

Semester	JAN 2022
Open to semester	4
Course code	EC2243
Course title	Atmosphere and Ocean Chemistry
Credits	3 /
Course Coordinator & participating faculty (if any)	Gyana Ranjan Tripathy
Nature of Course	Lectures and Tutorials
Pre-requisites	None
Objectives (goals, type of students for whom useful, outcome etc)	The main objective of this course is to learn the basic chemical processes taking place in the atmosphere and ocean. It will provide an outline of nature of the atmosphere and ocean and discuss how we are changing this with time and how they eventually feedback and modify our climate. This course will act as a link between the fundamental chemistry of Atmosphere-Ocean and the complex Earth System evolution and climate change.
Course contents (details of topics /sections with no. of lectures for each)	Evolution of earth's atmosphere and Ocean; current composition of the atmosphere and ocean; The greenhouse effect and the ozone hole; rainwater chemistry, acid rain; Atmospheric aerosols, concentration and size, sources, and transformation; Sources of anthropogenic pollution; Distribution of chemicals in the ocean; Estuarine behavior of elements; Nutrient cycling in oceans; Organic matter Production, export and remineralization; Carbon cycle, Inorganic carbon chemistry, air-sea carbon exchanges, solubility and biological carbon pumps; Silicate and Calcium chemistry and links to long term climate and evolution of earth system
Evaluation /assessment	End-Sem Examination-40% Mid-Sem Examination-40% Others-20%
Suggested readings (with full list of authors, publisher, year, edn etc.)	1. Global Environment: Water, Air and Geochemical cycles. E K Berner and R A Berner, Second edition, 2012 Princeton University Press, Oxford. 2. Introduction to Atmospheric Chemistry, Daniel Jacob, Princeton University Press, 1999. 3. Chemical Oceanography, IVth Ed., Frank Millero, 2013.

	4. Tracers in the sea. W S Broecker and T Peng, 1982.
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