VANCOUVER COMMUNITY COLLEGE

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CHEM 1083: Principles of Chemistry - Part 1

EFFECTIVE DATE

January 2018

DEPARTMENT

UT Sciences

DESCRIPTION

This course examines the properties of matter. Core topics include safety in a laboratory environment, thermochemistry, the gas laws and reaction kinetics. Optional topics include the electronic structure of atoms, the periodic table and properties of elements, chemical bonding and molecular shapes. 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 1083.

COREQUISITES

None

COURSE LEARNING OUTCOMES

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

- Distinguish between the system and the surroundings and calculate internal energy from heat and work
- Relate thermochemical equations to heat energy transferred in reactions involving a set amount of substance
- Calculate the heat transferred in a calorimetry experiment using heat capacities or specific heats
- Use the appropriate units and conversions for pressure, volume and temperature
- Apply Boyle’s, Charles’, Guy-Lussac’s and the Combined Gas Laws to predict pressure, volume, or

temperature
- Describe an ideal gas and make calculations using the Ideal Gas Law
- Describe the collision model of chemical reactions
- Describe activation energy, endo and exothermic reactions using potential and kinetic energy diagrams
- Describe the factors that effect reaction rate including temperature, concentration, surface area, and catalysts
- 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 1083 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%

COURSE TOPICS

- Safety Measures in a Laboratory Environment

Thermochemistry
Gases
Reaction Kinetics
Electronic Structure of Atoms (optional)
Periodic Table and Properties of Elements (optional)
Chemical Bonding (optional)
Molecular Shapes (optional)

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.