Subject Description Form

Subject Code	CSE548
Subject Title	Global Climate Change and Society Response
Credit Value	3
Level	5
Pre-requisite/ Co-requisite/ Exclusion	Recommended background knowledge: Engineering or science background at undergraduate level. Basic knowledge of physics and environmental science.
Objectives	To provide students with a comprehensive understanding of the current state of climate science and its societal implications, the fundamental principles of climate change, including analyzing observed changes in climate patterns over time. Students will explore the role of Environmental, Social, and Governance (ESG) criteria in climate-related disclosures and their impact on decision-making, analyze strategies for mitigation, adaptation, and resilience, and identify and assess climate-related risks and opportunities across various sectors.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. understand scientific, economic, and ecological issues underlying the threat of global climate change, and the institutions engaged in negotiating an international response. b. analyze historical trends and future projections of climate change to identify an integrated approach for developing effective climate policies. c. promote policies grounded in scientific evidence while effectively communicating climate-related risks, opportunities, and the importance of ESG criteria. d. demonstrate creative and critical thinking skills, with the ability to work independently on climate-related challenges and solutions. e. Evaluate strategies for mitigation, adaptation, and resilience in response to climate change impacts.
Subject Synopsis/ Indicative Syllabus	**Keyword Syllabus** **i) Introduction to Climate Change** 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. **ii) Observed Climate System Changes and Projections** Analysis of past climate changes and their 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. **iii) <u>ESG and Climate Disclosures</u>** Emerging trends in climate disclosure, focusing on case studies of various sectors; Impact of disclosures on stakeholder engagement and decision-making. **iv) <u>Response to Climate Change</u>** Overview of strategies for climate change mitigation and adaptation; identification and assessment of climate-related risks and opportunities across various sectors, emphasizing the importance of proactive strategies and informed decision-making.
Teaching/Learning Methodology	**<u>Lectures:</u>** will introduce fundamental knowledge and theoretical basis for climate change and its society response. Students will be required to take a quiz, which allow them to thoroughly understand taught contents. **<u>Guest lecturers:</u>** 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. **<u>Video Clips:</u>** will be presented to provide students additional information on global climate change. **<u>Workshops/seminars:</u>** for students to present and discuss key problems and potential issues for selected case studies. **<u>Independent study:</u>** 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. Quiz	20%	✓	✓		✓
2. Group project	30%	✓	✓	✓	✓
3. Final exam	50%	✓	✓	✓	✓
Total	100%				

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

Assessment will include two quiz (20%), a group project (30%) (a written report (10%) and an oral presentation (20%)), and a 3-hour final exam (50%).

Students must pass the final examination and achieve a passing overall score / grade to pass the subject.

Reading List and References

<u>Books</u>

B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds), C*limate 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