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CHEM 1093: Principles of Chemistry - Part 2

EFFECTIVE DATE

January 2018

DEPARTMENT

UT Sciences

DESCRIPTION

This course examines why and how chemical reactions take place. Core topics include safety in a laboratory environment, chemical equilibrium (qualitative and quantitative aspects, equilibrium in acid-base systems, additional aspects of aqueous equilibria) and electrochemistry. This course provides an insight into the role of chemistry in industry and its role in the explanation of natural phenomena encountered in everyday life. Stoichiometry is reviewed. Both Chemistry 1083 and Chemistry 1093 are required for covering the chemistry topics contained in high school courses up to and including the Grade 12 level. Chemistry 1083 and Chemistry 1093 may be taken at the same time or in any order.

CREDITS

3.0

YEAR OF STUDY

1st Year Post-secondary

PREREQUISITES

• Chemistry 11 or equivalent • English 10 or equivalent (English 11 is strongly recommended) • Precalculus 11 (successfully completed within the last 3 years, a minimum score of 72% on the Intermediate Algebra Math Assessment, or equivalent). If the Math prerequisite is not met, MATH 0861 or MATH 1061 must be taken at the same time as CHEM 1093.

COREQUISITES

None

COURSE LEARNING OUTCOMES

Upon successful completion of this course, students will be able to:

- Explain the nature of chemical equilibrium using examples
- Apply Le Chatelier's Principle
- Calculate equilibrium constants of homogeneous and heterogeneous systems and equilibrium

- concentrations from equilibrium constants
- Calculate K_{sp} and solubility
- Describe Bronsted-Lowry acids and bases including acid-bases pairs and predict the relative strengths of acids
- Calculate $[H^+]$, $[OH^-]$, pH, and pOH from any one known
- Calculate pH from K_a
- Describe the characteristics of a buffer system
- Assign oxidation states to elements in compounds in order to identify oxidizing and reducing agents and balance redox equations
- Describe the components of electrochemical and electrolytic cells and predict the voltage, E_o , of electrochemical and electrolytic cells
- Describe the applications of oxidation-reduction to everyday and industrial processes
- Perform experiments safely, collect and record data effectively, analyze and interpret data, and write formal reports

PRIOR LEARNING ASSESSMENT & RECOGNITION (PLAR)

None

HOURS

Lecture: 60

INSTRUCTIONAL STRATEGIES

Class-based: Chemistry 1093 uses a lecture based model. A significant amount of class time will be spent on hands-on activities, concept-development worksheets and problem solving. A minimum of four labs will be conducted and will relate to the core topics.

GRADING SYSTEM

Letter Grade (A-F)

PASSING GRADE

D

EVALUATION PLAN

Type	Percentage	Assessment activity
Assignments	10	
Lab Work	25	including formal and informal lab reports
Exam	45	three tests at 15% each

Quizzes/Tests	20	a number of quizzes for a total of 20%
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COURSE TOPICS

- Safety Measures in a Laboratory Environment
Chemical Equilibria
Additional Aspects of Aqueous Equilibria
Electrochemistry

LEARNING RESOURCES

None

Notes:

- Course contents and descriptions, offerings and schedules are subject to change without notice.
- Students are required to follow all College policies including ones that govern their educational experience at VCC. Policies are available on the VCC website at:
<https://www.vcc.ca/about/governance--policies/policies/>.
- To find out how this course transfers, visit the BC Transfer Guide at <https://www.bctransferguide.ca>.

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