

GEOGRAPHY AND PLANNING

GPHY 314 – Climate Change



Course Instructor	Junyan Zhang	Email: junyan.zhang@queensu.ca								
Office	Online office hours									
Contact Time	Two 1.5 hour lectures per week One 1 hour Tutorial per week									
Format	Lectures based on textbook and reading materials									
Class Assessment	<table> <tr> <td>Assignments (4 x 10%)</td> <td>40%</td> </tr> <tr> <td>Exams (best 2 of 3)</td> <td>30%</td> </tr> <tr> <td>News Article Presentation</td> <td>5%</td> </tr> <tr> <td>Research Paper</td> <td>25%</td> </tr> </table> <p>There is no final exam, so that students can focus on the individual research paper.</p>		Assignments (4 x 10%)	40%	Exams (best 2 of 3)	30%	News Article Presentation	5%	Research Paper	25%
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COURSE OVERVIEW

This course introduces students to the science of global climate change and explores potential outcomes and political aspects that surround the topic of climate change today. The course aims to provide students with a sound sense of background on how the climate system works and how the scientific community uses models, observations and theory to assess changes, causes and impacts of climate across different time scales. Emphasis will be placed on past and present evidence of climate change, but some of the potential social, economic and environmental consequences of future climate change will also be explored. Attention will be drawn to the latest research on climate change as well as the evolution of scientific data and conclusions that have emerged over the past decades. A focus will be on the impacts of climate change on people and landscapes in the Canadian North. Students will be able to gain a theoretical background from lectures, and to bring active discussion between peer groups in tutorial classes.

LEARNING OUTCOMES

- Understand climate and climate change processes at local to global scales;
- Assess the role of human involvement in climate change;
- Analyze the future effects of climate change and the role of adaptation;
- Recognize well-founded or false arguments used in science, policy and media;
- Work with climate data to build interpretive skill and process knowledge and;
- Develop skills for communicating climate change science and policy.

COURSE TOPICS

1. What is climate change?
2. Climate history of the Earth
3. Drivers of paleoclimate variability
4. Anthropogenic and natural sources of climate variability
5. Indicators of modern climate change
6. Projected changes to the earth's climate
7. Global impacts of climate change
8. Impacts of climate change on northern Canada
9. Climate adaptation and mitigation
10. Communication of climate science

COURSE READINGS

Required: Dessler, A. 2015. Introduction to Modern Climate Change. Second Edition, Cambridge University Press, 273 p.
Optional: Ruddiman, W.F., 2014. Earth's Climate: Past and Future, 3rd Edition, W H Freeman & Co, 464 p.