



## COURSE OUTLINE

### 1. **Course:** PHYS 371, Introduction to Energy - Fall 2023

Lecture 01 : MWF 11:00 - 11:50 in CHC 105

<b>Instructor</b>	<b>Email</b>	<b>Phone</b>	<b>Office</b>	<b>Hours</b>
Dr. Laura Mazzino	<a href="mailto:laura.mazzino@ucalgary.ca">laura.mazzino@ucalgary.ca</a>	403 220-8648	SB 533	Wednesdays 13:30-14:30

To account for any necessary transition to remote learning for the current semester, courses with in-person lectures, labs, or tutorials may be shifted to remote delivery for a certain period of time. In addition, adjustments may be made to the modality and format of assessments and deadlines, as well as to other course components and/or requirements, so that all coursework tasks are in line with the necessary and evolving health precautions for all involved (students and staff).

#### **In Person Delivery Details:**

This course is being offered in person. Lectures will not be recorded.

#### **Course Site:**

D2L: PHYS 371 L01-(Fall 2023)-Introduction to Energy

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

#### **Equity Diversity & Inclusion:**

The University of Calgary is committed to creating an equitable, diverse and inclusive campus, and condemns harm and discrimination of any form. We value all persons regardless of their race, gender, ethnicity, age, LGBTQIA2S+ identity and expression, disability, religion, spirituality, and socioeconomic status. The Faculty of Science strives to extend these values in every aspect of our courses, research, and teachings to better promote academic excellence and foster belonging for all.

The Physics and Astronomy EDI Committee acknowledges there are persistent barriers that prevent such accessibility and hinder our progress towards EDI. Our representatives (faculty, postdocs, graduate and undergraduate students) are committed to addressing any concerns and work towards proactive solutions that enact necessary change within the department. To submit anonymous questions, comments or concerns regarding EDI related issues, please reach out to our Associate Head EDI, Claudia Gomes da Rocha ([claudia.gomesdarocha@ucalgary.ca](mailto:claudia.gomesdarocha@ucalgary.ca))

### 2. **Requisites:**

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

### 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:

Course Component	Weight	Due Date (duration for exams)	Modality for exams	Location for exams
Course Etiquette (Respect, Grace & Courtesy). Communication Guidelines <sup>1</sup>	5%	Ongoing		
Online Assignments - Weekly (12 items, 2 lowest dropped) <sup>2</sup>	20%	Ongoing		
2% BONUS MARKS: Scavenger Hunt <sup>3</sup>	2%	Ongoing		
Midterm 1 <sup>4</sup>	20%	Oct 04 2023 at 11:00 am (50 Minutes)	in-person	In Class
Midterm 2 <sup>5</sup>	20%	Nov 08 2023 at 11:00 am (50 Minutes)	in-person	In Class
Registrar Scheduled Final Exam <sup>6</sup>	35%	Will be available when the final exam schedule is released by the Registrar	online	Will be available when the final exam schedule is released by the Registrar

<sup>1</sup> Students are responsible for reading the Course Etiquette & Communication Guidelines, posted on D2L, under COURSE INFORMATION. By attending the course, students agree with and are responsible for following both the Course Etiquette & Communication Guidelines.

<sup>2</sup> \*\*\*The 2 lowest will be dropped\*\*\*. Online assignments have the format "unlimited attempts" and they are great practice for exams. The availability and due dates will be posted in the D2L Calendar.

<sup>3</sup> Scavenger hunt: 2% bonus points will be added to the final grade for those completing the activity. Available starting September 6, 2023, this fun activity will help you to discover places around campus that relate to energy concepts covered in this course. Submission through Dropbox. Due October 30, see below for details.

<sup>4</sup> See "Exam Policy" section

<sup>5</sup> See "Exam Policy" section

<sup>6</sup> Online

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
<b>Minimum % Required</b>	95 %	90 %	85 %	80%	75%	70 %	65 %	60%	55%	50 %	45 %

**The percentage grade for the course must be equal to or larger than the stated value to obtain a certain letter grade, without rounding.**

This course will have a Registrar Scheduled Final exam that will be delivered on-line. [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 1 hours.

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.

**Course Etiquette:** Students will conduct respectful behavior toward their other classmates, the Teaching Assistants, and to the instructor, during classes and during office hours, which will result in 5% of the final grade awarded to them.

**Communication guidelines:** Students are required to read and agree to the Communication Guidelines for this course, as posted on D2L.

- Students MUST use their UCalgary email account for any communications.

- Emailing should be limited to business hours and will be responded to during the same hours: Monday-Friday 9 am - 5 pm.

- Students must include the course code PHYS371 F2023 in the subject line.
- Students must include in the first line 1) their first and last name and 2) their UCID number.
- Correspondence from private accounts, other than the UofC official accounts, or without the required information will NOT be answered.
- When communicating with the instructor on important matters, please allow 3-4 work days for a response to messages and e-mail inquiries.
- Technical solutions to homework questions will not be provided by email. Students are expected to ask these types of questions in person.
- **PLEASE DO NOT EMAIL THE INSTRUCTOR for day-to-day issues (you will receive a reply "D2D" in that case). Instead, ask during the lectures or visit the office hours. Emailing the instructor is reserved for very important issues (such as extended absence related to health that might result in missing work beyond from what it is already accommodated in the compassionate grading scheme).**
- Office hours are a great opportunity to get one-on-one help with the course in general and particular questions regarding a topic, a concept, an assignment, course management, etc. TAs will also have office hours to help you with anything you need.

The Piazza forum is set up for this course (see login information below) to facilitate peer-interaction and to receive peer-feedback. The course's PIAZZA forum will be monitored by the instructor at least once a week.

Piazza: <https://piazza.com/ucalgary.ca/fall2023/f2023phys371> (access code on D2L under "Student Resources")

**Assignments:** The assignments will be completed through D2L. **The 2 lowest assignments will be dropped. NO LATE SUBMISSIONS ARE ACCEPTED.** Check the course D2L calendar to see release date/time and due date/time for each assignments. For more information, consult D2L, under the section "Resources for Students - Assignments": A list of assignments with their release date/time and due date/time will be posted in that section.

Students will complete an initial "Assignment 0" before the second class. This assignment is an initial assignment regarding important information presented in this course outline and is set up for unlimited attempts. Assignment 0 will become available by September 5, 2023 (in the D2L "quizzes" section, and will have a "0%" grade associated with it. However, the completion of Assignment 0 with 100% is a requirement to 'unlock' the rest of the material for the course on D2L. If a student forgets to answer this assignment or did not score 100% yet, their D2L shell will show empty. After achieving 100% in this initial assignment, all available content for the course (and subsequent content uploaded throughout the course) will appear automatically.

**Midterms:** See "Exam Policy" section. Further details about midterms will be given in the lecture, 1 week prior to each midterm exam.

**Final Exam:** See "Exam Policy" section. Further details about the final exam will be given in the lecture, 1 week prior to the last day of class.

**Bonus points:** A 'scavenger hunt' around campus related to ENERGY! This fun activity will help you to discover places around campus that relate to energy concepts covered in this course. Submission through Dropbox. It can be completed individually or in a group but must be submitted individually to receive a 2% bonus points in the final grade. The scavenger hunt will open on September 6, 2023, and will close on October 30. Details will be posted on D2L.

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:**

In the event that a student legitimately fails to submit any online or in-person assessment on time (e.g. due to illness, domestic affliction, 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, or possible exemption and reweighing of components. Absences not reported within 48 hours will not be accommodated. Students may be asked to provide supporting documentation ([Section M.1](#)) for an excused absence, See [FAQ](#).

If an excused absence is approved, options for how the missed assessment is dealt with is at the discretion of the coordinator or course instructor. Some options such as an exemption and pro-rating among the components of the course may not be a viable option based on the design of this course.

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

There are no scheduled out of class activities for this course.

## 6. **Course Materials:**

**There is no mandatory textbook** for this course. The day-to-day work will be done with material provided via D2L and the website created by Professor Jason Donev (UCalgary, Faculty of Science, Department of Physics and Astronomy): [https://energyeducation.ca/encyclopedia/Main\\_Page](https://energyeducation.ca/encyclopedia/Main_Page).

Complementary Textbook(s):

Nick Jell, Renewable Energy: A Very Short Introduction: Oxford University Press.

Nick Jenkin, Energy Systems: A Very Short Introduction: Oxford University Press.

These textbooks, available at the bookstore in etext format, are good complementary material to the class material, providing excellent summaries of the content of the course, and **are not mandatory**.

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:**

### 7.a) **Midterm Exams:**

**Both midterm exams are closed-book exams.**

Midterm exams will be in class exams. A CALCULATOR (of any kind including graphing or programmable calculators) is required to complete these assessments in class.

Students are allowed to use in the exams a personalized letter size page (8.5 x 11 in; 22 cm x 28 cm) front and back with formulas and personal notes.

Resources to study for the midterm exams (blue slides) will be provided during class.

### 7.b) **Final Exam:**

**The final exam is an ONLINE exam.**

Resources to study for the final exam (purple slides) will be provided during class.

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 their [website](#) or call [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](mailto:svsa@ucalgary.ca)) or phone at [403-220-2208](#). The complete University of Calgary policy on sexual violence can be viewed [here](#).
- d. **Student Ombuds Office:** A safe place for all students of the University of Calgary to discuss student related issues, interpersonal conflict, academic and non-academic concerns, and many other problems.
- e. **Student Union Information:** [SU contact](#), Email your SU Science Reps: [science1@su.ucalgary.ca](mailto:science1@su.ucalgary.ca), [science2@su.ucalgary.ca](mailto:science2@su.ucalgary.ca), [science3@su.ucalgary.ca](mailto:science3@su.ucalgary.ca),
- f. **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](mailto:phas.ahugrd@ucalgary.ca) preferably 10 business days before the due date of an assessment or scheduled absence.

- g. **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](#)  
[Faculty of Science Academic Misconduct Process](#)  
[Research Integrity Policy](#)

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

- h. **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.
- i. **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.
- j. **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.

### Course Syllabus

Week 1: Introduction to the course. Concept of energy. Modelling energy and matter. Energy and Work. Power.

Week 2: Brief Chronology of Human use of Energy. Examples of Energy usage pre-Industrial Revolution.

Week 3: Electricity. Electromagnetism. Generation of electricity. Storage, and Distribution of electricity.

Week 4: Examples of Energy usage post-Industrial Revolution. Thermal energy.

Week 5: Heating our homes. *Midterm 1*

Week 6: Thermodynamics. Heat Engines.

Week 7: Wind, Hydro.

Week 8: Wave, Tidal. Geothermal.

Week 9: Nuclear Power, Solar Power. *Midterm 2*

Week 10: Fossil fuels.

Week 11: TERM BREAK. NO CLASSES.

Week 12: Energy and Climate. Environmental consequences and climate change.

Week 13: Primary energy, end-use, energy for society: Social consequences.

Week 14: Wrap up.

### Course Learning Incomes

Before enrolling to the course, students should be able to:

Convert numerical quantities from one set of units to another with given unit conversions (i.e. 100 cm = 1 m, convert 324 cm into meters)

Solve linear algebraic equations (e.g. If  $3y+6=12$ , what is the value of  $y$ ?)

Use a calculator to find the sin, cos, and tan of an angle (e.g. Find  $\cos 40^\circ$  with a calculator).

Read line, bar, and pie charts.

Discuss, in a mature and respectful manner, controversial topics such as climate change, fracking, and poverty.

**Course Outcomes:**

- What energy is and how it is used
- The advantages and disadvantages of various sources of primary energy
- What electricity is and how it is produced & distributed
- How our energy use ties to our changing climate.
- Analyze how our quality of life depends on energy consumption
- Analyze, evaluate and discuss the consequences of energy choices

Electronically Approved - Aug 29 2023 17:47

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**Department Approval**

Electronically Approved - Aug 30 2023 14:38

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**Associate Dean's Approval**