

CHEM 025A, Chemistry 025*6 credits, 6 hours lecture*

Chemistry 025 begins with an introduction to elements and the Periodic Table, followed by atomic theory and periodicity chemical bonding and types of compounds, chemical nomenclature, and chemical reactions. The remainder of the course focuses on calculations involving measurements in chemistry, the metric systems (SI), and scientific notation as applied to gases, solutions (including acids and bases), and stoichiometry.

Alberta Education Course Equivalency: Chemistry 20

Corequisite: MATH 010C

Instructor

Linda Milette
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Office Hours

Mondays	9:00 – 9:50 AM
Tuesdays	3:00 – 3:50 PM
Wednesdays	9:00 – 9:50 AM & 12:00 – 12:50 PM
Thursdays	3:00 – 3:50 AM

Hours of Instruction

Tuesday Lectures	1:00 PM – 2:50 PM	Room CC237
Thursday Lectures	1:00 PM – 2:50 PM	Room CC237
Friday Lectures	1:00 PM – 2:50 PM	Room CC219

Required Supplies

CHEMISTRY 25 Student Manual (available at the bookstore)

Scientific Calculator – Does not have to be a TI-83 or better.

Course Outcomes

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

- Recognize the main branches of Science and explain the scientific method
- List the five branches of Chemistry
- Describe the basic particles that make up the underlying structure of matter
- Explain the Atomic Theories leading to the modern structure of the atom (Dalton, Thomson, Rutherford and Bohr)
- Describe the three subatomic particles which make up the atom.
- Explain the division of elements in the periodic table
- Identify and characterize of elements in groups and periods
- Explain the chemical bonding and properties of compounds
- Classify and explain the structure of compounds.
- Write names and formulas for compounds
- Apply VSEPR theory to predict molecular shapes for molecules
- Explain the types of intermolecular forces
- Recognize the systematic chemical name of binary, ternary and higher compounds
- Recognize the difference between precision vs accuracy, types of errors and significant digits
- Employ the measurement system for unit conversion and density problems.
- Apply the mole concept for calculation of molar mass, moles of elementary units, and molar volume of gas
- Explain molecular behavior, using models of the gaseous state of matter.
- Investigate solutions, describing their physical and chemical properties
- Describe molar concentration, molar concentration of ions in solution, and dilutions
- Describe acidic and basic solutions qualitatively and quantitatively
- Explain how balanced chemical equations indicate the quantitative relationships between reactants and products involved in chemical changes.
- Use stoichiometry in quantitative analysis.

Evaluation*

Class assignments	20 %
Quizzes	20 %
Midterm Exam (Unit 1 – 3)	30 %
Final Exam (Unit 4 – 6)	30 %
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TOTAL	100 %

** as per the Classroom Policies and Procedures posted on the Moodle Course page: late assignments will receive a grade deduction or a zero grade if submitted after assignments are returned to the class. Quizzes cannot be written at a later date.*

The minimum pre-requisite for progression is 1.7 (refer to Grading System below)

Grading System

Descriptor	4.0 Scale	Percent
Excellent	4.0	96 – 100
	4.0	90 – 95
	3.7	85 – 89
Good	3.3	81 – 84
	3.0	77 – 80
	2.7	73 – 76
Satisfactory	2.3	69 – 72
	2.0	65 – 68
	Minimum Prerequisite	1.7
Poor	1.3	55 – 59
Minimum Pass	1.0	50 – 54
Failure	0.0	0 – 49

Proposed Schedule of Topics

Unit I—Matter and Atomic Structure

- Section A: Introduction to Chemistry
- Section B: Basic Concepts of Matter
- Section C: The Structure of the Atom
- Section D: Introduction to the Periodic Table

Unit II—Structure of Compounds

- Section A: The Structure of Compounds
- Section B: Writing Formulas for Ionic and Molecular Compounds
- Section C: Intermolecular Forces

Unit III—Chemical Nomenclature

- Section A: Valence and Oxidation Numbers
- Section B: Chemical Nomenclature

MIDTERM EXAM (Units I – III)

Unit IV—Calculations in Chemistry as applied to Gases

- Section A: Mathematics in Chemistry
- Section B: Measurements in Chemistry
- Section C: The Mole Concept
- Section D: Gas Laws

Unit V—Calculations in Chemistry as applied to Solutions

- Section A: Characteristics of Solutions
- Section B: Preparing Solutions
- Section C: Acids and Bases

Unit VI—Chemical Reactions and Stoichiometry

- Section A: Writing and Balancing Chemical Equations
- Section B: Stoichiometry

FINAL EXAM (Units IV – VI)

Calendar of Important Events

Dates on the following calendar are tentative; shaded areas indicate no Chemistry 025 classes.

Week	Monday	Tuesday	Wednesday	Thursday	Friday
1	September 4 <i>Labour Day - College Closed</i>	5 Orientation Day	6 <i>First day of classes</i>	7 Introduction Unit 1A	8 Unit 1B Matter
2	11	12 Unit 1C Atoms	13	14 Unit 1C Atoms	15 Unit 1D Periodic Table
3	18	19 Unit 2A Compounds	20	21 Unit 2B Writing Formulas	22 Unit 2B Electron dot and structural Diagrams
4	25	26 Unit 2B VSEPR Theory Unit	27	28 Unit 2B VSEPR Theory Unit	29 Unit 2C Intermolecular Forces
5	October 2	3 Unit 3A Valence/Oxidation	4	5 Unit 3B Nomenclature	6 Unit 3B Nomenclature
6	9 <i>Thanksgiving Day - College Closed</i>	10 Unit 3B Nomenclature	11	12 Review/ Unit 4A Math	13 Unit 4A Math/ Unit 4B Measurements
7	16	17 MIDTERM EXAM	18	19 Unit 4B Measurements	20 Unit 4C Mole Concept
8	23	24 Unit 4C Mole Concept	25	26 Unit 4D Gas Laws	27 Unit 4D Gas Laws
9	30	31 Unit 5A Solutions	November 1	2 Unit 5A Solutions	3 Unit 5B Preparing Solutions
10	6	7 Unit 5B Preparing Solutions	8	9 <i>Reading Day - No Classes</i>	10 <i>Reading Day - No Classes</i>
11	13 <i>Remembrance Day (in lieu of) - College Closed</i>	14 Unit 5C Acids/Bases	15	16 Unit 5C Acids/Bases	17 Unit 5C Acids/Bases
12	20	21 Unit 6A Chemical Equations	22	23 Unit 6A Chemical Equations	24 Unit 6A Chemical Equations
13	27	28 Unit 6B Stoich	29	30 Unit 6B Stoich	December 1 Unit 6B Stoich
14	4	5 Unit 6B Stoich	6	7 Review Last Day of Classes	8
15	11 Final Exams	12 Final Exams	13 Final Exams	14 Final Exams	15 Final Exams

Please Note: Date and time allotted to each topic is subject to change.

***Final exam dates are scheduled by the College.**

Do not book travel before December 16th, 2017.

Performance Requirements

Student Responsibilities

It is your responsibility as a student to contact the Office of the Registrar to complete the forms for Withdrawal or Change of Registration, and any other forms. Please refer to the list of important dates as noted in the Academic Schedule in the Keyano College credit calendar.

More specific details are found in the Student Rights and Student Code of Conduct section of the Keyano College credit calendar. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Student Code of Conduct Policies.

Laboratory Safety

In the science laboratories, safety is important.

Students must complete the *WHMIS for Students* online training course on Moodle before entering the science laboratories.

Students must comply with the mandatory laboratory safety rules for this course as provided in the laboratory manual. Failure to do so will result in progressive discipline such as a verbal warning, refused entry into the laboratory, or suspension from the College.

Student Attendance

Class attendance is useful for two reasons. First, class attendance maximizes a student's learning experience. Second, attending class is a good way to keep informed of matters relating to the administration of the course (e.g., the timing of assignments and exams). Ultimately, you are responsible for your own learning and performance in this course.

It is the responsibility of each student to be prepared for all classes. Students who miss classes are responsible for the material covered in those classes and for ensuring that they are prepared for the next class, including the completion of any assignments and / or notes that may be due.

Academic Misconduct

Students are considered to be responsible adults and should adhere to principles of intellectual integrity. Intellectual dishonesty may take many forms, such as:

- Plagiarism or the submission of another person's work as one's own
- The use of unauthorized aids in assignments or examinations (cheating)
- Collusion or the unauthorized collaboration with others in preparing work
- The deliberate misrepresentation of qualifications
- The willful distortion of results or data
- Substitution in an examination by another person
- Handing in the same unchanged work as submitted for another assignment
- Breach of confidentiality.

The consequences for academic misconduct range from a verbal reprimand to expulsion from the College. More specific descriptions and details are found in the Student Rights and Student Code of Conduct section of the Keyano College credit calendar.

It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Student Code of Conduct Policies.

In order to ensure your understanding of the concept of plagiarism, **you must successfully complete the online tutorial** found on ilearn.keyano.ca. Then print the certificate, sign it, and show it to each of your instructors. Your course work will not be graded until you show this signed certificate.

Specialized Supports

Counselling and Accessibility Services

Counselling Services provides a wide range of specialized counselling services to prospective and registered students, including personal, career and academic counselling.

SKILL Centre

The SKILL Centre is a learning space in the Clearwater Campus at Keyano College where students can gather to share ideas, collaborate on projects and get new perspectives on learning from our tutorial staff.

The SKILL Centre, through a variety of delivery methods, provides assistance in skill development to Keyano students. Assistance is provided by instructors, staff and student tutors. Individuals wishing to improve their mathematics, writing, grammar, study, or other skills, can take advantage of this unique service.

Authorization

This course outline has been reviewed and approved by the Program Chair.

Linda Milette, Instructor

Lisa Turner, Chair

Date Authorized

Vincella Thompson, Dean

Date Authorized

Signed copies to be delivered to:

Instructor

Registrar's Office