

**NORTHEASTERN UNIVERSITY  
DEPARTMENT OF CIVIL & ENVIRONMENTAL ENGINEERING**

**CIVE 4778 – Dialogue of Civilization – Climate Adaptation and Policy in an Emerging Economy – Summer 1 - 2015**

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**Course Description:** This course will explore how India with her ever-growing urban regions, and with her vulnerable coastal and inland populations, plan to adapt to climate change and natural hazards, and how she chooses to participate in international climate and emissions negotiations. The implications for India and the world, as well as for US-India relations, will be discussed. The discussions will be put in the context of the history and culture of India. A primary objective will be to understand how an emerging yet vulnerable economy adjusts to the reality of climate change and weather or hydrologic extremes, and how the will of citizens may drive decisions and policy even in a resource constrained nation. The students will be encouraged to think about possible lessons learned, if any, for U.S. adaptation decisions and mitigation policy.

A climate change war game described adaptation as “managing the unavoidable” and mitigation as “avoiding the unmanageable”. An emerging yet vulnerable economy such as India may perceive these stresses as competitive constraints. Irrigation planning and flood control in rural areas are important for food security and can save the lives of human beings at maximum risk. However, flash floods in cities like Mumbai, caused by a combination of heavy rain and high tides, can cause havoc on the economy, and put lives at stake. Reducing fossil-fuel emissions may limit global warming and hence climate change consequences, but may be perceived as disruptions to growth. Balancing these constraints is a clear and present need for India, and increasingly, for the developed world such as the United States.

The students will learn about India’s climate adaptation and policy based on discussions with the instructor, as well as possible interactions with guests from Indian academia, private industry, and government agencies. The students will also get an opportunity to get immersed in the culture of India, and visit some of her cities, coastlines, and tourist attractions, to get acquainted with the long and continuous history of the Indian peoples.

The course will culminate with a mock “climate change war game”, resembling a situation where international negotiators meet to formulate treaties on climate change adaptation and mitigation. The war games will be motivated by an event organized by the Center for a New American Security, a Washington-DC based think-tank, in 2008. Each student will need to participate in the war game and demonstrate her/his understanding of the science and policy imperatives.

**At the conclusion of this course students will be able to:**

1. Demonstrate their grasp of the climate change adaptation and policy challenges and imperatives for India, with consequences for US-India relations and US policy.
2. Develop and demonstrate the ability to grasp a different culture and understand the extent to which lessons learned may be generalized.
3. Clearly express their opinions in written and verbal work and support their opinion with relevant, well-researched and detailed evidence.

**Assignments:**

**(1) Class Participation and Enthusiasm (Worth 15%):** Students are expected to come to each and every excursion and guest lecture or discussion session prepared to listen, participate, and contribute. I would expect you to be immersed in the culture and understand the various sensitivities and the need to be respectful to guest lecturers, students, guides, and professors.

**(2) Weekly Blog (Worth 25%):** During the dialogue, students will maintain a photo journal or blog documenting their experiences abroad.

You will write 2 entries per week (10 in total) on your site - 1 Blog due on Wednesday at 6pm, 1 Blogs due on Sunday at 12 noon.

**Blogs must be submitted and site dated on or by the dates listed above or will not be accepted for grading.**

**Each blog entry should be 100-200 words (about 1-2 paragraphs) and discuss the places we have visited or you have personally explored. You may also add pictures as well.**

Your blogs can be fun but they must be formally written and academic in nature. They should be a mixture of all of the topics below:

- Specific site visits, guest lectures, or interactions with students, academics and/or others on campus on in places visited.
- What you observe about life in the academic campuses, the cities and their streets, and non-urban or coastal regions.
- The major challenges and priorities for India in terms of climate adaptation and policy, and whether any lessons learned in a resource constrained economy may be generalized to a developed economy or vice versa.

**(3) Reflection Papers / Reports (Worth 30%):** During the dialogue, students will be asked to write 2 reflection papers each, approximately 6-8 pages, examining the guest lectures, discussions, history of the locations we've visited, and the learning that took place in each.

**(4) Contribution in a climate change war game (Worth 30%):** The students must go through the required reading and be prepared to participate in a climate change war game along those lines. The specific rules will be revealed during the game.

## **REQUIRED READINGS:**

Climate Change and India: Vulnerability Assessment and Adaptation, Edited by P.R. Shukla et al., Universities Press, 2003

Climate Change War Games, Center for a New American Security

1. CNAS website: <http://www.cnas.org/node/149>
2. CNAS Participant Briefing Book:  
<http://www.cnas.org/files/documents/publications/Clout%20and%20Climate%20Change%20Briefing%20Book%20%5BFor%20Release%5D.pdf>
3. Nature News:  
<http://www.nature.com/news/2008/080805/full/454673a.html>

US-India cooperation on climate change crisis:

<http://blogs.state.gov/stories/2013/06/27/cooperating-india-climate-change-crisis>

## **Recommended Reading (Fiction):**

1. *Shantaram: A Novel*, by Gregory David Roberts, Macmillan, 2004
2. *Maximum City: Bombay Lost and Found*, Random House, 2009

## **Recommended Reading (India and the monsoons):**

*Ancient Indian civilization's tryst with climate change and monsoon rainfall:*

1. *New York Times* article: <http://green.blogs.nytimes.com/2012/05/29/ancient-civilization-upended-by-climate-change/>
2. *LA Times*: <http://articles.latimes.com/2012/may/28/science/la-sci-sn-indus-harappan-20120528>
3. 2012 PNAS paper: <http://www.pnas.org/content/109/26/E1688.short>

*Current scientific understanding of and uncertainties about the Indian monsoons*

1. 2006 *Science* paper:  
<http://www.sciencemag.org/content/314/5804/1442.short>
2. 2012 *Nature Climate Change* paper:  
<http://www.nature.com/nclimate/journal/v2/n2/full/nclimate1327.html>
3. 2013 news article in *Science*:  
<http://www.sciencemag.org/content/340/6139/1400.short>

## **Suggested Reading (Indian Culture & History):**

1. *Ancient India in Historical Outline*, by D.N. Jha, Manohar Publishers, 1999
2. *The Essential Aurobindo*, Edited by Robert McDermott, SteinherBooks, 2001
3. *Ignited Minds: Unleashing the Power Within India*, by A.P.J. Abdul Kalam, Penguin India, 2003