



ALAGAPPA UNIVERSITY

[A State University Accredited with 'A+' Grade by NAAC]

Karaikudi – 630 003

Tamil Nadu



ENVIRONMENTAL MONITORING SENSORS

Value added course

(Course Code : VAC-BEBS-04)

OFFERED BY

DEPARTMENT OF BIOELECTRONICS AND BIOSENSORS

Environmental Pollution is the effect caused by undesirable changes in our surroundings that have harmful impacts on plants, animals, and human beings. Environmental sustainability requires conservation of pure environment from different pollutant materials and routes which cause pollution. Pollutants can be classified into different types like air, water, soil. This course is designed to impart comprehensive knowledge on biodiversity, environmental pollution, control and monitoring instrumentation methods and their applications.

COURSE OBJECTIVES

- Gaining knowledge on pollutant, types and their controlling methods
- Understanding types of biomolecules and their structures
- Effects of pesticide on human health and preventive measures
- Understanding petroleum industrial effects and processes
- Understanding role of metabolites in human health



Course Coordinator Contact

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**Offered during
Weekend / Holidays**

Syllabus

Course Code	Value added course	ENVIRONMENTAL MONITORING SENSORS	Weekly	Hours: 5
Objectives VAC- BEBS- 04	<ul style="list-style-type: none"> ➤ Understanding the ecosystems and environmental balance for sustainable development. ➤ Understanding the sources of pollution and controlling parameters ➤ Understanding the biodiversity on environmental balance 			
Course Outcomes	Based on this course, the graduate will understand /evaluate / develop technologies on the basis of environmental regulations and sustainable development			
UNIT-I	ECOSYSTEMS: Definition, Scope, and Importance of ecosystem. Classification, structure, and function of an ecosystem, Food chains, food webs, and ecological pyramids. Flow of energy, Biogeochemical cycles, Bioaccumulation, Biomagnification, ecosystem value, services and carrying capacity, Field visits.			
UNIT-II	SOURCES OF POLLUTION : Living organisms and Non-Living materials, water sources exploitation of surface and ground water, floods and droughts, Dams. Mineral use and exploitation, environmental pollution by mineral resources, Land resources: Forest resources, Energy : fossil fuels, renewable and non-renewable energy sources, use of alternate energy source, case studies.			
UNIT-III	BIODIVERSITY : Vegetation Monitoring Measurement of height, girth and biomass, Transect method: Line and belt transect, Measurement of frequency, density, abundance and diversity, Value of biodiversity; consumptive use, productive use, social, ethical, aesthetic and optional values.			
UNIT-IV	ENVIRONMENTAL POLLUTION AND CONTROL TECHNOLOGIES: Environmental Pollution: Classification of pollution, Air Pollution: Primary and secondary pollutants, Automobile and Industrial pollution, Ambient air quality standards. Water pollution: Sources and types of pollution, drinking water quality standards. Soil Pollution: Sources and types, Impacts of modern agriculture, degradation of soil. Noise Pollution: Sources and Health hazards, standards, Solid waste: Municipal Solid Waste management, composition and characteristics of e-Waste and its management.			
UNIT-V	INSTRUMENTS IN ENVIRONMENTAL MONITORING pH meter, Conductivity meter, Colorimeter, UV Spectrophotometer, Atomic absorption spectrophotometer Flame photometer, Hot air oven, autoclave, laminar flow, RDS, RSPM 2.5, Handy sampler, Gas chromatography, Mass spectroscopy, Scanning electron microscopy			
TEXT BOOKS:				

1. Handbook of Methods in Environmental Studies: Vol.1 By Maiti, Subodh. (2003).
2. Waste Water Engineering, Metcalf and Eddy, INC, Tata McGraw Hills
3. Indian Standard for Drinking Water, BSI, New Delhi. Environmental Pollution Control, C. S. Rao, Wiley Eastern Ltd., 1993
4. Environmental Studies by Anubha Kaushik, 4th Edition, New age international publishers.
5. Air Pollution Control and Engineering, De Nevers, McGraw Hills, 1993, 10.
6. Fundamentals of Air Pollution, Samuel, J. W., 1971, Addison Wesley Publishing
7. Fundamentals of Environmental Pollution, Krishnan Khannan, S. Chand and Company Ltd., 1994.
7. Text book of Environmental Science and Technology - Dr. M. Anji Reddy 2007, BS Publications.
6. Introduction to Environmental Science by Y. Anjaneyulu, BS Publications.