Western University
Geography 3350A: Environmental Change (2013)
Course Outline

Fall 2013

Instructor: Beth Hundey

Email: ehundey2@uwo.ca

Twitter: @bhundey

Office Location: Room 1430 Social Science Centre

Office Hours: Tuesdays 10:30-11:30 or by appointment on Tuesdays and Thursdays only.

Course Timetable:

Tuesdays	8:30 to 10:30 am	SSC 2333
Thursdays	8:30 to 10:30 am	SSC 2333

Course Calendar Description:
The evidence, causes, and chronology of environmental change with particular emphasis on the Holocene in North America.

Prerequisite checking – the student's responsibility
Prerequisites: Third or fourth year status at the University including at least one of Geography 2310 A/B, 2320 A/B and 2330 A/B.

Prerequisite checking:
Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

Communication Policy
1. Please contact the professor and the teaching assistant by email GEO3350 in the subject heading, and use professional communication etiquette. The instructor will respond to email messages primarily on Tuesdays and Thursdays, please ask questions with ample time for response and be patient. Personal accounts might be intercepted by SPAM filters and be sent to junkmail, and are not to be used for communication between university employees, students,

and staff. The teaching assistant and I will therefore not be responding to emails that are not from @uwo.ca addresses.

2. Generally, all emails will be responded to within 48 hours during weekdays (not including holidays). Emails will usually be addressed during regular work hours (9-5). We may choose, at our discretion, to respond outside these hours, depending upon availability.
3. Announcements regarding any changes or notifications will be made on WebCT. Please check often for updates.
4. I will use twitter to post news articles, class updates, blog updates, and reminders. Students may follow and if they choose, share news to @bhundey. Students do not need to follow me on twitter or use twitter to be successful in the class, and important announcements will always also be made via OWL powered by Sakai. Also note that you do not have to have a twitter account to check what I have posted on twitter. Students should not use twitter as a way to contact the TA or instructor for administrative or personal matters (use email, as above).

Course Content

The subject matter of this course is very extensive and broad ranging since, in order to understand environmental/ climate change, it is necessary to have some integrative understanding of

(i) the present climate and other natural environmental systems
(ii) the forcing functions that control those systems
(iii) the chronology of past environmental changes
(iv) the techniques used to reconstruct paleoenvironments and their limitations (including dating techniques)
(v) anthropogenic influences on local and global environments.

Course Objectives

After successfully completing Geography 3350A, students will be able to:

- Explain tools climate scientists use for studying paleoclimates.
- Explain types of climate models and the importance of climate projections.
- Effectively communicate climate science to a general audience in both online written and oral formats.
- Articulate natural and anthropogenic climate forcing mechanisms.
- Quantitatively analyze time series data, and make informed inferences about the results.
- Summarize and discuss policy reports (IPCC).
- Critically analyze mitigation and adaptation plans for climate science.
- Identify and explain links between climate and earth system spheres (hydrosphere, lithosphere, cryosphere, and atmosphere).
- Effectively communicate academic literature to a general audience.
- Synthesize academic research on a climate science topic and communicate your findings orally and in summary (abstract) form.

Course Structure & Classroom Culture

This upper-level course requires active participation from students, both for assessment, and to enhance the learning experience of the entire class. Active learning benefits students by supporting higher-level learning and improves retention of material (M.J. Prince, 2004). Participation will be graded, and there are formal and informal expectations of involvement. Lectures will be interspersed with brainstorming, activities, and discussion. You will work together as a class to plan an in-class mini-conference. As a class you will also "publish" a climate science blog with student-written articles that will be updated on at least a weekly basis. **Please come to class prepared to be involved and respectful to your classmates, the instructor, and the teaching assistant.** Be respectful of the opinions and thoughts of other classmates posted in discussion forums and contributed to discussion. Derogatory or offensive remarks and responses are not acceptable, nor are they effective forms of academic debate.

Course Materials:

Required Textbook:

Ruddiman, W.F. (2008). Earth's Climate, *Past and Future, Second Edition*. Freeman, New York.

We will also be reading parts of:

IPCC – Fourth Assessment Report, available for free from www.ipcc.ch

Course Requirements:

Assessment	Weight	Date
Climate science blog entry *Written communication of an academic article to general audience*	15%	Due dates will vary by student (to be decided in first week of classes)
Techniques of Environmental Change Science Presentation (8%) and Fact Sheet (2%) *Presentation (in pairs) and fact sheet*	10%	Oct. 10, 2013
Lab Assignment *Climate data analysis*	10%	Oct 15, 2013
Research Presentation (15%), Abstract (5%), and Annotated Bibliography (5%) *Presentation.*	25%	Annotated bibliography due Oct. 24. Abstracts due Nov. 5. Presentations in class on Nov. 12 and Nov. 14.
Participation *Includes peer editing task, in-class participation/ activities, attendance in class (2 free misses), and blog and conference responsibilities.*	10%	Throughout
Final Exam	30%	TBD

Assignment Details

Further details will be provided when the assignments are introduced in class – below the assignments are summarized.

Lab Assignment (10%)

Students will be required to complete a lab assignment that will require written answers and graphing and calculations in a suitable program (Excel, R, etc.). Time will be given in class for the completion of the assignment but the assignment will require work outside of class time as well.

Techniques of Environmental Change Science (10%)

Students are required to prepare a 8-minute presentation (in pairs) describing the methods and use of a technique used in the study of Environmental Change or Climate Science. Students will choose from a list of topics in class.

Environmental Change Blog Entry (15%)

As a class, you will create and maintain a climate science blog. Each student will be responsible for creating a blog entry, as well as editing the entry of another student. The due dates for the blog entries will vary by student and will be determined in the first week of classes. Each blog post will be based upon a scientific article (original research, not a review article) of the student's interest in a climate science field. The article will be summarized for the understanding of the general, news-reading public and will be accessible to the general public on the web. Many of the details and requirements of the blog and blog postings will be decided in a collaborative effort by the class in the first weeks of school and requirements will be disseminated shortly afterward.

In-class Conference Presentations (25%)

The In-class Conference Presentations consists of 3 individually graded components : an annotated bibliography, an abstract, and the presentation. You will also be graded based on participation, as each of you will have organizational duties, and this will contribute towards your participation mark. The research topics are open-ended giving students the opportunity to further explore a topic of interest. The topic must be specific and at least 8 academic references must be used. A topic statement and **annotated bibliography** are due before the presentation and feedback will be given from the TA and/ or the instructor. Before the presentation, an **abstract** describing the main findings of your research is due (maximum 1 page). The presentations should be 10 minutes – you may reserve 1 – 2 minutes for questions at the end (e.g. 8 minutes presentation, 2 minutes questions).

Participation (10%)

Students will be graded on participation in a variety of ways. Attendance in class is required for effective participation and contributes to the participation grade (students may receive a perfect attendance grade unless more than two classes without reasonable explanations are given). Participation will also be monitored during class activities. Consideration will also be given to other involvement including but not limited to online discussion, providing links to related news or research

items or commentary to the class or instructor via webct or twitter. More formal participation requirements occur in preparation for the in-class conference (above) and for peer-editing a classmate's blog entry.

Grade Breakdown and Explanation

90-100 Excellent. You have surpassed my expectations (very rare)

80-89 Very good. You have fulfilled my expectations

70-79 Good. Expectations are mostly fulfilled with weak areas.

60-69 Satisfactory. There are problems such as confusing writing or expectations are not fulfilled.

50-59 Less than satisfactory. There are major problems.

< 50 Unsatisfactory. Task not fulfilled.

Policy on Late Written Assignments:

For UWO Policy on Accommodation for Medical Illness and a downloadable SMC see:

http://www.uwo.ca/univsec/handbook/appeals/accommodation_medical.pdf

Downloadable Student Medical Certificate (SMC): https://studentservices.uwo.ca under the Medical Documentation heading.

Students seeking academic accommodation on medical grounds for any missed tests, exams, participation components and/or assignments worth 10% or more of their final grade must apply to the Academic Counselling office of their home Faculty and provide documentation. Academic accommodation cannot be granted by the instructor or department.

For non-documented medical absences, late assignments will be given a penalty of five percent per day from the final grade for the assignment for a maximum of 5 days. After 5 days the assignment will not be assessed resulting in a grade of 0.

For assignments worth less than 10%, the student must submit a request for accommodation to the instructor.

Course Schedule

The attached schedule is tentative and subject to change depending on student enrolments and other factors, including field camp breaks. It may be updated – all updates will be communicated with the class.

Week	Date	Topics	Reading	Action items
1	**Sept 10**	**Course organization** *Assignment handouts and discussion: Climate science blog entry, Climate news of the week*		

		Geologic time		
	Sept 12	**Introduction to the Climate System I: Internal interactions** - Feedbacks: vegetation, ice, land surface, atmosphere, ocean - The Carbon Cycle	Ch. 1: Section 1-9 Optional review– Ruddiman 2001 Ch 2 (online).	
2	**Sept 17**	**Introduction to Climate System II: Forcing mechanisms** - Milankovitch cycles	Sections 1-5, 1-6 (p. 10-12); Ch. 7.	
	Sept 19	**Environmental Change Methods I: Instrumental records and dating techniques**	p. 7-8, p. 18-26, p.31-38	
3	**Sept 24**	**Environmental Change Methods II: Dendrochronology – Guest Lecture Dr. Brian Luckman**	p. 295-298,	*Be prepared to go outside*
	Sept 26	**Environmental Change Methods III: Dendrochronology – Guest Lecture Dr. Brian Luckman**	p. 26-31;	*Be prepared to go outside*
4	**Oct 1**	**Lab Assignment work period** Please read and attempt questions ahead of time so you can use class and instructor time wisely.		*Work Period* *No participation grades for attendance today*
	Oct 3	**Lab Assignment work period** Note: Change location: SSC 1425 Computer lab		*Work Period* *In SDAL SSC1425* *No participation grades for attendance today*
5	**Oct 8**	**Environmental Change Methods V: Palynology – Guest Lecture Dr. Katrina Moser**	p. 26 -31	
	Oct 10	**Environmental Change Methods: Presentation Day**	Section 16-4	*Presentation Day* *+ Fact Sheets .pdf to nizral@uwo.ca or webct dropbox.*
6	**Oct 14**	Thanksgiving Monday – University Closed		
	Oct 15	**Earth's history & climate I: the whole shebang** **Earth's history & climate II: the last 550 myr** - magnetic susceptibility	Chapter 3; Chapter 4	*Lab Assignment Due*

		- Pangaea to present		
	Oct 17	**Earth's history and climate III: the last 100 myr**	Ch. 5; Ch 9	
7	**Oct 22**	**Last Glacial Maximum**	Ch 12	*In class CLIMAP activity. Bring laptop/ tablet if possible.*
	Oct 24	**Early Humans I: Evolution, settlements, and climate hypotheses**	Ch. 15	*Annotated Bibliography & Topic Statement due* *Video: Becoming Human (Nova)*
8	**Oct 29**	**Case Study: Humans and Environmental Change – Easter Island** **Guest Lecture – Katrina Moser**	TBD	
	Oct 31	**Study Day**		
9	**Nov 5**	**Early Humans II: Impact of Climate on Early Civilizations** **Early Humans III: Influence of early civilizations on the environment**	Ch. 15	***Abstract Due*** *Bring in short-hand notes on your assigned early civilization. Civilization Collapse Jigsaw*
	Nov 7	**Climate Since the LGM**	Ch 13	
10	**Nov 12**	**In-Class Conference**		*Presentation Day*
	Nov 14	**In-Class Conference**		*Presentation Day*
11	**Nov 19**	**Short Term Climate Patterns: ENSO, Effective moisture, etc.**	Ch. 16; Ch. 17	
	Nov 21	**Recent Climate Warming: Scientific basis & historical context**	Ch. 18	
12	**Nov 26**	**IPCC – The Physical Science basis**	IPCC 4th AR – specific readings TBA	*In-class jigsaw activity*
	Nov 28	**Mitigation/ Adaptation**	TBD	
13	**Dec 3**	**Policy, education, technology, and the future**	Online article – see Sakai page Ch. 19	
	Dec 5	**Exam Review**		

Statement on Use of Electronic Devices

No electronic devices will be allowed during tests and examinations.

Statement on Academic Offences

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_undergrad.pdf

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (http://www.turnitin.com).

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

Mental Health

If you or someone you know is experiencing distress, there are several resources here at Western to assist you. Please visit the site below for more information on mental health resources: http://www.uwo.ca/uwocom/mentalhealth/.

Western's commitment to accessibility

The University of Western Ontario is committed to achieving barrier free accessibility for persons studying, visiting and working at Western.

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.

Support Services

Registrarial Services: http://www3.registrar.uwo.ca/index.cfm

Student Development Services: http://www.sdc.uwo.ca/