Name of Faculty	:	Faculty of Science
Name of Program	:	Bachelor of Science
Course Code	:	2BSC03
Course Title	:	Environmental Chemistry
Type of Course	:	Professional Core
Year of Introduction	:	2023-24

Prerequisite	:	Interest in learning all environmental science
Course Objective	:	It aims to provide students with a comprehensive understanding of environmental chemistry, analytical techniques, pollution issues, and the regulatory aspects necessary to address environmental challenges effectively. They also foster critical thinking and problem-solving skills in the context of environmental science and management.
Course Outcomes	:	At the end of this course, students will be able to:
	CO1	Understand the fundamental principles of environmental chemistry.
	CO2	Apply quality control measures to ensure the reliability of analytical results.
	CO3	Evaluate the environmental and human risks associated with pollutants.
	CO4	Develop an awareness of ethical and sustainability considerations in environmental decision making.

Teaching and Examination Scheme

Teaching Scheme (Contact Hours)			**Credits**	**Examination Marks**				
				Theory Marks		**Practical Marks**		**Total Marks**
L	**T**	**P**	**C**	**SEE**	**CIA**	**SEE**	**CIA**	
3	0	2	4	50	25	50	25	150

Legends: ***L****-Lecture;* ***T****–Tutorial/Teacher Guided Theory Practice;* ***P*** *– Practical,* ***C*** *– Credit,* ***SEE*** *– Semester End Examination,* ***CIA*** *- Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)*

Course Content

Unit No.	Topics	Teaching Hours	Weightage	Mapping WithCOs
1	**Introduction to Environmental Chemistry:** Basic principles of environmental chemistry, including the composition of the Earth's atmosphere, hydrosphere, and lithosphere. An introduction to environmental pollutants and their sources.	12	26.66%	CO1
2	**Analytical Chemistry for Environmental Analysis:** Analytical techniques used in environmental chemistry, such as spectroscopy, chromatography, and mass spectrometry. Analyze environmental samples and detect pollutants.	10	22.22%	CO2
3	**Environmental Pollution and Remediation:** Various types of environmental pollution, including air pollution, water pollution, and soil contamination. The sources, effects, and control measures for pollutants.	11	24.44%	CO3
4	**Environmental Laws and Regulations:** The legal framework governing environmental protection and conservation. The study of environmental laws and regulations at the local, national, and international levels, as well as the role of government agencies and organizations in environmental management.	12	26.66%	CO4

Suggested Distribution of Theory Marks Using Bloom's Taxonomy						
Level	Remembrance	Understanding	Application	Analyse	Evaluate	Create
Weightage	**-**	**25**	**25**	**-**	**25**	**25**

NOTE: This specification table shall be treated as a general guideline for the students and the teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Suggested List of Experiments / Tutorials

Sr. No.	Name of Experiment/Tutorial	Teaching Hours
1	Quantify the concentration of dissolved solids in water to gauge its salinity.	02
2	Monitoring and assessing the chemical composition of water in lakes, rivers, and oceans to ensure safe drinking water and protect aquatic ecosystems.	02
3	Developing processes and technologies to minimize the release of pollutants from industrial facilities	02
4	Studying the causes and effects of acid rain, including its impact on soil, water bodies, and infrastructure.	02
5	Designing and optimizing methods for treating wastewater and removing contaminants.	02
6	Evaluating the presence and impact of heavy metals like lead, mercury, and cadmium in various ecosystems.	02
7	Developing techniques to clean up and protect groundwater from contamination.	02
8	Developing eco-friendly fuels from renewable resources.	02
9	Researching and implementing recycling processes to reduce waste.	02
10	Implementing strategies to reduce air pollution in cities, such as promoting public transportation.	02
11	To find out TDS in Pond water and River Water..	02
12	To find out a BOD in Pond water, River Water.	02
13	To find out COD in Pond water, River water.	02

Major Equipment/Instruments and Software Required

Sr. No.	Name of Major Equipment / Instruments and Software
1	Test tubes
2	Test tube stand
3	Beakers
4	Funnel
5	BOD bottels
6	Glass rod
7	Test tube holder

Suggested Learning Websites

Sr. No.	Name of Website
1	https://nptel.ac.in/courses/120108002
2	https://nptel.ac.in/courses/120108004

3	https://nptel.ac.in/courses/120108005

Reference Books

Sr. No.	Name of Reference Books
1	Environmental Chemistry" by Baird and Colin
2	Chemistry of Environment" by Bailey and Strong
3	Principles of Instrumental Analysis" by D A Skoog and J L Loary
4	Environmental Chemistry" by Anil Kumar De
5	Environmental Chemistry" by B K Sharma
6	Chemistry For Environmental Engineering And Science" by Clair Sawyer and Perry Mccarty
7	Environmental Chemistry" by S C Bhatia
8	Environmental Chemistry" by Banerji
9	A Textbook of Environmental Chemistry" by V Subramanian