

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: Environmental Chemistry

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programmed specification.

1. Teaching Institution	University of Technology
2. University Department/Centre	Chemical Engineering Department
3. Course title/code	Environmental Chemistry
4. Program (s) to which it contributes	
5. Modes of Attendance offered	Fall time
6. Semester/Year	2 semester/year
7. Number of hours tuition (total)	3
8. Date of production/revision of this Specification	
9. Aims of the Course	

toward the end of the course, understudies ought to have the capacity to:

1. describe the essential standards of natural toxicology, organic and inorganic, talk about illustrative cases, and perform basic counts of importance to the evaluation of human introduction to possibly unsafe synthetic elements in the earth
2. describe the significant concoction structure and procedures happening in the air, and clarify the science supporting a portion of the irritation mankind is bringing about to the regular air
3. explain the natural effect of the ozone impact, and portray how these might be minimized to keep sound earth
4. discuss the concoction standards supporting different waste treatment alternatives
5. illustrate the standards of water science through its structure, properties application in ecological science
6. perform accurate laboratory work in a range of basic analytical chemistry applications
7. Developing an understanding of the fundamental biological mechanisms that allow microorganisms to degrade and/or remove contaminants from the environment.

10• Learning Outcomes, Teaching, Learning and Assessment Method

A-Knowledge and Understanding

A1. Basic information, concepts and terminology of the environmental chemistry

A2. We rely on the environment for the air we breathe, the water we drink, the food we consume and our overall health in general. There is an increasing pressure on our environment by modern society and the growing human population, resulting in a growing demand for knowledge and understanding of the environment, notably the chemistry that underpins the functioning (or lack thereof) of our environment. In this course we focus on key concepts and techniques used in environmental chemistry with modules focused on the chemistry of the lithosphere, atmosphere and hydrosphere. The concepts learned in these modules are then used to explore chemical oceanography and global biogeochemical cycles, as well as the transport and distribution of organic contaminants in the environment. This is an essential course for chemistry and other science majors interested in gaining knowledge and understanding of the environment.

A3. Ability to deal with environment in friendly way

A4. Ability to deal with environment in friendly way

B. Subject-specific skills

1. Understand the chemical formation of soils and their chemical properties
2. Understand the chemical composition of the Earth's atmosphere
3. Perform calculations important to water chemistry
4. Understand the physical and chemical properties of water
5. Understand pE/pH diagrams and their use in aquatic chemistry
6. Understand sources of pollution especially chemical pollution
7. Understand the air chemistry and the sources of air pollution
8. Gain laboratory skills needed for common methods of quantifying chemicals in environmental matrices
9. Understanding the microbial growth and dynamics.
10. Understanding the role of microorganisms in treatment of pollutants.
11. Gain laboratory skills needed for common methods of quantifying chemicals in environmental matrices

Teaching and Learning Methods

11. Course Structure

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Assessment methods

Midterm exams ,Final exam ,Quizzes, homework, partial test (Oral questions), reports

C. Thinking Skills

- C1. ability to thinking in the ecology and deal with in right way
- C2. Ability to calculate and Analyze the data of polluted sample
- C3. Ability to follow the new sources of pollution and thinking in way to reduce it
- C4. Ability to control the polluted products
- C5. Ability to control the polluted products by using microorganisms.

D. General and Transferable Skills (other skills relevant to employability and personal development).

- D1. Be creative, particularly and analytical in the formulation and solution of problems
- D2. Work together in same-discipline teams to solve chemical pollution problems.
- D3. Work together in same-discipline teams to Environmental Literacy
- D4. Be creative and have Global Perspective in this field

12. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	Lectures 1- Harrison, R.M., "Understanding Our Environment An Introduction to Environmental Chemistry and Pollution", 3rd edition, The Royal Society of Chemistry 1999 2- Benefield, L.D., Judkins, J.F. and Weand, B.L. Process Chemistry for water and wastewater treatment. Prentice-Hall, Inc. Englewood Cliffs, New Jersey, 1982. 3- Weiner, R. F. "environmental engineering" 4th edition Elsevier Science 2003 4- Video web search
Special requirements (include for example workshops, periodicals, IT software, websites)	1- laboratory 2- websites 3- video about the problem
Community-based facilities (include for example, guest Lectures, internship, field studies)	Field trips Student mini report

13. Admissions	
Pre-requisites	Before undertaking this module the student should have undertaken the principle of general chemistry and biology
Minimum number of students	Non
Maximum number of students	Non