B. Tech. Engineering				
Course code: Course Title	**Course Structure**			**Pre-Requisite**
CE201: Introduction to Earth, Atmosphere, climate, and environmental sciences	**L**	**T**	**P**	**NIL**
	3	**1**	**0**	

Course Objective: To familiarize the students with the concepts of the subject and its related applications in climate studies

S. No	Course Outcomes (CO)
CO1	To develop an understanding of the basic concepts of the Earth and the Atmosphere
CO2	To understand different atmospheric and geological phenomena and processes
CO3	To conceptualize how to use the theoretical knowledge of climate studies in long-term climate change analysis
CO4	Understand the basic principles and practices of environment and biodiversity safeguarding

S. No	Contents	Contact Hours
UNIT 1	**Introduction to Earth Sciences**- Earth's physical features, evolution of Earth, Earth's composition, petrology and mineralogy, structural geology, geophysics, natural hazards- volcanoes, earthquakes, tsunami, glaciers, landslides, geological division of India	6
UNIT 2	**Physical Geology**- Earth's internal structure, variation of pressure, temperature density, theory of isostasy, continental drift, plate tectonics, folds, faults, and unconformities, rock and water cycle	6
UNIT 3	**Introduction to atmospheric sciences**- Solar radiation, electromagnetic spectrum and radiation, phenomenon of scattering, refraction, absorptivity, particles of atmosphere, states of matter in the atmosphere, fundamentals of atmospheric modelling	6
UNIT 4	**Climate studies**- Advection and convection winds, associated wind patterns, cloud formation, thermal heat generation, evaporation and condensation, precipitation, extreme weather events, numerical weather prediction	6
UNIT 5	Introduction to environmental studies- Definition, scope, and importance, natural resources, renewable and non-renewable resources, Social issues and the environment, human population and environment	6
UNIT 6	**Environmental management**- Environmental pollution- air/ water/ noise/ soil/ thermal, solid waste management, disaster management	6

UNIT 7	**Biodiversity studies and management**- Ecosystem and ecology, energy flow, productivity, biodiversity and conservation, biogeography, value of biodiversity, ex-situ and in-situ conservation, hot spots of biodiversity, endemic species, threats to biodiversity	6
	Total	**42**

REFERENCES

S.No.	Name of Books/Authors/Publishers	Year of Publication / Reprint
1	Lenton, T., "Earth System Sciences", Oxford University Press, (ISBN 9780198718871, 019871887X) .	2000
2	Lianko, A. A., "Introduction to Earth Sciences", Katha Pub., (ISBN 9789715740357, 9715740359).	2012
3	Earle, S., "Physical Geology", BCcampus, BC Open Textbook Project, (ISBN: 9781774200285, 1774200287).	2005
4	Kenning, F., "Introduction to atmospheric Physics", Callisto Reference, (ISBN: 9781641160094, 1641160098).	2008
5	C. Dorland, M. A. van Drunen, R. Lasage, "Climate Change in Developing Countries", CABI Pub., (ISBN: 9781845930776, 1845930770).	2021
6	Basu, M., Xavier, S., Savarimuthu, SJ, X. (2017). Fundamentals of Environmental Studies. India: Cambridge University Press.	2017
7	Biodiversity: Monitoring, Management and Utilization. (2018). India: DAYA Publishing House.	2018
8	Ahrens, C. D., & Henson, R. (2018). Essentials of Meteorology. Cengage Learning	2018