CHRIST COLLEGE (AUTONOMOUS)
IRINJALAKUDA

CHRIST
COLLEGE (AUTONOMOUS)
IRINJALAKUDA, KERALA

certificate course on

Environmental analysis and Analytical techniques

DEPARTMENT: ENVIRONMENTAL SCIENCE

NAME OF VALUE-ADDED COURSE: ENVIRONMENTAL ANALYSIS AND ANALYTICAL TECHNIQUES

SYLLABUS HOURS: 35

COURSE OUTCOME: TO UNDERSTOOD DIFFERENT ENVIRONMENTAL ANALYSIS TOOLS
TOFAMILIARIZE DIFFERENT ANALYTICAL INSTRUMENTS
TO GOT TECHNICAL EXPERTISE IN WATER ANAL

Dr. Jolly Andrews CMI
Principal
Christ College

Dr.Subin K Jose
Course Coordinator
Department of Geology and Environmental Science

FOR REGISTRATION
SCAN

ENVIRONMENTAL ANALYSIS AND ANALYTICAL TECHNIQUES

Assessment Procedure 2023-24

Environmental science is a vast and increasingly important field. The design and implementation of policies to protect our health and environment rely on environmental analysis. In turn, environmental scientists require suitable analytical methods and techniques to monitor the effects of environmental contaminan**ts.** The course is designed to develop skills in analytical methods used for environmental analysis. The course includes analysis techniques for environmental monitoring of water. After a brief introduction to the general problem of pollution the course illustrates, above all through the discussion of specific examples, the criteria and methodologies to be followed for the solution of problems typical of environmental analysis.

Which of the following is the light emitting property of waste water

(a) Turbidity

(b) pH

(c) Volatility

(d) Alkalinity

How can stability of radiation be achieved in incandescent or discharge sources used in Absorption Spectroscopy?

a) Using filters

b) Using monochromators

c) Using slits3

d) By controlling the source voltage

Aeration of water is done to remove _____

(a) Turbidity

(b) Odour

(c) Bacteria

(d) Color

No.	Name	13/9	13/9	13/9	15/9	15/9	15/9	14/9	14/9	22/9	22/9	22/9	22/9	24/9	28/9	28/9	28/9	27/9	28/9	4/10	6/10	5/10	6/10	7/10	11/10	11/10	16/10	16/10	4/11	6/11	6/11	7/11	7/11	CO1
1.	Abhishek V U																																	
2.	Adithya P																																	
3.	Angel Treesa Antony																																	
4.	Anjaly Jose																																	
5.	Anjaly P S																																	
6.	Christina C B																																	
7.	Devika M R																																	
8.	Devika P Dayanand																																	
9.	Lakshmi K Rajeev																																	
10.	Parvathi V M																																	
11.	Sneha K S																																	
12.	Sona S Kumar																																	
13.	Thanhath T S																																	

Solar Photovoltaic Technology Basics

CPCC54

Value Added Certificate Course

Teacher Coordinator Report 2023-24

Number of students	13
Date of examination	DECEMBER ,3, 2023
Total students who passed exam	13
Total course duration	35 Hrs.

Feedback analysis:

- Students appreciated the techniques and their wonderful experiences of hands-on training.
- Students appreciated the advantage of the hands-on training session in future research purposes.
- The students enjoyed team work.
- 100% of the students enjoyed the classes.
- Students demanded more such courses to develop their practical skills.

Course Coordinators: Dr. Subin K. Jose., HOD Dept. of Environmental Science

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CERTIFICATE OF COMPLETION

This to certify that Mr./Ms._____
has successfully completed the certificate course in Environmental Analysis and Analytical techniques, organized by Department of Geology and Environmental Science , Christ College (Autonomous), Irinjalakuda.

COURSE COORDINATOR
Dr. SUBIN K JOSE

PRINCIPAL
Dr. Fr. Jolly Andrews CMI

Department: Environmental science
Name of Value-added course: Environmental analysis and Analytical techniques
Syllabus hours: 35

Course outcome: To understood different environmental analysis tools
To familiarize different analytical instruments
To got technical expertise in water analysis
Syllabus details:

	Environmental analysis and Analytical techniques **Instrumentation ANALYTICAL TECHNIQUES**

Module I:

Introduction to environmental analysis tools

Gravimetric Methods- Principle and application of gravimetric methods in determination of total, dissolved, suspended, volatile and fixed solids present in water and waste water.
Volumetric Methods- Importance of volumetric analysis. - Standardization of reagents using volumetric titrations
Electrochemical Methods - pH meters, Glass and reference electrodes- Ion selective electrodes- Electrical conductivity measurements: Conductivity Meters
Photometric methods- Principle and applications of colorimetry, Nephelometry and Turbidometry- Spectrophotometry- Optical design of filter photometer, single beam spectrophotometer, double beam –UV – Visible – Spectrophotometer

Module II: Analytical Techniques and instrumentation- (Principles and application)
Microscopy- Light microscope, Bright field, Dark field, Phase contrast and Fluorescent microscope.

Module III: Analysis of pH, conductivity, colour, temperature, turbidity, odour, acidity, alkalinity, Dissolved oxygen, BOD,Nitrate, Phosphate, Fluride, Calcium, Magnesium, Hardness

Module IV: Basics of environmental issues, Solid waste management, Water pollution. Water pollution assessement. Waste water treatment techniques and methods.

Suggested Readings:

1. Rump, H. H. and Krist, H. (1998), Laboratory Manual for the Water, Wastewater and Soil, VCH Publishers, New York.

2. Skoog, D. A. and Leary, J. J. (1992). Principles of Instrumental Analysis, 4th edn., Saunder's College Publishing, Fortworth.
3. Stanley, E. M. (2004), Environmental Chemistry, CRC Press
4. Bour, E. J. (1982), Introduction to Chemical Instrumentation, 4th edition, Wiley and Sons, NY.
5. Christian, G.D. (2001), Analytical Chemistry, 5th edition, John Wiley and Sons Inc., India
6. Khopkar, S.M. (1993), Environmental Pollution analysis, Wiley Eastern Ltd.
7. Manahan, S.E. (2007), Environmental Chemistry, 7th edition, Lewis Publications, Florida, USA.
8. Manly, (2001) Statistics for Environmental Science and Management, Chapman and Hall / CRC Press, Boca Raton, FL, USA. Peter Laake, Haakon Breien Benestad. Academic Press, 05-Nov-2007 -
9. Vogel, A.I. (1998), Quantitative Analysis, 6th edition, Prentice Hall Inc.,
10. Willard, H. H., Merritt L. L. and Dean, J. A. (1976), Instrumental Methods of Analysis, 5th edition, Van Nostrand Reinhold.

CHRIST COLLEGE (AUTONOMOUS) IRINJALAKUDA

VALUE ADDED CERTIFICATE COURSE PRACTICAL EXAMINATION-2023

ENVIRONMENTAL ANALYSIS AND ANALYTICAL TECHNIQUES

TIME: 2 Hours **MAX. MARKS: 50**

Answer all the questions.

1. Analyze the pH of the given sample. **[1x20 = 20]**
2. Analyze the hardness of the given sample. **[1x20 = 20]**
3. Analyze the Calcium and Magnesium of the given sample. **[1x10 = 20]**

TOTAL: 50 MARKS

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ENVIRONMENTAL ANALYSIS AND ANALYTICAL TECHNIQUES
Value Added Certificate Course

Summary Report 2023

The course started on October 03, 2023. There were 13 students and 13 students completed the course. The course was 35 Hrs. duration. Students enjoyed the group dynamics and, in their feedback, requested for more such sessions in the future.

Course Outcome:

The students were satisfied with the class. They were given different aspects of Analytical Techniques and Instrumentation in Biology. This helped them understood different environmental analysis tools, familiarize different analytical instruments and to get technical expertise in water analysis

Course Coordinator: Dr. Subin K. Jose., HOD Dept. of Environmental Science and