

Climate Change

Course Code ENE-415	Credit Hours 3-0
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Course Description

Text Book:

1. Climate Change - Causes, Effects, and Solutions, 1st Edition, Hardy, J. T., John Wiley & Sons, 2003.
2. Global Warming -The Complete Briefing by John T. Houghton. (3rd edition) Cambridge University Press, 2004.
3. Global Change and the earth system, Keith, A.(ed), Springer, 2005.

Reference Book:

1. Climate Impact and Adaptation Assessment A Guide to the IPCC Approach, Earthscan Publication Ltd, London, 2005.
2. IPCC reports 2007, 2014, 2018 see (<https://www.ipcc.ch/ar6-syr/>)

Prerequisites :

Nil.

ASSESSMENT SYSTEM FOR THEORY

	Without Project (%)	With Project/Complex Engineering Problems (%)
Quizzes	15	10-15
Assignments	10	5-10
Mid Terms	25	25
Project	-	5-10
End Semester Exam	50	45-50

ASSESSMENT SYSTEM FOR LAB

Lab Work/ Psychomotor Assessment/ Lab Reports	70%
Lab Project/ Open Ended Lab Report/ Assignment/ Quiz	10%
Final Assesment/ Viva	20%

Teaching Plan

Week No	Topics/Learning Outcomes
1	Introduction to the earth's climate: climate change, and the interactions between climate and the global environment
2	Global Climate Change: Causes & Consequences
3-4	Human responses to potential climate change; Recent Climate Change Indicators

5	Global warming and greenhouse effect; Air Pollution and Acid Rain; Ozone depletion; Climate change and Industry
6-7	Types & Resources to produce Energy; Role of Energy Production in climate change: Fossil fuels, Hydrocarbons & their by-products
8	Observing Climate systems and its extremes: Climate and Weather
	Mid-Semester Exam
9	Introduction to Climate Models, Understanding future climate projections
10	Artificial Intelligence approaches; Machine learning,
11	Artificial Intelligence approaches; Deep learning,
12	Applications of AI in Climate change
13	Artificial intelligence for climate change Projection (Case Study)
14	Artificial intelligence for climate change adaptation (Case Study)
15	Impacts: ocean acidification and sea-level rise
16	Introduction to Climate Change Mitigation and Low Carbon Development
17-18	End Semester Exam

Practical: Nil