



Course Information

098 A: Division: Instruction Division Date: 18 November 18

X **douglas college** B: Dept.: Science & Technology New Course:

Program: Revision of Course Information form: Dated:

E: 4 C: CHEM 108 D: Introductory Chemistry

Subject & Course No. CHEM 108 Semester Spring Section 001

including stoichiometry and atomic structure, and then continues with the study of the following: thermochemistry, equilibrium, gases and liquids, acids, bases, redox reactions, and several organic chemistry topics.

Prerequisite: CHEM 104 (C) or better or CHEM 107 (C) or better) AND Math 101 (or equivalent)

Course Cerequisites:

Clinical Experience: _____ Hrs.

Practicum: _____ Hrs.

Shop: _____ Hrs.

Other: _____ Hrs.

Course for which this Course is a Prerequisite: _____

N. Textbooks and materials to be purchased by students
(Use Bibliographic Form):

MOORE, J. W., JOESTEN, M. J., WOOD, J. G. and MOORE, J. W. *The Chemical World: Concepts and Applications*.
Saunders College Publishing, Toronto

Chemistry 108 Laboratory Manual

ing Headings:

Complete Form with Entries Under the Following

O. Course Objectives P. Course Content

O. General Course Objectives

The student will be able to:

1. Express the precision of a calculated

quantity given the uncertainties in the measurements used in the calculation.

2. Given the mass of a substance and the volume of a sample,

molecular formulas;

4. Given the balanced equation for a chemical reaction, carry out the required stoichiometric calculations. The substances in the reaction may be gases, solids, liquids, or

6. Define any of the terms listed below: Le Chatelier's principle, etc.

7. Carry out thermochemical calculations based on the following:

9. Use the Principle of Le Chatelier to predict the direction of change in a system in equilibrium as the result of a given change in temperature, pressure, or volume of the system.

11. Solve problems involving the use of the concentration of ions in equilibrium systems.

12. Write balanced equations for all reactions of

14. Calculate the pH and percent ionization of a solution of given concentration of a weak acid or base (or the salt of a weak acid or base).

15. Give the concentration of the ions in a solution of a weak acid or base.

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Balance

... any redox reaction

... industrial processes
... sodium hydroxide
... the sea, metals and their ores, fractionation of air, the atmosphere

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... the sea, metals and their ores, fractionation of air, the atmosphere

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Scientific Measurement - Review

... types of errors,

Basic SI units, conversion factors, accuracy and precision, significant uncertainty, significant figures and calculations

Atoms - Molecules and Ions - Review

Redox

Definitions of oxidizing and reducing agents, oxidation numbers and balancing redox equations.

Descriptive Chemistry selected topics from the following:

Noble gases, industrial applications, sodium by electrolysis, chlorine and sodium hydroxide, aluminum production, magnesium from the sea, metals and their ores, fractionation of air, the atmosphere, pollutants, sulfur (8 hours)

Laboratory Content

The following laboratory experiments will be performed during the lab period:

- 1. Analytical balance and metric conversions
- 2. Density measurements

- 3. Acid-Base Titrations
- 4. Thermochemistry
- 5. Redox Determination of Water of Hydration
- 6. Chemical Equilibrium

10. Electrochemistry

R. Evaluation

Following evaluations:

The student's performance in the course will be based on the following:

During the semester (30%)

Work will be given during the

Final examination period (40%)

problem assignments, quizzes, class participation [5% maximum] (15% in total)

1. Lecture Material (75%)

- a) Two or three in-class tests will be given during the semester
- b) A final exam covering the entire semester's work

These reports will either

- a) Written reports for each experiment will be handed in and graded
- b) Laboratory reports will be handed in on report sheets (98%)