COURSE OBJECTIVES

1. To create awareness about safe laboratory practices
2. To provide hands on experience on instruments like pH meter, conductivity meter, potentiometer, colorimeter, micropipette, centrifuge ec
3. To impart theoretical knowledge and practical skills on analysis of ground and surface water

Water Quality Monitoring

value added course

CMS COLLEGE KOTTAYAM (AUTONOMOUS)

ESTD: 1817

Department of Chemistry
CMS College Kottayam
(Autonomous)

OURSE DESCRIPTION

This course enables the student to analyze the various physical, biological and chemical parameters of both ground and surface water as per the standard procedure put forward by World Health Organization.

COURSE I: LEVEL I

Course	Details				
Code	**CCCH01**				
Title	**Water quality monitoring**				
Offered to	UG Students				
Branch	Chemistry				
Duration	Six Months				
Type	Certificate Course				
Credits	2	Hrs/Week	2	Total Hours	36

COURSE DESCRIPTION

This course enables the student to analyze the various physical, biological and chemical parameters of both ground and surface water as per the standard procedure put forward by World Health Organization.

COURSE OBJECTIVES

1. To create awareness about safe laboratory practices

2. To provide hands on experience on instruments like pH meter, conductivity meter, potentiometer, colorimeter, micropipette, centrifuge etc.

3. To impart theoretical knowledge and practical skills on analysis of ground and surface water

COURSE OUTCOMES

CO No.	*Expected Course Outcomes* *Upon completion of this course, the students will be able to:*	Cognitive Level
1	Mange issues related to lab safety	Ap
2	Understand the principle and theory behind various analytical	U

	methods	
3	Determine the authenticity of a physical parameters	Ap
4	Analyze real samples like water samples and food samples for finding adulteration	An

CONTENT: THEORY (18 Hours; Credit 1)

Module	Course Description	Hrs	CO.No.
1.0	**Lab Safety**	**3**	**1,2**
1.1	Laboratory hygiene and safety- storage and handling of chemicals.	1	1,2
1.2	Laboratory signs- Simple first aids: electric shocks, fire, cut glass, inhalation of poisonous gases, accidents due to acids and alkalies, burns due to phenol and bromine.	1	1,2
1.3	Disposal of sodium and broken mercury thermometer. Awareness of material safety data sheet (MSDS). Disposal of used chemicals, Good Laboratory Practices.	1	1,2
2.0	**Sampling and Data Analysis**	**2**	**2, 3,4**
2.1	Sampling, evaluation of analytical data, errors, accuracy and precision, methods of their expression, indeterminate errors.	1	2,3
	Various methods for the representation of data.	1	
3.0	**Techniques and Instruments used in Chemical Analysis**	**2**	**2, 3,4**
3.1	Titrimetric and electroanalytical techniques used for water analysis. Introduction to the usage of micropipettes, centrifuge, pH meter, colorimeter etc.	1	2, 3,4
4.0	**Introduction to surface and ground water**	**5**	
4. 1	Hydrological cycle, quality of surface and ground water.	1	
4.2	Biology of natural water- plant algae, microfonna , microbiology.	1	
4.3	Sources of contamination; Industry, Agriculture and household. Processes in nature and human activities in contaminating water. Pollution of fresh water, ground water and ocean. Effects of water pollution from various agents such as pesticides, detergents and inorganic pollutants.	1	
4.4	Waste water treatment techniques: Activated sludge process, Aerated	2	

	lagoons, trickling filters, up flow anaerobic sludge blanket, disinfection, sludge treatment, tertiary and advanced waste water treatment-Industrial waste water treatment. Activated Carbon Adsorption (filtration by activated charcoal). Treatment with ion exchange resins, membrane techniques.		
5.0	**Water quality parameters and standards**	**6**	**2,3,4**
5.1	Classification of physical, chemical and biological parameters of water; Procedure for sample collection for various analysis. Significance of water quality parameters. Water quality standards- drinking, industrial, Irrigation	2	2,3,4
5.2	Measurement of water quality parameters: Odour, Colour, Electrical conductivity, Turbidity, Total dissolved solids (TDS), Salinity, Chemical Oxygen Demand (COD), Biological Oxygen Demand (BOD), Dissolved oxygen (DO), Total microbes, pH, acidity, alkalinity, Hardeness, Chloride content, iron content and total ammonia.	4	2,3,4

CONTENT: PRACTICAL (18 Hours; Credit 1)

Module	Course Description	Hrs	CO.No.
1.0	Sample collection for various analysis	2	4, 5
2.0	Determination Organoleptic & Physical Parameters: Colour, odour, pH, taste, turbidity and total dissolved solids.		
3.0	Determination of chemical parameters of water		
4.0	Determination of biological parameters of water		
5.0	Standard representations of a data by Origin/Microsoft Excel	2	4
6.0	Taking anthropogenic investigation of at least 2km of a stream or river on one side.		
7.0	Case study: Kuttanadu wetland		

References

1. Mendham, J., A. I. Vogel's Quantitative Chemical Analysis 6th Ed., Pearson, 2009.
2. Willard, H.H. Et al.: Instrumental Methods of Analysis, 7th Ed. Wardsworth Publishing Company, Belmont, California, USA, 1988.
3. Christian, G.D. Analytical Chemistry, 6th Ed. John Wiley & Sons, New York, 2004.
4. Harris, D.C.: Exploring Chemical Analysis, 9th Ed. New York, W.H. Freeman, 2016.
5. Khopkar, S.M. Basic Concepts of Analytical Chemistry. New Age International Publisher, 2009.
6. Skoog, D.A. Holler F.J. &Nieman, T.A. Principles of Instrumental Analysis, Cengage Learning India Ed.

7. Mikes, O. Laboratory Hand Book of Chromatographic & Allied Methods, Elles Harwood Series on Analytical Chemistry, John Wiley & Sons, 1979.
8. Ditts, R.V. Analytical Chemistry; Methods of separation, van Nostrand, 1974.

Teaching Methodologies

- Class room learning through Power point presentation, smart classes, demonstrations etc.
- Outreach programme Based learning
- Peer Teaching
- Demonstration Methods for lab practices.
- Learning through Student Centric methods like Group discussions, Debate, Quiz etc.

Methods of Evaluation

75 % attendance is mandatory for appearing in any examinations. One industrial visit and Outreach programme is compulsory awarding the certificate in the mentioned course. For theory and practical a minimum of 40% marks is mandatory for the award of the certificate.

Sl.No.	Type	Marks
1.	Attendance	5
2.	Assignment/Viva/Seminar	10
3.	Written Test (Theory)	100
4.	Practical Test	100
5.	Institution Visit and Report Submission	50
6.	Outreach Programme	20
7.	Record	15
Total		**300**

Mark distribution of Attendance

Percentage	Mark
Above 90 %	5
Above 85%	4
Above 80%	3
Above 75%	2
75%	1
Below 75%	0

Water Quality Monitoring Attendance Sheet

BSc First Year

18/11/2021 | 19/11/2021 | 24/11/2021 | 25/11/2021

Name of the student																								
Abhirami Gopal	x	x	x	x	x	x	x	x	x	x	x	x	x	x	a	a	x	x	x	x				
Adithya P M	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
Austin Joby Mathews	a	a	a	a	a	x	x	x	x	x	x	x	x	x	x	x	x	x	x	a	a			
Devika A S	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	a	a				
Devika T	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
Geethu Sivan	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
GOwri Nandana	a	a	a	x	x	x	x	x	x	x	a	a	a	x	x	x	x	x	x	x				
Jithin Luckose Abraham	a	a	a	a	a	x	x	x	x	x	x	x	x	x	x	a	a	a	a	a				
Juliet Joshy	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
Lakshmi S	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
Mekhana Ajith	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
Renjima K Mathew	x		y	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
Rintu Lalu		g	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
Sreelakshmi Satheesh	a	a	a	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	a	a				
Alfred Joseph	x	x	x	x	x	a	a	a	a	a	x	x	x	x	x	x	x	x	x	x				
Amritha S Gopakumar	a	a	a	a	a	a	a	a	a	a	x	x	x	x	x	x	x	x	x	x				
Anagha Thampi	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	a	a				
Anaina S L	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
Anandhu Anil	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
Aneena Babu	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
Anjana R	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
Aswanth Raj	x	x	x	x	x	x	x	a	a	a	a	a	x	x	x	x	x	x	x	x				
Betsy Johnson	a	a	a	a	a	a	x	x	x	x	x	x	x	x	x	x	a	a	a	a				
Diya Alex	x	x	x	x	x	x	x	x	x	x	a	a	a	a	a	x	x	x	x	x				
Feba Mariam Robinson	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	a	a				
=;als	«	«	«	<	«	^	I	«	I	<	I	^	<I	X	I	«	I	<	I	^		<I		
Kezia K Davies			A	€	4	4	Al	Al	Y	I	I		4	I	7	I	4	I	<	I4	4	< I		
Krishnapriya R	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	A	a			
Nandhini J	x	x	x	x	x	a	a	a	x	x	x	x	x	x	x	x	x	x	x	A	a			
Shivadarsana R Nair	a	a	a	x	x	x	x	x	x	x	x	x	x	x	x	a	a	a	x	x				
Sudev C S	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	a	a				
Vishnu Shaji	a	a	a	a	a	a	a	a	a	a	x	x	x	a	a	x	x	x	a	a				
Anandhu Ajeesh			7		4t	k		!	/t	k!		!/	£	!	7	4	A	!						
Annu Elsa Reji	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	a	a				
Jobitha Jacob	x	x	x	a	a	x	x	a	a	x	x	x	a	a	x	x	x	a	a					
Mariya Varughese	x	x	x	a	a	a	a	a	x	x	x	x	x	a	a	x	x	x	a	a				
Naima Reji John	x	x	x	x	x	x	x	x	x	x	a	a	a	a	a	x	x	x	x	x				

Name and Signature of the Coordinator

Dr. Bijin Joseph T.

Name and Signature of the HOD

Sumod M. John

DEPARTMENT OF CHEMISTRY KOTTAYAM DATE C.M.S. COLLEGE

Water Quality Monitoring Attendance Sheet

BSc Second Year

Name of the student	18/11/2019					19/11/2019					20/11/2019					21/11/2019				
	:	o	c	r	*-	I	II	III	IV	V	I	II	III	IV	V	I	II	III	IV	V
AKHL7\ROY	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ANANDUM	X	X	X	a	a	X	X	X	X	X	X	X	X	X	X	X	X	X	a	a
ANANDUKRISHNAN						X	X				X	X	X							
ANATHAKRISHNAN PV	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
ANUPAMA R KRISHNA			"			X	X	X	€	K	X	X	X	X	X	X	X	X	X	X
ARDRA N	y	y	y	y	x		ty	y			X	X	X	X	X	X	X	X	X	X
ATHIRA HARIDAS	(		x	K	x	X	X	x	x	x	X	X	X	X	X	X	X	X	X	X
BIBIN JOSE	X	X	X	a	a	X	X	X	a	a	X	X	X	a	a	X	X	X	a	a
BISNA NAZEER	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
DEVIKA G NAIR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
EVIN JACOB	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GOPIKA SHAJI	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
JENCY SAIRA JHON	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
JILU MERIN MATHEW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
JINCYMOL THOMAS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	'c	X'	X	X	X
JOMA JHONSON	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	a	X	X
JUBAIN SALIM	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	a	a
KISHAN K B	X	X	X	a	a	X	X	X	X	X	X	X	X	X	a	X	X	X	a	a
MANUMOL M	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MEENAKSHY A	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
NITHIN RAJ R	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
NITHYA LAKSHMI G	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
NITSU SUSAN LITTY	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ROSHNA SALAM	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SANDRA ANN KUNJU	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SHAWN DANY GABRIEL	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SHINU ELIAS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SUSAN KORAH	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TUSHAR C BRAJEESH	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
VINITHA P																				
ABHINAV C S	a	a	a	a	a	X	X	X	a	a	X	X	X	a	a	X	X	X	a	a
ALBI S KOKKATTU	X	X	X	X	X	X	X	X	X	X	X	X	X	a	a	X	X	X	X	X
ALEENA JOSEPH	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AMAL K SHAJI	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ANJANA BIJU	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ARYA M U	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ASWINI ANIL	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	18/11/2019						19/11/2019						20/11/2019						21/11/2019						
ATHULYA K S	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X		X	X	X	X	X		
G VISHNUPRIYA	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X		X	X	X	X	X		
GREESHMA M SOMAN	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X		X	X	X	X	X		
KRISHNAVENI G	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X		X	X	X	X	X		
LOPEZ RENNY	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X		X	X	X	X	X		
PRAVEENAMOL K JOHN	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X		X	X	X	X	X		
SHALIMA S	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X		X	X	X	X	X		

Name and Signature of the Coordinator

Azun Abraham David

Name and Signature of the HOD

DEPARTMENT OF CHEMISTRY
KOTTAYAM
DATE
C.M.S COLLEGE

Water Quality Monitoring Attendance Sheet

BSc First Year

Name of the student	18/11/2021	19/11/2021	20/11/2021	21/11/2021
Abhirami Gopal	P P P P	P P P P P P P P P P	P P P P	
Adithya P M	P P P P	P P P P P P P P P P	P P P P	
Austin Joby Mathews	P P P P	P P P P P P P P P P	P P P P	
Devika A S	P P P P	P P P P P P P P P P	P P P P	
Devika T	P P P P	P P P P P P P P P P	P P P P	
Geethu Sivan	P P P P	P P P P P P P P P P	P P P P	
Gowri Nandana	P P P P	P P P P P P P P P P	P P P P	
Juliet Joshy	P P P P	P P P P P P P P P P	P P P P	
Jithin Luckose	P P P P	P P P P P P P P P P	P P P P	
Lakshmi S	P P P P	P P P P P P P P P P	P P P P	
Mekhana Ajith	P P P P	P P P P P P P P P P	P P P P	
Renjima K Mathew	P P P P	P P P P P P P P P P	P P P P	
Rintu Lalu	P P P P	P P P P P P P P P P	P P P P	
	P P P P	P P P P P P P P P P	P P P P	
	P P P P	P P P P P P P P P P	P P P P	
	P P P P	P P P P P P P P P P	P P P P	
Sreelakshmi Satheesh	P P P P	P P P P P P P P P P	P P P P	
Alfred Joseph				
Amritha S Gopakumar				
Anagha Thampi	P P P P	P P P P P P P P P P	P P P P	
Anaina S L	P P P P	P P P P P P P P P P	P P P P	
Anandhu Anil	P P P P	P P P P P P P P P P	P P P P	
Aneena Babu	P P P P	P P P P P P P P P P	P P P P	
Anjana R	P P P P	P P P P P P P P P P	P P P P	
Aswanth Raj	P P P P	P P P P P P P P P P	P P P P	
Betsy Johnson	P P P P	P P P P P P P P P P	P P P P	
Diya Alex	P P P P	P P P P P P P P P P	P P P P	
Feba Mariam Robinson	P P P P	P P P P P P P P P P	P P P P	
X•lals	« « « <	«I<I «I<I«I< IX	<I XI«I<I<	<I
Kezia K Davies	A €	4 4 Al Al Y I I	4I 7I4I<	I4 4 < I
Krishnapriya R	P P P P	P P P P P P P P P P	P P P P	
Nandhini J	P P P P	P P P P P P P P P P	P P P P	
Shivadarsana R Nair	P P P P	P P P P P P P P P P	P P P P	
Sudev C S	P P P P	P P P P P P P P P P	P P P P	
Vishnu Shaji	P P P P	P P P P P P P P P P	P P P P	
Anandhu Ajeesh	7	4t k !	/t k! ! /	£! 4 A !
Annu Elsa Reji	P P P P	P P P P P P P P P P	P P P P	
Jobitha Jacob	P P P P	P P P P P P P P P P	P P P P	
Mariya Varughese	P P P P	P P P P P P P P P P	P P P P	
Naima Reji John	P P P P	P P P P P P P P P P	P P P P	

Name and Signature of the Coordinator

Dr. Bijin Joseph T.

Name and Signature of the HOD

Sumod M. John

Water Quality Monitoring Attendance Sheet

BSc Second Year

Name of the student	18/4/2019 I	II	III	IV	V	19/4/2019 I	II	III	IV	V	20/4/2019 I	II	III	IV	V	21/4/2019 I	II	III	IV	V
AKHL7\ROY	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ANANDUM	x	x	x	a	a	x	x	x	x	x	x	x	x	x	x	x	x	x	a	a
ANANDUKRISHNAN						x	x				x	x	x							
ANATHAKRISHNAN PV	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
ANUPAMA R KRISHNA			"			x	X	X	€	K	x	x	x	x	x	x	x	x	x	x
ARDRA N			y	x	x	xl		<		x‹	x	x	x	x	x	x	x	x	x	x
ATHIRA HARIDAS	X		x	K	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
BIBIN JOSE	x	x	x	a	a	x	x	x	a	a	x	x	x	a	a	x	x	x	a	a
BISNA NAZEER	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DEVIKA G NAIR	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
EVIN JACOB	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
GOPIKA SHAJI	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JENCY SAIRA JHON	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JILU MERIN MATHEW	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JINCYMOL THOMAS	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	'c	x'	X	x	x
JOMA JHONSON	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	a	x	x
JUBAIN SALIM	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	a	a
KISHAN K B	x	x	x	a	a	x	x	x	x	x	x	x	x	x	a	x	x	x	a	a
MANUMOL M	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
MEENAKSHY A	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
NITHIN RAJ R	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
NITHYA LAKSHMI G	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
NITSU SUSAN LITTY	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ROSHNA SALAM	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
SANDRA ANN KUNJU	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
SHAWN DANY GABRIEL	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
SHINU ELIAS	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
SUSAN KORAH	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
THUSHAR G BRAJEESH	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
VINITHA P																				
ABHINAV C S	a	a	a	a	a	x	x	x	a	a	x	x	x	a	a	x	x	x	a	a
ALBI S KOKKATTU	x	x	x	x	x	x	x	x	x	x	x	x	x	a	a	x	x	x	x	x
ALEENA JOSEPH	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
AMAL K SHAJI	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ANJANA BIJU	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ARYA M U	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ASWINI ANIL	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

	18/11/2019						19/11/2019						20/11/2019						21/11/2019					
ATHULYA K S		,K		X	K		/	Y	Y	'X			Kt X(X X						X					
G VISHNUPRIYA			X	X	K		;t		X'		X		X K) V X	A				6	A	A				
GREESHMA M SOMAN																								
KRISHNAVENI G																								
LOPEZ RENNY																								
PRAVEENAMOL K JOHN																								
SHALIMA S																								

Name and Signature of the Coordinator

Azun Abraham David

Name and Signature of the HOD

DEPARTMENT OF CHEMISTRY
KOTTAYAM
DATE
C.M.S. COLLEGE

Report on the Add on Course "Water Quality Monitoring"

The Department of chemistry ,CMS College kottayam conducted an Add On Course on "water quality monitoring" from 18th November 2019 to 21st November 2019. This course enables the student to analyze the various physical, biological and chemicalparameters of both ground and surface water as per the standard procedure put forward by World Health Organization. Students also developed awareness about safe laboratory practices. This course provide hands on experience on instruments like pli meter, conductivity meter,potentiometer, colorimeter, micropipette, centrifuge etc. This course impart theoretical knowledge and practical skills on analysis of ground and surface water.

A total of 79 students took admission for the course .Starting from from 18th November 2019 there were 18 hours of theory class and 18 hours of practical sessions conducted by Resource Persons from suitable fields. The sessions were divided into the following categories-

1. Lab safety

2. Sampling and data analysis

3. Techniques Are The Instruments Used In Chemical Analysis

4. Introduction to Surface And Ground Water

5. Water Quality Parameters And Standards

The valedictory Function of the program was conducted on 21st November 2019. Overall, the success of the course was heightened by the enthusiasm and participation of students, Contribution of the Resource Persons and finally the efforts put by the college staff and team.

Dr.Biju Joseph T (Course Convener)

Dr. Biju Joseph T.

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