



UNIVERSITY OF CALGARY
FACULTY OF SCIENCE
DEPARTMENT OF PHYSICS & ASTRONOMY
COURSE OUTLINE

1. **Course:** PHYS 371, Introduction to Energy -- Summer 2018

Instructor Name	Email	Phone	Office	Hours
L01: (TR 12:00 - 14:45 in SA 104)				
Brodie Yyelland	brodie.yyelland@ucalgary.ca	TBA	TBA	T/W/Th 3:00pm - 4:00pm

Course Description

Energy is key for our quality of life, but misconceptions about energy abound. This course is an exciting overview of energy issues relevant in the modern world. This course will discuss why we use fossil fuels, what the consequences are and what options are available, and the issues associated with those options. These will include nuclear, solar and wind power.

Course Site:

D2L: PHYS 371 L01-(Summer 2018)-Introduction to Energy

Department of Physics & Astronomy:

Office: Science B 605

Phone: 403 220-5385

Email: office@phas.ucalgary.ca

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.

Some previous exposure to physics, e.g., Science 10, is strongly recommended. Not intended for Physics majors and will not count in the field of Physics. **Students who do not meet these requirements will be removed from the course.** Note: The Faculty of Science policy on pre- and co-requisite checking is outlined in the 2016-2017 Calendar. A student may not register in a course unless a grade at least "C-" has been obtained in each pre-requisite course; it is the responsibility of students to ensure that their registrations are in order. See <http://www.ucalgary.ca/pubs/calendar/current/sc-3-5.html> for details.

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
In class work (worksheets and clickers)	10	N/A
Homework	30	N/A
Midterm Examinations (2)	30	July 17, July 31
Final Examination	30	TBA

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 %	87 %	84%	81%	78 %	75 %	71%	68%	65 %	60 %

This course has a registrar scheduled final exam.

Student Response Systems - I will be using the Top Hat clicker system to ask questions about what you've read and the material that we cover in the lecture. Half of your points will be determined by if you answer and half will be based on if you get the answer correct.

Worksheets - I will hand out worksheets to be completed in small groups in class. Some of these worksheets will require you to work with students in your group outside of class.

Homework - I've done my best to create problems that I believe you'll be able to solve, in a relatively timely fashion. Homework will be done on a weekly basis and due on Wednesdays at midnight, unless stated otherwise.

4. Missed Components of Term Work:

The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in [Section 3.6](#). It is the student's responsibility to familiarize himself/herself/themself with these regulations. See also [Section E.3](#) of the University Calendar.

5. Scheduled out-of-class activities:

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

6. Course Materials:

The required text for this course is the website energyeducation.ca, available for free online.

7. Examination Policy:

There will be two mid-term exams during the semester and one comprehensive, final exam scheduled by the registrar. Material will come from class lectures, readings, homework, and worksheets. These exams will ask you to discuss energy issues and choices that the course has talked about.

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.

1. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **15 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 immediately submit the Reappraisal of Graded Term work form to the department in which the course is offered. The department will arrange for a re-assessment of the work if, and only if, the student has sufficient academic grounds. See sections [I.1](#) and [I.2](#) of the University Calendar

2. **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 Center:** The Students Union Wellness Centre provides health and wellness support for students including information and counselling on physical health, mental health and nutrition. For more information, see www.ucalgary.ca/wellnesscentre or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** The University of Calgary is committed to fostering a safe, productive learning environment. The Sexual Violence Policy (<https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf>) is a fundamental element in creating and sustaining a safer campus environment for all community members. We understand that sexual violence can undermine students' academic success and we encourage students who have experienced some form of sexual misconduct to talk to someone about their experience, so they can get the support they need. 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).
- d. **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties. Examples of academic misconduct may include: submitting or presenting work as if it were the student's own work when it is not; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; collaborating in whole or in part without prior agreement of the instructor; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. **These are only examples.**
- e. **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on [assembly points](#).
- f. **Academic Accommodation Policy:** Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services in accordance with the procedure for accommodations for students with disabilities available at [procedure-for-accommodations-for-students-with-disabilities.pdf](#).
- Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Associate Head of the Department of Physics & Astronomy, Dr. David Feder by email phas.ahugrd@ucalgary.ca or phone 403-220-8127. Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than **14 days** prior to the date in question. See [Section E.4](#) of the University Calendar.
- g. **Safewalk:** Campus Security will escort individuals day or night (See the [Campus Safewalk](#) website). Call [403-220-5333](tel:403-220-5333) for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- h. **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.
- i. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](tel:403-220-3911) Email: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: [403-220-3913](tel:403-220-3913) Email: sciencerep@su.ucalgary.ca. Student Ombudsman, Email: suvpaca@ucalgary.ca.
- j. **Internet and Electronic Device Information:** Unless instructed otherwise, cell phones should be turned off

during class. All communication with other individuals via laptop, tablet, smart phone or other device is prohibited during class unless specifically permitted by the instructor. Students that violate this policy may be asked to leave the classroom. Repeated violations may result in a charge of misconduct.

- k. **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.

Topic outline

The following is a general guideline of what topics we'll be covering:

July 3rd: Course overview and Our Changing Planet (Chapter 1)

July 5th: High-Energy Society (Chapter 2)

July 10th: Energy: A Closer Look (Chapter 3)

July 12th: Turning Heat into Work (Chapter 4)

July 17th: Midterm 1, Fossil Fuel Energy (Chapter 5)

July 19th: Fossil Fuel Energy (Chapter 5) continued

July 24th: Environmental Impacts of Fossil Fuels (Chapter 6)

July 26th: Nuclear Energy (Chapter 7)

July 31st: Midterm 2, Energy from Natural Nuclear Processes: Geothermal and Solar Power (Chapter 8)

August 2nd: Energy from Natural Nuclear Processes: Geothermal and Solar Power (Chapter 8) continued

August 7th: Indirect from the Sun: Water, Wind, Biomass (Chapter 9)

August 9th: Keeping Warm: The Science of Climate (Chapter 10)

August 14th: Course Review and Final Exam Preparation

Attendance and Classroom Behavior

To do well in this course: read the assigned passages before coming to class; show up, and participate in class discussions, including submitting clicker questions; and do the weekly homework assignments. This is a large lecture course which will break into small group discussions; courteous behavior is expected. If you fall behind or have trouble, I expect you to come to me and then we can figure out what can be done about it. The earlier in the course you approach me the more help I can be. Bring a calculator, a way to answer clicker questions, paper and a writing implement to class.

The required material will be presented in class and in readings, and you will be responsible for all information presented in class (even if not in the readings) and in the readings (even if not presented in class). Additionally, you will occasionally have to go outside of the classroom materials to find more information.

Course Incomes

At the beginning of the course, students should be able to:

- Convert numerical quantities from one set of units to another with given unit conversions (eg. 100 cm = 1 m, how many meters is 324 cm?)
- Solve linear algebraic equations (eg. If $3y+6=12$, what is the value of y ?)
- Use a calculator to find the sin, cos and tan of an angle (eg. Find $\cos 40^\circ$ with a calculator).
- Read line, bar and pie charts
- Discuss controversial topics such as climate change, fracking and poverty in a mature and respectful manner.

Department Approval:

Electronically Approved

Date: 2018-06-21 10:00

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