



UNIVERSITY OF
ALBERTA

RENr 401/GEOG 290

CLIMATE CHANGE IN THE CIRCUMPOLAR WORLD

In Winter 2014, GEOG 290, *Climate Change in the Circumpolar World*, is being offered at Yukon College concurrent with the University of Alberta's RENr 401, as part of the Northern Environmental and Conservation Sciences, B.Sc. Program. All students registered in GEOG 290 or RENr 401 must adhere to requirements outlined in this course syllabus. University of Alberta students must also be aware of, and adhere to, the University's Code of Student Behaviour, referenced in the outline; Yukon College students must be aware of, and adhere to, Yukon College's Academic Regulations, also referenced in the outline.

INSTRUCTOR: JOHN STREICKER

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DAY & TIME: Tuesdays, 7:00 – 10:00 pm

LOCATION: A2204, Ayamdigut Campus, Whitehorse

COURSE DESCRIPTION

Global climate change is an issue of high priority for citizens, decision makers in the public and private sector, and the research community. There remain many questions related to the concrete extent and nature of current and projected changes in the global climate system, and how these changes will affect those things which our society values. While some of the information and evidence about climate change is clear, the process is multi-faceted with implications for ecosystems, socio-economics and health. Combining this complexity with the extent of the problem means that there are no comprehensive, simple solutions.

Developing responses to climate change requires an understanding of the basic scientific principles behind climate change, the strengths and weaknesses of global climate models that are used to project future conditions, the impacts of climate change on natural and socio-economic systems, and the nature of the vulnerability within these systems to changing environmental conditions. Responses to the climate change issue include education, research, policy, economics and technology development, and tend to be most effective when considered in a comprehensive and integrated manner.

This course examines the contemporary issue of climate change in the context of northern environments. The course canvasses our understanding of climate change and responses to it. The course begins with an overview of climate change as an issue, its detection, historical evidence and scientific basis, and then examines potential impacts of change on northern environments and socio-economic systems. The course concludes with an exploration of the nature and variety of responses to the issue at regional, national, and international levels, with a focus on adaptation, mitigation and policy responses.

The multi-disciplinary approach to this course targets a broad audience: a Yukon College certificate or diploma student / University of Alberta Northern Environmental and Conservation Sciences students, a graduate of one of its programs, working professionals and policy makers and interested members of the public. The 3-credit course is a recommended elective in several diploma programs, including the Renewable Resources Management Program.

LEARNING OUTCOMES:

Successful completion of this course will give the student

- a broad understanding of the many dimensions of climate change;
- capacity to appreciate and evaluate the evidence regarding climate change - both current and past – and an understanding of the level of uncertainty in predicting changes in climate;
- an understanding of why climate change is more dramatic in the North, the impacts now being felt and those projected to occur;
- an appreciation of how the North has responded to ecological, economic and cultural changes in the past, and how the North may respond to plausible scenarios of future climate change;
- an awareness of the complexity of developing responses to climate change;
- an understanding of implications of climate change to the circumpolar North and especially renewable resource management; and
- improved critical thinking, writing, oral presentation and research skills

DELIVERY METHODS/FORMAT:

This 13-week course is being offered in the evenings to maximize participation by practitioners and those with a general interest in the topic. Instruction will take place one evening a week over a 3-hour class in the winter semester.

The course is divided into modules (described in the outline). Each module includes readings, although there is no single text prescribed for the course. Students will be expected to read assigned module readings, and are encouraged to explore and read supplementary material. Other media may be included (e.g. video, internet) or suggested. All course submissions (except exams) will be digital.

PREREQUISITES:

For students taking the course as GEOG 290: Students with a second-year standing or permission of the instructor or a program advisor.

For students taking the course as RENr 401: Registration in University of Alberta BSc in Environmental and Conservation Sciences degree program and permission of a Northern ENCS Program Advisor.

This course may be of interest to managers and practitioners, who are not in a diploma program at Yukon College or another institution, but work in a field that would benefit from a background in climate change. Participation by these students is encouraged, and these students are strongly recommended to contact the course's instructor prior to enrolling.

Students at other institutions are welcome to take this course. Such students should have a Letter of Permission from their home institution if they intend to apply this course to their programs.

COURSE REQUIREMENTS:

GEOG 290 is the course offering through Yukon College. RENr 401e is the course offering through the University of Alberta. The course syllabus is the same for the two offerings, but in general expectations for RENr 401e will be elevated. This will include additional required reading, enhanced module exercises, a seminar (rather than a presentation), and modified or supplementary exam questions.

Module Exercises – study questions will accompany the readings and lectures. Throughout the course a series of short exercises for grade will be assigned.

Mid Term Exam – There will be a 1.5 hour mid-term exam consisting primarily of short answer and essay questions. Exam questions will be based on the readings, the lectures and on the study questions that accompany the readings.

Research Paper – Students will prepare an analytical term paper on a topic, chosen in consultation with the instructor (word processed, 2,000 to 3,000 words). Each paper must include a reference list / bibliography. As an alternative to the research paper, and subject to approval by the instructor, students may propose and complete a project of their interest to meet the writing/research aspects of the course.

Research Paper Presentation – Each student will be required to deliver a 10-minute presentation on their research paper or project. RENr 401 students will deliver either a 30 minute seminar or two 15 minute presentations. Presentations will be graded on the clarity of the material presented, oral presentation skills, the quality of visual presentation aids, and quality of responses to questions posed by the Instructor and the class following the presentation.

Final Exam – There will be a 3-hour final exam consisting primarily of short answer and essay questions.

EVALUATION:

The course grade will be determined as follows:

Module Exercises	20%	approximately 5 exercises at 4% each
Mid term exam	20%	
Paper	20%	GEOG 290: written paper 12%; presentation 8% RENr 401e: written paper 10%; presentation 10%
Final exam	40%	

Plagiarism

Plagiarism involves representing the words of someone else as your own, without citing the source from which the material is taken. If the words of others are directly quoted or paraphrased, they must be documented according to standard procedures. The resubmission of a paper for which you have previously received credit is considered a form of plagiarism. Plagiarism is academic dishonesty, a serious academic offence, and will result in you receiving a mark of zero (F) on the assignment or the course. In certain cases, it can also result in dismissal from the College. Do not underestimate the impact such a situation will have on your reputation.

Academic Integrity

The University of Alberta is committed to the highest standards of academic integrity and honesty. University of Alberta students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students must familiarize themselves with the Code of Student Behaviour (www.ualberta.ca/secretariat/appeals.htm) and avoid any behaviour which could result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University. Students should be particularly aware of the code as it pertains to assignments, internet and library research, use of previous class notes and interviews or discussions with others.

Yukon College students are expected to be familiar with academic standards and regulations outlined in the Academic Regulations (http://www.yukoncollege.yk.ca/downloads/Academic_Regulations_2004.pdf).

Week	Date	Topic	Outline
1	7-Jan-14	Introduction	<ul style="list-style-type: none"> Class methodology Course outline Backgrounds of instructor and students Intro to climate and global warming Definitions, terminology and themes
2	14-Jan-14	Climate change	<ul style="list-style-type: none"> History of climate change Paleoclimate Climate forcings - Natural drivers Recent trends - Human drivers Confidence levels
3	21-Jan-14		<ul style="list-style-type: none"> Greenhouse gases Carbon cycle Traditional knowledge Northern trends and feedbacks Predicting future change, models and scenarios Abrupt change
4	28-Jan-14	Impacts	<ul style="list-style-type: none"> Physical impacts (temperature, precipitation, melt, etc.) Ecosystem impacts Social impacts
5	4-Feb-14		<ul style="list-style-type: none"> Health Economic sectors and costs Interdependencies Circumpolar-global links
6	11-Feb-14	Adaptation	<ul style="list-style-type: none"> Historical adaptation Adaptive responses Resource management case study
7	18-Feb-14		<ul style="list-style-type: none"> Planning (community, resource sector, etc.) Critical infrastructure Research Northern lead
8	25-Feb-14	Mid-term	
9	4-Mar-14	Mitigation	<ul style="list-style-type: none"> Baselines, targets, sectors Conservation Energy efficiency
10	11-Mar-14		<ul style="list-style-type: none"> Alternate energy Carbon sinks and sequestration Carbon offsets Trends in oil & gas Northern threats and opportunities
	18-Mar-14	Reading Week	
11	25-Mar-14	Policy	<ul style="list-style-type: none"> International policy (UNFCCC, Kyoto) National policy
12	1-Apr-14		<ul style="list-style-type: none"> Circumpolar responses Education, media, policy and public opinion Economic shift, market tools The Arctic as a geopolitical region
13	7-Apr-14	Presentations	
14	TBD	Final	

Course Materials**Required Reading**

- Weeks 1-5 Intergovernmental Panel on Climate Change
Fourth Assessment Report
The Physical Science Basis
Frequently Asked Questions
- Weeks 4-5 *Arctic Climate Impact Assessment*
Highlights Document
- Weeks 7-13 TBA

Additional Required Reading for RENr 401e

- Weeks 1-5 Intergovernmental Panel on Climate Change
Fifth Assessment Report
The Physical Science Basis
Summary for Policy Makers
- Weeks 4-5 *Arctic Climate Impact Assessment*
Overview Document (pp 1-45)
- Weeks 7-13 TBA

Suggested Reading

- Weeks 1-3 Intergovernmental Panel on Climate Change
Fifth Assessment Report
The Physical Science Basis
Summary for Policy Makers and Technical Summary
- Weeks 1-3 United Nations Environmental Programme
Vital Climate Change Graphics
- Weeks 1-3 Atmosphere, Climate & Environment Information Programme
Global Climate Change Student Guide Joe Buchdahl 1999
- Weeks 4-5 *Arctic Climate Impact Assessment*
Overview Document
- Weeks 7-8 Intergovernmental Panel on Climate Change
Fourth Assessment Report
Impacts, Adaptation and Vulnerability
Summary for Policy Makers and Technical Summary
- Weeks 9-12 TBA

On-line References

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| ACIA | Arctic Climate Impact Assessment | www.taiga.net/acia/
www.acia.uaf.edu |
| IPCC | Intergovernmental Panel on Climate Change | www.ipcc.ch |
| IPY | International Polar Year | www.ipy.org
www.ipy-api.gc.ca |
| NCE | Northern Climate Exchange | www.taiga.net/nce/ |
| UNEP | United Nations Environmental Programme | www.grida.no |
| Coursera | Climate Literacy | www.coursera.org/course/climateliteracy |
| PCIC | Climate Insights 101 video course | pics.uvic.ca/education/climate-insights-101 |

Course Submissions

All course submissions (except exams) will be through MyYC. Students are encouraged to share queries, concerns and thoughts with the wider group.