PHY101 - 001: Elementary College Physics I

Course Syllabus

Spring, 2023 (4 Credits)

Instructor: Dr. Ata Suanda
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Zoom link: https://uncw.zoom.us/my/asuanda

Class meetings: T/Th 9:30 - 10:45 am (**F2F***)
Class location: Deloach Hall 212
Office Hours: Th 10:45 -12:00 pm
Office location: DL213

Course Description

This is the first semester of a two-semester algebra-based introduction to the fundamental principles of physics. Students will learn to describe the motion of the physical world, both in qualitative scientific language and quantitatively in the form of mathematical relationships. Topics will include kinematics, Newtonian statics and dynamics, conservation laws, oscillations, and mechanical waves. There will be **two 1-hr 15-min lecture sessions and one 2-hr laboratory session per week**. This course partially satisfies University Studies II: Approaches and Perspectives/Scientific Approaches to the Natural World.

1 Learning Goals

By the end of the course, students are expected to:

1. Demonstrate the ability to think critically and to use appropriate concepts to analyze problems or situations with fundamental physics principles.
2. Be knowledgeable of the equations governing various types of motion.
3. Be able to conduct laboratory experiments, analyze data, and synthesize results into a coherent narrative.
4. Demonstrate basic communication skills by working in groups on laboratory experiments and have thoughtful discussion and interpretation of data.

2 Course Logistics

Guidelines

This course is delivered in a synchronous **in-person face-to-face*** format. All students are expected to attend and participate in the **two 1-hr 15-min lecture sessions and one 2-hr laboratory sessions per week at the assigned day and time.** It is expected that students will be on-time and present during class time. You are responsible for reading and knowing the material covered in each lecture.

Software and online considerations

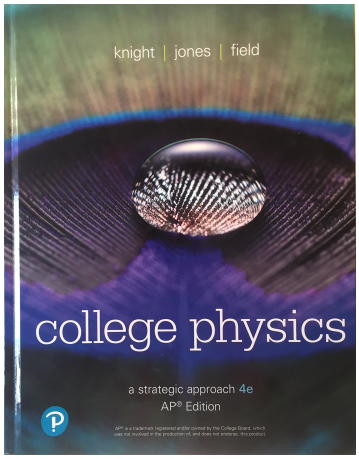
Canvas will be used to post assignments and videos. You must have access to and be comfortable with Canvas, Mastering Physics (see below), and Zoom on a suitable device (laptop, desktop or tablet). Class-wide communication is done through email and Canvas. If you have any concerns, difficulties or questions about their usage, please contact the instructor as soon as possible.

Textbook

The text for this class is:

- Knight, Field, and Jones (2014). *College Physics: a strategic approach*, 4th ed., Pearson

We will be accessing this text and associated online material through *Pearson Matering Physics*. This package is **required** and available for purchase at the UNCW bookstore or through Pearson directly (see instructions on Canvas). The package contains access to the *eText* of *College Physics*. Paper copies of the text may also be purchased for additional cost, but this is not required. By next class, you will need an active Pearson account that is linked to your Canvas account. Once linked, all the resources can be accessed from our Canvas course home page.



Prerequisites

- Undergraduate level College Algebra (MAT 111), Calculus (MAT 151), **or** Trigonometry (MAT 112).

3 Course Requirements

Attendance and participation

Although there is no official attendance taken (exception is for extra credit points, see below), you are expected to attend all lectures and laboratory sections. You must contact the instructor to inform of any excused absences or homework extension requests at least **one day prior** to the assignment due date.

Homework

Homework is an essential tool to learning physics. Each week, you will be assigned homework that is to be completed through the online links in Mastering Physics. **Homework must be completed by Sunday at 11:59 pm of each week**. Each student must complete and submit homework through their own Mastering portal. Expect to spend 1-3 hours a week completing the homework assignment. Additional time should be spent reading and studying from the textbook. If the instructor approves an extension, late homework will be accepted with no penalty. Without a pre-approved extension, late work is penalized by **1 point every day after it is due**.

Exams

There will be three 75 minute **in-person** exams throughout the semester and one cumulative final exam. The final is **Thursday, May 4, 8:00 - 11:00am**. The exams will consist of a mixture of multiple choice, definitions or conceptual questions plus selected problems similar to those covered in class and in the homework. You will be tested on your grasp of the concepts and ability to use these concepts to solve problems. Each student is allowed to use their own single-sided equation sheet during exams. No other materials are allowed. Cell phone usage is prohibited during exams, except for use as a calculator. If the class exam average is below 73, exams will be curved to an average score of 73. Curved scores will be reported on CANVAS. An applied curve will not result in a lowering of any student's scores.

Exams **must be taken in person** on the scheduled day. You are allowed to miss **one** in-class exam, in which case the two remaining in-class exams are used to determine your exam grade. If you have an extenuating circumstance and have to miss an exam but want it to count toward your grade, you must communicate this and schedule a make up exam with the instructor **no later** than three days prior to the exam. There will be no makeup exams without prior permission. A failed score is received if you miss a scheduled make-up exam.

Lab policy

Laboratory attendance and assignment completion is required for this course. This accounts for 10% of your final course grade. Your **Laboratory instructor** will communicate the scheduled Laboratory section and activities, policies and grading procedures for each section.

Extra credit

There is an opportunity to receive up-to 5 points of extra credit in PHY101 towards your final grade. These points may be earned through completion of weekly extra credit assignments in Mastering Physics and **randomized** attendance taken at the instructor's discretion.

Grading policy

Your final grade for this course will be based on the following proportional weights:

- **30%** Homework assignments (**by Sunday, 11:59 pm**)
- **35%** Three in-class exams
- **10%** Labs
- **25%** Final exam
- Up to additional +5 points of extra credit

Grading Scale

Your course grade is converted from the weighted 100-Point System to A$\pm$ System as follows:

A	≥ 90	**B-**	78 - 80	**D+**	66 - 68
A-	87 - 89	**C+**	75 - 77	**D**	63 - 65
B+	84 - 86	**C**	72 - 74	**D-**	60 - 62
B	81 - 83	**C-**	69 - 71	**F**	< 60

4 General course policies

COVID-19

For everyone's health and safety, this course will follow University guidelines and protocols concerning COVID-19. If you are physically sick, ill, or experience COVID-19 symptoms,**do not** attend class. Email **both** your instructor and UNCW coronavirus@uncw.edu, and contact the Student Health Center **(910) 962-3280**. If you are experiencing other hardship and difficulties impacting your learning, please talk to someone and do not suffer alone. The UNCW counselling center is available at DePaolo Hall, www.uncw.edu/counseling/about.html, **910-962-3746** or by email at CounselingCenter@uncw.edu.

Academic Integrity and Honesty

All members of the UNCW community are expected to follow the academic Honor Code. Please read the UNCW Honor Code carefully (as covered in the UNCW Student Handbookand available here: www.uncw.edu/odos/honorcode/). Academic dishonesty will not be tolerated.

Accommodation

The University of North Carolina Wilmington is committed to complying with all federal, state, and local requirements of nondiscrimination. UNCW supports the right of enrolled students to a full and equal educational opportunity and is committed to reasonable accommodations for individuals with documented disabilities or who are impacted by Title IX concerns. Students

with disabilities for whom accommodations may be necessary must be registered with, and provide notification through UNCW's Disability Resource Center (www.uncw.edu/disability). Once established, responsibility for disability-related accommodations and access is shared by DRC, faculty, and the student. Disability Resource Center: DePaolo Hall, Suite 1033; **910-962-7555**.

Non-discrimination

Individuals who wish to report any form of gender-based discrimination or sexual misconduct/harassment—and those requesting related accommodations—should contact UNCW's Title IX Office (www.uncw.edu/titleix). Students may also report incidents of misconduct to the faculty; however, be aware that faculty are mandatory reporters and are required by law to notify the Title IX office. If students wish to seek confidential resources without reporting an incident, three departments at UNCW are exempt from mandatory reporting requirements: CARE: Interpersonal Violence Prevention & Response, University Counseling Center, and Abrons Student Health Center.

Violence and Harrasment policy

Discrimination based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation is a violation of state and federal law and will not be tolerated. There is a zero-tolerance policy for any kind of violent or harassing behavior at UNCW. If you are experiencing an emergency of this type contact the police at **911** or UNCW CARE at **910-962-2273**. Resources for individuals concerned with a violent or harassing situation www.uncw.edu/noharm/resources/index.html.

Seahawk Respect

The UNCW Seahawk Respect Compact affirms our commitment to a civil community characterized by mutual respect. That Compact will soon be affixed to the wall of each classroom and can be accessed at www.uncw.edu/diversity/src.html. Individuals wanting more information about the Seahawk Respect Compact can contact the Office of Institutional Diversity and Inclusion, Alderman Hall, Suite 217 **910-962-7104**.

5 Weekly course schedule

The following lecture schedule is tentative and subject to change. In addition to this schedule, students are responsible for completing weekly homeworks.

Week	Date		KFJ Chapters and reading
1	01/12	Intro	Syllabus review, CH1.1 - 1.5 Preliminary material
2	01/17 01/19		CH 1.6 - 2.1 Uniform motion CH 2.2 - 2.7 Motion in 1D and free fall
3	01/24 01/26		CH 3.1 - 3.4 Using Vectors CH 3.5 - 3.6 Projectile motion
4	01/31 02/02		CH 3.7 Circular motion CH 4.1- 4.6 Forces and Newton's Laws
5	02/07 02/09	**Exam 1**	Exam 1 review CH 1 - CH 3
6	02/14 02/16		CH 4.7 - 5.4 Apparent weight and weightlessness CH 5.4 - 5.8 Drag, ropes and pulleys
7	02/21 02/23		CH 6.1 - 6.3 Circular motion dynamics CH 6.4 - 6.6 Orbits and Newton's law of gravity
8	02/28 03/02	**Exam 2**	Exam 2 review CH 4 - CH 6
9	03/07 03/09	Spring Break	No Class No Class
10	03/14 03/16		CH 7.1 - 7.4 Rotational motion and torque CH 7.4 - 7.8 Gravitational torque and center of gravity
11	03/21 03/23		CH 8.1 - 8.4 Static equilibrium and balance CH 8.5 - 8.8 Springs and Hooke's law
12	03/28 03/30		CH 9.1 - 9.4 Impulse and Momentum CH 9.4 - 9.7 Conservation of Momentum
13	04/04 04/06	**Exam 3**	CH 7 - CH 9 No Class
14	04/11 04/13		CH 10.1 - 10.5 Work and Energy CH 10.6 - 10.10 Conservation of energy
15	04/18 04/20		CH 11.1 - 11.4 Using energy CH 11.5 - 11.8 Heat Engines and entropy
16	04/25 04/27		Practice Final Review Extended Office hours

Final exam: **Thursday, May 4, 8:00 - 11:00am**