

CECX63	ENVIRONMENTAL MONITORING	L	T	P	C
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OBJECTIVES:

- To understand the analytical techniques and instrumental methods in environmental monitoring.
- To impart knowledge on various air quality monitoring methods.
- To understand the concepts involved in monitoring water quality.
- To enhance their knowledge in material characterization techniques.

MODULE I ANALYTICAL METHODS 7

Classification of instrumental methods- Performance characteristics of instruments (static and dynamic)-errors and uncertainties in performance parameters- noise reduction- Sensitivity and detection limit Errors-types-expression of errors- Precision and accuracy- Calibration of instrumental methods.

MODULE II AIR QUALITY MONITORING METHOD 7

Spectrophotometry - Electromagnetic radiation -Atomic absorption and emission spectrometry -Ultraviolet-visible spectrophotometry principle and instrumentation- Atomic adsorption spectroscopy principle and instrumentation- Monitoring environmental problem using remote sensing and GIS.

MODULE III WATER QUALITY MONITORING METHODS 8

Electro chemical methods- electrochemical cell- Fluorimetry- nephelometry and turbidimetry- principles- Electrodes- Conductometry- electrolytic conductivity specific equivalent and molar conductance- working principles of pH, EC, TDS meters.

MODULE IV MATERIAL CHARACTERIZATION METHODS 8

Material characterization techniques- SEM, TEM, XRD, FTIR, thermal analysis-working principles and applications.

Total Hours : 30**TEXT BOOKS:**

1. Paul. R. Locontio, "Trace Environmental Quantitative Analysis: Principles,

Techniques and Applications”, 2nd Edition, 2005

2. D.A. Skoog, D.M. West and T.A. Nieman, “Principles of Instrumental Analysis”, 5th Ed. Thomson Asion (P) Ltd. Singapore, 2004.

REFERENCES:

- 1 Andrew N. Rencz, “Manual of Remote Sensing: Remote Sensing for Natural Resource Management and Environmental Monitoring”, John Wiley & Sons Inc, April 2004
2. Reeve R.N., “Introduction to Environmental Analysis, Analytical techniques in sciences”, John and Sons, Chichester, UK, 2002.

OUTCOMES:

At the end of the course, the students will be able to

- elaborate about the problems and errors in instruments.
- explain the principle and method of air quality monitoring techniques.
- describe the principle of water quality monitoring techniques.
- select a method for material characterization.