This course will take a historical perspective on energy technologies, focusing on periods when there was significant change in the available technologies and in the organization and exploitation of energy resources. The emphasis will be on the contexts that gave rise to these changes (cultural, economic, political, environmental), as well as on the consequences of these changes for interactions within and between human communities and their environments. The transformative effects of the adoption of fossil fuel technologies in the nineteenth and twentieth centuries will be given due prominence, but attention will also be paid to longer-term issues of food and fuel production and processing, and to changes in transport and storage. The chronological scope of the course will therefore include the emergence of agricultural communities and the development of territorial states and empires as well as more recent developments.

**Class time and location:** Tuesdays, 10am to 12 noon, SS1070

**Tutorials:**
- T0101: Tuesdays 12 noon – 1 pm, AP120
- T0201: Tuesdays 1pm – 2 pm, BA2135

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

- **Show understanding** of energy transitions in history.

- **explain** how changes in energy technologies led to changes in past human societies and their environments, and what factors affected the adoption and use of new energy technologies.

- **compare** the effects of energy transitions in different social contexts

- **reflect** on the possible implications for Canadians of the current energy transitions.
**Instructor:** Ben Akrigg (Classics)

Office: Room LI117, 125 Queens Park

email: ben.akrigg@utoronto.ca I shall do my best, but cannot promise, to answer email enquiries within 24 hours. I shall not answer email enquiries over the weekend, however.

Office hours: Mondays and Wednesdays 12 noon to 1 pm (If these times are impossible for you, please email me to arrange an appointment at a different time.)

**Course Assessment:**

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Mid-term test</td>
<td>20%</td>
</tr>
<tr>
<td>Final Examination</td>
<td>40%</td>
</tr>
<tr>
<td>Short research paper (due 5th April)</td>
<td>20%</td>
</tr>
<tr>
<td>Tutorial attendance &amp; participation</td>
<td>10%</td>
</tr>
<tr>
<td>Tutorial assignments</td>
<td>10%</td>
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</tbody>
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**Some further notes on course requirements:**

- **Readings.** See below for a schedule. The required readings will be provided on Quercus, via the Library Course Reserve module.

- **Tutorials.**
  - Attendance at tutorials is required. There will be three possible marks for participation in each tutorial: 10 (present and contributes effectively to discussion, and/or participates fully in other tutorial activities); 7 (present, but does not contribute effectively to discussion, or take full part in activities); and 0 (absent).
  - Each tutorial will have a short written assignment to be completed in advance and **handed in on paper at the start of the week’s lecture class.** Details of each assignment will be provided in class a week in advance (so we will talk about the first assignment in the first lecture class), but typically you will be asked to write about 200 words/half a page in response to an aspect of that week’s readings (see schedule below). There will be three possible marks for tutorial assignments. If your response shows evidence of careful reading of the set text(s) and organized thought about it, you will receive full credit (10). If you hand in something, but it is clearly half-hearted and put together in a rush, you will get half-credit (5). Obviously if you fail to hand anything in you will get no credit (0).
  - **Note that there will be no tutorials in the first week of term (8th January).**
There will be one mid-term **test**, which will be held on Tuesday 12th February.

- The test will cover the material from the preceding five weeks of the course, including assigned readings and class slides and handouts, and will require both short answers and a small number of longer answers (similar in length and scope to the tutorial assignments).

- Students who miss the test will receive a mark of zero for the test.
  - However, if the test was missed for reasons entirely beyond your control you should, within one week of the test, submit to the instructor a written request for special consideration explaining your reason for missing the test, and attaching appropriate documentation, such as a medical certificate or a College Registrar's note. If your reason for missing the test is acceptable, then you will be able to take a make-up test.

**Final exams** are scheduled by the Faculty of Arts and Science. The exam period for this semester runs from 9th to 30th April. The exam timetable will be published in February.

- The final exam will include both short-answer sections similar to the in-class tests and a longer-answer “essay” section.

**The research paper** will be about 2000 words long. Some of the tutorial sessions will be devoted to helping you with this.

- You will be given a choice of questions to answer.
- You may submit your paper by email (to my address as above) or in person in the last lecture class.
- Late submissions will receive a mark of zero.

### Class & reading schedule:

**Week 1  8th January**  **Introduction: The Scope of the Course**

Note: No tutorials this week.


**Week 2  15th January**  **The Current Energy Transition**

Week 3  22nd January  Transition to Agriculture

Week 4  29th January  Constraints in pre-industrial agriculture

Week 5  5th February  Energy in ancient empires

Week 6  12th February  MIDTERM
No readings or tutorials this week.

READING WEEK is February 19th to 22nd

Week 7  26th February  First Globalization?

Week 8  5th March  Industrial Revolution I: The difference a steam engine makes…
Week 9  12th March  Industrial Revolution II: … but agriculture still matters


(Note that Sunday 17th March is the last day to cancel S courses without academic penalty; and the last day to add/remove CR/NCR option)

Week 10  19th March  Industrial Revolution III: Regional variations: the uneven distribution of the future


Week 11  26th March  Oil


Week 12  2nd April  The Current Energy Transition Revisited: where next?

No readings for this week.

5th April: Written assignments due.

(Examination Period begins Saturday 9th April, runs to Tuesday 30th April).

Accessibility Needs:
The University of Toronto is committed to accessibility. If you require accommodations for a disability, or have any accessibility concerns about the course, the classroom or course materials, please contact Accessibility Services as soon as possible: email disability.services@utoronto.ca or consult http://studentlife.utoronto.ca/accessibility.
Academic Integrity:
Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student’s individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto’s Code of Behaviour on Academic Matters (www.governingcouncil.utoronto.ca/policies/behaveac.htm) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Potential offences include, but are not limited to:

In papers and assignments:
1. Using someone else’s ideas or words without appropriate acknowledgement.
2. Submitting your own work in more than one course without the permission of the instructor.
3. Making up sources or facts.
4. Obtaining or providing unauthorized assistance on any assignment.

On tests and exams:
1. Using or possessing unauthorized aids.
2. Looking at someone else’s answers during an exam or test.
3. Misrepresenting your identity.

In academic work:
1. Falsifying institutional documents or grades.
2. Falsifying or altering any documentation required by the University, including (but not limited to) doctor’s notes.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or from other institutional resources (see www.utoronto.ca/academicintegrity/resourcesforstudents.html).
Choose a specific past energy transition (which could be a fuel substitution, a prime mover substitution, the domestication of a particular plant species or similar) and discuss the circumstances in which that transition took place, the length of time it took to take place, and the consequences for people affected by it.

**Word limit:** 2000 words, including notes but not including the bibliography

**Submission deadline:** Friday 5th April, 5pm. This is the last day of regularly-scheduled classes; this assignment should not intrude into the exam period. However, if you anticipate that you will have difficulty meeting this deadline then I will be happy to grant you an extension (length to be agreed between us) without penalty if you contact me at least 24 hours before this deadline.

You may submit your paper by email or in person in the last lecture class (on Tuesday 2nd April).

**References:** You should provide references for any factual claims you make.

Use any referencing system with which you are familiar; just make sure that you apply it consistently.

How many references you need will depend on your individual case, but for a piece this length I’d expect to see roughly between ten and twenty.

**Grading:** Grades will be assigned on the content of your piece. As long as your points are clear and understandable, you will not be penalised for errors of spelling or grammar.

The best papers will engage with all three of the aspects of your energy transition that I have asked about: the circumstances, the length of time it took; and the consequences. Note that you will not necessarily need to spend a lot of your words on describing the details of the technology/species/fuel you are talking about, unless these are directly relevant to another aspect of your essay. The context and the consequences are what you should focus on.

Try to write in a way that would be accessible for other (advanced) undergraduate students like yourself. Think about readings that you have found clear and helpful and try to emulate them.