

Programme: M. Sc. (Marine Sciences)

Course Code: MSO 370

Number of Credits: 01

Effective from AY: June 2018-19

Title of the Course: Aerosol and Climate Practical

Prerequisites for the course:	Students undergoing course in any branch of Marine Sciences.	
Objective:	1. In the present course, trace metals and nutrients will be analysed from PM₁₀ particulate matter collected from respirable dust sampler. 2. The main objective of this course is to study the atmospheric composition of aerosols. 3. These studies would help to understand the affect of rapid urbanisation and industrialisation on air quality.	
Content:	1. RDS sampler - principle and instrumentation (6 hrs; Ref: 1, 2, 3) 2. Method to collect dry deposited material by using PM 10 (6 hrs; Ref. 1, 2, 3) 3. Estimation of mass loadings of PM 10 (06 hrs; Ref: 1, 2, 3) 4. Estimation of water soluble metals (Fe, Zn, Cu and Pb) in dry deposited material (06 hrs; Ref: 4, 5, 6, 7) 5. Estimation of total metals (Fe, Zn, Cu and Pb) in dry deposited material(06 hrs; Ref: 4, 5, 6, 7)	24 hours
Pedagogy:	Demonstations/ Lab experiments.	

References/ Readings	1. Methods for air sampling and analysis (2nd edition), 1977 – Katz M, APHA Press Inc. 2. Methods of air sampling and analysis (3rd edition), 1989 - Lodge Jr., Lewis Publishers: Michigan. 3. Guidelines for the measurement of ambient air pollutant (Vol. 1), 2012 - NAAQMS series/36/2012-13. 4. Manual for geochemical analysis of marine sediments and suspended particulate matter, 1977 - Loring, D. H. and Rantala, R. T. T, Fish. Mar. Serv. Dev. Technical Report, 700. 5. Methods of Seawater analysis, 1983 - K. Grasshoff, M. Ehrhardt and K. Kremling (eds.), Verlag Chemie, Weinheim, 6. Analytical chemistry of seawater, 1975 - Riley, J.P., In Chemical Oceanography J.P. Riley and G. Skirrow (eds.), Vol. 3. Academic Press, London. 7. Standard methods for the examination of water and wastewater (20th edition), 1998 - APHA, Washington. D. C.	
Learning Outcomes	1. The main outcome of the study is to understand the quality of air through the analysis of dust, trace metal levels and nutrients in particulate (PM₁₀) and fine matter (PM_{2.5}). 2. The effect of different metals on the environment is studied based on their concentrations in the atmosphere. 3. These studies also would help for identification of hot spots near industrial or urban conglomerates. 4. Can be assessed through their possible sources and their implication on coastal waters of Goa. 5. Such studies along with crustal elements would be more informative about the sources and would suggest remedial measures to be adopted for their control.	