

Subject Description Form

Subject Code	CSE548
Subject Title	Global Climate Change and Society Response
Credit Value	3
Level	5
Pre-requisite/ Co-requisite/ Exclusion	<u>Recommended background knowledge:</u> Engineering or science background at undergraduate level. Basic knowledge of physics and environmental science.
Objectives	To provide students with an overview of the current state of science and debates in global climate change, develop ability to critically examine the complicated scientific, political, and social issues related to global climate change.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: <ul style="list-style-type: none"> a. understand scientific, economic, and ecological issues underlying the threat of global climate change, and the institutions engaged in negotiating an international response; b. identify an integrated approach to analyze climate change and develop policies for dealing with climate change; c. promote policy based on solid science and active communications; d. have creative and critical thinking and an ability to work independently.
Subject Synopsis/ Indicative Syllabus	<p><u>Keyword Syllabus</u></p> <p>i) <u>Introduction to climate change</u></p> <p>Historical overview of climate change science; changes in atmospheric constituents and radiative forcing; how human activities are affecting the radiative energy balance in the atmosphere; Changes throughout the climate system.</p> <p>ii) <u>Changes in different systems with global warming</u></p> <p>Past climate change and its causes; coupling between changes in the climate system and biogeochemistry; climate models and their evaluation; understanding and attributing climate change; global and regional projections of future changes in climate.</p> <p>iii) <u>Impacts of observed and future climate changes to various aspects</u></p> <p>Freshwater resources and their management; ecosystem; food, fiber and forest products; coastal systems and low-lying areas; industry, settlement and society; human health.</p> <p>iv) <u>Response to climate change: adaption and mitigation</u></p> <p>Assessment of adaptation practices, options, constraints and capacity; Synergies and trade-offs between adaptation and mitigation; assessing</p>

key vulnerabilities and the risk from climate change; Perspectives on climate change and sustainability.

Mitigation in varied systems: energy supply, transport and its infrastructure, residential and commercial buildings, industry, agriculture, forestry, waste management.

Governments' attitudes and policies around the world; developed countries and developing countries: UN climate change conferences and international organizations, local government's efforts, non-governmental activities; roles of the media.

Teaching/Learning Methodology

Lectures: will introduce fundamental knowledge and theoretical basis for climate change and its society response. Students will be required to take a mid-term test, which allow them to thoroughly understand taught contents.

Guest lecturers: will be invited to share a broad perspective of key environmental issues. They will provide a critical exposition of the current status and future challenges related to climate change issues. Ample opportunities will be provided for classroom discussions.

Video Clips: will be presented to provide students additional information on global climate change.

Workshops/seminars: for students to present and discuss key problems and potential issues for selected case studies.

Independent study: require students to prepare an individual report based on a specific climate change issue. Students are also required to give an oral presentation.

Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)					
		a.	b.	c.	d.		
1. Continuous Assessment	40%	✓	✓		✓		
2. Presentation	20%	✓	✓	✓	✓		
3. Final exam	40%	✓	✓	✓	✓		
Total	100%						

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

Assessment will include a written report, an oral presentation, and a 2-hour final exam.

Students must attain at least Grade D in both coursework and final examination (whenever applicable) in order to attain a passing grade in the overall result.

**Reading List and
References**

Books

B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds), *Climate Change 2007: Mitigation of Climate Change*, Cambridge University Press, 2007.

Dessler Andrew, *Introduction to Modern Climate Change*, Cambridge University Press, 2012.

IPCC, 2007: *Climate Change 2007: Synthesis Report*. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.

IPCC, 2014: *Climate Change 2014: Synthesis Report*. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.

Jenkins Adam, *Climate Change Adaption: Ecology, Mitigation and Management*, Nova Science Publisher, 2011.

Julie K. Gines, *Climate management issues: economics, sociology, and politics*, ebrary, CRC Press , 2012.

Parry Martin, Canziani Osvaldo, Palutikof Jean, Van der Linden Paul, Hanson Clair, *Impacts, Adaptation and Vulnerability*, Cambridge University Press, 2007.

Solomon Susan, Qin Dahe, Manning Martin, Marquis Melinda, Averyt Kristen, Tignor Melinda M. B., *The Physical Science Basis*, Cambridge University Press, 2007.

Websites

Intergovernmental Panel on Climate Change <http://www.ipcc.ch>