

**ENG PHYS 3ES3**  
**Introduction of Energy Systems**  
Undergraduate Fall 2021  
Course Outline

**CALENDAR/COURSE DESCRIPTION**

Students will systematically study subjects related to a wide range of energy, environmental and economic fields.

**Class: Tuesday & Thursday: 8:30-9:20am; Friday: 13:30-14:20pm.**

Classes will be conducted by zoom by sharing the PPT materials etc. These will be recorded and posted in A2L for **24 hours**.

The course will start on **September 9**, 2021.

This is posted on A2L and updated without notification. **To check whether this is updated regularly is students' responsibility.**

**PRE-REQUISITES AND ANTI-REQUISITES**

Prerequisite(s): NA

Antirequisite(s): NA

**INSTRUCTOR OFFICE HOURS AND CONTACT INFORMATION**

**Shinya Nagasaki**  
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**Office Hours:**  
by appointment

**TEACHING ASSISTANT OFFICE HOURS AND CONTACT INFORMATION**

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**Office Hours:**  
By appointment

**COURSE WEBSITE/ALTERNATE METHODS OF COMMUNICATION**

<http://avenue.mcmaster.ca/>

Course materials used in the lecture and reference information are posted on A2L.

Communication is done through A2L and/or email. The periodical check to A2L is students' responsibility.

### COURSE INTENDED LEARNING OUTCOMES

By the end of this course, students should be able to:

- demonstrate an ability to define what the energy systems are.
- demonstrate an ability to understand not only physics, chemistry and math on energy but also the relationship between the economical and environmental issues and the energy systems.
- demonstrate an ability to understand the uncertainty and the intra- and inter-generation gaps in the risks, and to demonstrate an ability to emphasize the engineers' ethics and responsibilities in the decision-making under the risks.
- To demonstrate an ability to identify the short- and long-term interactions between the technologies of energy systems and the environment and economy quantitatively and/or qualitatively.

### MATERIALS AND FEES

#### Required Texts:

NA

PDF files of course materials an instructor uses in the class will be posted on A2L.

#### Calculator:

Only the McMaster Standard Calculator will be permitted in tests and examinations. This is available at the Campus Store.

#### Other Materials:

F.M. Vanek, L.D. Albright, L.T. Angenent: Energy Systems Engineering: Evaluation and Implementation, Third Edition, McGraw Hill.

### COURSE FORMAT AND EXPECTATIONS

The course is organized as follows:

- 3 virtual lectures per week (zoom)
- 8 assignments (plural assignments may be given in one week)
- 2 In-class quizzes (students do not need to access to zoom, but access to A2L)
- Energy Debate (full attendance in Energy Debate Presentation is mandatory)
- Final Exam (mandatory)

### COURSE SCHEDULE

**Schedule may change. Schedule is regularly updated. Check A2L.**

All classes will be conducted by zoom using screen sharing. More details are posted on A2L.

WEEK	Subjects learnt	Chapters in Course Materials
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Week 1	Guidance (first class)	Chapter 1
Week 2/3	Energy Technology	Chapters 2-1, 2-2
Week 4/5	Energy Systems	Chapters 3-1, 3-2
Week 6	In-Class Quiz 1 2 min presentation on Energy Debate	
Week 7	Energy and Environment	Chapter 4
Week 8/9	Energy, Environment, Economy	Chapters 5-1, 5-2
Week 10	Long Term Scenario of Energy In-Class Quiz 2	Chapters 6, 7
Week 11-13	Energy Debate Presentation (maybe, from week of Nov. 22)	

Attendance is not checked except weeks of Energy Debate Presentation.

**Full attendance during Energy Debate presentation (maybe, from the week of Nov 22, 2021). Students who do not attend all dates must lose 20 (Energy Debate) out of 100 marks.**

**Final Exam is mandatory.** If a student does not take the Final Exam, the **student must be failed.**

After Chapter 3 and Chapter 7 finish, In-class quiz sessions (Quiz appears on A2L for 50min (class time slot); due is the one hour after the class time slot) will be scheduled.

In addition to lectures, students will be required to make an energy debate group (7-8 students per group). Each group will make two sub-groups (3-4 students per sub-group). Each group decides one topic on controversial energy issue. One group is pro and the other is con for the issue. For example, topic is “McMaster will replace the nuclear power reactor in 2025”. Pro group will develop the argument to support the replacement and Con group will develop to oppose it (including the claim to stop the reactor now). Debate (15min) between sub-groups will be taken by video by yourselves and shared at course. Any topics are acceptable if it is explicitly related to energy issue.

In the week 11-13 (plan schedule. Last 2-3 weeks of course), each group shows its video to all students, TAs and instructor. Format will be announced in the 1st class.

All students (except the group member) and TAs will vote which sub-group is more reasonable, attractive, confident etc., pro or con. The lost sub-group (pro or con) is required to submit a report (0.5 page from one group, due: one week) about how they can improve their debate.

#### ASSESSMENT

Component	Weight
Quiz	20% (10% x 2 in-class quiz)
Assignment	40% (details are posted on A2L)
Energy Debate	Win: 20%; Lose: 15% + report 5%
Final Exam	20%
Total	100%

**Taking the Final Exam is mandatory. In the Final Exam, if you write answers that are not related to the questions, you certainly fail.**

Students are required to write the answer of quizzes and submit it to A2L.

Students are required to submit the assignment answer **within one week** to A2L (if assignment is given Monday class, submit by 23:59pm on Monday). The Midterm Recess is not included in this one week, namely students have practically two weeks.

The instructor and TAs will not answer the questions like “Is this answer correct?”

The assignment **submitted after due date will not be marked**. There will be **no extension of due dates for assignments. Any excuses about the late submission of assignments never be accepted.**

The weights of quiz, assignment and debate never be transferred to the Final Exam.

#### ACCREDITATION LEARNING OUTCOMES

The Learning Outcomes defined in this section are measured for Accreditation purposes only, and will not be directly taken into consideration in determining a student’s actual grade in the course.

Outcomes	Indicators
<b>1. Can demonstrate the competence in physics, chemistry and mathematics which relates to system, economic, sustainability analysis in energy systems.</b>	1.2 Quiz, Assignment, Exam
<b>2. Can demonstrate the competence in engineering which relates to system, economic, sustainability analysis in energy systems</b>	1.3 Quiz, Assignment, Exam
<b>3. Can demonstrate an ability to assess the options from a sustainability engineering perspective, which emphasizes environmental stewardship and long-term economic development.</b>	9.3 Quiz, Assignment, Exam
<b>4. Can demonstrate an ability to draw the politically reasonable, economically feasible, technologically sound, socially acceptable, environmentally fruitful conclusions which are completely supported by solid evidence.</b>	13.5 Quiz, Assignment, Debate, Exam

For more information on Accreditation, please visit: <https://www.engineerscanada.ca>

#### EQUITY, DIVERSITY, AND INCLUSION

Every registered student belongs in this course. Diversity of backgrounds and experiences is expected and welcome. You can expect your Instructor to be respectful of this diversity in all aspects of the course, and the same is expected of you.

The Department of Engineering Physics is committed to creating an environment in which students of all genders, cultures, ethnicities, races, sexual orientations, abilities, and socioeconomic backgrounds have equal access to education and are welcomed and treated fairly. If you have any concerns regarding inclusion in our Department, in particular if you or one of your peers is experiencing harassment or discrimination, you are encouraged to contact the Chair, Associate Undergraduate Chair, Academic Advisor or to contact the [Equity and Inclusion Office](#).

#### PHYSICAL AND MENTAL HEALTH

For a list of McMaster University's resources, please refer to the [Student Wellness Centre](#).

#### ACADEMIC INTEGRITY

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. **It is your responsibility to understand what constitutes academic dishonesty.**

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university. For information on the various types of academic dishonesty please refer to the [Academic Integrity Policy](https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/), located at <https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/>

The following illustrates only three forms of academic dishonesty:

1. plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. improper collaboration in group work.
3. copying or using unauthorized aids in tests and examinations.

#### COURSES WITH AN ON-LINE ELEMENT

McMaster is committed to an inclusive and respectful community. These principles and expectations extend to online activities including electronic chat groups, video calls and other learning platforms.

**Some courses may** use on-line elements (e.g. e-mail, Avenue to Learn (A2L), LearnLink, web pages, capa, Moodle, ThinkingCap, etc.). Students should be aware that, when they access the electronic components of a course using these elements, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in a course that uses on-line elements will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure, please discuss this with the course instructor.

#### CONDUCT EXPECTATIONS

As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These expectations are described in the [Code of Student Rights & Responsibilities](#) (the "Code"). All students share the responsibility of maintaining a positive environment for the academic and personal growth of all McMaster community members, **whether in person or online.**

It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviours that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students' access to these platforms.

#### ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES

Students with disabilities who require academic accommodation must contact [Student Accessibility Services](#) (SAS) at 905-525-9140 ext. 28652 or [sas@mcmaster.ca](mailto:sas@mcmaster.ca) to make arrangements with a Program Coordinator. For further information, consult McMaster University's [Academic Accommodation of Students with Disabilities](#) policy.

#### COURSE POLICY ON MISSED WORK, EXTENSIONS, AND LATE PENALTIES

1. It is the students' responsibility to regularly check the course webpage (A2L) for updates and announcements.
2. Delay submission of quiz and assignment is not marked.
3. All attendance in Energy Debate Session is mandatory.
4. Final Exam is mandatory.

#### SUBMISSION OF REQUEST FOR RELIEF FOR MISSED ACADEMIC WORK

In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar "Requests for Relief for Missed Academic Term Work".

1. **Relief for missed academic work worth less than 25% of the final grade resulting from medical or personal situations lasting up to three calendar days:**
  - Use the [McMaster Student Absence Form](#) (MSAF) on-line self-reporting tool. No further documentation is required.
  - Students may submit requests for relief using the MSAF once per term.
  - An automated email will be sent to the course instructor, who will determine the appropriate relief. Students must immediately follow up with their instructors. Failure to do so may negate the opportunity for relief.
  - The MSAF cannot be used to meet a religious obligation or to celebrate an important religious holiday.
  - The MSAF cannot be used for academic work that has already been completed attempted.
  - An MSAF applies only to work that is due within the period for which the MSAF applies, i.e. the 3-day period that is specified in the MSAF; however, all work due in that period can be covered by one MSAF.
  - The MSAF cannot be used to apply for relief for any final examination or its equivalent. See *Petitions for Special Consideration* above.
2. **For medical or personal situations lasting more than three calendar days, and/or for missed academic work worth 25% or more of the final grade, and/or for any request for relief in a term where the MSAF has been used previously in that term:**
  - Students must report to their Faculty Office to discuss their situation and will be required to provide appropriate **supporting documentation**.
  - If warranted, the Faculty Office will approve the absence, and the instructor will determine appropriate relief.

#### ACADEMIC ACCOMMODATION FOR RELIGIOUS, INDIGENOUS OR SPIRITUAL OBSERVANCES (RISO)

Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the [RISO](#) policy. Students should submit their request to their Faculty Office **normally within 10 working days** of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

#### COPYRIGHT AND RECORDING

Students are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and copyright law protect every original literary, dramatic, musical and artistic work, **including lectures** by University instructors

The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

#### EXTREME CIRCUMSTANCES

The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, AtoL and/or McMaster email.