

**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: Science 10 (Chemistry unit) and Chemistry 20*  
*Corequisite: MATH 010C*

**Instructor**

Iona Gocool  
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780-791-4830  
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**Office Hours**

Mondays - Fridays            4:00 – 5:00 PM

**Hours of Instruction**

Monday Lectures            8:00 – 9:50 AM Room CC215  
Tuesday Lectures           10:00 – 11:50 AM Room CC215  
Thursday Lectures           10:00 -11:50 AM Room CC215

**Required Supplies**

CHEMISTRY 25 Student Manual (available at the bookstore)

Scientific Calculator – Does not have to be a graphing calculator.

*\* If you are a **new user**, please purchase a Texas Instrument calculator (TI – 30Xa). This is what I use and therefore I can help you use it correctly quickly. It is inexpensive and broadly available in stores.*

**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 %
<u>Final Exam (Unit 4 – 6)</u>	<u>30 %</u>
TOTAL	100 %

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
	<b>Minimum Prerequisite</b>	<b>1.7</b>
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)**

**Dates on the following calendar are tentative and illustrate a guideline as to the content covered for each class.**

Week	Monday	Tuesday	Wednesday	Thursday	Friday
1	<b>January 7</b> Introduction Unit 1A First day of classes	<b>January 8</b> Unit 1B Matter	<b>January 9</b>	<b>January 10</b> Unit 1C Atoms	<b>January 11</b>
2	<b>January 14</b> Unit 1C Atoms	<b>January 15</b> Unit 1D Periodic Table	<b>January 16</b>	<b>January 17</b> Unit 2A Compounds	<b>January 18</b>
3	<b>January 21</b> Unit 2B Writing Formulas	<b>January 22</b> Unit 2B Writing Formulas	<b>January 23</b>	<b>January 24</b> Unit 2C Intermolecular Forces	<b>January 25</b>
4	<b>January 28</b> Unit 2C Intermolecular Forces	<b>January 29</b> Unit 2C Intermolecular Forces	<b>January 30</b>	<b>January 31</b> Unit 3A Valence/Oxidation	<b>February 1</b>
5	<b>February 4</b> Unit 3A Valence/Oxidation	<b>February 5</b> Unit 3A Valence/Oxidation	<b>February 6</b>	<b>February 7</b> Unit 3B Nomenclature	<b>February 8</b>
6	<b>February 11</b> Unit 3B Nomenclature	<b>February 12</b> Unit 3B Nomenclature	<b>February 13</b>	<b>February 14</b> Unit 3B Nomenclature	<b>February 15</b> <b>MIDTERM EXAM</b> <b>UNITS 1 - 3</b>
7	<b>February 18</b> No Class Family Day!	<b>February 19</b> No Class <b>READING WEEK</b>	<b>February 20</b> No Class <b>READING WEEK</b>	<b>February 21</b> No Class <b>READING WEEK</b>	<b>February 22</b> No Class <b>READING WEEK</b>
8	<b>February 25</b> Unit 4A Math	<b>February 26</b> Unit 4B Measurements	<b>February 27</b>	<b>February 28</b> Unit 4C Mole Concept	<b>March 1</b>
9	<b>March 4</b> Unit 4D Gas Laws	<b>March 5</b> Unit 4D Gas Laws	<b>March 6</b>	<b>March 7</b> Unit 5A Solutions	<b>March 8</b>
10	<b>March 11</b> Unit 5A Solutions	<b>March 12</b> Unit 5B Preparing Solutions	<b>March 13</b>	<b>March 14</b> Unit 5B Preparing Solutions	<b>March 15</b>
11	<b>March 18</b> Unit 5C Acids/Bases	<b>March 19</b> Unit 5C Acids/Bases	<b>March 20</b>	<b>March 21</b> Unit 5C Acids/Bases	<b>March 22</b>
12	<b>March 25</b> Unit 6A Chemical Equations	<b>March 26</b> Unit 6A Chemical Equations	<b>March 27</b>	<b>March 28</b> Unit 6B Stoichiometry	<b>March 29</b>
13	<b>April 1</b> Unit 6B Stoichiometry	<b>April 2</b> Unit 6B Stoichiometry	<b>April 3</b>	<b>April 4</b> Unit 6B Stoichiometry	<b>April 5</b>
14	<b>April 8</b> Review	<b>April 9</b> Review	<b>April 10</b> Last Day of Classes	<b>April 11</b>	<b>April 12</b>
15	<b>April 15</b> E	<b>April 16</b> X	<b>April 17</b> A	<b>April 18</b> M	<b>April 19</b> <b>No EXAMS</b> Good Friday
16	<b>April 22</b> <b>No EXAMS</b> Easter Monday	<b>April 23</b> X	<b>April 24</b> A	<b>April 25</b> MS	

**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 April 26, 2019.**

### Course Specific Policies

1. **Attendance Policy:** Chemistry 025 Section A is designed as a **face-to-face course**, so success is improved by being on time and regularly attending. Extended or frequent absences *for any reason cannot* be accommodated and can impact your overall mark. Some suggestions for handling occasional lecture absences include:
  - a. checking the Calendar of Events, News Forum and slide notes by logging into [ilearn.keyano.ca](http://ilearn.keyano.ca)
  - b. finding a “classroom buddy” whom you can contact for details regarding what you have missed.
  - c. check your Keyano email frequently, as notices posted to the ilearn forum automatically go there.
2. **Electronic devices policy:**
  - a. Texting and personal web browsing in **NOT** permitted during class time.
  - b. Some students find usage of tablets and laptops to follow slides very helpful during lectures, so you are welcomed to bring these to class **for instructional purposes only**.
  - c. Sounds on all cell phones should be turned off during class and if you need to take an important call please leave the room to avoid disrupting others. **Please note that using electronic devices to record the class in any way (audio, video, photos, etc.) is not permitted.**
3. **Late Work Policy:** assigned work must be received in hard copy and in person. It will receive
  - a. full marks when received in person on the due date.
  - b. the earned grade, minus 10%, for each day late.
  - c. a mark of zero if received after I have returned the assignment.
  - d. No late work will be accepted for “Completion Checks”.
4. **Other Course Policies and Procedures:**
  - a. **work submitted by non-attending students may not be marked.**
  - b. Any work showing evidence of copying or plagiarism will receive a mark of zero. (see “Student Rights and Responsibilities” in the Credit Calendar).
  - c. in-class quizzes cannot usually be rewritten, as these are meant to give you immediate feedback on your progress. A quiz may be omitted with valid medical documentation.
  - d. a missed exam may be written at an alternate time only under certain *exceptional* circumstances, *at the instructor’s discretion*. The instructor must be contacted within 24 hours of the scheduled exam, and documentation (e.g. a doctor’s note) provided.
  - e. the final exam will be written on the date scheduled by the College; otherwise, the procedure for “Deferred Final Examination” in the Credit Calendar is to be followed.

Should you have trouble logging into [ilearn.keyano.ca](http://ilearn.keyano.ca), please contact Keyano College Information and Technology Services ([its.helpdesk@keyano.ca](mailto:its.helpdesk@keyano.ca) or 780-791-4965).

## 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.

### 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](http://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

The Student Academic Support Services (SASS) department: Accessibility Services, Skill Centre and Wellness Services, work together to support student success at Keyano College.

**Accessibility Services (CC167)** supports student success through group and individualized instruction of learning, study and test taking strategies, and adaptive technologies. Students with documented disabilities, or who suspect a disability, can meet with the Learning Strategists to discuss accommodation of the learning barriers that they may be experiencing. Students who have accessed accommodations in the past are encouraged to visit our office at their earliest opportunity to discuss the availability of accommodations in their current courses. Individual appointments can be made by calling 780-791-8934

**Skill Centre (CC119)** provides a learning space where students can gather to share ideas, collaborate on projects and get new perspectives on learning from our tutorial staff. Students visiting the centre have access to one-to-one or group tutoring, facilitated study groups, and assistance in academic writing. The Skill Centre's Peer Tutor program provides paid employment opportunities for students who have demonstrated academic success and want to share what they have learned. Tutoring is available free to any students registered at Keyano College on a drop in basis, from 9:00 am to 5:00 pm Monday through Friday. Additional evening hours are subject to tutor availability and are posted in the Skill Centre.

**Wellness Services (CC260)** offers a caring, inclusive, and respectful environment where students can access free group and individual support to meet academic and life challenges. Mental Health Coordinators offer a safe and confidential environment to seek help with personal concerns. The Mindfulness Room in CC260 is available as a quiet space for students to relax during regular office hours. Wellness Service welcomes students to participate in any of the group sessions offered throughout the academic year addressing such topics as; Mindfulness and Test Anxiety. Individual appointments can be made by calling 780-791-8934.

**Please watch your Keyano email for workshop announcements from our Student Academic Support Services team.**