

# ESS205H1 F LEC0101 20259:Confronting Global Change

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Please contact Kayla as a first contact for questions, petitions, issues with the course.



(Rose Valley, Cappadocia, Turkiye; from UofT ICM field trip 2024)

## Confronting Global Change

The emergence of society as a major geological force is considered in terms of the evolving debate about the consequences of human activity for the habitability of our planet. Major issues such as climate change, environmental pollution, and depletion of natural resources are examined. The course content include three primary modules:

### A The Active Earth

1. Introduction to the Earth system (Sept. 4)
  - interior of the Earth—→lithosphere, crust, mantle, core
2. Geodynamics (Sept. 11)
  - the geosphere and tectonically active surface of Earth
3. Time (Sept. 18)

- the major events in Earth's history

#### 4. **Test One (Sept. 25)**

### **B The Changing Earth and Us**

#### 5. Hazards! (Oct. 2)

- earthquakes, tsunamis, volcanoes

#### 6. Field trip (Oct. 9)

- Don Valley Brickworks; building stones of Toronto

### **Assignment One: Writing I (Due: Oct. 15)**

#### 7. Earth Resources (Oct. 16)

- what do we take from the solid Earth?

#### 8. Dead dinosaurs (Oct. 23)

- oil, gas, fracking, human-induced earthquakes

#### 9. **Test Two (Nov. 6)**

### **C Are We Changing the Earth?**

#### 10. Climate Change (Nov. 13)

- present-day and recent variations in Earth's climate

#### 11. Global climate change through Earth history (Nov. 20)

- long term change and what's driving these changes?

#### 12. The Anthropocene (Nov. 27)

- are humans the dominant influence on the Earth?

### **Assignment Two: Writing II--poster (Due: Nov. 28)**

**Final Exam will be written during the December Exam Period**

### **Course Format and Grading Scheme**

We will meet for class on Thursdays from 11 am-1 pm. There will be two writing assignments and two tests given during the term (details will be given on these in the first week of class), in addition to the final exam during the formal December Exam Period.

The grading scheme will be as follows:

Assignment One 15%

Assignment Two 15%

Test One 15%

Test Two 15%

Final Exam 40%

The course will use Quercus for administration. Check there for marks, handouts, etc.

## **Course learning outcomes**

At the end of this course students will be able to:

1. define the Earth system and its components
2. explain key concepts in Earth science (e.g., plate tectonics, climate change, Anthropocene) and how they can impact humans
3. connect scientific thought to issues of climate change, sea-level change and other human-induced changes to the Earth system
4. understand changes to the solid Earth over geologic and human timescales
5. read scientific graphs
6. produce a logically written piece to explain a specific topic to peers

## **Resources**

Instead of a required textbook, readings will be taken from the internet and from selected journals. I will direct you to these sources as they come up during the course. If you're interested in having a reference textbook, there are many introductory Earth Science text books that are excellent and would be useful for supplementing material covered during the course (and available from the various libraries here). For example:

- Physical Geology and the Environment by Plummer, McGeary, Carlson, Eyles and Eyles
- Environmental Geology by Montgomery
- The Blue Planet, An Introduction to Earth System Science by Skinner and Murck
- Canada Rocks by Eyles and Miall.

- How to Build a Habitable Planet by Broecker is a very interesting book that reads almost as a novel, rather than a text book.

## **Instructor**

Russ Pysklywec (Pes-klev-its)

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