

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: CHEMISTRY

Code No.: CHM 300-3

Program: FORESTRY TECHNOLOGY (FISH & WILDLIFE)

Semester: FIVE

Date: JUNE 7, 1984

Author: J. S. KORREY

New: _____ Revision: X

APPROVED:


Chairperson

_____ Date

CHEMISTRY

CHM 300-3

Course Name

Course Number

PHILOSOPHY/GOALS:

CHM 300-3 is a one semester course designed to provide fish and wildlife students with the basic theory and background for a better understanding of work done in other areas such as environmental measurements. Topics covered are: matter, physical and chemical change, density, structure of matter, mole concept, percent composition, chemical formulas, nomenclature, equations, solubility, concentration, and solution problems, acid-base theory and organic chemistry.

METHOD OF ASSESSMENT:

A = 80 - 100%
B = 70 - 79%
C = 60 - 69%
I = 59 or less

To obtain an "A" grade, completion of a special project is required. However, completion of the project is not required to pass the course - students will still be able to pass with a "B" or a "C" grade. Students that do not have Grade 12 or 13 Chemistry and choose to do the project must make at least a "B" grade on the project in order to get an "A" overall.

TEXTBOOK(S):

Malone, Leo J., Basic Concepts of Chemistry, John Wiley and Sons, N.Y.

CHEMISTRY 300-3

UNIT I:

Chemistry and Matter

REF: Chapter 1 and 3 - Malone

- Chemistry and nature of matter
- Properties of matter
- Physical and chemical changes
- Density (Chapter 2)
- Structure of the elements
- Compounds and formulas
- Ions and ionic compounds
- Structure of the atom
- Atomic no., mass no., atomic mass

UNIT II:

Periodic Nature of the Elements

REF: Chapters 4 and 5 - Malone

- Periodic table of the elements
- Physical properties of the elements
- periods
- groups
- trends

UNIT III:

Chemical Formulas and Nomenclature of Inorganic Compounds

REF: Chapter 7 - Malone

- Oxidation states
- Naming binary compounds
- Naming ternary compounds containing oxygen
- Naming common acids

Chemical Equations

REF: Chapter 9 - Malone

The student will be able to write and balance equations representing the 5 types of chemical reactions.

UNIT IV:

The Mole Concept

REF: Chapters 8 and 9 - Malone

- Molecular mass of compounds
- The number of moles in a given mass of material
- Molar ratios - calculations as to amount of product produced and reactant consumed
- Equivalent weight of acids, bases, salts, elements and oxidizing or reducing agents
- percent composition
- stoichiometry of reactions

UNIT V:

Solution Problems

REF: Chapter 11 - Malone

- Solubility of ionic compounds
- Methods of expressing concentration
- Solution Problems
 - 5 types - A) Preparation of a molar solution
 - B) Working from specifications
 - $M = \frac{\% \text{ purity} \times \text{Sp. Gr.} \times 1000}{\text{GMW}}$
 - C) Dilution problems $C_1V_1 = C_2V_2$
 - D) Preparation of a normal solution and relationship between M & N
 - E) ~~Mixing solutions of different concentrations and calculate resulting concentration~~

UNIT VI:

Acid-Base Equilibria

REF: Chapter 15 - Malone

- Equilibria in water
- Concept of pH and pOH
- Weak acids and bases in water
- Buffers

UNIT VII:

Organic Chemistry

REF: Chapter 16 - Malone

- A brief introduction to organic chemistry to include:
 - saturated and unsaturated hydrocarbons
 - aromatic compounds
 - organic functional groups
 - alcohols
 - ethers
 - acids, esters
 - amines, amides
 - aldehydes and ketones

LABORATORY EXPERIMENTS

A two-hour lab session will be run every other week. The labs are designed to give the student practice in basic lab techniques. Experiments to be conducted are:

(6 weeks x 2 hours) = 12 hours

1. Physical Properties - densities of liquids and solids 2 hours
- Separation of components of a mixture 4 hours
3. Titration of acids and bases 6 hours

GUIDELINES

SAULT COLLEGE CHEMISTRY DEPARTMENT

JANUARY 1984

The following Chemistry Department guidelines with regard to grades, make-up tests, attendance and laboratory sessions, are within the limits as set out in the Sault College Guidelines Manual, Article 18:30.

1. Grades

Grades are based on an average of test numerical scores as established by the instructor of each course.

For Example:

A - 80+%
B - 70-79%
C - 60-69%

May be the criteria
for some courses.
Consult the instructor
of each course.

2. Term Test

Tests written during the term will be assigned a numerical grade, as follows:

60% + - pass
(under) 60% - fail

There will be no rewrites of term tests until make-up period.

The "I" (incomplete) grade at the end of the semester: (Theory)

- (a) The "I" grade will be assigned to a student whose average grade is between 50% and 59%, provided all assignments are completed as required.
- (b) An "I" grade may also be assigned if all tests are satisfactory but assignments are not complete.

3. Treatment of Laboratory Incompletes

Laboratory Experiments and Reports

All laboratory work must be completed in the allotted time period. Reports are due one week after the allotted time period for a particular experiment. Late reports will be down-graded 10% per week. For instance, a report graded as 60% (6 out of 10) and turned in six weeks late would receive a zero rating. This zero rating would be averaged in with the remaining grades to arrive at an overall Grade Point Average. An overall Grade Point Average of 2.0 or more (a "C" grade) is required to complete the course. If a G.P.A. of 2.0 is not achieved, additional experiments must be performed satisfactorily to upgrade this mark.

9. Any "I" grades remaining at the deadline date set by administration will be converted to R's.

Any deviation from the above requires the approval of the instructor, co-ordinator or chairman of the department.

LABORATORY LOCKER FEE - \$50.00 DEPOSIT

Each student will pay a \$50.00 refundable deposit for the use of a laboratory locker with a Key. Payment must be made to the Accounting Office before the first lab session. Refunds will be made at the end of the year when the locker key has been returned to the instructor and the contents of the locker are in a satisfactory state of cleanliness. Missing items restocked from the chemical storeroom during the year will be deducted from the \$50.00 and the balance returned to the student by the Accounting Office.

Chemistry Department
Sault College