



Boston University
PY105 Fall 2026
Physics I

Section – Room SCI B-23	Instructor	Email	Office Hours & Contacts
S1 MWF 8:00 – 9:45 AM	Nicholas Gross		Office hours will be shown on our course calendar.
S2 MWF 10:10 – 11:55 AM	Paul Trunfio		For course issues (physics/problem solving or course-wide logistics), please use Piazza (public, private to instructor or targeted to one instructor) For individual administrative/logistical issues, please email studiopy@bu.edu (monitored by multiple instructors so nothing gets missed) In Top Hat’s “Welcome to S# Section,” we share individual faculty emails. Feel free to cc on individual issues, but avoid emailing only to faculty directly as responses will be delayed.
S3 MWF 12:20 – 2:05 PM	Joe Larkin		
S4 MWF 2:30 – 4:15 PM	Wanzheng Hu		
S5 MWF 4:30 – 6:15 PM	Jim Miller		
S6 MW 6:30 – 9:15 PM	Yumi Kim		

Course Description: The CAS PY 105/106 sequence satisfies premedical requirements. PY105 covers fundamental principles of physics underlying everyday phenomena, including forces, motion, momentum and energy, harmonic motion, and heat and thermodynamics. Carries natural science divisional credit (with laboratory) in the College of Arts and Sciences. This course fulfills a single unit in the BU Hub areas: Scientific Inquiry I, Quantitative Reasoning I, Critical Thinking.

Course Overview: We invite you to join us in creating and contributing to a positive, productive, and respectful classroom culture. We have planned a course with different teaching and learning modes to foster a rich and engaging experience. Everyone contributes to an environment that shapes the learning process. All students are expected to attend classes when scheduled. Active participation will help you grasp concepts and develop problem-solving skills, and it also contributes to your participation grade.

Student Expectations: Physics is a skill-based subject -- more like learning an instrument or a sport than memorizing facts. That means success doesn’t come from just watching others solve problems or Googling answers, just like you wouldn’t become a good soccer player by only watching videos of Lionel Messi. This course trains you to apply tools to new situations, not just repeat steps. Think of it like medicine: when a patient walks in with nausea, a doctor doesn’t jump to a diagnosis; they consider multiple explanations and work through the evidence. Physics works the same way. That kind of diagnostic problem-solving takes time. We expect you to engage actively and honestly with the material. Mistakes are not just okay; they’re essential to the learning process. We’re here as coaches: to support, challenge, and help you grow. What we ask you is to reflect on what’s working and be willing to try new strategies.

Course Resources Overview:

- Physics Prep, self-paced program focused on fundamental skills: polymer.bu.edu/physicsprep/
- Course postings, worksheets, announcements and discussion board: piazza.com
- Homework, lecture participation, worksheet assessments, labs, and e-Book: tophat.com
- Blackboard Learn (for mid-semester and final grades only): learn.bu.edu
- Scanned and graded quizzes and hand-in homework with rubrics: gradescope.com
- Course calendar: tinyurl.com/studiophysics
 - To add the calendar to your personal G-Calendar, click “Add to Google Calendar” on the bottom left

Required Course Materials:

- **Scientific calculator** (NOT a mobile phone app) which has sine, cosine, exponential and their inverse functions. It will mainly be used for homework assignments, exams, labs, etc.
- **Top Hat – tophat.com** – See Getting Started with Top Hat (below). Registration for Top Hat is available for desktop/laptop or mobile device and is a paid subscription service. You must register before the first day of class. Follow the link in the email invitation you will receive a few days before the first class.
- **Textbook: *Essential Physics***, by A. Duffy, Volume I which is an interactive e-Book integrated with our Top Hat course. If you would like another option, we post a free PDF version.

Course Grade: Your letter grade will be assigned based on the total score you accumulate throughout the course. By staying engaged, you can accumulate points for many of these factors. Each factor will contribute as follows:

- Studio worksheets (11%) & Attendance (4%) for a total of 15%
- Homework Assignments: hand-in (5%) + Top Hat (10%) for a total of 15%
- Labs: 14%
- Exams: 56% - There are four, as shown on schedule

Grading Scale: We will use an absolute grading scale, so you are not competing with your classmates. This is designed to encourage you to help each other learn. The scale is as follows:

90.00 – 100 = A- and A
75.00 – 89.99 = B-, B and B+
60.00 – 74.99 = C-, C and C+
50.00 – 59.99 = D
< 50.00 = F

Note: we do not give full grade boundaries in the syllabus for A/A-, B's, C's. You can estimate B's and C's based on 5-point bins for each. This is intentional as we set the final boundaries when we do the final grade calculations.

Exams (rooms TBA): There will be four exams, spaced at the end of each unit of instruction. The schedule:

- Exam 1: Tuesday, September 22
- Exam 2: Tuesday, October 20
- Exam 3: Tuesday, November 10
- Exam 4: Tuesday, December 8
- Makeup Exams: Friday, December 11 and Sunday, December 13

Exams are designed to assess how well you can apply physics concepts to new situations. Each 75-minute exam will be announced on Piazza. We will hold a live and recorded Saturday review of posted practice problems. We encourage everyone to attend the exam review class, where you'll work through exam-like problems followed by a review.

For Exams 1-3, except for conflicts due to religious observances, there are no separate makeups following an exam, including for illness. Instead, you may miss an exam without documentation and take a different makeup exam covering that exam's content at the end of the semester. You may make up a maximum of two missed exams. We strongly discourage relying on this option because taking an exam long after completing the unit is generally more difficult; however, it is available when personal situations make it necessary.

Exam 4 follows a traditional makeup policy. If you miss Exam 4 for an approved reason, including illness, you must contact us promptly and provide appropriate documentation. An approved Exam 4 makeup will be administered as soon as reasonably possible.

Makeup Policy: It is your responsibility to do all assignments, according to the posted schedules. Many of the assignments will routinely appear in Top Hat during the course. Makeups and extensions are **not** offered for homework, e-books, attendance or worksheet assessments. Makeups for exams are addressed in the exam section (above). Makeups for labs are addressed following the guidelines outlined on p. 4.

Attendance Policy: Attendance will be taken during each studio class using Top Hat's geo-locating feature. If you were marked absent in error, which sometimes happens, you must clear that up with your instructor by end of that class. We will not override attendance retroactively or based on emails. We understand that students must miss class due to sickness or unforeseen circumstances. **There is no need to contact your instructor if you are going to miss a lecture.** We drop a few missed classes for the semester (both attendance and worksheet assessments).

PY105 Fall 2026 Course Schedule for Sections S1 – S5 (2 hour classes)

Date	Studio Class Topics	Assignments
W 9/2	L-01: Motion in One Dimension	WS-01
F 9/4	L-02: Freefall & Newton's Laws of Motion	WS-02
M 9/7	<i>No Classes – Labor Day Holiday</i>	HW #1 Due (extended until Tuesday)
W 9/9	L-03: Free Body Diagrams & Forces in One Dimension	WS-03
F 9/11	L-04: Forces Between Carts (Lab)	Lab #1
M 9/14	L-05: Motion in Two Dimensions	WS-04 HW #2 Due
W 9/16	L-06: Projectile Motion	WS-05
F 9/18	L-07: Projectile Motion (Lab)	Lab #2
M 9/21	L-08: Exam #1 Review	HW #3 Due
T 9/22	Exam #1 (Covers L-01 – 08; WS-01 – 05; Labs 1-2)	e-Book #1 Due
W 9/23	L-09: Free Body Diagrams Review & Friction	WS-06
F 9/25	L-10: Applying Newton's 2 nd Law	WS-07
M 9/28	L-11: Applying Newton's 2 nd Law, Part 2	WS-08 HW #4 Due
W 9/30	L-12: Constant Acceleration (Lab)	Lab #3
F 10/2	L-13: Circular Motion	WS-09
M 10/5	L-14: Circular Motion, Part 2	WS-10 HW #5 Due
W 10/7	L-15: Impulse & Momentum <i>Last day to drop without a "W"</i>	WS-11
F 10/9	L-16: Momentum & Collisions (Lab)	Lab #4
M 10/12	<i>No Classes – Indigenous Peoples' Day Holiday</i>	-
T 10/13	L-17: Work, CoM and Collisions (Monday Schedule)	WS-12 HW #6 Due
W 10/14	L-18: Energy Conservation & Collisions	WS-13
F 10/16	L-19: Energy (Lab)	Lab #5
M 10/19	L-20: Exam #2 Review	HW #7 Due
T 10/20	Exam #2 (Covers L-09 – 20; WS-06 – 13; Labs 3-5)	e-Book #2 Due
W 10/21	L-21: Torque	WS-14
F 10/23	L-22: Static Equilibrium	WS-15
M 10/26	L-23: Static Equilibrium, Part 2 + Rotation	WS-16 HW #8 Due
W 10/28	L-24: Simple Harmonic Motion	WS-17
F 10/30	L-25: Simple Harmonic Motion, Part 2 + SHM (Lab)	WS-18 & Lab #6
M 11/2	L-26: Buoyant Force	WS-19 HW #9 Due
W 11/4	L-27: Pressure	WS-20
F 11/6	L-28: Fluid Statics (Lab) <i>Last day to drop with a "W"</i>	Lab #7
M 11/9	L-29: Exam #3 Review	HW #10 Due
T 11/10	Exam #3 (Covers L-21 – 29; WS-14 – 20; Labs 6-7)	e-Book #3 Due
W 11/11	L-30: Fluid Dynamics	WS-21
F 11/13	L-31: Fluid Dynamics, Viscosity & Drag Force	WS-22
M 11/16	L-32: Macroscopic Thermal Physics	WS-23 HW #11 Due
W 11/18	L-33: Microscopic Thermal Physics	WS-24
F 11/20	L-34: Calorimetry (Lab)	Lab #8
M 11/23	L-35: First Law of Thermodynamics	WS-25 HW #12 Due
W 11/25	<i>No Classes – Thanksgiving Break</i>	-
F 11/27	<i>No Classes – Thanksgiving Break</i>	-
M 11/30	L-36: Thermodynamic Processes	WS-26 No HW Due
W 12/2	L-37: Thermodynamic Cycles & 2 nd Law	WS-27
F 12/4	L-38: Gravitation & Special Relativity	WS-28
M 12/7	L-39: Exam #4 Review	HW #13 Due
T 12/8	Exam #4 (Covers L-30 – 39; WS-21 – 28; Lab 8)	e-Book #4 Due
W 12/9	L-40: Lab Makeups	-

PY105 Fall 2026 Course Schedule for Section S6 (3 hour classes)

Date	Studio Class Topics	Assignments
W 9/2	L-01: Motion in One Dimension L-02: Freefall & Newton's Laws of Motion	WS-01 & WS-02
M 9/7	<i>No Classes – Labor Day Holiday</i>	HW #1 Due (extended until Tuesday)
W 9/9	L-03: FBDs & Forces in One Dimension L-04: Forces Between Carts (Lab)	WS-03 & Lab #1
M 9/14	L-05: Motion in Two Dimensions	WS-04 HW #2 Due
W 9/16	L-06: Projectile Motion L-07: Projectile Motion (Lab)	WS-05 Lab #2
M 9/21	L-08: Exam #1 Review	HW #3 Due
T 9/22	Exam #1 (Covers L-01 – 08; WS-01 – 05; Labs 1-2)	e-Book #1 Due
W 9/23	L-09: Friction L-10: Applying Newton's 2 nd Law, Part 1	WS-06 & WS-07
M 9/28	L-11: Applying Newton's 2 nd Law, Part 2	WS-08 HW #4 Due
W 9/30	L-12: Constant Acceleration (Lab) L-13/14: Circular Motion, Parts 1 & 2	Lab #3 WS-09 WS-10
M 10/5	L-15: Impulse & Momentum L-16: Momentum & Collisions (Lab), Part 1	WS-11 HW #5 Due
W 10/7	L-16: Momentum & Collisions (Lab) L-17: Work, CoM and Collisions	Lab #4 WS-12
M 10/12	<i>No Classes – Indigenous Peoples' Day Holiday</i>	-
T 10/13	L-18: Energy Conservation & Collisions	WS-13 HW #6 Due
W 10/14	L-19: Energy (Lab)	Lab #5
M 10/19	L-20: Exam #2 Review	HW #7 Due
T 10/20	Exam #2 (Covers L-09 – 20; WS-06 – 13; Labs 3-5)	e-Book #2 Due
W 10/21	L-21: Torque L-22: Static Equilibrium	WS-14 & WS-15
M 10/26	L-23: Static Equilibrium, Part 2 + Rotation L-24: Simple Harmonic Motion	WS-16 & WS-17 HW #8 Due
W 10/28	L-25: Simple Harmonic Motion, Part 2 + SHM (Lab)	WS-18 & Lab #6
M 11/2	L-26: Buoyant Force	WS-19 HW #9 Due
W 11/4	L-27: Pressure L-28: Fluid Statics (Lab)	WS-20 Lab #7
M 11/9	L-29: Exam #3 Review	HW #10 Due
T 11/10	Exam #3 (Covers L-21 – 29; WS-14 – 20; Labs 6-7)	e-Book #3 Due
W 11/11	L-30: Fluid Dynamics L-31: Fluid Dynamics, Viscosity & Drag Force	WS-21 & WS-22
M 11/16	L-32: Macroscopic Thermal Physics L-33: Microscopic Thermal Physics	WS-23 HW #11 Due
W 11/18	L-34: Calorimetry (Lab)	WS-24 Lab #8
M 11/23	L-35: First Law of Thermodynamics	WS-25 HW #12 Due
W 11/25	<i>No Classes – Thanksgiving Break</i>	-
F 11/27	<i>No Classes – Thanksgiving Break</i>	-
M 11/30	L-36: Thermodynamic Processes L-37: Thermodynamic Cycles & 2 nd Law	WS-26 & WS-27 No HW Due
W 12/2	L-38: Gravitation & Special Relativity	WS-28
M 12/7	L-39: Exam #4 Review	HW #13 Due
T 12/8	Exam #4 (Covers L-30 – 39; WS-21 – 28; Lab 8)	e-Book #4 Due
W 12/9	L-40: Lab Makeups	-

Homework Assignments (due Mondays at 11:59 pm, except due to holidays): Problem solving is the primary way to develop physics skills. In short, the more problems you work through (including struggling with them), the better you'll understand the concepts and apply them to new situations. Unlike some courses, memorizing solutions to assigned problems is not an effective strategy for exam success.

We have two types of homework assignments:

- **Hand-in Homework Assignments uploaded to Gradescope:** Each week's homework assignment will consist of a single page (front-to-back) with two problems. The problems will be available electronically and in class. We ask you to refrain from posting requests for help for these hand-in problems on Piazza. Please use Piazza only for clarification. **There will be no extensions granted. We base your Gradescope homework score on obtaining 92% of maximum possible points** – equivalent to dropping one assignment.
- **Homework Assignments on Top Hat:** Each assignment will include relevant simulations and problems. **There will be no extensions granted**, so plan ahead and use studio time, office hours, Piazza, and open study in SCI 202. Consistent with our philosophy of learning from mistakes, **we will base your Top Hat homework score on obtaining 83% of the maximum possible points** – each homework is worth 12 points, so this equates to a perfect score being 10 out of 12. You have **five** attempts for each online homework question. Use your submissions wisely. Each time you submit, Top Hat tells you whether you are correct or incorrect, and then (on the homework) you get more chances to correct anything you got wrong. In general, Top Hat expects numerical answers to be within 1% of the correct answer, so avoid rounding until the final answer and use at least three significant figures.

Top Hat e-book Assignments & Review Sessions for Extra Credit: The Top Hat e-book questions (as well as content review sessions) aim to incentivize you to read and practice outside of class and help you prepare for learning new concepts. Your goal is to complete as many questions as needed to grasp the concepts. The Top Hat e-book modules are split into parts that match the topics of each exam with due dates (exam dates). **The e-book on Top Hat is not required, but completing the e-book modules by the due date will offer you up to 2% grade boost to your final numerical grade at the end of the semester.** You will earn the maximum of 2% for achieving 70% of total possible e-book points, anything below that threshold is extra credit that is weighted accordingly.

Laboratory Experiments: All labs are assigned on Top Hat, with a pre-lab due by the beginning of class on lab day. We ask that you work in groups of 3-4 when conducting the labs. However, all written responses (analyses) must be in your own words, not copied and pasted from a group member. The lab itself is **due on Top Hat at the end of the studio class when the lab is held**. If you miss a lab, for good reason, we schedule a makeup at the end of the semester.

Getting support through Office Hours: The PY105 teaching staff hold about 40 office hours per week. The office hour schedule will be posted on the course's Google Calendar and Piazza. Some office hours focus on content review or homework walkthroughs.

Getting online support through Piazza: Please ask questions about the course through the PY105 site on Piazza. Feel free to answer questions posted by other students – but you should be careful to be helpful without simply giving away answers to homework questions. With all PY105 students, Learning Assistants, Teaching Fellows, and professors monitoring the Piazza site, this should be the best way to get questions answered quickly.

Proprietary material: Almost all the material in the course is created by us and is copyrighted. You are not allowed to post any course material anywhere outside of our course websites. Using sites such as Chegg or Discord servers is strictly not allowed. We urge you to refrain from use of AI (e.g., GenAI, ChatGPT, etc.) for all work in this course as our worksheets and homework are designed to help you develop skills that you'll later apply on exams.

Ethics Policy: As a student at Boston University, you are expected to be familiar with and adhere to the College of Arts and Sciences Academic Conduct Code. In particular, cheating on exams and quizzes or unauthorized collaboration on lab work will not be tolerated. Evidence of cheating will be reported immediately to your Academic Conduct Committee. Students found guilty of cheating on exams may be penalized by suspension or even expulsion. Link to the code: www.bu.edu/academics/policies/academic-conduct-code/