

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 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

Co requisite: MATH 010C

Instructor

Nancy Serediak

Email: nancy.serediak@keyano.ca

Office Hours

Individual meetings are available **Fridays, 1:00 – 2:50 pm via Zoom** on a first come, first served basis. Students will be admitted into the Zoom “waiting room” until it is their turn for one-on-one attention.

Other times may be available Monday – Friday, between 9:00 am and 5:00 pm; please call or email to set up an appointment.

Hours of Instruction

Mondays	3:00 – 4:50 pm	Synchronous tutorial (group)
Wednesdays	1:00 – 2:50 pm	Synchronous tutorial (group)
Fridays	1:00 – 2:50 pm	Office hours (individual)

Instruction is flexible; tutorials are meant to go over the previous day’s work and explain the new lesson.

Required Resources

- ***Chemistry 025 Student Manual***, available in print from the Keyano Bookstore.
- **Calculator**, scientific or graphing
- **Computer** (laptop or desktop)—see pages 8 and 9 for details

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 that 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

Assignments	60%
Moodle Quizzes	40%

A grade of 60% (1.7, or C-) is required for progression. The minimum standard for passing this course is a grade of 50% (1.0, or D).

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
	2.3	69 – 72
Satisfactory	2.0	65 – 68
Minimum Prerequisite	1.7	60 – 64
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

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

Calendar of Important Events: shaded areas indicate no Chemistry 025 lessons. *Please note: date and time allotted to each topic is subject to change.*

Week	Monday	Tuesday	Wednesday	Thursday	Friday
1	January 4	5	6 First day of Chem 025! Unit 1A: Intro to Chemistry	7	8 Office hours
2	11 Unit 1B: Matter	12	13 Unit 1C: Atoms	14	15 Office hours Moodle Quiz #1
3	18 Unit 1D: Periodic Table	19	20 Unit 2A: Compounds	21	22 Office hours Ass't #1 Due
4	25 Unit 2B: Writing Formulas (Ionic)	26	27 Unit 2B: Writing Formulas (Molecular)	28	29 Office hours Moodle Quiz #2
5	February 1 Unit 2C: Intermolecular Forces	2	3 Unit 2C: Intermolecular Forces	4	5 Office hours Ass't #2 Due
6	8 Unit 3A: Valence & Oxidation #'s	9	10 Unit 3B: Nomenclature (Ionic)	11	12 Office hours Moodle Quiz #3
7	15 Family Day College Closed	16 Reading Week - No Classes	17 Reading Week - No Classes	18 Reading Week - No Classes	19 Reading Week - No Classes
8	22 Unit 3B: Nomenclature (Molecular)	23	24 Unit 3B: Nomenclature (Acids)	25	26 Office hours Ass't #3 Due
9	March 1 Unit 4A: Math	2	3 Unit 4B: Measurements	4	5 Office hours Moodle Quiz #4
10	8 Unit 4C: Mole Concept	9	10 Unit 4C: Mole Concept Unit 4D: Gas Laws	11	12 Office hours Ass't #4 Due
11	15 Unit 4D: Gas Laws	16	17 Unit 5A: Solutions and Molar Concentration	18	19 Office hours Moodle Quiz #5
12	22 Unit 5B: Preparing Solutions	23	24 Unit 5C: Acids & Bases	25	26 Office hours Ass't #5 Due
13	29 Unit 5C: Acids & Bases	30	31 Unit 6A: Chemical Equations	April 1	2 Good Friday Holiday College Closed
14	5 Easter Monday Holiday College Closed	6	7 Unit 6A: Chemical Equations Unit 6B: Stoichiometry	8	9 Office hours Moodle Quiz #6
15	12 Unit 6B: Stoichiometry	13	14 Last tutorial! Unit 6B: Stoichiometry	15	16 Ass't #6 Due
16	19 First day of final exams	20 Final exams	21 Final exams	22 Final exams	23 Final exams
17	26 Final exams	27 Final exams	28 Final exams	29 Final exams	30 Last day of final exams

Final exams are scheduled by the College. Do not book travel until May 1, 2021 for courses with final exams. Deferred exams will NOT be approved for travel, even if the travel was booked prior to enrolling in the course.

Course Specifics

Remote delivery: Chemistry 025A is designed as an **asynchronous, remote delivery course**. Prepare to devote **2-4 hours each day a lesson is given** to self-directed study and completion of assessments. With this format, success is improved by keeping up with the material on a daily basis and asking questions.

Each lesson date (see pg 4), you are expected to do the following:

- check your Keyano email.** This is how the College, and I, will get in touch with you. Always use your Keyano email to get in touch with me.
- check Moodle by logging into ilearn.keyano.ca.** Check the following areas each weekday: Calendar (daily lessons), Assessments (assignments and unit quizzes), and Announcements.
- complete the coursework, in the order in which it is covered.** You will need your textbook, the Student Course Package, and the electronic resources on Moodle.

Synchronous **ZOOM tutorials** will be provided on scheduled days (see pg 4) to serve as a check-in place where you can virtually meet with me and your classmates to ask questions and discuss items from recent self-directed lessons. **Regular attendance** at ZOOM tutorials will help with staying motivated and feeling connected to your community of scholars 😊. Click "**Link to ZOOM tutorials**" when you're on Moodle.

ZOOM tutorials may also be used as presentation dates for assignments. On these dates, attendance is mandatory.

Electronic devices: please refer to pages 8 and 9 for detailed hardware and software requirements. For the best experience in ZOOM tutorials and one-on-one meetings, a **headset or earbuds with a microphone is recommended**.

You will also need to know how to create and upload electronic documents to Moodle (PDF or Word format), and be prepared to create and upload audio PowerPoints (MP4) and videos (MP4) for some assignments. *Students can download MS Office, for Windows or Mac, for free through Moodle (see pg 9 for details).*

Late Work: your **assignments** will receive

- the earned grade in full when received by the due date and time. 😊
- the earned grade, **minus 20%**, for **each** additional day late, during the marking period.
- a mark of zero if submitted after marks are released on Moodle.

Each **Moodle Quiz** will be completed online through Moodle, in one attempt, during a limited timeframe. Extensions and "make-ups" will not be granted. Some written response questions will be provided in advance so that you can upload these responses during the quiz time.

****Please note:** there will be no alternative, "make-up", or "extra credit" assignments provided.**

Performance Requirements and Student Services

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](#). The Keyano College credit calendar also has information about Student Rights and Code of Conduct. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and 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 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; and
- 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 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 Code of Conduct Policies.

Specialized Supports

The Student Services department is committed to Keyano students and their academic success. There are a variety of student supports available at Keyano College. Due to the continuing situation with the Covid-19 pandemic, the offered support services will be implemented differently this semester by being provided mostly virtually. In-person service can be requested as needed. All Alberta Health Services guidelines will be followed for in-person appointments—wear a mask, maintain two meters of physical distance, use hand sanitizer, and stay home if you are unwell.

All student services are available during Keyano business hours: Monday to Friday, 8h30-16h30.

Accessibility Services: provides accommodations for students with disabilities. Students with documented disabilities, or who suspect a disability, can meet with a Learning Strategist to discuss their current learning barriers and possible accommodations. Students who have accessed accommodations in the past are encouraged to contact us to request them for the semester. Please note that requesting accommodations is a process and requires time to arrange. Contact us as soon

as you know you may require accommodations. For accessibility services supports and to book a virtual appointment, please contact accessibility.services@keyano.ca.

Accessibility Services also provides individual and group learning strategy instruction for all students, as well as technology training and supports to enhance learning. Meet with a Learning Strategist to learn studying and test-taking strategies for online classes. Schedule an appointment with the Assistive Technology Specialist to explore technology tools for learning. Book an appointment today by emailing accessibility.services@keyano.ca

Wellness Services: 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. All individual appointments will continue virtually.

Wellness Services welcomes students to participate in any of the virtual group sessions offered throughout the academic year addressing topics including mindfulness and test anxiety.

Individual virtual appointments can be made by emailing wellness.services@keyano.ca.

Library Services: provides students with research and information supports as they engage in their studies. Library staff are available to support you both virtually and in person throughout the semester. For a detailed list of library supports and services, go to www.keyano.ca/library. For any inquiries, please email askthelibrary@keyano.ca.

Begin your research with the [Library's FIND page](#). Search for sources using OneSearch, the Library's Catalogue, or by searching in a specific database selected from the [A-Z Database List](#).

Individual support with the Information Librarian is available virtually. Appointments can be requested by using the [Book A Librarian online form](#).

Research and Subject Guides are helpful resources when beginning your research or addressing other information needs. To view a subject or course specific guide, go to the Subject Guide webpage [here](#).

To access additional research resources, including Citation Guides (APA, MLA, Chicago, or IEEE), go to the [Research Help Library page](#).

The Loanable Technology collection is available to support students in their online learning pursuits. Items available for borrowing include mobile projectors, webcams, noise cancelling headphones, Chromebooks, and laptops. For an up-to-date list of technology available for borrowing, go to the Library's [Loanable Technology webpage](#).

Skill Centre: Provides academic support services to students registered in credit programs at Keyano College in the form of tutoring, assignment/lab support, writing support groups, facilitated study groups, workshops, and study space. This service is free and is available for all Math, Sciences, Humanities and Trades courses offered at Keyano.

While most courses are being offered online, the Skill Centre will be offering mostly virtual services and in-person sessions as requested. Please email Skill@keyano.ca to get in contact with our Academic Content Specialists. The Skill Centre is located in CC-119 at the Clearwater Campus.

For the most up to date information on how to book a session, please view the [Keyano Skill Centre homepage](#).

Academic Success Coaching: offers you support and access to resources for your academic success to help you to find the Keys to your Success. The Academic Success Coach will work with you to develop an academic success plan, develop your study and time management skills, and connect you with the right resources here at Keyano. Academic.success@keyano.ca is the best way to access resources during virtual service delivery. The Academic Success Coach is located in the Skill Centre in CC-119 at the Clearwater Campus.

E-Learning

Technology and internet will impact your online learning experience. It's important that you are able to watch an online video and other course materials, take online quizzes, and participate in a live class with your instructor and other students.

Keyano College operates in a **Windows based environment** and having the correct tools for online learning is important. Here's a list of recommended system requirements.

Internet Speed

Minimum Internet speeds of 5 Mbps.

Recommended Internet speeds of 25 Mbps (especially if you are sharing your internet at home).

Check your internet speed with Fast.com

System requirements:

Microsoft Windows	Apple
<p>Minimum Requirements:</p> <p>A Windows 10 computer/laptop</p> <ul style="list-style-type: none"> Minimum 4GB of RAM. 10GB+ available hard drive storage. Enough available hard drive space to install the Microsoft Office suite (approximately 3GB). Microsoft Office software is free to all Keyano students and employees. Microphone, webcam and speakers. A headset with a microphone is recommended. System updates must be regularly installed. Anti-Virus / Anti-Malware software 	<p>Minimum Requirements:</p> <p>A Macintosh (V10.14 and above) computer/laptop</p> <ul style="list-style-type: none"> Minimum 4GB of RAM. 10GB+ available hard drive storage. Enough available hard drive space to install the Microsoft Office suite (approximately 3GB). Microsoft Office software is free to all Keyano students and employees. Microphone, webcam and speakers. A headset with a microphone is recommended. System updates must be regularly installed. Anti-Virus / Anti-Malware software.
<p>Recommended Requirements</p> <ul style="list-style-type: none"> 8GB of RAM A method of backing up/synchronizing to local or cloud-based storage such as OneDrive is highly recommended. This is included if you complete the setup of KeyanoMail and download MS Office using your Keyano email for free. 	<p>Recommended Requirements</p> <ul style="list-style-type: none"> 8GB of RAM A method of backing up/synchronizing to local or cloud-based storage such as OneDrive is highly recommended. This is included if you complete the setup of KeyanoMail and download MS Office using your Keyano email for free.

Chromebooks are **not** recommended as they are not compatible with testing lockdown browsers.

A Microsoft Surface or iPad or iPad Pro may be possible alternatives in some program areas.

Computer Software

Students will be able to get access to Microsoft Office 365 for free using Keyano credentials by [clicking here](#).

Recording of Lectures and Intellectual Property

Students may only record a lecture if explicit permission is provided by the instructor or by Accessibility Services. Even if students have permission to record a lecture or lecture materials, students may not share, distribute, or publish any of the lectures or lecture materials, this includes any recordings, slides, instructor notes, etc. on any platform. Thus no student is allowed to share, distribute, publish or sell course related content (instructor, or students) without permission. It is important to recognize that the Canadian Copyright Act contains provisions for intellectual property. The [Academic Integrity Policy](#) provides additional information on Keyano College's expectations from students as members of the intellectual community.

ITS Helpdesk

If you are having issues with your student account, you can contact the ITS Helpdesk by emailing its.helpdesk@keyano.ca or calling 780-791-4965.