MARKAZ ARTS AND SCIENCE COLLEGE, ATHAVANAD

PG DEPARTMENT OF BIOCHEMISTRY

CERTIFICATE COURSE 2022-23

MZBCCC02- AN INTRODUCTION TO ANALYTICAL METHODS FOR WATER QUALITY ASSESSMENT

Course objectives

- To understand water quality criteria, and standards
- To comprehend knowledge about sources, cause and impacts of water pollutants
- To be abreast with physical, chemical and biological methods water treatment.

Course outcomes

At the end of the course the student will be able to:

- Explain the general properties of water and understand water resources and water conservation.
- Develop awareness about water quality criteria and standards, and their relation to public health and environment
- Interpretate the quality of daily using water.
- Understand important parameters for measuring water quality.
- Know about the methods for the determination of water quality parameters
- Learn how to run accurate water quality tests and to determine how the parameters relate to each other.

SYLLUBUS

Unit I

Fundamental chemistry of water (6 hours): Chemistry of water, Physical and chemical properties, Weak Interactions in the aqueous system, Ionization of water, water as a reactant, Water recourses,

Unit II

Water pollution (6 hours)- Definition of water pollution, types of water pollutants ,sources of water pollutants, trace element in water. Purification of water- Treatment of domestic and industrial water.

Unit III

Water quality analysis (8 hours): Important water Quality parameters and methods for their determination - turbidity, color, taste, pH, acidity, alkalinity, chemical constituents, hardness, Dissolved Oxygen (DO) in water, BOD of water, COD of water etc., water sampling, standard for drinking water as per BIS specifications, household water treatment and safe storage.

Unit IV

Practical – Analytical tests for water quality assessment (10 hours): Determination of pH and conductivity, Test for acidity and alkalinity, Test for total hardness, Test for chloride, calcium, iron etc., calculation of magnesium content and total solids.

REFERENCE

1. Nelson, D. L. and Cox, M.M. Lehninger Principles of Biochemistry, 6th Edition, W.H.Freeman and Company, N.Y., USA.
2. Laboratory Mannual of Water and Wastewater Analysis, D.R. Khanna, R. Bhutiani, Daya Publishing House, Delhi, 2008.
3. A. K. De, Environmental Chemistry, 6th Edn.
4. S. S. Dara, A Textbook of Environmental Chemistry and Pollution Control, 8th Edn.
5. A. K. Ahluwalia, Environmental Chemistry.