
Course Name

Code No.**I. COURSE DESCRIPTION:**

This course provides students with an understanding of the characteristics of and relationships between the various levels of chemical and biological organization from atoms to ecosystems. Significant processes and various environmental problems are examined.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1. Demonstrate an understanding of the relationship of the scientific method to natural resource technology.

Potential Elements of the Performance:

- describe the steps in the scientific method
- using the scientific method demonstrate how you would solve a given natural resource problem
- prepare a technical report to describe the results of a lab analysis of waste recycling at Sault College
- describe the organization and purpose of each section of a technical report

2. Demonstrate an understanding of the hierarchy of matter.

Potential Elements of the Performance:

- describe and give examples of each level of organization from sub-atomic particles to ecosystems
- correctly sort various examples of matter into their proper level of organization
- explain how any one level relates to subsequent or previous levels

3. Describe characteristics, which distinguish different types of non-living matter.

Potential Elements of the Performance:

- differentiate between mass, volume, density, states of matter, mixtures, solutions, suspensions

Course Name

Code No.

- relate characteristics of elements to their position in the periodic table
- read and apply information from the periodic table such as chemical symbols, atomic organization, atomic mass and atomic number and apply electronegativity values to determine polar characteristics of molecules
- describe the differences between metals, non-metals and noble gasses; ionic and covalent compounds; organic and inorganic materials; and acids and bases.
- describe the chemical and physical properties of water and their relationship to ecosystem functions
- explain the pH scale
- calculate gram molecular weights
- calculate neutralization requirements for acidic conditions
- complete simple chemical equations
- separate materials from a mixture on the basis of chemical and physical properties

4. Describe the characteristics common to all living organisms.

Potential Elements of the Performance:

- explain and give examples of each of the 10 characteristics common to all living organisms
 - label the parts of a plant and animal cell
 - describe the function of the various organelles within a cell
5. Name and classify organisms according to the binomial system of classification

Potential Elements of the Performance:

- use proper convention in writing scientific names
 - explain the basis for classifying living organisms
 - categorize select examples of organisms into their respective taxonomic groups
 - explain taxonomy and phylogeny
6. Describe the basic life molecules, which make up plants and animals.

Potential Elements of the Performance:

- distinguish between and describe the roles of each of the following: carbohydrates, lipids, proteins and nucleic acids

Course Name

Code No.

7. Describe basic strategies of obtaining nutrients energy.

Potential Elements of the Performance:

- differentiate between the process of diffusion and osmosis
- summarize the processes of photosynthesis and respiration and their relationships to ecosystem function

8. Demonstrate dependency and vulnerability of life processes in relation to human and natural induced environmental change.

Potential Elements of the Performance:

- describe the causes for and impacts of the following global environmental problems:
 - i) acid deposition
 - ii) ozone depletion
 - iii) global warming
 - iv) eutrophication

9. Develop safe and correct lab technique with respect to chemical handling and instrument use.

Potential Elements of the Performance:

- discuss and apply safe lab procedures including handling of dangerous chemicals
- demonstrate knowledge of the Workplace Hazardous Materials Information System
- demonstrate use of balances, pH metre, glassware including pipettes and burettes, hot plates, fume hoods

10. Develop use of the compound microscope

Potential Elements of the Performance:

- use a compound microscope to observe and draw cellular material
- measure size of microscopic materials
- calculate the scale of drawings
- demonstrate proper care and handling of the microscope

Course Name

Code No.**III. TOPICS:**

1. Scientific Foundations
2. Natural Order
3. The Chemistry of Nature
4. The Structural and Functional Components of Life
5. Environmental Problems
6. Laboratory Procedures and Practices

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Environmental Science Study Guide
Environmental Science Lab Manual
Lab Coat

V. EVALUATION PROCESS/GRADING SYSTEM:

3 Unit Tests	50%
4 Assignments	15%
Labs	<u>35%</u>
	100%

Lab assignments and report values will be reduced at a rate of 10% per day for late submissions for a period of 5 days after the due date. After 5 days the lab assignment/report value will be zero.

All labs/assignments/reports must be submitted regardless of lateness to pass the course.

Failure to attend a test without medical or severe personal reasons will result in a zero and no opportunity to make up the test will be offered.

Course re-writes are not offered.

The following semester grades will be assigned to students in postsecondary courses:

 Course Name

 Code No.

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	90 - 100%	4.00
A	80 - 89%	3.75
B	70 - 79%	3.00
C	60 - 69%	2.00
R (Repeat)	59% or below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field placement or non-graded subject areas.	
U	Unsatisfactory achievement in field placement or non-graded subject areas.	
X	A temporary grade. This is used in limited situations with extenuating circumstances giving a student additional time to complete the requirements for a course (see <i>Policies & Procedures Manual – Deferred Grades and Make-up</i>).	
NR	Grade not reported to Registrar's office. This is used to facilitate transcript preparation when, for extenuating circumstances, it has been impossible for the faculty member to report grades.	

VI. SPECIAL NOTES:

Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your instructor and/or the Special Needs office. Visit Room E1204 or call Extension 493, 717, or 491 so that support services can be arranged for you.

Retention of course outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Course Name

Code No.**Plagiarism**

Students should refer to the definition of “academic dishonesty” in *Student Rights and Responsibilities*. Students who engage in “academic dishonesty” will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course, as may be decided by the professor. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

The Professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the instructor. Credit for prior learning will be given upon successful completion of the following:

VIII. DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.