



COURSE OUTLINE

1. **Course:** PHYS 227, Classical Physics - Fall 2021

Lecture 01: MWF 09:00 - 09:50 in TI FORUM

Instructor	Email	Phone	Office	Hours
Dr David Feder	dfeder@ucalgary.ca	403 220-3638	SB 535	Wednesdays 1000-1100

Despite appearances to the contrary, this course is not going to be like your high school physics was, even though it covers some of the same topics. Key differences include:

- This course should be a lot more fun!
- The pace is WAY faster. We'll be covering 10 chapters of the textbook in a little over 12 weeks in the term. And there is a lot of detail covered in this textbook; the chapters covered (Chapters 1-11, not including Chapter 8) span 429 pages. So you'll need to read about 36 pages per week to stay caught up. It will be easy to fall behind, so watch out!
- Because of the fast pace, I can't possibly cover everything in the textbook during lecture time. I'll try to cover the most important parts, but it will be up to you to learn the rest on your own. You are very much in charge of your learning in this course.
- Familiarity with basic calculus (derivatives and integrals) is expected, and generally the level of math is more advanced.
- The way we approach and solve problems is different than the ways you might have done this in high school.
- There is an assignment due approximately every 1.5 weeks. Each assignment covers either one or two chapters of the textbook. Assignments are available for two weeks, and no deadline extensions are possible.
- You will be learning how to program in visual Python, to perform simulations of mechanical systems.
- You'll be incorporating basic aspects of the special theory of relativity in your calculations, when warranted.

In Person Delivery Details:

This course has been designated as blended, i.e. a combination of in-person and online components. All labs and tutorials will be online. Lectures will start online, and move to in-person by Sept. 20.

Re-Entry Protocol for Labs and Classrooms:

To limit the spread of COVID-19 on campus, the University of Calgary has implemented safety measures to ensure the campus is a safe and welcoming space for students, faculty and staff. The most current safety information for campus can be found [here](#). **Online Delivery Details:**

This course is being offered online in real-time via scheduled meeting times, you are required to be online at the same time.

To help ensure Zoom sessions are private, do not share the Zoom link or password with others, or on any social media platforms. Zoom links and passwords are only intended for students registered in the course. Zoom recordings and materials presented in Zoom, including any teaching materials, must not be shared, distributed or published without the instructor's permission.

This course has a registrar scheduled, synchronous final exam. The writing time is 2 hours + 50% buffer time.

Lectures will start online, and move to in-person by Sept. 20. All labs are online. Both lectures and labs are synchronous.

Course Site:

D2L: PHYS 227 L01-(Fall 2021)-Classical Physics

Note: Students must use their U of C account for all course correspondence.

2. **Requisites:**

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

Prerequisite(s):

Physics 30; and Mathematics 30-1 or Mathematics 2 (offered by Continuing Education); and Mathematics 31; and

admission to a Major or Minor in Physics or Astrophysics or a Major in Chemistry, Natural Science (Physics Concentration), or Environmental Science (Physics Concentration).

Antirequisite(s):

Credit for more than one of Physics 227, 321, or 221 will not be allowed.

3. **Grading:**

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar.

In determining the overall grade in the course the following weights will be used:

Component(s)	Weighting %	Date
WileyPLUS assignments (8)	20	Schedule posted below
Labs	25	Schedule posted below
TopHat	5	In-class throughout the term
Midterm Examination	25	Wednesday, October 27 at 6:00pm
Final Examination	25	Scheduled by the Registrar

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows.

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Minimum % Required	95 %	90 %	85 %	80%	75%	70 %	65 %	60%	55%	50 %	45 %

This course will have a final exam that will be scheduled by the Registrar. [The Final Examination Schedule](#) will be published by the Registrar's Office approximately one month after the start of the term. The final exam for this course will be designed to be completed within 2 hours.

The final exam will be administered using an on-line platform. Per section [G.5](#) of the online Academic Calendar, timed final exams administered using an on-line platform, such as D2L, will be available on the platform. Due to the scheduling of the final exams, the additional time will be added to **the end** of the registrar scheduled **synchronous** exam to support students. This way, your exam schedule accurately reflects the **start time** of the exam for any **synchronous** exams. E.g. If a **synchronous** exam is designed for 2 hours and the final exam is scheduled from 9-11am in your student centre, the additional time will be added to the **end** time of the **synchronous** exam. This means that if the exam has a 1 hour buffer time, a synchronous exam would start at 9 am and finish at 12pm.

WileyPlus

WileyPLUS is an online assignment tool that is linked to the textbook used in this course. There will be eight WileyPLUS assignments due most weeks on the Friday, not including the first week, last week, week of the Term Break, or the week of the midterm examination. The WileyPLUS Assignment Schedule is given near the end of this course outline. Each assignment is worth only 2.5% of your term grade. I strongly believe that the best way to learn is to work on problems, so there are many assignments to do, but each one is worth relatively little which I hope will make them low-stress.

It is highly recommended that you purchase the integrated e-textbook and WileyPLUS through Wiley (instructions below). Not only is the textbook an excellent study tool, but also a link to the textbook is provided in WileyPLUS assignment questions in case you run into trouble. That said, if purchasing both the e-text and WileyPLUS would incur undue financial hardship, then you can access WileyPLUS from a computer in the Taylor Family Digital Library (TFDL).

Instructions:

Information about how to enrol in WileyPLUS can be found on the course D2L page. **The course code (this is important!) is A20909.**

Labs

There are five labs (all online and synchronous) in this course. Each lab is worth 5 percent of your term grade.

You are already enrolled in a lab group in your lab section; please see the course D2L shell for your assignment. The labs are on Tuesdays for all lab sections. Each lab section is 1 hour and 50 minutes long, and the labs are designed to be finished within the allotted time. That said, you will have until the Friday at 5:00 PM of that week to submit your lab for grading. Each lab has a pre-lab assignment that involves creating a simple program to prepare you for the simulations you will do. Each lab that you complete will explain what it is you will have to submit, which will then be graded by the TA of your lab section. Note that labs **ONLY** take place on the following dates:

Lab 1 (September 21): Introduction to Simulation in VPython

Lab 2 (October 5): Simulating Constant Acceleration

Lab 3 (October 19): Simulating Spring-Mass Systems

Lab 4 (November 2): Simulating Gravitational Orbits

Lab 5 (November 23): Simulating a Physical Pendulum

TopHat

In order to help you better understand the course material, to encourage class participation and student interaction, to provide you with rapid feedback, and (frankly) to break up the monotony of a lecture, you will be frequently answering questions via an online 'classroom response system' called TopHat. These questions will be worth 5% of your total term grade: 2.5% for participation, and 2.5% for accuracy. To account for a broad range of technical difficulties that could be encountered, and to account for the fact that life is sometimes complicated, at the end of the term the total Top Hat grade will be calculated out of 80 rather than 100.

TopHat is nice in that you can submit your answers either on your computer / tablet, or your phone, or even via plain text. The questions will always be viewable via Zoom during the lectures, but will also simultaneously be captured and displayed in TopHat. You must bring an electronic device (cell phone, smart phone, tablet, laptop computer, etc.) to class in order to take the quizzes.

To register:

- Go to www.tophat.com and click on "Signup" in the top right corner of the screen.
- Select "Sign-up as student" and when it prompts you to, enter the 6-digit Join Code "712697" and choose "Physics 227 Fall 2021" from the menu and click "Join this Course."
- Input your full name and your University of Calgary email address. **You must use your UofC email address!** If you don't, then (a) you'll be asked to pay for something that is free because the UofC has a site license; and (b) your final grade tabulation won't work because all your grades are tied to your UofC credentials!
- In order to properly get credit for TopHat at the end of the semester, enter your 8-digit UCID in the appropriate spot in your profile.
- If you will be using your mobile device to text in answers during class, be sure to put in your phone number during signup and follow the instructions.

We'll start using TopHat on September 13, but the answers will only count toward the gradebook starting Monday September 20 (after the UofC course add deadline which is Friday September 17).

Midterm Examination

The midterm exam is tentatively scheduled for Wednesday, Oct. 27 at 6:00pm (outside of regular class time). It will be two hours (plus an hour buffer to compensate for technical problems), and administered via D2L. The midterm exam covers Chapters 1-5 of the textbook.

Final Examination

The final exam will be scheduled by the Registrar and will cover all Chapters (1-11, not including Chapter 8) of the textbook, with a focus on Chapters 6,7,9,10, and 11.

The University of Calgary offers a [flexible grade option](#), Credit Granted (CG) to support student's breadth of learning and student wellness. Faculty units may have additional requirements or restrictions for the use of the CG grade at the faculty, degree or program level. To see the full list of Faculty of Science courses where CG is not

eligible, please visit the following website: <https://science.ucalgary.ca/current-students/undergraduate/program-advising/flexible-grading-option-cg-grade>

4. **Missed Components Of Term Work:**

The university has suspended the requirement for students to provide evidence for absences. Please do not attend medical clinics for medical notes or Commissioners for Oaths for statutory declarations.

In the event that a student legitimately fails to submit any online assessment on time (e.g. due to illness etc...), please contact the course coordinator, or the course instructor if this course does not have a coordinator to arrange for a re-adjustment of a submission date. Absences not reported within 48 hours will not be accommodated. If an excused absence is approved, one possible arrangement is that the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course. This option is at the discretion of the coordinator and may not be a viable option based on the design of this course.

5. **Scheduled Out-of-Class Activities:**

The following out of class activities are scheduled for this course.

Activity	Location	Date and Time	Duration
Midterm	Online	Wednesday, October 27, 2021 at 6:00 pm	1.5 Hours

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY. If you have a conflict with the out-of-class-time-activity, please contact your course coordinator/instructor no later than **14 days prior** to the date of the out-of-class activity so that alternative arrangements may be made.

6. **Course Materials:**

Required Textbook(s):

Ruth Chabay and Bruce Sherwood, *Matter and Interactions*, 4th edition: Wiley.

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

- A computer with a supported operating system, as well as the latest security, and malware updates;
- A current and updated web browser;
- Webcam/Camera (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled;
- Stable internet connection.

For more information please refer to the UofC [ELearning](#) online website.

7. **Examination Policy:**

No aids are allowed on tests or examinations.

Students should also read the Calendar, [Section G](#), on Examinations.

8. **Approved Mandatory And Optional Course Supplemental Fees:**

There are no mandatory or optional course supplemental fees for this course.

9. **Writing Across The Curriculum Statement:**

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also Section [E.2](#) of the University Calendar.

10. **Human Studies Statement:**

Students will not participate as subjects or researchers in human studies.

See also [Section E.5](#) of the University Calendar.

11. **Reappraisal Of Grades:**

A student wishing a reappraisal, should first attempt to review the graded work with the Course

coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

- a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **ten business days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall submit the Reappraisal of Graded Term work form to the department in which the course is offered within 2 business days of receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. See sections [I.1](#) and [I.2](#) of the University Calendar
- b. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section I.3](#) of the University Calendar.

12. Other Important Information For Students:

- a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).
- b. **SU Wellness Services:** For more information, see www.ucalgary.ca/wellnesscentre or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email (svsa@ucalgary.ca) or phone at [403-220-2208](tel:403-220-2208). The complete University of Calgary policy on sexual violence can be viewed at (<https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Sexual-and-Gender-Based-Violence-Policy.pdf>)
- d. **Misconduct:** Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity. Research integrity, ethics, and principles of conduct are key to academic integrity. Members of our campus community are required to abide by our institutional [Code of Conduct](#) and promote academic integrity in upholding the University of Calgary's reputation of excellence. Some examples of academic misconduct include but are not limited to: posting course material to online platforms or file sharing without the course instructor's consent; submitting or presenting work as if it were the student's own work; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. Please read the following to inform yourself more on academic integrity:

[Student Handbook on Academic Integrity](#)
Student Academic Misconduct [Policy](#) and [Procedure](#)
[Research Integrity Policy](#)

Additional information is available on the [Student Success Centre Academic Integrity page](#)

e. **Academic Accommodation Policy:**

It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The student accommodation policy can be found at: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf>

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf>.

Students needing an accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, by filling out the [Request for Academic Accommodation Form](#) and sending it to Dr. David Feder by email phas.ahugrd@ucalgary.ca preferably 10 business days before the due date of an assessment or scheduled absence.

- f. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see [Legal Services](#) website.
- g. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](#) Email: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: [403-220-3913](#) Email: sciencerep@su.ucalgary.ca. [Student Ombudsman](#), Email: ombuds@ucalgary.ca.
- h. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.
- i. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or [non-academic misconduct](#), in addition to any other remedies available at law.

Course Schedule

We'll be covering 10 chapters of the textbook (Chapters 1-11, not including Chapter 8). Not including the first and last weeks, and the week of the midterm, this corresponds to one chapter per week! So this course is pretty fast-paced. The following is the schedule of topics we'll be covering. Dates given are the Mondays of the week.

- **13/09 Chapter 1: Interactions and Motion**
 - No labs: lab time for downloading / validating WileyPLUS, TopHat, VPython, LaTeX, etc.
- **20/09 Chapter 2: The Momentum Principle**
 - Lab 1 (21/09): Introduction to Simulation in VPython. Lab report due 24/09. Assignment 1 (covers Chapter 1) due on 24/09 at 23:59
- **27/09 Chapter 3: The Fundamental interactions**
 - No lab. Assignment 2 (covers Chapter 2) due on 01/10 at 23:59
- **04/10 Chapter 4: Contact Interactions**
 - Lab 2 (05/10): Simulating Constant Acceleration. Lab report due 08/10. Assignment 3 (covers Chapter 3) due on 08/10 at 23:59
- **11/10**
 - Thanksgiving Monday, so short week! No labs.
- **18/10 Chapter 5: Determining Forces from Motion**
 - Lab 3 (19/10): Simulating Spring-Mass Systems. Lab report due 22/10. Assignment 4 (covers Chapter 4) due on 22/10 at 23:59
- **25/10 Chapter 6: The Energy Principle**
 - No lab. No assignment. Just study because the midterm exam is on 27/10 at 18:00
- **01/11 Chapter 7: Internal Energy**
 - Lab 4 (02/11): Simulating Gravitational Orbits. Lab report due 05/11. Assignment 5 (covers Chapter 5) due on 05/11 at 23:59
- **08/11 Midterm Break - no classes!**

- **06/11 Midterm Break - no classes:**
- **15/11 Chapter 9: Translational, Rotational, and Vibrational Energy**
 - No lab. Assignment 6 (covers Chapters 6 and 7) due on 19/11 at 23:59
- **22/11 Chapter 10: Collisions**
 - Lab 5 (23/11): Simulating a Physical Pendulum. Lab report due 26/11. Assignment 7 (covers Chapter 9) due on 26/11 at 23:59.
- **29/11 Chapter 11: Angular Momentum**
 - No lab. No assignment due.
- **06/12 Finish Chapter 11**
 - No lab. Assignment 8 (covers Chapters 10 and 11) due on 08/12 at 23:59.

Course Incomes:

It is expected that students entering PHYS 227 are able to:

- Solve for the roots of a quadratic equation
- Use trigonometry and geometry to solve problems
- Employ basic algebraic manipulations
- Perform basic derivatives and integrals
- Express themselves in English

Course Outcomes:

- Explain how interactions between systems affect motion
- Catalog and discuss fundamental and emergent interactions
- Make mathematical predications about collisions using the momentum principle
- Calculate behavior of systems using the energy principle and energy quantization
- Predict behaviour of rotating systems using angular momentum, torque and rotational kinetic energy.

Electronically Approved - Sep 13 2021 22:00

Department Approval

Electronically Approved - Sep 14 2021 08:52

Associate Dean's Approval