

PHYSICS 2001 – Spring 2020 Syllabus – Introduction to Physics

Walter Hall Room 245 — Tuesdays & Thursdays

See “Pandemic Notes” on page 6.

Section 101 (Class #3147): 10:30-11:50 am

Instructor: Dr. Richard Piccard, Office: 243B Clippinger Laboratories, 740-593-1785, piccard@ohio.edu

Section 102 (Class #3148): 1:30-2:50 pm

Instructor: Dr. Zach Meisel, Office: 204 Edwards Accelerator Lab, 740-593-1973, meisel@ohio.edu

Course Description: First course in physics; open to students from all areas. Students should have a background in algebra, trigonometry, and geometry, but no calculus is required. Recommended for students in liberal arts, engineering management and technology, geological sciences, plant biology, and pre-medicine. Topics include the mechanics of solids and liquids, oscillations, heat, and thermodynamics. There can be no credit for PHYS2001 after PHYS2051.

Course Outcome Goals:

- Students develop a broad knowledge of the physical principles that describe the universe.
- Students learn how algebra, trigonometry, and geometry are used to represent the world mathematically and how they are used to solve the problems.
- Students learn to understand and solve physics problems.

Prerequisite: MATH 1200 or Placement Level 2 or higher

Text: “College Physics” from OpenStax College (ISBN 1-938168-00-3). The book is available for free as a *pdf* file or an *epub* file on the OpenStax website (<https://openstax.org/details/college-physics>). Printed copies are also available for purchase from OpenStax or a local bookstore. Other materials are available as ancillaries, but only the text is required.

Attendance: Students are responsible for being aware of schedule changes announced in class. The participation component of the grade (see below) may well be affected by any lack of attendance.

Participation: We use a lecture and demonstration format for the material, but Physics is learned by doing, not by spectating, hence the laboratory and participation parts of your grade. The Top Hat system collects responses to verbal and projected questions throughout the lecture. Responses earn 3 points if correct and 2 points if incorrect. The semester total score is scaled so that 75% or higher earns full credit. Other in-class exercises may also contribute to this portion of the grade. Excused absences and technical issues are treated as part of the 25% of the score that is forgiven. Go to <https://www.ohio.edu/oit/teaching>; click to expand “Teaching and Learning Tools” in the menu at the left; click on “Student Response System”; and click on “Help and Resources” to reach a page that links to the “Student Quick Start Guide” for Top Hat. You may need to register your student account with Top Hat and must bring an electronic device compatible with Top Hat to each lecture (for example, a text-capable phone, a Wi-Fi-only tablet, a laptop, a smartphone, etc.).

Pre-class Assignments: You will learn more in class if you come prepared. To help you prepare for each class, short assignments are posted on LON-CAPA, due 15 minutes before the lecture; instructions for accessing LON-CAPA are at the end of this syllabus. The semester total score is scaled so that 80% or higher earns full credit. Technical issues are treated as part of the 20% of the score that is forgiven.

Homework: Homework assignments are also handled via the LON-CAPA system. You can test your understanding with additional problems from the textbook. Assignments are usually due each Friday at 11:59 pm; the exact due date for each problem is visible online. There will be times when multiple assignments are available; be sure that you, **“Do first what is due first!”** Additional written assignments may be part of the homework grade. When you complete a problem successfully, LON-CAPA provides you with a receipt number; please record it. This is your proof that you completed the work. We will not investigate discrepancies in records without this receipt. The semester total score is scaled so that 80% or higher earns full credit. Technical issues are treated as part of the 20% of the score that is forgiven.

Exams: There are **three midterm exams** and a **comprehensive final exam**; all four exams are **combined-sections**. One 8½”x11” sheet of paper with handwritten notes can be used along with a calculator during the on-campus exams. No books or other notes are allowed. We will not provide any physics formulas on the exam, so your sheet should contain any formulas that you need. Be sure to bring it! Best practice is to be preparing your sheet right from the start. Online-exams are open text and notes.

Electronic Devices during Exams: You are allowed a dedicated calculator during exams. All other electronic devices are forbidden, including earbuds, calculator apps on phones or tablets, music players, electronic dictionaries, tablets, and cell phones, or any device that is remotely similar, except, of course, that online exams require the use of a web browser and a tablet or computer. Any forbidden device carried among your possessions at the on-campus exam must be **fully powered down**. A simple scientific calculator can be purchased for as little as \$10. It must handle scientific notation, logarithms, exponentials, and trig functions, but a graphing calculator is not necessary.

Laboratory: Labs are in Clippinger Hall room 045, starting the week of January 27th; see the attached Lab schedule and make-up policy for more details. **You must register separately for the lab.** The lecture and lab have different call numbers on your course schedule. There are a large number of lab sections; the registration web site may show you only a few at a time. **The laboratory must be passed in order to pass the entire course.** You will fail the lab if you miss more than three labs that you don't make up, or if your semester lab average is less than 70%. If you recently took and passed the lab for PHYS 2001 and wish to carry over your prior lab score, send an email to your instructor **right away** with the details (course, year, and semester). We will look up your grades and let you know if this is acceptable.

Drop/Add: See Changing Class Schedule policy in the Ohio University Undergraduate Catalog. Makeup work may not be available for past-due assignments if you add after the first day of class.

Academic Misconduct: Academic Misconduct is a violation of the Ohio University Code of Student Conduct. **If you are found to be involved in academic misconduct regarding this course, you will receive an F on the pertinent work** and possibly for the entire course. You may also be referred to the Director of Community Standards. Procedures for such judicial actions will be invoked as described in the Student and Faculty Handbooks. See the O. U. Undergraduate Catalog.

Preferred Name Policy: Ohio University permits you to specify a preferred name on documents that do not require your legal name. You can change the name that appears on the class list through the myOHIO portal site. After having done so, please let the instructor know if any class resources, such as LON-CAPA or Top Hat, are still using the wrong name.

Grading: Your course grade will be determined as follows:

Exam 1 (evening) _____	17%
Exam 2 (online, cumulative) _____	10%
Exam 3 (online, cumulative) _____	15%
Final Exam (online, cumulative) _____	28%
Homework (LON-CAPA) _____	10%
Pre-class Assignments (LON-CAPA) _____	5%
Participation (in-class Top Hat) _____	5%
Laboratory _____	10%
<i>Total</i> _____	<i>100%</i>

Final grades for the course will be assigned to a letter-grade according to the following scale. We reserve the option of shifting the scale downward (i.e., lower % required for a given letter grade) if we judge, for example, that the exams were particularly difficult, but we will **not** shift it upward.

- A- to A: 90% or better
- B- to B+: 80-89%
- C- to C+: 70-79%
- D- to D+: 60-69%
- F: 59% and below

Contingency Plans: In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised academic calendar or other circumstances beyond the instructor's control. We will make sure this information is communicated via email and LON-CAPA.

Copyright: The lectures, classroom activities, and all materials developed by the instructors are copyrighted in the name of the individual instructors as of the date, January 13, 2020.

Accessibility Services: If you may need an accommodation based on the impact of a disability, promptly contact the class instructor privately to discuss your specific needs and provide written documentation from the Office of Student Accessibility. **If you are not yet registered as a student with a disability, promptly contact the Office of Student Accessibility Services.**

Assistance Outside of Class: Available assistance outside of lecture for this course includes:

- Physics “Help Room” in Walter 245, staffed by the PHYS 2000 TAs and instructors. The tentative schedule is 6-9 pm Wednesday and Thursday; changes may be announced in class.
- Instructor “Office Hours” (announced in class and by appointment) and email.
- “Supplemental Instruction” sessions administered by the Academic Advancement Center:
<https://www.ohio.edu/uc/aac/tutoring-services/si>
- Tutors are available for hire through the Academic Advancement Center:
<https://www.ohio.edu/uc/aac/tutoring-services/peer>

Tentative Lecture Schedule: Dates are subject to changes announced in class. Chapters refer to sections of the course textbook, “College Physics” by OpenStax College, that should be read prior to class. A free pdf copy of the book is here: <https://openstax.org/details/college-physics>

<u>Date(s)</u>	<u>Chapter(s)</u>	<u>Study Topic(s)</u>
1/14	1	Introduction, Measurement
1/16 & 1/21	2	Units, 1D Motion, Free-fall
1/23, 1/28, & 1/30	3	2D Kinematics, Vectors
2/4 & 2/6	4	Newton’s Laws, Forces
2/11	5	Applications of Forces
2/13	9	Torque, Static Equilibrium
2/16 (Sunday) Study Session, 6-9 pm, Walter 245		
2/17 (Monday Evening) Combined Sections, Exam 1, 7:15-9:15pm, Morton 201		
2/18	9	Torque, Static Equilibrium
2/20 & 2/25	7	Work, Energy, Power, Conservation of Energy
2/27	8	Impulse, Momentum, Conservation of Momentum
3/3	8	Momentum, Energy, Collisions
3/5	6	Circular Motion
3/8-3/22 Spring and Pandemic Breaks, No Class or Labs		
3/24	10	Rotational Kinematics and Dynamics
3/26	10	Moment of Inertia, Angular Momentum
3/31 & 4/2	16	Hooke’s Law, Simple Harmonic Motion
Week of 3/30: Exam 2, Online; preceded by Online Study Session, 6-9 pm, prior night; details TBA		
4/7	11,12	Fluids, Pressure, Depth, Continuity, Bernoulli, Magnus
4/9	13,14	Thermal Expansion, Calorimetry, Phase Changes, Latent Heat
Week of 4/13: Exam 3, Online; preceded by Online Study Session, 6-9 pm, prior night; details TBA		
4/14	13	Ideal Gas Law, Kinetic Theory of Gases, Thermodynamics
4/16 & 4/21	15	Laws of Thermodynamics, Thermal Processes, Cycles
4/23	--	Review Problems
4/26 (Sunday) Online Study Session, 6-9 pm; details TBA		
4/27 (Monday Afternoon) Cumulative Final Exam; details TBA		

Lab Schedule:

<i>Week of</i>	<i>Experiment #</i>	<i>Experiment Title</i>
January 13	No Labs This Week	
January 20	No Labs This Week (MLK Day)	
January 27	2	Simple Measurements and Density
February 3	3	Addition of Forces
February 10	8	Acceleration Using the Air Track
February 17	7	Atwood's Machine
February 24	4	Equilibrium and Center of Gravity
March 2	5	Parallel Forces
March 9	No Labs This Week (Spring Break)	
March 16	No Labs This Week (Pandemic Break)	
March 23	12	Ballistic Pendulum
March 30	11	Conservation of Momentum
April 6	19b	Simple Harmonic Motion & Hooke's Law
April 13	16	Coefficient of Linear Expansion
April 20	18	Heat of Fusion & Vaporization of Water

Lab Registration: Lab call numbers are separate from the course call numbers, so make sure that your registration includes **two** (2) call numbers for PHYS 2001. If you have not scheduled a lab by the end of the first week, you must see Ms. Candi Spaulding in Room 046 Clippinger for a green slip. You may only change or sign into a lab that has open slots. You may take the lab only the same semester that you take the associated lecture class.

Missing First Lab: Because of the large student enrollment in these courses, students not attending the first scheduled lab will be **dropped automatically** from the lab roster so that other students may be put into these openings. If, for any reason, you miss the first laboratory, it is your responsibility to contact Ms. Candi Spaulding (593-1689, spauldic@ohio.edu) **immediately** to retain your seat in lab.

Lab Grades: A passing grade (70% or better) in the Laboratory is required to pass the entire course. Labs missed and not made-up are included in the average with zero points earned. All laboratories will be graded on the basis of 10 points in each of two separate areas:

1. Lab technique and participation: Graded from observation of student's written pre-lab work, in-lab performance, punctuality, cooperation, and quizzes.
2. Lab report: Numerical and graphical analysis and conclusions.

Under normal circumstances the data and the analysis of each laboratory is expected to be completed within the two-hour period and the report turned in to the laboratory instructor.

If you miss **more than 3 labs** or lab reports that are not made-up, with **or** without a valid University excuse, **you will receive a failing grade for the lab and the entire course.** A missed laboratory may

not be made-up unless the student has a valid University excuse. Read the make-up policy below or the generic version posted on the door of the laboratory; you are responsible for this information. Your TA **cannot** authorize a make-up lab. **All** make-up labs must be scheduled with Candi Spaulding (office: Clippinger Hall room 046) or Stephen Goss (office: Clippinger Hall room 042), either before the miss (e.g., in the case of University scheduled events) or as soon as the student has returned. If, with authorization, you can arrange to come to another lab during the **same** experiment that was missed, you may be able to make-up an excused missed lab with full credit. For some labs, data may be provided so that the report may be completed outside of the usual laboratory time. For such “dry labs” the maximum score on the make-up will be 80%. This means you **may lose points even for an excused absence**.

- **No food (including gum) or drink (including water) or open-toed shoes are allowed in lab.**
- **Bring your calculator, graph paper, and ruler/protractor to lab.**
- **Bring to lab both a printed copy of the lab instructions and your written responses to the pre-lab work.**

Pandemic Notes

Top Hat class participation is section-specific; your instructor will provide the details.

Remaining Exams will be online through LON-CAPA. Details to be announced. Online exams are open-text and -notes. The tentative schedule is to have **midterm 2** during the week of March 30, covers through March 3 lecture and Homework Assignment 9, counts 10% of the course mark; **midterm 3** in mid-April, date and coverage to be announced, counts 15% of the course mark (midterms 2 and 3 are 90 minutes working time); and the **final exam** on April 27, counts 28% of the course mark (two-hour working time). The reduced and progressive impact on the course mark is intended to ease the process as we all learn how to deal with this new exam format.

Lecture Schedule on p. 4 has been updated. In essence, the three planned lectures on fluids are condensed to one. The lectures are all in the same sequence as originally planned. Online lecture format and access is section-specific; your instructor will provide the details.

LON-CAPA Pre-class and Homework Assignments will be scaled so that 80% of available points earns full credit in the course mark calculation; both are coordinated with the lectures.

“Do first what is due first.”

Labs will be done by a combination of reading, watching online videos, and working with previously taken data sets; the original instructions will be supplemented with new files in LON-CAPA. The pre-lab quiz and the final report will be submitted online, details, including allocation of points for grading, TBA. The schedule on p. 5 has been updated: the Buoyancy lab will not be done; the other post-break labs will be done in the published order, one each week.

Online Help Sessions will be scheduled in Microsoft Teams; details TBA. If you prefer not to be publicly identified as the person who asks a question, send it by email to the TA or instructor conducting the session, who will replicate the question, and then answer it, in the meeting.

Department of Physics & Astronomy Laboratory Make-up Policy:

1. All make-up labs are to be scheduled through the Clippinger 046 office (Candi Spaulding). Neither your instructor **nor** your TA can make these arrangements. You may also contact Ms. Spaulding at 740-593-1689 or via email at spauldic@ohio.edu.
2. Any student who will miss a lab for a mandatory scheduled University activity (e.g. track meet for a member of the track team) must provide a written excuse explaining their absence. The student should make up the lab in another regular section of the lab during the week of the missed experiment. Emergency excused make-ups must be rescheduled within one week of the missed lab. If your lab falls late in the week, you may have to do your make-up lab **before** your regularly scheduled lab time.
3. All labs will be graded such that each lab counts towards the final course grade.
4. Missed labs without a valid (University Sanctioned) excuse will count as zero (0%) and the student will not be allowed to make-up this missed lab.
5. If more than three (3) labs are missed with or without valid excuses and are not made-up (Only University Sanctioned misses may be made-up), the student will fail the entire course (lecture & lab).
6. Schedule all medical appointments at times other than your lab time. Make-up exams and labs in other courses do not take precedence, nor do advisor or resident director (RD) meetings. Flight time also does not take precedence over regularly scheduled classes. University procedures require that regularly scheduled classes and laboratories take precedence over such activities.
7. Students waiting until the last weeks of the semester to do make-ups missed during the first part of the semester will be denied make-up privileges even if the original excuse for missing the lab was valid.
8. Missed scheduled make-ups will be counted as zero (0%) and will not be re-scheduled unless there are exceptional circumstances.
9. All make-up labs must be completed by the last lab of the semester in the course in which the lab was missed.
10. All make-up labs must be accompanied by a blue half-sheet for both the performance part and in order for that lab to be graded by the regular instructor. If this sheet is not presented to the make-up lab instructor, the student will be denied the make-up. If the sheet is not attached to the make-up report, the lab will not be graded by the lab instructor. All completed lab material must be turned into the student's lab instructor, in the instructor's mailbox in the Physics & Astronomy office (Clippinger Hall room 251) within 24 hours of the make-up.

Instructions for Using LON-CAPA:

We will use the LON-CAPA system for homework and pre-class assignments and to distribute general course materials. The following contains information you will need.

- **Access:**

The system is accessed via a web browser. Go to the URL <https://loncapa.phy.ohio.edu/>. If you bookmark LON-CAPA, use that address, not an individual server's address. Your username is your 8-character Ohio ID (e.g. ml931098). The username is case sensitive; make sure the first two letters are lowercase. Your password is the same as for your Ohio ID. (See "Accounts" and "Passwords" on <https://www.ohio.edu/oit/accounts/> to activate your account or change your password, if necessary.)

Your browser must have "cookies" and Javascript enabled. Pop-up windows must not be blocked from any server whose name ends with "phy.ohio.edu" (i.e., allow "*.phy.ohio.edu").

- **Finding Materials:**

Upon log-in, select the "Student" role for your course. You will be presented with the first item in the course. This may be a homepage or the course contents page. Click on Course Contents.

The Course Contents page allows you to view all "resources" (pre-class assignments, homework, lecture notes, etc.) in the course. It is a good place to check the status (open-dates, due-dates, dates the answers are provided) of various problems. To help with clutter, folders can be opened and closed by clicking on the + or – in front of the folder icon. When expanded, the status of individual problems in an assignment will be displayed.

To go to a problem, click on the title. Enter the answers in the boxes provided (or via pull-down menus). Press submit answer to finalize your answer. Feedback will be provided. If you are correct, you will be provided a receipt number; **record this** so that you will have proof you completed your assignment in the event of a technical problem. Without the receipt number, we will not investigate any issues regarding claims of lost points. You are typically allowed multiple attempts at a problem. The number of attempts is displayed below the problem and on the Course Contents page. **The system may be inaccessible due to large load near assignment deadline times. Do not wait until the last minute to submit your answers.**

- **Printing an Assignment:**

To obtain a print-out of an assignment, go to one of the problems in the assignment. Select the Print icon from the menu in the top-right of the screen. Select "Selected resources in folder ..." and press Next. Press Next again. The system will create a pdf file which can be read using Adobe Acrobat Reader (or most other pdf-viewers).

- **Checking Scores:**

Go to the Main Menu (link on the top-left of the screen) and click "View current problem status and grading information" to get an overview of the point totals for each folder. **Check due dates & times carefully under the Course Contents page.** If you think the time isn't correct, contact your instructor **before** the due date listed. Note that the time on the computer is set to National Standard Time (www.time.gov); this is not necessarily the same as the time on your computer, phone, or watch.

- **Tips for Submitting Answers to Problems in LON-CAPA:**

- Scientific notation is entered in the form 6.02e23, not 6.02x10²³. For negative exponents, it is like 1.0e-3.
- Problems may or may not require units; the computer will let you know. If units are requested, place a space between the number and the units. An example of a complex unit is acceleration, meter per second per second input, for example, as 9.80 m/s² or 9.80 m/s/s or 9.80 m/(s*s).
- Read the computer feedback carefully. **If LON-CAPA complains about units or significant figures, it has not checked the numerical part of your answer.**
- If you are having technical difficulties, please click on the Help link on the log-in page or the Help link on the top-right of the screen if you're already logged-in. Other help item links are scattered throughout the LON-CAPA webpages (identified by the blue question marks).