Natural Sciences Program
SB 149
403 220-6760
usc@ucalgary.ca

COURSE OUTLINE

1. **Course:** SCIE 317, Energy Transformations - Fall 2020

   Lecture 01: MWF 10:00 - 10:50 - Online

Instructor	Email	Phone	Office	Hours
Dr Jason Donev	jmdonev@ucalgary.ca	403 210-6343	SA 101A	Monday 14:00-15:00, Tuesday 10:00-11:00, Tuesday 13:00-14:00

This is a one term course on the heat engines that harness fuels and the electricity that is transmitted to users in the developed world. We will talk about where comes from to run our lives and how that energy is converted into useful forms for transmission, distribution and use. This will include a review of the necessary thermodynamics.

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.

Students will be meeting with the professor and working with other students over Zoom. While it will be possible to call in using a telephone, a computer with a microphone is encouraged to participate in the class discussions and group work.

Course Site:

D2L: SCIE 317 L01-(Fall 2020)-Energy Transformations

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):
3 units from Physics 211, 221 or 227; and 3 units from Physics 223, 255, 259 or 355. Also known as: (formerly Science 507.17)

Students are required to have taken and passed physics 211 (or 221 or 227), 223 (or 255) and PHYS 371 or ENEE 355 or get permission from the natural sciences director.

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
Midterm 1	15	Oct 14th, 2020
Midterm 2	15	Nov 18th, 2020
Final Exam	20	TBD
Classwork & Homework	30	Ongoing
Project	20	Nov 30- Dec 2nd, 2020

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 %	72%	69%	66 %	63 %

This course has a registrar scheduled final exam.

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, then the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course.

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

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

6. **Course Materials:**

   Access to an introductory (first year) physics textbook, like the text used for PHYS 211/221/223 is strongly recommended.

   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:**

   Non-programmable calculators will be allowed on all exams. Midterm exams will be done synchronously during the Wednesday afternoon tutorial session.

   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.

   There will be writing requirements in this course. Grammar, punctuation, spelling and effective writing are necessary in this world, and therefore necessary in this class. Proofread everything that you turn in to me. If you fall behind or have trouble, please come to me and we can figure out what can be done about it. The earlier in the course you approach me the more help I can be.

10. **Human Studies Statement:**

If you agree, your course work may be used for research purposes. Your responses will remain anonymous and confidential. Grouped data (no individual responses) may be used in academic presentations and publications. Participation in such research is voluntary and will not influence grades in this course. Students' signed consent forms will be withheld from instructors until after final grades are submitted. More information will be provided at the time student participation is requested.

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 Center:** For more information, see www.ucalgary.ca/wellnesscentre 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) or phone at 403-220-2208. The complete University of Calgary policy on sexual violence can be viewed at (https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf)

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. **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 Program Director of the Natural Sciences Program, Dr. Edwin Cey by email ntscdirector@ucalgary.ca or phone 403 220-8393. 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.

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.

How we'll spend classroom time

I believe in active learning and everyone participating in discussion; this class will centre around dialogues about energy production and use. I'll distribute sheets of questions with checkpoints interspersed. You'll answer the questions in groups by reading the textbook, discussion with your classmates and researching on the internet. Students will discuss their answers in small groups online. Computer simulations will be provided to aid discussion. When you get to a checkpoint, call me into your discussion room to discuss your answers. Every member of the group is expected to have answers to all of the questions. If everyone seems to have sufficient understanding of the material, you get checked off, if not, your group goes back and fixes the problem and re-does the checkpoint. You will then turn your checkpoint sheets in to be assessed electronically. Test material will be based on material that we discuss in these checkpoints and the homework.

If you miss class for any reason, including illness, you must contact me promptly (within 48 hours of the missed class)Please be prompt as your group will be counting on you.

Bring:

The checkpoint questions and an electronic device for answering them. There are several ways to do this, please talk with me if you need help coming up with a good way to do this.

There will be writing requirements in this course. Grammar, punctuation, spelling and effective writing are necessary in this world, and therefore necessary in this class. Proofread everything that you turn in to me. If you fall behind or have trouble, please come to me and we can figure out what can be done about it. The earlier in the course you approach me the more help I can be.

Homework solutions will be submitted electronically.

Assessments

1. Worksheets & homework

You will be given questions on sheets to do both in class and at home. Additional homework will be assigned and turned in throughout the term. Make sure to show up on time for class, or you will lose points on the checkpoints.

Assessment Criteria: Punctuality of assignments (if late they will be marked down 20%/day they are late unless discussed specifically with the instructor), clear demonstration of work done, neatness and readability, and the correct answer. A correct answer with no work, or indecipherable work will not receive full credit.

3. Midterm Exams

Assessment Criteria: The exams will cover material from the checkpoints, the assignments and the book. You'll be marked on material comprehension and how well you can communicate the material on the exams. If you have special requirements for exams, please let me know as soon as possible.

4. Final Exam Date: TBD by registrar

This will be a comprehensive final exam, including questions the presentations on the projects.

Assessment Criteria: This exam will cover material from lecture, the assignments and the book and different projects. You'll be marked on material comprehension and how well you can communicate the material on the exams. For the final exam, you will also be asked to integrate the course material into a large picture of thermodynamics and electricity.

5. Project

In order to deepen your understanding of the material, each student will research and present on a particular heat engine. By understanding one engine in detail, you'll have a better understanding of other engines.

a) Presentations

The presentation will be for the entire class, and you'll be expected to answer questions. You will present about a particular heat engine its advantages, disadvantages, uses and history.

Assessment Criteria: Knowledge of material, professionalism of presentation, how questions are handled.

b) Paper

The final paper will be 10 - 12 pages (pictures, diagrams and tables excluded), IEEE format (a template will be available on D2L). Your paper will be turned in for peer evaluation from other students. Proofread your work before turning it into for peer evaluation.

Assessment Criteria: Length, professionalism of presentation, depth and knowledge of subject matter.

c) Peer evaluation Value: A homework Assignment

Evaluating peer's work is important in technical fields. You must be able to read documents on subject matter that are related to, but not necessarily in your field of expertise. You will be given papers from other students to read through and comment on.

Assessment Criteria: Professionalism and thoughtfulness of comments.

Course Outcomes:

- Discuss technical and social issues related to electrical power generation, transmission and distribution.
- Communicate to peers the fundamental science behind how heat engines get energy from fuels to run power plants and power transportation.
- Discuss and evaluate the issues related to energy generation, use, and distribution.

Electronically Approved - Aug 27 2020 22:13

Department Approval