SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: CHEMISTRY I

Code No.: CHM 108-3

Program: GEOLOGICAL ENGINEERING TECHNICIAN

Semester: TWO

Date: JUNE 1, 1983

Author: J. S. KORREY

New: _____ Revision: X

APPROVED: _____ _____

Chairperson Date

CALENDAR DESCRIPTION

CHEMISTRY	CHM 108-3
Course Name	Course Number

PHILOSOPHY/GOALS:

This course provides the geology student with a basic understanding of chemistry and the sciences. Topics discussed are the structure of matter, the nature of electrons in atoms, the periodic table, chemical bonding, nomenclature, equations, solution chemistry, solubility rules and chemical calculations. The related lab work being intended to teach basic techniques of weighing, decantation, filtration and extraction. The student is also required to write laboratory reports.

METHOD OF ASSESSMENT (GRADING METHOD):

			Weighting
A = 80 - 100%	Theory	38 hours	80% of Mark
B = 70 - 79%	Lab	10 hours	20% of Mark
C = 60 - 69%	Testing	3 hours	
I = 59 or less		51 hours	

(3 hours per week for 17 weeks = 51 hours)

TEXTBOOK(S):

Malone, Leo J., "Basic Concepts of Chemistry",
John Wiley & Sons, N.Y., 1981.

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TOPIC NO.	PERIODS	TOPIC DESCRIPTION
1	2	Introduction To Chemistry - Why should a geologist know chemistry? - Symbols of the elements - Properties of matter - Metric units in chemistry - Density measurements
2	4	The Structure of Matter - The basic structure of the elements - Compounds and Formulas - Ions and Ionic Compounds - The structure of the atom - Atomic number, mass number, atomic weight, molecular weight
3	8	The Nature of Electrons in Atoms - A model of electrons in atoms, shells, subshells - Electron notation of elements - Orbitals - Electron spin, paramagnetism, diamagnetism - The shapes of orbitals
4	3	The Periodic Table - Periods - Groups - Metals, non-metals - Trends: Atomic radius Ionization energy Electron affinity
5	8	Chemical Bonding - Lewis structures - Ionic bonding - Covalent bonding - Multiple covalent bonds - Bond length and bond energy - Polyatomic ions - Writing Lewis structures - Resonance hybrids - Polarity and electronegativity - Hybridization

TOPIC NO.	PERIODS	TOPIC DESCRIPTION
6	5	Chemical Nomenclature - Oxidation states - Naming binary compounds - Naming ternary compounds - Naming compounds with polyatomic ions - Naming acids
7	6	Quantitative Relationships - The mole and molar mass - Percentage composition - Empirical and molecular formulas - Chemical equations - Types of chemical reactions (5) - Solution Chemistry - calculations - Solubility rules

CHM 108-3 LAB

(5 Weeks) 5 x 2 = 10 hours

The laboratory work is intended to teach techniques and to familiarize the student with the need to make accurate measurements. In order to accomplish this, the student will perform the following experiments:

1. Introduction to Laboratory Techniques
   a) Determine the mass of a metal slug.
   b) Determine the density of the metal slug.
2. Determination of the water of hydration.
3. The separation of the components of a mixture.