

COURSE TITLE	TESTING METHODS IN ENVIRONMENTAL AUDIT-I
COURSE CODE	01CH0411
COURSE CREDITS	1

Objective:

- 1 The objective of the course is to provide skills and an improved understanding of water quality testing.

Course Outcomes: After completion of this course, student will be able to:

- 1 Apply appropriate techniques to measure key physico-chemical, hydrological, and microbiological water quality parameters.
- 2 Apply standard laboratory and field protocols to conduct accurate water quality monitoring and testing.
- 3 Analyze inter-relationships among water quality parameters to identify pollution sources and assess water system behaviour.
- 4 Evaluate water quality results against environmental and public-health standards to determine suitability for various uses.

Pre-requisite of course: Knowledge of water quality parameters

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
0	0	2	0	0	0	50	50
Contents : Unit	Topics						Contact Hours
Total Hours							

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	Experiment 1 Overview of lab equipment, apparatus, and utilities of environmental engineering lab	2
2	Experiment 2 Analysis of pH, alkalinity, acidity of water sample and its implication and reusability aspect	4
3	Experiment 3 Analysis of biological oxygen demand of water sample and its implication and reusability aspect	6

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
4	Experiment 4 Analysis of calcium hardness of water sample and its implication and reusability aspect	2
5	Experiment 5 Analysis of calcium hardness of water sample and its implication and reusability aspect	2
6	Experiment 6 Analysis of dissolved oxygen in water sample and its implication and reusability aspect	4
7	Experiment 7 Analysis of conductivity of water sample and its implication and reusability aspect	2
8	Experiment 8 Analysis of chemical oxygen demand in water sample and its implication and reusability aspect	6
9	Experiment 9 Analysis of total solids, total dissolved solids, Total suspended solids in water sample and its implication and reusability aspect	2
Total Hours		30

Textbook :

- 1 Standard methods for the examination of water and wastewater., Rice, E. W., Baird, R. B., Eaton, A. D., & Clesceri, L. S., APHA, 2012

References:

- 1 Water quality: guidelines, standards & health., Water quality: guidelines, standards & health., Fewtrell, L., & Bartram, J. , IWA Publishing, 2001

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
0.00	0.00	35.00	35.00	30.00	0.00

Instructional Method:

- 1 The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

Instructional Method:

- 2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
- 3 Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.
- 4 Students will use supplementary resources such as online videos, NPTEL videos, ecourses, Virtual Laboratory.

Supplementary Resources:

- 1 <https://vlab.amrita.edu/index.php?sub=2&brch=193&sim=1548&cnt=1>