Climate Change: Science, Economics, and Policy (ECON/ENVI 235)
Macalester College – Fall 2018

Class meetings: TTh 9.40 am – 11.10 am, OLRI 301
Instructors:
   Louisa Bradtmiller  lbradtmi@macalester.edu; 651.696.6837; Olin-Rice 249D
   Office hours M and W, 9 – 10am, and by appointment via email
   Sarah West  wests@macalester.edu; 651.696.6842; Carnegie 310-F
   Office hours M and W, 1 – 2.45pm, and by appointment via email
Preceptor:
   Collin Dobie  cdobie@macalester.edu; Office hours TBA

Course description
The causes and effects of climate change are inextricably linked with the global economy. The combustion of fossil fuels produces carbon dioxide, which traps energy near Earth’s surface and leads to warmer average global temperatures. The combustion of fossil fuels also forms the backbone of the modern economy, fueling cars, power plants, and everything in between. This team-taught course will provide a framework in which to consider the costs and benefits of fossil fuel consumption in the present, but also over the coming decades and centuries. We will use concepts from climate science and environmental economics to help evaluate existing and proposed policy interventions designed to reduce fossil fuel consumption, and we will similarly consider possible technological solutions to slow or even reverse climate change. We will spend a significant amount of time exploring how the preceding topics factor into Integrated Assessment Models. Governments and NGOs use these models to combine scientific and socioeconomic information in order to predict the outcomes of various climate and policy scenarios. These are the state of the art in climate science, economics and policy; students will be exposed to several of the most commonly used models and to research from their critics.

Goals for students
By the end of this course, students should be able to
   • Explain the basic principles of climate science and economics to a non-technical audience
   • Understand the costs and benefits of, prospects for, and obstacles to potential climate change policies
   • Use an Integrated Assessment Model to simulate changes in natural and economic conditions and to analyze the relative effectiveness of policies intended to reduce greenhouse gases
   • Critique Integrated Assessment Models and their alternatives using a number of scientific and economic criteria
   • Communicate clearly and effectively through written presentations of ideas

Course texts and readings

Various other articles, textbook chapters, and reports will be required. They will be posted on Moodle.

**Moodle**

The class Moodle page should be your first stop for information about readings, assignments, and what to expect in class. The page is color-coded: readings (green) should be completed before class on the day of the entry, and assignments (blue) are due that day at the beginning of the class period. This will require some looking ahead on your part.

**Grading**

Your final grade for this course will be determined by the number of points you accumulate throughout the semester.

<table>
<thead>
<tr>
<th>Point distribution</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading responses (10 @ 6 points each)</td>
<td>60</td>
</tr>
<tr>
<td>Homework (6 @ 140/6 points each)</td>
<td>140</td>
</tr>
<tr>
<td>Final project</td>
<td></td>
</tr>
<tr>
<td>-Stage 1 (Hypothesis/Parameters)</td>
<td>20</td>
</tr>
<tr>
<td>-Stage 2 (Literature/Debate)</td>
<td>20</td>
</tr>
<tr>
<td>-Stage 3 (Identify Output)</td>
<td>20</td>
</tr>
<tr>
<td>-Final Report</td>
<td>140</td>
</tr>
<tr>
<td>Exams (2 @ 100 points each)</td>
<td>200</td>
</tr>
<tr>
<td><strong>TOTAL POSSIBLE</strong></td>
<td><strong>600</strong></td>
</tr>
</tbody>
</table>

**Reading Responses**

We will require reading responses for 10 of the course readings (indicated on Moodle). They will be graded on a pass/fail basis. We will post guiding questions about each of the readings to Moodle; to receive credit for a response you must use the reading to answer the questions. Hand in each reading response on Moodle by **9:30 am** the day for which the reading is assigned. No late responses will be accepted.

**Homework**

Six homework assignments are intended to give you practice with the material and an opportunity to receive feedback on your understanding of course content. We urge you to work together on your homework, but each of you must use your own words to write up your own assignment, and you must write on your homework the names of those with whom you worked. Homework assignments are generally long, so starting them early and working on a section each day is a good idea.
Exams
Exam dates are October 11 and November 29. You may reschedule an exam only if you have a conflicting religious holiday. You must make arrangements to reschedule at least one week before the scheduled exam time. The only excuses for a missed exam are verifiable medical emergencies or absences for those students who represent the College in college-sponsored activities as specified in Macalester’s Class Attendance and Absences Policy. In the event of an excused missed exam, a weighted average of the other exam grade and the final project grade will serve as the grade of the missed exam.

Final project
The final project for this course will be a chance for students to use a leading integrated assessment model (Nordhaus) to examine the scientific, economic, and policy implications of a climate change scenario. The project will be done in groups of 3 or 4 students. The final project will take the form of a report that explains the results of model simulations that test hypotheses about the determinants of climate and human welfare. Three interim assignments that build toward the final report will be spread throughout the semester. The project description, including interim steps, can be found on Moodle. The due dates are as follows:

Stage 1: Oct. 23; Stage 2: Nov. 6; Stage 3: Nov. 20; Final Report: Noon on Dec. 15

Please hand in all but the final report as hard-copies in class AND via Moodle. You may hand in the final report via Moodle only.

Academic integrity
Cheating on exams, using another’s homework solutions, or failure to acknowledge the contributions of others’ work—including group members—to your own are serious offenses. Cheating or failure to properly reference sources will result in a grade of F for the exam or assignment and may result in a failing grade for the course. It is your responsibility to become familiar with Macalester’s policies on what constitutes these offenses and to behave accordingly. We will report all cheating and plagiarism to the Dean of Academic Programs. For more information, see http://www.macalester.edu/academicprograms/integrity.html.

Disabilities
We are committed to providing assistance to help you be successful in this course. Accommodations are available for students with documented disabilities. Contact the Associate Dean of Students (696-6220) to make an appointment. Please do this early in the semester to ensure that necessary accommodations are approved so that you can begin the semester successfully.

Miscellany
If you have concerns about any aspect of this course, please come see one of us sooner rather than later. We are always pleased to hear about how you think the class could be more interesting, and if there’s a topic you’re just dying to see covered we’ll see if we can fit it in. We will respond to email during ‘normal business hours’. While it is possible that we will check
our email at 2am, we probably won’t write you back until at least the next morning. So, don’t wait until the last minute to email with that question about your assignment that’s due tomorrow.

We are learning from each other in addition to conveying our expertise and learning with you. We will do our best to indicate which instructor to seek out for clarification or feedback about a particular topic.

Please turn off (all the way off, or Do Not Disturb on, not just to vibrate) your cell phone before coming to class. Laptop use is prohibited except for specific in-class exercises.