke's law, Energy in SHM, the pendulum, damped SHM, driven SHM, resonance Test-III: Nov 17 - Chapters 7, 8, 9 - duration 50 minutes
Week14 Nov 20 – Nov 24	Elastic behavior of matter, stress and strain Nov 23 Thanksgiving holiday no lecture
Week15 Nov 27 – Dec 01	Final exam review
Week16 Dec 04	Comprehensive Final Exam: Chapters 1-10 Wednesday, December 6, 2023, 1:00 PM – 3:50 PM