

## LESSON PLAN

### B.Tech opens elective Feb-2016

Course Code	<b>CE1205</b>
Course Title	<b>GLOBAL WARMING AND CLIMATE CHANGE</b>
Prerequisites	<b>Nil</b>
Category	<b>Professional Subjects (P)</b>

### Instructional Objectives:

<b>Instructional Objectives No.</b>	<b>Instructional Objectives</b>
1.	To know the basics, importance of global warming
2.	To know the concept of mitigation measures against global warming

### Student's outcome

<b>Student outcome number</b>	<b>Student outcome</b>
(a)	an ability to apply knowledge of mathematics, science, and engineering
(c)	an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
(e)	an ability to identify, formulate, and solve engineering problems

Lecture No.	Topic to be covered	Instructional objectives	Students outcome	reference
<b>UNIT I - EARTH'S CLIMATE SYSTEM</b>				
1.	Introduction to climate system and Role of ozone in environment	a,c,e	1,2	1,2,3
2.	ozone layer-ozone depletion	a,c,e	1,2	1,2,3
3.	Introduction to Green House gases	a,c,e	1,2	1,2,3
4.	Green House gases and its Effect	a,c,e	1,2	1,2,3
5.	Radioactive Effects of Greenhouse Gases	a,c,e	1,2	1,2,3
6.	The Hydrological Cycle	a,c,e	1,2	1,2,3
7.	Impact of hydrological cycle with green house gases	a,c,e	1,2	1,2,3
8.	Carbon Cycle	a,c,e	1,2	1,2,3
<b>UNIT II - ATMOSPHERE AND ITS COMPONENTS</b>				
9.	Importance of Atmosphere	a,c,e	1,2	1,2,3
10.	Physical Chemical Characteristics of Atmosphere	a,c,e	1,2	1,2,3
11.	Vertical structure of the atmosphere	a,c,e	1,2	1,2,3
12.	Composition of the atmosphere	a,c,e	1,2	1,2,3
13.	Atmospheric stability	a,c,e	1,2	1,2,3
14.	Temperature profile of the atmosphere	a,c,e	1,2	1,2,3
15.	Lapse rates s-Temperature inversion	a,c,e	1,2	1,2,3
16.	Effects of inversion on pollution dispersion.	a,c,e	1,2	1,2,3
<b>UNIT III - IMPACTS OF CLIMATE CHANGE</b>				
17.	Causes of Climate change	a,c,e	1,2	1,2,3
18.	Change of Temperature in the environment	a,c,e	1,2	1,2,3
19.	Melting of ice Pole and sea level rise	a,c,e	1,2	1,2,3
20.	Impact of sea level rise	a,c,e	1,2	1,2,3
21.	Climate Change on various sectors	a,c,e	1,2	1,2,3

22.	Climate Change on agriculture	a,c,e	1,2	1,2,3
23.	Climate Change on forest	a,c,e	1,2	1,2,3
24.	Climate Change on ecosystem	a,c,e	1,2	1,2,3
25.	Climate Change on water resources	a,c,e	1,2	1,2,3
26.	Climate Change on human health	a,c,e	1,2	1,2,3
27.	Projected impact for different regions and irreversible changes.	a,c,e	1,2	1,2,3
<b>UNIT IV - OBSERVED CHANGES AND ITS CAUSES</b>				
28.	Climate change and Carbon credits	a,c,e	1,2	1,2,3
29.	CDM- Initiatives in India	a,c,e	1,2	1,2,3
30.	Kyoto Protocol	a,c,e	1,2	1,2,3
31.	Intergovernmental Panel on Climate change	a,c,e	1,2	1,2,3
32.	Climate Sensitivity and Feedbacks	a,c,e	1,2	1,2,3
33.	The Montreal Protocol	a,c,e	1,2	1,2,3
34.	UNFCCC	a,c,e	1,2	1,2,3
35.	IPCC report details and actions	a,c,e	1,2	1,2,3
36.	Evidences of Changes in Climate and Environment	a,c,e	1,2	1,2,3
37.	Evidences of Changes in Climate and Environment –on global scale	a,c,e	1,2	1,2,3
38.	Evidences of Changes in Climate and Environment –in India	a,c,e	1,2	1,2,3
<b>UNIT V - CLIMATE CHANGE AND MITIGATION MEASURES</b>				
39.	Clean development mechanism, Carbon trading	a,c,e	1,2	1,2,3
40.	Future clean technology – biodiesel, natural compost, eco-friendly plastic	a,c,e	1,2	1,2,3
41.	Alternative energy sources-bio-fuel, hydrogen, solar energy, wind, hydroelectric power	a,c,e	1,2	1,2,3

42.	Mitigation Efforts in India and Adaptation funding	a,c,e	1,2	1,2,3
43.	Mitigation Technologies and Practices, Energy Supply, Transport, Buildings, industry Agriculture, Forestry	a,c,e	1,2	1,2,3
44.	Carbon sequestration and Carbon capture and storage (CCS), Waste (MSW & Bio waste, Biomedical, Industrial waste	a,c,e	1,2	1,2,3
45.	International and Regional cooperation	a,c,e	1,2	1,2,3

### **TEXT BOOK**

1. Dash Sushil Kumar, “Climate Change – An Indian Perspective”, Cambridge University Press India Pvt. Ltd, 2007.

### **REFERENCES**

1. Adaptation and mitigation of climate change-Scientific Technical Analysis. Cambridge University Press, Cambridge, 2006.
2. Atmospheric Science, J.M. Wallace and P.V. Hobbs, Elsevier / Academic Press 2006.
3. Jan C. van Dam, Impacts of “Climate Change and Climate Variability on Hydrological Regimes”, Cambridge University Press, 2003.

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