PHYS 102-001 – FALL 2022

GENERAL PHYSICS: MECHANICS, HEAT and SOUND

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Class Meeting Times Tue/Thu – 8:30 – 10:30 AM – DLR A8

Course Description PHYS 101 presents an introduction to classical mechanics, fluids, heat, thermodynamics, vibrations and sound. Suggested for students in a pre-health program.

Text Physics: Principles with Applications, 7th Edition, Giancoli

Textbook is recommended but not required. You may use a different edition. No homework problems will be assigned from the text. There may be optional, suggested problems for practice from the text (7th edition).

Course Pre-requisite Entrance credit in algebra and trigonometry

Course Structure This class will be taught in an active learning format. A significant amount of classroom time will be devoted to working on selected problems in small groups, with ample opportunities to interact with and ask questions. To take full advantage of this course structure, it is essential to keep up with the class and view the recorded lectures and example problems before coming to class. *Your key to success - **keep up with the work**!*

Grade Breakdown

Component	**Percent of Total**
Exams (4)	70
Assignments (Classwork, Homework, Attendance)	30

*** You must pass the laboratory to pass the course. It is your responsibility to keep track of the lab start dates. Since the lab runs independent of lecture, all questions related to labs must be sent to Peter Harnish (pharnish@physics.upenn.edu)*** ***

Grading Scale

Please use the grading scale below as a **general guideline** to keep track of your grades throughout the semester.

Letter Grade	Numerical Grade Range
A	95 - 100
A-	90 - 94
B+	87 - 89
B	83 - 86
B-	80 - 82
C+	77 - 79
C	73 - 76
C-	70 - 72
D+	67 - 69
D	61 - 66
F	0 - 60

SNAPSHOT OF A TYPICAL WEEK

- **Lectures and Example Problems:** Attend lecture and read chapter items from the book for a specific unit **before** the 'Concept Check and Warm-up' (CC/WU) is scheduled for that unit in class.

- '**Concept Check and Warm-up**'(CC/WU): The 'Concept Checks' are a set of conceptual multiple-choice questions whereas the warm-up problems are free response problems. Warm-up problems will be discussed in detail during class.

- **HW Sets:**

  - Homework is assigned in Canvas. Log into Canvas and look for the Modules tab. HW will be posted there. Submit your HW before its due date, there will be a penalty of 25% for late submission. Submissions can be uploaded using the Assignment tab in Canvas.
  - To upload your work, scan all work in a single pdf format. If you have questions on how to upload, let me know.
  - All HW sets for Units covered between exams will be due at **midnight the night before the exam**.
  - The homework grade will be based on your accuracy.
  - An overall accuracy of **90%** will be considered as 100% for the HW component of your grade at the end of the course. This is a cut-off and no scaling will be involved.

- **Quiz**: Quizzes may include a set of multiple-choice questions, free response, or a combination of both based on the unit(s) indicated.

  - There will be weekly quizzes. You will have 10 minutes to finish them. Do not wait until the last minute to finish it. Once due, there is no make-up.
  - Although collaboration in your study group is encouraged, quizzes are individual and you are expected to abide by Penn's Code of Academic Integrity.

EXAMS

- There will be four (4) exams cumulative, in-class, closed book, and timed for 90 minutes.
- A formula sheet will be posted on Canvas under 'Modules' for your reference. A copy of that formula sheet will be provided during the exam. No other notes or formula sheets allowed.
- Basic scientific calculators are permitted.

- The lowest exam score may be replaced by the average of all 4 exams. There are no dropped exams.
- ***For an excused absence reported through Course Absence Report and followed up by an email prior to the exam day, the following policies will be implemented:***

    - *If you are missing an exam due to medical reasons, a doctor's note is required. For non-medical reasons, an email is required prior to the scheduled exam.*
    - *You may then take the make-up exam on the official make-up day as published by the Office of the University Registrar to make up for the missed exam. The make-up exam is cumulative in its scope. Based on your situation, other options will be considered as the need may be. A follow-up email is required to discuss this.*
    - Students missing TWO or more exams will be advised to withdraw since there will be no opportunity to make up a second missed excused exam.
    - For further information on SAS policies regarding final exams, click here.

- For an **unexcused** absence(s), the exam will be counted as a zero.
- You are expected to tell the truth about your situation and failure to do so is a violation of Penn's Code of Academic Integrity.
- If you expect a conflict with a religious obligation, you should discuss this with me as early as possible in the term.
- Students with a disability who require special accommodations are required to obtain appropriate documentation from the Office of Student Disabilities Services. Once I receive approvals from SDS, accommodations will be provided.
- Problems on exams will be graded using the physics grading rubric.
- If you believe a grading mistake has been made, write a description of the mistake, as you see it, and email me the next day for consideration. Requests for regrading after that will not be considered.

Honor Code

You are encouraged to study with other students and collaborate during class. Obviously, any form of copying or cheating on exams is strictly forbidden. In general, you are expected to abide by Penn's Code of Academic Integrity.

Study Hints

- It is crucial that you keep up with the work, and plan to spend time out of class every day studying and doing the homework. The material is progressive, in that each chapter depends on material presented in previous chapters. If you get behind, you cannot just skip a chapter and go on to the next; you must comprehend the material at each stage before you can progress.
- Utilize the resources available on your book to enhance your conceptual understanding.
- Seek help from me or the TA during office hours, or in your study groups.
- The Weingarten Learning Resources Center can provide professional instruction on strategies for exam preparation, taking exams, time management, etc.
- Check your grades on Canvas on a regular basis and should you have any questions or concerns email at miroman.at.sas.upenn.edu. Waiting until the end of the semester is not a good strategy.

Note:

This syllabus may be slightly modified if needed by external circumstances.

COURSE UNITS (Chapters refer to recommended textbook)

Unit 1

Introduction, Measurement, Estimating (Ch 1)

Describing Motion: Kinematics in 1D (Ch 2)

Kinematics in 2D: Projectile motion. Relative velocity (Ch 3)

Kinematics in 2D: Circular motion. (Ch 5.1)

Unit 2

Dynamics: Newton's Laws of Motion (Ch 4)

Dynamics of Circular Motion (Ch 5)

Gravitation (Ch 5)

Work and Energy (Ch 6)

Unit 3

Linear Momentum (Ch 7)

Rotational Motion (Ch 8)

Oscillations and waves (Ch 11)

Sound (Ch 12)

Unit 4

Fluids (Ch 10)

Temperature and Kinetic Theory (Ch 13)

Heat (Ch 14)

The laws of Thermodynamics (Ch 15)