



Dempo Charities Trust's

DHEMPE COLLEGE OF ARTS & SCIENCE
Miramar, Panaji-Goa

Determination of Physico-chemical and Microbiological parameters in drinking Water

CourseObjective:

To enable students to acquire knowledge and to estimate the different Physico-chemical and biological parameters in drinking water so as to determine whether water is hygienically safe and fit for consumption. Students are encouraged to bring water samples from their locality for analysis.

CourseContents:

- 1) Orientation course/ introduction to microbiological parameters of water.
 - 1.1 Water quality of drinking water
 - 1.2 Water quality standards
 - 1.3 Study of E.coli, Pseudomonas aeroginasa, and Salmonella Typhimurium
 - 1.4 Effect of micro-organisms on human health.(1.1,1.2-1hr and 1.3,1.4-1hr)
- 2) Microbiological techniques (practicals)
 - 2.1 Sterilization techniques-Autoclaving, drying of apparatus, making cotton plugs, Laminar air flow, traditional way b/w burner—6 hrs
 - 2.2 Preparation of nutrient broth, Agars-control and samples----7 hrs
 - 2.3 Inoculation of sample, incubation time and detection of presence---8 hrs
- 3)Introduction to chemical parameters of water:
 - 3.1 Sources of water supply
 - 3.2 Water standards for domestic use-physical characteristics such as turbidity, colour, and odour.
 - 3.3 Chemical characteristics such as pH, chlorides, hardness, phosphates, nitrates, total dissolved solids ,DO, total Fe content, Acidity, Alkalinity, sulphates, free CO₂ ,electrical conductivity.
 - 3.4 Aspects of water pollution.
 - 3.5 Treatment of water for domestic use.(3.1, 3.2, 3.3-----1 hr and 3.4, 3.5-1 hr)

4) Chemistry practicals:

4.1 –Determination of colour, odour, taste, pH, turbidity and total dissolved solids—2 hrs

4.2 Total Acidity, total Alkalinity, chlorides and free CO₂—2 hrs

4.3 Total hardness, calcium content, sulphates and nitrates —2 hrs

4.4 Total Fe content, total phosphorous —2 hrs

Course outcome: Students after completing this course gain adequate knowledge to conduct analysis of water samples in their locality to test the potability of water and thus serve the community in the larger interests.

References: ---

1)--Handbook of Water and waste water analysis by Kanwaljit Kaur

2)-Physico-Chemical Examination of water, sewage and Industrial effluents

by N. Manivasakam