

# PHY101-002: Elementary College Physics I

## Course Syllabus

Fall, 2021

Instructor: Dr. Derek J. Grimes

E-mail: grimesdj@uncw.edu

**Zoom link: DocG's MeetingRoom**

Meeting ID: 825 9297 9135

Password: physics

**Final Exam:** 11:30am-2:30pm on 12/08/2021

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Class meetings: M/W/F 1:00 - 1:50 pm (ET)

Office Hours: M/W/F 2-3:00 pm (on Zoom)

## Course Description

This course is the first 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. Students are likely familiar with many of the topics and problems addressed herein. This course will expand on such experience and intuition using basic physical principles, like Newton's laws of motion. As a student, you are expected to actively engage with this material. There will be many resources made available beyond those *required* to pass this class. The more you put in, the more you will get in return.

## 1 Learning Goals

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

1. Have a broad understanding of kinematics, Newtonian statics and dynamics, gravitation, oscillations and mechanical waves.
2. Be knowledgeable of the basic equations governing the motion of objects and simple systems/collections of objects.
3. Be able to conduct laboratory experiments, analyze data, and synthesize results into a coherent narrative.
4. Know how to construct simple models, such as free body diagrams, to analyze physical systems and use them, along with fundamental physical principles, to predict evolution.

## 2 Course Logistics

### Guidelines

This course is delivered in-person, with three 1-hr lecture sessions and one 2-hr laboratory sessions per week. It is expected that students will be on-time and present during class time and *participate* in class discussions. You are responsible for reading and knowing the content covered in each lecture. **Canvas** will be used to post assignments and communicate with the class.

### Software

You must have access to and be comfortable with Canvas, and Zoom (including screen-share capability). If you have any concerns, difficulties or questions about their usage, please contact the instructor as soon as possible.

### Reference Books

The required textbook for this class is:

- Knight, Field, and Jones (2014). *College Physics: a strategic approach*, 4<sup>th</sup> ed., Pearson *available through UNCW Bookstore*

### Prerequisites

- Recommended: College Algebra (MAT 111)

## 3 Assignments and Grading

### Assignments

- Assignments will be announced in class and posted on Canvas.
- Homework assignments will be through the Pearson Mastering Physics web-site (link in Canvas) and include reading, online video review, essay questions, and calculations using equations discussed in class.
- Written assignments are to be submitted as a **single** document in .pdf or .doc format and due by **5 pm** on the due-date scheduled.
- Late assignments will be docked 10% per day after the due-date unless the instructor grants an extension.
- Requests for extensions must be made **1 full week** before the assignment is due.
- Students are welcome and encouraged to work together on homework assignments. However, each student must submit **their own** individual work in accordance with UNCW honor code policies (see below).
- Assistance with assignments is available during office hours. Please schedule an appointment ahead of time for homework help. If the office hours listed above do not work, you may request an alternate meeting time. Assistance is **NOT** available on the due-date of the assignment.

## Grading Policy

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

- **10pts** In-class Participation
  - **10pts** Laboratory Assignments\*
  - **15pts** Homework Assignments (equally weighted)
  - **15pts** Exam 1\*\*
  - **15pts** Exam 2
  - **15pts** Exam 3
  - **20pts** Comprehensive Final Exam on **Wed. 08 December 2021**
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- 100pts** Total

\*Laboratory Assignments: Students must complete **10 labs**, each worth **1pts**. One make-up lab will be offered to either replace a missed lab assignment or count as extra credit worth **1pts**.

\*\*Exams 1-3: The lowest score from Exams 1–3 will be dropped and the final course grade evaluated based on the remaining (85pts), **unless this negatively impacts a students overall course grade.**

## Grading Scale

Your course grade is converted from 100-Point System to A-F System using the following table:

<b>A</b>	$\geq 89.5$	<b>B</b>	<b>79.5 - 89.49</b>
<b>C</b>	<b>69.5 - 79.49</b>	<b>D</b>	<b>59.5 - 69.49</b>
<b>F</b>	$< 69.5$		

## 4 General course policies

### COVID-19

As of August 2nd, the university has required the use of face coverings indoors and you will not be permitted in class without a face covering. Any student who has a medical concern with wearing a face covering should contact the Disability Resource Center at (910) 962-7555. Effective August 23, any student on campus who has not provided proof of vaccination will be required to participate in weekly surveillance testing. **Vaccines** are available through the UNCW Student Health Center.

Please do not come to class when you are not feeling well or are experiencing any COVID-19 symptoms. Please email me to discuss virtual options. If you have been exposed to COVID-19 or are concerned about exposure, please contact the Student Health Center at (910) 962-3280 for specific information about testing, contact tracing and quarantine/isolation requirements, which differ for vaccinated and non-vaccinated individuals, according to CDC guidance.

## 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 Handbook and available here: [www.uncw.edu/odos/honorcode/](http://www.uncw.edu/odos/honorcode/)). Academic dishonesty and plagiarism will not be tolerated in this class. Don't cheat. When in doubt, cite your references and acknowledge class-mates or external sources.

## 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 official notification through, UNCW's Disability Resource Center ([www.uncw.edu/disability](http://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](http://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 Harassment 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](http://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](http://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 schedule of topics is tentative and subject to change. Student assignments are marked in **green** for when they will be assigned and due dates are marked in **blue**. Students are responsible for completing and submitting assignments by these dates.

Week	Date	Topic
1	08/18 08/20	Intro Course intro, review syllabus, begin CH 1 (1.1-1.3; HW1 assigned) CH 1 Representing Motion; Sections 1.4-1.7
2	08/23 08/25 08/27	CH 2 - Motion in One Dimension (2.1-2.4; HW1 due; HW2 assigned) - Motion Problems & Free Fall (2.5-2.7) CH 3 - Vectors and Motion in Two Dimensions (3.1-3.3)
3	08/30 09/01 09/03	- Ramps & Projectiles (3.3-3.5; HW2 due; HW3 assigned) - Circular & Relative Motion (3.6-3.7) CH 4 - Forces & Newton's Laws of Motion I & II (4.1-4.3; HW4 assigned)
4	09/06 09/08 09/10	Labor Day - No Class CH 4 - Free Body Diagrams & Newton's Law III (4.3-4.7; HW3 due) CH 5 - Applying Newton's Laws: (5.1-5.3; HW4 due; HW5 assigned)
5	09/13 09/15 09/17	CH 5 - Applying Newton's Laws cont'd: (5.3-5.4). CH 5 - Normal Forces, Friction, Drag, Ropes & Pulleys (5.4-5.7; HW5 due) Exam 1 - CH 1-5
6	09/20 09/22 09/24	CH 6 - Circular Motion, Orbits & Gravity (6.1-6.2; HW6 assigned) CH 6 - Newton's Apple (6.2-6.5) CH 7 - Rotational Motion (7.1; HW6 due; HW7 assigned)
7	09/27 09/29 10/01	CH 7 - Rotational Motion (7.1-7.2) CH 7 - Rotational Motion (7.2-7.4) CH 7 - Rotational Motion (7.5-7.7; HW7 due; HW8 assigned)
8	10/06 10/04 10/08	CH 8 - Equilibrium, Stretching & Compression (8.1-8.2) CH 8 Stretching & Compression (8.3-8.4 HW8 due) Fall Break - No Class
9	10/11 10/13 10/15	Exam 2 - CH 6-8 CH 8 - Young's Modulus & Elastic Limit CH 9 - Exam 2 (recap) intro to Momentum & Impulse (9.1; HW9 assigned)
10	10/18 10/20 10/22	CH 9 - Impulse-Momentum Theorem & Inelastic Collisions (9.1-9.2) CH 9 - Momentum Conservation (9.2-9.4) CH 9 - Rockets & Inelastic Collisions (9.4-9.6)
11	10/25 10/27 10/29	CH 9 - Angular Momentum (9.7; HW9 due; HW10 assigned) CH 10 - Mechanical Energy & Work (10.1-10.4) - Thermal Energy, Conservation & Energy Diagrams (10.5-10.8)
12	11/01 11/03 11/05	- Chemical Energy, Collisions & Power (10.8-10.10) CH 11 - Thermodynamics (11.1-11.4; HW10 due; HW11 assigned) Exam 3 CH 8-10
13	11/08 11/10 11/12	CH 11 - Heat Engines, Heat Pumps (11.5-11.6) - Systems, Energy & Entropy CH 12 - Thermal Properties of Matter (12.1-12.5; HW11 due HW12 assigned)
14	11/15 11/17 11/19	- Calorimetry, Specific Heat, & Heat Transfer (12.6-12.9) CH 13 - Fluids (13.1-13.4; HW13 assigned) - Fluid Dynamics & Viscosity (13.5-13.6; HW12 due)
15	11/22 11/24	CH 14-16 - Oscillations & Traveling Waves (14.1-14.4; HW13 due; HW14 assigned) Thanksgiving - No Class
16	11/29 12/01	CH 1-8 - Review (HW14 due) CH 9-16 - Review
17	12/08	Final (11:30 am – 2:30 pm)