

## **COURSE ANNOUNCEMENT**

## **RMES-520:** Climate Change: Science, Technology and Sustainable Development

Dr. Hisham Zerriffi (hisham.zerriffi@ubc.ca) Winter Session 2014 (Term 2), Th 1-4 pm AERL 107

Enrolment: Graduate Students (or advanced undergraduates with instructor approval)

Over the past few decades, climate change has emerged as one of the most complex challenges faced by both social and ecological systems globally. On the one hand, changes in global climate are likely to have significant impacts in many parts of the world, and while a small number of regions / sectors may benefit many others could be devastated. On the other hand, reducing greenhouse gas emissions poses significant technological, economic and political challenges. Reductions of greenhouse gas gases will be made in the presence of incomplete information and continued scientific and economic uncertainty. The mismatches between the spatial and temporal scales of both emissions and impacts means that incentives to take action are very different globally, making effective action difficult. Changes in human behaviour and technological innovations of the magnitude needed to significantly reduce greenhouse gas emissions may be difficult to achieve. Adapting to climate change will require long-term planning and will pose differential burdens to countries in the developed and developing world. While the challenges are immense, the possibility for radically transforming human energy systems exists and options for adapting to a climate change can be implemented. This course focuses primarily on these two potential responses to climate change: mitigation and adaption. In the course students will engage in the major debates around options for dealing with the climate problem with an emphasis on both behavioural and technological aspects of the climate change problem.

The course will consist of five modules:

- Module 1 provides a general overview of climate science and impacts, highlighting the current state of knowledge and remaining uncertainties.
- Module 2 focuses on carbon management options: mitigation and energy system changes and efficiency options.
- **Module 3** will examine **geo-engineering management options** that may be considered if carbon management is not timely or sufficient enough to avoid major climate impacts with a focus on carbon capture and sequestration. Technology options, risk management issues and policy responses will be discussed.
- **Module 4** on **vulnerability and adaptation** will look at how different populations are at risk of climate change impacts and the options available and requirements for successful adaptation.
- **Module 5** related to **carbon politics and carbon economics** will cover the role of politics (at various scales) and the role of economics in addressing the climate change problem. Included will be discussion of international negotiations, equity, the role of local action, and economic versus other instruments to control carbon emissions.

There is no single text for this course. Readings will come from a variety of articles, books and reports including the latest reports of the Inter-Governmental Panel on Climate Change and the recent Global Energy Assessment.



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