ESOE 4 CLIMATE CHANGE AND ITS IMPLICATIONS

Number of Theory Credits	Number of lecture hours/ semester
3	**42**

CONTENTS OF ESOE 4: CLIMATE CHANGE AND ITS IMPLICATIONS	**42Hrs**
Unit – 1	**14**
Climate Change: Definition, scope and facts of climate change. Weather and climate; Meteorological parameters - temperature, pressure, precipitation, humidity, wind speed & direction. Monsoons – Definition, Indian monsoons – seasons: Cold weather season (Winter), the hot weather season (Summer), season of advancing monsoon (The rainy season) and season of retreating monsoon (The transition season). Cyclones of the Indian region; El-Nin˜o, La Nina and their impacts.	
Unit – 2	**14**
Greenhouse effect and global warming: Definition, impacts, major greenhouse gases, sources and sinks of greenhouse gases; Carbon footprint. Ozone layer depletion and recovery, issues and remedies; ground level ozone and air pollution. Impacts of global climate change: Increased surface mean temperature, Urban Heat Islands; insect outbreaks, vector borne/zoonotic diseases, forest fire, reduced water availability, influence on agriculture, increase in floods and drought incidences, loss of biodiversity and extinction of	

species, sea level rise. Climate change and food security. India's climate change vulnerability - Case studies. Particulate pollution and global dimming.	
Unit – 3	
Climate change and policy frameworks – History of international climate change policies. The United Nations Conference on Environment and Development, Agenda 21, United Nation Framework Convention on Climate Change (UNFCCC), Intergovernmental Panel on Climate Change (IPCC) and its Assessment Reports, The Kyoto Protocol, Paris Agreement. Overview of Conference of Parties (CoPs). Evolution of climate change negotiations. Ministry of Environment, Forests & Climate Change (MoEF&CC), National Action Plan on Climate Change (NAPCC). Climate change adaptation and mitigation: Definition, scope and objectives. Linkages between development, climate change impacts, their mitigation and adaptation. Clean Development Mechanisms; Green Climate Fund, The Adaptation Fund. Carbon trade; Carbon Offset, United Nations Sustainable Development Goals.	

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Donald Ahrens.C. (2008). Essentials of Meteorology: An Invitation to the Atmosphere. Cengage Learning publication.

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Cambridge University Press. Great Britain.

Rajit Sengupta and Kiran Pandey. (2021). State of India's Environment 2021: In Figures. Centre Science and Environment, New Delhi.

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