



SARVAJANIK
UNIVERSITY

INCLUSIVE | INTEGRATED | INNOVATIVE

SARVAJANIK UNIVERSITY
Sarvajani College of Engineering and Technology
Bachelor of Technology
Civil Engineering



B. Tech. IV Semester VII

Subject Name : Climate Change Studies

Subject Code: BTCL14708

Type of course : PEC-V

Prerequisite : Environment Science (BTMD17102)

Rationale : To equip students for understanding of the environmental and climate change dimensions of development trends and interventions.

Teaching and Examination Scheme:

TEACHING SCHEME				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	100
3	0	0	3	60	25	15	-	-	

CA1: Continuous Assessment (assignments/projects/open book tests/closed book tests **CA2:** Sincerity in attending classes/class tests/ timely submissions of assignments/self-learning attitude/solving advanced problems **TEE:** Term End Examination **TEP:** Term End Practical Exam (Performance and viva on practical skills learned in course) **CA3:** Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in course

Content:

Sr. No.	Topics	Teaching Hrs.	Module Weightage
1.	Fundamentals of Climate Change and Global Warming: Climate, weather and Climate Change, Overview of Earth's Atmosphere, Layers of Atmosphere, Temperature, Radiation and Variation, Heat-Balance of Earth Atmosphere System, Temporal Variation of Air temperature, Greenhouse gases and its sources, Effects and causes of global warming, Sources of aerosols, Direct and indirect effects, Production mechanisms of aerosols, Trends in aerosols, Carbon dioxide & climate change, Methane & climate change, Nitrous oxide & climate change, CFCs & climate change, Role of Indian industry in production of CFC products, Climate Forcers, Role of plants, Role of countries and citizens in containing global warming	15	34%
2.	Environmental Economics: Issues of costs and benefits of alternative environmental policies to deal with air pollution, water quality, toxic substances, solid waste, and global warming, UNFCCC, IPCC and Kyoto protocol: Scientific and implementation bodies of Kyoto, Kyoto mechanisms	8	16%
3.	Climate Change Impacts And Adaptation: Concept of climate change impacts and adaptation, Causes and severity of impacts, Vulnerability of various sectors like water resources, agriculture, forest, energy sector, coastal zones, human health, linkages between climate change adaptation and development	11	25%

PEC-V: Professional Elective Course-V

W.e.f. AY 2021-22





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4.	Climate Change Mitigation: Introduction to Climate Change Mitigation and Low Carbon Development, Strategic Frameworks and Policy Approaches for Mitigation and Low Carbon Development, Sectors with High Mitigation Potential, Mitigation technologies for transport, infrastructure, industry, waste, energy sector, Renewable and alternative energy, Green building, International Initiatives to Support Climate Change Mitigation	11	25%
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Suggested Specification table with Marks (Theory/Practical):

% Distribution of Marks					
R Level	U Level	A Level	N Level	E Level	C Level
30	30	15	15	5	5

Legends: R: Remembrance, U: Understanding; A: Application, N: Analyze, E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Text Books:

Sr. No.	Title of book /article	Author(s)	Publisher and details like ISBN	Year of publication	Publication Edition
1	Climate change: Critical Concepts in the environment	Frank Chambers, Michael Ogle	Routledge	2002	1 st
2	Global Warming- A very short introduction	Mark Maslin	Oxford publication	2009	2 nd
3	Climate Change and Sustainable Development: Prospects for Developing Countries	Anil Markandya	Routledge	2002	1 st
4	Climate Change Policy - Facts, Issues and Analysis	Jepma, C.J., and Munasinghe, M.	Cambridge University Press	1998	-
5	IPCC Fourth Assessment Report	-	Cambridge University Press, Cambridge, UK	-	-
6	Climate change: Causes, Effects and Solutions	John T. Hardy	Willey publication	2003	1 st
7	Climate Change- A very short introduction	Mark Maslin	Oxford publication	2014	3 rd





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Course Outcome:

Sr. No.	CO Statement After learning this subject, students will be able to	Marks % weightage
CO-1	Discuss Climate Change in Atmosphere, its reasons and indicating parameters, gases leading to climate change. (R, U....cognitive level)	15
CO-2	Describe effects of global warming and climate change, role of citizen and Indian countries containing to global warming. (R, U, A....cognitive level)	15
CO-3	Describe the laws, policies, and legislation pertaining to climate change & to study the framework of legislative bodies at national and international level. (R, U, A, N....cognitive level)	10
CO-4	Discover the impacts, adaptation and mitigations for climate change. (R, U, A, N....cognitive level)	30
CO-5	Define the economics involved in mitigation methodologies, alternate sources of energy, and alternate methods of energy generation to reduce air pollutants. (R, U, A, N, E....cognitive level)	30

Mapping with POs:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO-1	2	2	-	-	-	1	1	2	1	1	2	1	3	1	1
CO-2	1	1	-	-	1	-	3	1	1	2	2	3	3	1	3
CO-3	1	1	1	-	-	-	1	2	-	1	3	2	2	1	2
CO-4	1	1	1	1	1	2	3	1	1	2	2	3	3	1	3
CO-5	1	1	1	1	1	2	3	1	1	2	2	3	3	1	3
Rational e*	6	6	3	2	3	5	11	7	4	8	11	12	14	5	12

Rationale*: The study of fundamental aspects, effects and economics of different challenges of climate change will help to select various methods to identify the impacts and its mitigation.

List of Open Source/learning website:

- https://www.youtube.com/watch?v=zQi3C_eZkLs
o Introduction to climate change
- <https://www.youtube.com/watch?v=QcBbC1xbn58>
o Climate change and its science
- <https://www.youtube.com/watch?v=IpSbQR199Oo>
o Climate change adaptation
- https://www.youtube.com/watch?v=I90q5WMD_TU
o Impacts of climate change
- https://www.youtube.com/watch?v=_DtVXI0QPnk
o Climate change mitigation and way forward

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