

# PHYS:1701

# Physics I

# Fall 2021

**Instructor:** Professor Gregory Howes  
**Office:** 213 Van Allen Hall  
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**Office Hours:** (via Zoom only) 1:30–2:30pm W, 9:30am–11:30am Th, or by appointment  
Zoom Link for Office Hours  
**Meeting ID:** 938 2285 9227, **Passcode:** 1701  
**Department:** Physics & Astronomy, 203 Van Allen Hall, Prof. Phil Kaaret, Chair

**Catalog Description:** This calculus-based physics course is part of a four-semester sequence intended primarily for physics and astronomy majors and other physical science or engineering majors who seek an in-depth introduction to physics (PHYS:1701, PHYS:1702, PHYS:2703, and PHYS:2704). Topics include Newtonian mechanics for point particles and rigid bodies and conservation laws. Grades are determined by homework, midterm exams, a final exam, and performance in lab sessions. The three weekly lectures and one-hour discussion (problem solving) are given by the course instructor, and the weekly lab is conducted by a teaching assistant.

**Lectures:** Monday, Wednesday, and Friday 12:30–1:20pm  
70 Van Allen Hall

**Discussion:** Thursday 12:30–1:20pm  
469 Van Allen Hall

**Required Text:** Halliday, Resnick, & Walker, *Fundamentals of Physics*, 11th edition (electronic or paper)

**Required Online Access:** WileyPLUS Online Homework system  
Top Hat Classroom Pro

**Required Lab equipment:** iOLab Device (rental or purchase)

**Web Pages:** <http://homepage.physics.uiowa.edu/~ghowes/teach/phys1701/index.html>  
ICON: <http://icon.uiowa.edu/>

**Course Preparation:** This is a 4 semester-hour course with lab. CLAS guidelines are that students should expect to spend two hours per semester-hour on study outside of class. This means 8 hours per week on homework, reading, and other course preparation.

**Exam Schedule:**

<b>Three Midterm Exams:</b>	Wednesday, September 22, 2021, 12:30–1:20pm	Chaps 1–5
	Wednesday, October 20, 2021, 12:30–1:20pm	Chaps 6–9
	Wednesday, November 17, 2021, 12:30–1:20pm	Chaps 10–12, 15
<b>Final Exam:</b>	To be determined	Chaps 1–15

**Grading:**

Homework:	15%
Labs:	15%
Midterm Exams:	15% each
Final Exam:	25%
Reading Quizzes:	extra credit (see below)

- Clickers:** The course will make extensive use of the Top Hat ([www.tophat.com](http://www.tophat.com)) classroom response system in class, required for every class lecture and discussion. You will be able to submit answers to in-class questions using Apple or Android smartphones and tablets, laptops, or through text message. You can visit the Top Hat Success Center ([success.tophat.com](http://success.tophat.com)) to learn how to register for a Top Hat account and get you up and running on the system. Our Course Join Code is **985452**. Should you require assistance with Top Hat at any time, due to the fact that they require specific user information to troubleshoot these issues, please contact their Support Team directly by way of email ([support@tophat.com](mailto:support@tophat.com)), the in app support button, or by calling 1-888-663-5491.
- Homework:** Weekly homework assignments are to be completed online using WileyPLUS, accessible through a link on our ICON course page. With the exception of Homework #0, all assignments must be completed online by 11:00pm on the Thursday that they are due. Late homework will not be accepted. You are encouraged to work together in groups on the homework, but each student must calculate the solutions to his/her own questions and submit the answers on WileyPLUS. Any solutions not available on WileyPLUS will be available on the ICON course website the day following the due date. If the score of the diagnostic test given in week 9 is higher, it will be used in place of your lowest homework score.
- Labs:** The laboratory assignments are a key part of the course, to be held under the supervision of your teaching assistant, who will also grade the laboratory reports. The iOLab Device, which can be purchased or just rented for the semester, is required to perform the laboratory activities. Questions about laboratory grading should be directed to your TA. Eating and drinking in the laboratory is not allowed. Conflicts between laboratory meeting times and night exams offered in other classes are to be resolved by the student asking for a make-up exam for the conflicting night exam. University policy is that instructors *must* offer such a make-up exam and that regularly scheduled class time, including laboratory, takes precedence over night exams. If a student misses a lab period due to illness or is required to quarantine, the laboratory exercises may be completed at home using the iOLab Device.
- Exams:** Three midterm exams will be held during regular class hours on the dates specified above. Exams will be closed book, but each student may bring a single, one-sided 8.5 by 11 inch formula sheet—*no words* may be written on the sheet, only formulas, and the formula sheet *must* be turned in with your exam. Midterm exams will cover the material specified above, and the final exam will be comprehensive. Exam solutions will be available on the ICON course website. There will be no make-ups for the one-hour exams except in truly extraordinary circumstances for which the student comes to the instructor *before* the exam to plan a make-up.
- Reading Quizzes:** Reading assignments must be completed *before* lecture. Completion of the reading is essential for the interactive learning method to be effective. During the semester, we will have 10 unannounced reading quizzes to be taken in class using Top Hat, intended to encourage reading and awareness of topics rather than in-depth understanding. The grades for the quizzes can only *help* your grade: at the end of the semester, you can improve your final exam grade (up to the maximum of 200 points) by your overall quiz percentage times 10 points. For example, if your final exam score is 150/200 and your quiz score is 80%, the the final exam score used for grading would be:  $150 + (80\% \times 10) = 158$ .

**Absence Policy:** Attendance is encouraged but not required for all regular class meetings, but any opportunities for extra credit through class activities, such as reading quizzes or diagnostic exams, will not be made up for any reason in the event of absence. Attendance during scheduled exams is required and make-up exams will only be given if the student comes to the instructor with appropriate justification *before* the exam to plan a make-up. If you feel sick, please stay home per University health and safety guidelines. If a student is required to quarantine, the course material and activities have been designed so that students will be able to complete homework and laboratory assignments from home.

**Teaching Assitant:** The Teaching Assistant (TA) for this course is graduate student Adam Zieser, adam-zieser@uiowa.edu. He will be overseeing the laboratory sections for this course, will assist with overseeing group problem solving activities during the discussion sections on Thursdays, and, during midterm exam weeks when no lab exercises are assigned, will run one-hour Midterm Exam Review Sessions during the lab periods.

**Physics Tutorials:** Teaching assistants are available for free tutoring in the TILE Commons Room, 310 Van Allen Hall, during posted hours. While you are strongly encouraged to seek help from the TAs and the instructor, do not expect them to do your homework for you.

Week	Lab	Class Meeting	Date	Reading	HW/Exam/Review
1	No Lab No Discussion	1	8/23	Chap. 1, Sec. 1–3, p. 1–8	Diagnostic Test  HW 0 due 8/27, 12:00pm
		2	8/25	Chap. 2, Sec. 1–4, p. 13–27	
		3	8/27	Chap. 2, Sec. 5–6, p. 27–31	
2	No Lab	4	8/30	Chap. 3, Sec. 1–3, p. 40–56	HW 1 due 9/2, 11:00pm
		5	9/1	Chap. 4, Sec. 1–4, p. 62–75	
		6	9/3	Chap. 4, Sec. 5–7, p. 76–82	
3	Lab i0	7	9/8	Chap. 5, Sec. 1–2, p. 94–106	HW 2 due 9/9, 11:00pm
		8	9/10	Chap. 5, Sec. 3, p. 106–114	
4	Lab i1	9	9/13	None	HW 3 due 9/16, 11:00pm
		10	9/15	Chap. 6, Sec. 1–2, p. 124–132	
		11	9/17	Chap. 6, Sec. 3, p. 133–138	
5	Exam 1 Review No Discussion	12	9/20	Chap. 7, Sec. 1–2, p. 149–155	Exam 1
		13	9/22	None	
		14	9/24	Chap. 7, Sec. 3–4, p. 155–162	
6	Lab i2	15	9/27	Chap. 7, Sec. 5–6, p. 162–169	HW 4 due 9/30, 11:00pm
		16	9/29	Chap. 8, Sec. 1–3, p. 177–191	
		17	10/1	Chap. 8, Sec. 4–5, p. 191–200	
7	Lab i3	18	10/4	Chap. 9, Sec. 1–3, p. 214–225	HW 5 due 10/7, 11:00pm
		19	10/6	Chap. 9, Sec. 4–6, p. 226–236	
		20	10/8	Chap. 9, Sec. 7–9, p. 237–244	
8	Lab i4	21	10/11	None	HW 6 due 10/14, 11:00pm
		22	10/13	Chap. 10, Sec. 1–3, p. 257–271	
		23	10/15	Chap. 10, Sec. 4–6, p. 271–278	
9	Exam 2 Review No Discussion	24	10/18	None	Review/Diagnostic Test Exam 2
		25	10/20	None	
		26	10/22	Chap. 10, Sec. 7–8, p. 279–286	
10	Lab i5	27	10/25	Chap. 11, Sec. 1–3, p. 295–302	HW 7 due 10/28, 11:00pm
		28	10/27	Chap. 11, Sec. 4–6, p. 302–309	
		29	10/29	Chap. 11, Sec. 7–9, p. 310–318	
11	Lab i6	30	11/1	Chap. 15, Sec. 1–3, p. 413–424	HW 8 due 11/4, 11:00pm
		31	11/3	Chap. 15, Sec. 4–6, p. 424–434	
		32	11/5	None	
12	Lab i7	33	11/8	Chap. 12, Sec. 1–2, p. 327–337	HW 9 due 11/11, 11:00pm
		34	11/10	Chap. 12, Sec. 3, p. 338–343	
		35	11/12	None	
13	Exam 3 Review No Discussion	36	11/15	Chap. 13, Sec. 1–3, p. 354–362	Exam 3
		37	11/17	None	
		38	11/19	Chap. 13, Sec. 4–6, p. 362–371	
Thanksgiving Break					
14	Lab i8	39	11/29	Chap. 13, Sec. 7–8, p. 371–377	HW 10 due 12/2, 11:00pm
		40	12/1	Chap. 14, Sec. 1–3, p. 386–393	
		41	12/3	Chap. 14, Sec. 4–5, p. 393–397	
15	Final Exam Review	42	12/6	Chap. 14, Sec. 6–7, p. 398–405	HW 11 due 12/9, 11:00pm Final Exam Review
		43	12/8	None	
		44	12/10	None	

**College of Liberal Arts and Sciences**  
**Information for CLAS Undergraduates**  
**Fall 2021**

**Attendance and Classroom Expectations**

Students are responsible for attending class and for knowing an instructor's attendance policies, which vary by course and content area. All students are expected to attend class and to contribute to its learning environment. Students are also expected to comply with University policies and directives regarding appropriate classroom behavior or other matters. Students also have the right to be evaluated solely on their academic achievement and the fulfillment of related requirements.

**Absences**

Students are responsible for communicating with instructors as soon they know that an absence might occur or as soon as possible in the case of an illness. Students may use the CLAS absence form to aid in communication with instructors who will decide if the absence is excused or unexcused; the form is located on ICON within the top banner under "Student Tools." Delays in communication could result in a forfeit of what otherwise might be an excused absence.

**Absences: Illness, Unavoidable Circumstances, and University Sponsored Activities**

Students who are ill, in an unavoidable circumstance affecting academic work, or who miss class because of a University sponsored activity are allowed by UI policy to make up a missed exam. Documentation is required by the instructor except in the case of a brief illness. Students are responsible for communicating with instructors as soon as the absence is known.

**Absences: Holy Days**

Reasonable accommodations are allowed for students whose religious holy days coincide with their classroom assignments, tests, and attendance if the student notifies the instructor in writing of any such religious Holy Day conflicts within the first days of the semester and no later than the third week. (See the University Operations Manual:

<https://opsmanual.uiowa.edu/students/absences-class#8.2>).

**Absences: Military Service Obligations**

Students absent from class due to U.S. veteran or U.S. military service obligations (including military service-related medical appointments, military orders, and National Guard Service obligations) must be excused without penalty. Instructors must make reasonable accommodations to allow students to make-up exams or other work. Students must communicate with their instructors about the expected possibility of missing class as soon as possible. (For more information, see <https://opsmanual.uiowa.edu/iv-8-absences-class%C2%A0-0>).

**Academic Misconduct**

All undergraduates enrolled in courses offered by CLAS have in essence agreed to the College's Code of Academic Honesty. Academic misconduct affects a student's grade and is reported to the College which applies an additional sanction, such as suspension. Outcomes about misconduct are communicated through UI email (<https://clas.uiowa.edu/students/handbook/academic-fraud-honor-code>).

**Academic Accommodations for Students with Disabilities**

UI is committed to providing an educational experience that is accessible to all students. A student may request academic accommodations for a disability (such as a mental health, attention, learning, vision, and a physical or health-related condition) through the Student Disability Services (SDS) office. The student is responsible for discussing specific accommodations with the instructor. Note that accommodations are not granted retroactively but from the time of the student's request to the instructor onward; additionally, accommodations must be requested at least two weeks in advance of the related assignment or exam (<https://sds.studentlife.uiowa.edu/>).

**Class Recordings: Privacy and Sharing**

Course lectures and discussions are sometimes recorded or live-streamed. These are only available to students registered for the course and the intellectual property of the faculty member. These materials may not be shared or reproduced without the explicit written consent of the instructors. Students may not share these recordings with those who are not enrolled in the course; likewise, students may not upload recordings to any other online environment. Doing so is a breach of the Code of Student Conduct and could be a violation of the Federal Education Rights and Privacy Act (FERPA); also see <https://dos.uiowa.edu/policies/code-of-student-life/>.

### **Communication: UI Email**

Students are responsible for all official correspondences sent to their UI email address (uiowa.edu) and must use this address for any communication with instructors or staff in the UI community ([Operations Manual, III.15.2](#)). Emails should be respectful and brief, with complex matters addressed during the instructor's drop-in hours, for example. Faculty are not expected to answer email after business hours or during the weekends.

### **Communication: Free Expression**

The University of Iowa supports and upholds the First Amendment protection of freedom of speech and the principle of academic freedom to foster a learning environment where open inquiry and the vigorous debate of a diversity of ideas are encouraged. Students will not be penalized for the content or viewpoints of their speech if student expression in a class context is germane to the subject matter of the class and is conveyed in an appropriate manner. To learn more, visit <https://freespeech.uiowa.edu/>.

### **Complaints about Academic Matters**

Students with a complaint about a grade or a related academic matter should first visit with the instructor and then with the course supervisor if one is assigned, and finally with the Chair of the department or program offering the course. Students may next bring the issue if not resolved to the College of Liberal Arts and Sciences. See <https://clas.uiowa.edu/students/handbook/student-rights-responsibilities>.

### **Final Examination Policies**

The final exam schedule is published during the fifth week of the fall and spring semesters or on the first day of summer classes; students are responsible for knowing the date, time, and place of their final exams. Students should not make travel plans until knowing this information. A student with exams scheduled on the same day and time or who have more than two final exams on the same day should visit this page for how to resolve these problems by the given deadline: <https://registrar.uiowa.edu/makeup-final-examination-policies>. No exams are allowed the week before finals, but with some exceptions made for labs, language courses, and off-cycle courses (<https://registrar.uiowa.edu/final-examination-scheduling-policies>).

### **Home of the Course**

The College of Liberal Arts and Sciences (CLAS) is the home of this course, and CLAS governs the courses add and drop deadlines, the "second-grade only" option (SGO), and other undergraduate policies and procedures. Different UI colleges may have other policies or deadlines. See <https://clas.uiowa.edu/students/handbook>. Questions? Contact CLAS at [clasps@uiowa.edu](mailto:clasps@uiowa.edu) or 319-335-2633.

### **Mental Health**

Students are encouraged to seek help as a preventive measure or if feeling stressed or overwhelmed. Students should talk to their instructors for guidance with specific class-related concerns and are encouraged to contact University Counseling Service (UCS) at 319-335-7294 during regular business hours to schedule an appointment. USC offers group and individual therapy as well as counseling for couples about relationships while making referrals to other resources (<https://counseling.uiowa.edu/>). Student Health can also address related concerns (<https://studenthealth.uiowa.edu/>). These visits are free to students. After hours, students are encouraged to call the Johnson County Community Crisis Line at (319) 351-0140 or dial 911 in an emergency.

### **Nondiscrimination in the Classroom**

The University of Iowa is committed to making the classroom a respectful and inclusive space for people of all gender, sexual, racial, religious, and other identities. Toward this goal, students are invited in MyUI to optionally share the names and pronouns they would like their instructors and advisors to use to address them. The University of Iowa prohibits discrimination and harassment against individuals based on race, class, gender, sexual orientation, national origin, and other identity categories indicated by the University's Human Rights policy. For more information, contact the Office of Equal Opportunity and Diversity at <https://diversity.uiowa.edu/division/office-equal-opportunity-and-diversity-eod>

### **Sexual Harassment**

Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff; all members of the UI community are expected to conduct themselves in a manner that maintains an environment free from sexual harassment and sexual misconduct. Those experiencing sexual harassment are strongly encouraged to report the incidents and to seek help (<https://osmrc.uiowa.edu/>).