

Faculty of Science Course Syllabus Department of Chemistry

CHEM 1011/1021 - Concepts in Chemistry: Structure and Reactivity

Welcome to Chemistry 1011/1021! We have created a comprehensive course syllabus to address any questions you may have throughout the term. This syllabus serves both as a guide and a contract between students and instructors, setting clear expectations and helping you prepare for the semester.

Please note that the policies in this syllabus are final and non-negotiable.

Use the table of contents below to navigate the syllabus and review important dates and policies. We hope you have an enjoyable and productive semester in First Year Chemistry!

Table of Contents

Land Acknowledgement.....	3
African Nova Scotian Acknowledgement	3
Section 1: General Course Information	3
Who to Contact?	3
Mode of Delivery	4
Important Academic Dates.....	4
Chemistry 1011/1021 Grading Scheme	5
Dalhousie Common Grading Scheme	6
Frequently Asked Question: How do I email an Instructor/Professor?	7
Frequently Asked Question: How do I access CAPA?	8
Frequently Asked Question: What happens if the course gets interrupted?	8
Frequently Asked Question: What should I do if I become sick during term?	8
Section 2: Lecture Component.....	9
Required Lecture Materials	9
Lecture Teaching Team	10
Lecture/Class Schedule	11
Experience Points.....	12
Daily Homework Questions	12
In-class Quizzes	13
Beyond the Classroom Reflective Assignments	13
Mastery Points	14
Mastery Exams.....	14
Make-up Mastery Exams	15
Mulligan Exam	15

Section 3: Laboratory Component.....	16
Laboratory Instructors	17
Required Materials for Lab.....	18
Safety Module and Lab Map	19
WHMIS Course Module	20
Mastering Purpose, Conclusion, and Observations Module	20
Laboratory Format, Expectations and Policies.....	21
Before Your Experiment	22
Theory and Pre-Lab Support Module Structure	22
During Your Experiment	23
After Your Experiment	23
Laboratory Schedule.....	24
Pre-Lab CAPA Assignments.....	25
Preparedness	25
Participation: Data Collection and Raw Data Submission.....	25
Lab Station Clean-Up	26
Post-Lab Due Dates	26
Post-Lab Report Weighting Scheme.....	27
Time Management.....	27
Missed Labs and Make-up Experiments.....	27
Final Dates for Make-up Experiments and Late Work Submissions	28
Laboratory Exemptions	28
Section 4: <i>Concept</i> Room & Chemistry Resource Centre.....	29
Section 5: Course Content & Learning Objectives	29
Course Description	29
Course Objectives and Goals	29
Course Learning Outcomes	29
Course Content.....	30
Laboratory Experiments.....	31
Section 6: Course Syllabus Appendix	32

Land Acknowledgement

Dalhousie University operates in the unceded territories of the Mi'kmaw, Wolastoqey, and Peskotomuhkati Peoples. These sovereign nations hold inherent rights as the original peoples of these lands, and we each carry collective obligations under the Peace and Friendship Treaties. Section 35 of the Constitution Act, 1982 recognizes and affirms Aboriginal and Treaty rights in Canada.

African Nova Scotian Acknowledgement

We recognize that African Nova Scotians are a distinct people whose histories, legacies and contributions have enriched that part of Mi'kma'ki known as Nova Scotia for over 400 years.

Section 1: General Course Information

Who to Contact?

If students have questions about Chem 1011/1021 please do not hesitate to contact one of the First Year Chemistry Coordinators. The best way to contact the First Year Chemistry Coordinators is by email using your **Dalhousie email account**. Please allow up to **5 business days** for a response and note that emails sent in the evening or on weekends may not be seen until the next business day.

For inquiries about the **Laboratory** portion of the course, please contact:



Dr. Jennifer MacDonald
(pronouns: she/her)
First Year Chemistry Lab Coordinator

Email: chemlab@dal.ca

For **all other inquiries** regarding the course, please contact:



Dr. Angela Crane-Garnier
(pronouns: she/her)
First Year Chemistry Course Coordinator

Email: chemlect@dal.ca

Please note, chemistry content related questions should be directed to the assortment of instructors, professors and teaching assistants (TAs) available to meet with students in the *Concept Room*, not to the coordinator email accounts. The main reason for this is chemistry content questions are not easily answered via email, and students will likely get a much faster response in the *Concept Room* or Resource Centre. However, don't worry, we have plenty of staff to help students throughout the course!

Mode of Delivery

This course will be held in-person on the Studley Campus of Dalhousie University in Halifax, Nova Scotia, Canada. All lecture and laboratory sections will be in-person (please refer to Sections 2 and 3 of this syllabus for complete details). All times listed in this syllabus are based on the Atlantic time zone.

Students should also note that you are only guaranteed a space/seat in the lecture and lab sections that you have registered for. Please attend the correct lecture and lab section based on your DalOnline schedule.

Important Academic Dates

Monday, September 7, 2026

Labour Day – **University closed**

Tuesday, September 8, 2026

Fall term classes begin

Tuesday, September 22, 2026

Last day to add or drop a Fall term course

Wednesday, September 30, 2026

National Day for Truth and Reconciliation – **University closed**

Wednesday, October 7, 2026

Last day to drop a Fall term course without a “W”

Monday, October 12, 2026

Thanksgiving Day – **University closed**

Thursday, November 5, 2026

Last day to drop a Fall term course with a “W”

Monday, November 9 – Friday, November 13, 2026

Fall Study Break – **no classes**

Tuesday, November 11, 2026

Remembrance Day – **University closed**

Tuesday, December 8, 2026

Follows the Monday schedule

Wednesday, December 9, 2026

Last day of Fall term classes – Follows the Wednesday schedule

Friday, December 11 – Tuesday, December 20, 2026

Fall term exam period

Wednesday, December 24 – Wednesday, December 31, 2026

Winter Break – **University closed**

Chemistry 1011/1021 Grading Scheme

To calculate a final numerical grade for Chemistry 1011/1021 the following grading scheme will be followed. A detailed breakdown of how grades are distributed for each course activity can be found in the individual section for each component.

Lecture Component:

Experience Points

Homework Questions	4%
In-class Quizzes	4%
Beyond the Classroom Reflective Assignments	2%

Mastery Points

Four (4) Mastery Exams	60%
------------------------	-----

Laboratory Component:

Lab Orientation and Safety

Lab Map & Safety Module	1%
WHMIS Course Module	2.5%
Mastering Purpose, Conclusion and Observations Module	0.5%
Lab Station Clean-Up	1%

Lab Work

Pre-Lab Assignments	5%
Post-Lab Reports	15%
Participation: Data Collection/Raw Data Submission	3%
Time Management & Preparedness	2%

Total: 100%

To obtain a passing grade in Chem 1011/1021, students must meet ALL of the following criteria:

- Obtain at least a grade of 30/60 on the “Mastery Points” portion of the course.
- Obtain at least a grade of 15.00/30 on the “Laboratory Component” of the course with 12.50/25 from “Lab Work.”
- Obtain at least a total combined grade of 50/100.
-

Important Note: *No extensions or exemptions will be given for any assignment/assessment that counts towards Experience Points or are worth less than 4%. This is because there is already flexibility built into their grading (i.e. assignments are available for a long period of time, only the top questions/assignments counting for full marks and the possibility to gain bonus marks) or these assignments are worth a negligible amount ($\leq 1\%$).*

No additional assessments (extra credit assignments or supplementary exam retakes) will be given. Final grades will be calculated based on the assessments laid out in this syllabus only. Under emergency circumstances that have a serious impact on the delivery of this class, *there may be a need to alter the syllabus*.

Dalhousie Common Grading Scheme

The final grade posted to student transcripts will be determined based on the numerical grade calculated by the Chemistry 1011/1021 Grading Scheme and converted to a letter grade based on the Dalhousie Common Grading Scheme seen below. Note the expectations of students in each grade category as is outlined in the definition of each letter grade category.

Conversion of numerical grades to Final Letter Grades follows the
Dalhousie Common Grade Scale

A+ (90–100)	A (85–89)	A– (80–84)
B+ (77–79)	B (73–76)	B– (70–72)
C+ (65–69)	C (60–64)	C– (55–59)
D (50–54)	F (<50)	

Grade	Definition
A+, A, A–	Excellent: Considerable evidence of original thinking; demonstrated outstanding capacity to analyze and synthesize; outstanding grasp of subject matter; evidence of extensive knowledge base.
B+, B, B–	Good: Evidence of grasp of subject matter, some evidence of critical capacity and analytical ability; reasonable understanding of relevant issues; evidence of familiarity with the literature
C+, C, C–	Satisfactory: Evidence of some understanding of the subject matter; ability to develop solutions to simple problems; benefitting from their university experience.
D	Marginal Pass: Evidence of minimally acceptable familiarity with subject matter, critical and analytical skills (except in programs where a minimum grade of 'C' is required).
F	Inadequate: Insufficient evidence of understanding of the subject matter; weakness in critical and analytical skills; limited or irrelevant use of the literature.

For more information about Dalhousie University's Grading Practices, please refer to:
https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html

Frequently Asked Question: How do I email an Instructor/Professor?

The following section will be relevant to all your courses at Dalhousie.

When emailing an instructor/professor, please remember to:

- **Always use your “@dal.ca” email account.** This is very important, especially if you are discussing grades. Many instructors/professors will not respond with personal information, such as grades, unless you are writing from your Dalhousie email account. *This is particularly true in First Year Chemistry.*
- Use an **informative subject line.** Many instructors/professors get hundreds of emails a day. This keeps an email from getting lost or forgotten.
- Use an **appropriate greeting.** Most faculty will let you know if they want to be addressed more formally (*example: Dr. Crane*) or more informally (*example: Angela*). If you are unsure, typically you would assume a formal greeting at first to maintain professionalism.
- Keep emails **professional**, this means no “text speak”, and writing in full sentences.
- Include the **course code.** Many instructors/professors teach multiple classes, and will not be able to assist you if they do not know which course you are in.
- Sign your email with your **full name and student ID (Banner number, ie. B0#####)**. This is very important as often classes can have students with the same or similar names, and we want to be able to make sure you get the correct information for you. *This is especially true in a big class like First Year Chemistry, where there are typically over 1000 students per term!*

Date: Monday, 11 Sept 2023 11:49:19 -0700
From: rufftime@randomemailaccount.com
To: chemlect@dal.ca
Subject: i need 2 cu

yo

i need 2 cu asap cuz idk ne chem. 2moro ok 4u?

ttfn
B-dawg

Sent from my phone

WRONG

Date: Monday, 11 Sept 2023 11:49:19 -0700
From: br123456@dal.ca ← **Official Dal Email Account**
To: chemlect@dal.ca
Subject: Chem 1011 – Schedule an appointment ← **Informative subject line**

Dear Dr. Crane, ← **Appropriate greeting**
My name is Brody and I am in your Chem 1011 class. I would like to make an appointment with you to discuss study techniques. Do you have any time next Tuesday to meet with me? I am available from 10am – 4pm. ← **Full sentences, no “text speak”, Course number**

Sincerely,

Brody “the dog” Garnier ←
B00123456 ← **Student ID (Banner Number)**
Sent from my phone

**note: The student “Brody Garnier” used in this email example is fictitious and no identification with actual persons (living or deceased) is intended or should be inferred. In fact, the “Brody Garnier” referred to here is Dr. Crane’s dog.*

Frequently Asked Question: How do I access CAPA?

Many of the online assessments in both the lecture and laboratory component will be hosted on the online learning platform, CAPA, which can be accessed by going to <https://capa.chemistry.dal.ca/>. Please use the following instructions when logging into CAPA for the first time:

1. Go to <https://capa.chemistry.dal.ca>
2. Click "Forgot password?"
3. Input your LON-CAPA username (your NetID using **lowercase** letters, example: aa123456) and your Dalhousie e-mail address in LON-CAPA (your NetID@dal.ca, example: aa123456@dal.ca) and press "Proceed".
4. Check your Dalhousie e-mail. An email will be sent from LON-CAPA helpdesk containing a password reset link. Click this link.
5. Once again, input your LON-CAPA username (NetID, lowercase), your Dalhousie e-mail address (NetID@dal.ca) and set/confirm a password and click "Save".
6. You will get a confirmation page and email for the reset of your password. Next click "Go to the login page".
7. From now on you will be able to login as normal with your LON-CAPA username (NetID, lowercase) and the password you created.
8. If you have issues logging into CAPA please email help@conceptschemistry.ca

Frequently Asked Question: What happens if the course gets interrupted?

In the event that any course activity is interrupted due to snow, power outage, or any other event/circumstance in Halifax or at Dalhousie University that is beyond the First Year Chemistry Teaching Team's control, please pay close attention to your Dalhousie Email Account and the Announcements made on the Brightspace Course Sites for the most up to date information.

Frequently Asked Question: What should I do if I become sick during term?

As always, we realize that we are all human, and getting sick during term is something that happens to the best of us (even us as instructors!). This is particularly on our mind as we have just experienced the COVID-19 Global Pandemic, which in many ways is still affecting us. As such, we wanted to address this point specifically.

First, if you are ill and unable to complete course work, do not panic, and instead contact **both** chemlect@dal.ca and chemlab@dal.ca as soon as you can. The sooner we know the situation the sooner we can develop a plan. If it is a short illness, the course policies laid out in this syllabus may already cover the plan of action. Please take note of the policies surrounding individual course assessments as you read through. If it is a long-term illness, that is affecting several weeks of classes then we will be working with students on a case-by-case basis, along with the Student Accessibility Centre and the Assistant Dean of Science dedicated to Student Affairs, to determine the best plan for finishing course work.

Section 2: Lecture Component

Required Lecture Materials

Course eTextbook

Concepts in Chemistry: Structure and Reactivity (2026–27 Ed.)

This course textbook is a custom written eBook for the course and has been completely re-written due to a curriculum update for the 2026-27 year. Older copies of this book are obsolete. This book includes all materials including worked examples and additional exercises which serve as the basis for creation of exams.

Students are strongly encouraged to obtain a copy to support their learning and success in the course.

This eBook is available through the Dalhousie Bookstore only.



Non-programmable Scientific Calculator

Only 2 main types of calculators are permitted during exams in Chem 1011/1021.

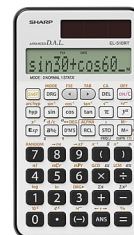
It is required that students registered in engineering and physics have the **CASIO fx-991ES PLUS** calculator, or equivalent (such as the CASIO fx-991ES PLUS C, CASIO fx-991ES PLUS 2 and the CASIO fx-991ES PLUS C 2nd edition).

It is required that all other science students have the **SHARP EL-510 series calculator** (the current model is the SHARP EL-510RTB, but older models such as the SHARP EL-510RNB will be accepted).

Both calculators are available at the Dalhousie Bookstore, however students may be able to find these calculators from alternative vendors.



CASIO fx-991ES PLUS



SHARP EL-510RTB

Lecture Teaching Team

Instructor Photo	Instructor Name	Role
	Dr. Angela Crane-Garnier (pronouns: she/her)	Course Coordinator Office hour: 11am-1pm Wednesdays Room: Chem 1052
	Tyler Ziehl (pronouns: he/him)	Lecturer Killam Library – MacMechan Auditorium 8:35 – 9:25am MWF <i>CHEM 1011 section 05</i> Concept Room Support
	Sam Knight (pronouns: she/her)	Lecturer McCain Arts & Social Sciences Building - Auditorium 1 (Scotiabank) 8:35 – 9:25am MWF <i>CHEM 1011/1021 section 01</i> 9:35 – 10:25am MWF <i>CHEM 1011 section 04</i> <i>CHEM 1021 section 02</i> Concept Room Support
	Dr. Marc Whalen (pronouns: he/him)	Lecturer McCain Arts & Social Sciences Building - Auditorium 2 (Ondaatje) 9:35 – 10:25am MWF <i>CHEM 1011 section 02</i> 10:35 – 11:25am MWF <i>CHEM 1011 section 03</i> <i>CHEM 1021 section 03</i>
	Dr. Michael Freund (pronouns: he/him)	Concept Room Support
	Dr. Mark Stradiotto (pronouns: he/him)	
	Dr. Laura Turculet (pronouns: she/her)	

Lecture/Class Schedule

Date	Class Content	Notes
Mon., Sept. 7	<i>Labour Day</i>	<i>No Class – University Closed</i>
Wed., Sept. 9	Welcome and Introduction	Please read the course syllabus to prepare for this class
Fri., Sept. 11	Topic 1 – Atomic Structure	
Mon., Sept. 14	Topic 2 – Emission/Absorption	
Wed., Sept. 16	Topic 3 – UV-vis Spectroscopy	
Fri., Sept. 18	Topic 4 – Quantum Numbers	Quiz 1 (Topics 1-3)
Mon., Sept. 21	Topic 5 – Atomic Orbitals	
Wed., Sept. 23	Topic 6 – Electron Configurations	
Fri., Sept. 25	Topic 7 – Trends in Z_{eff} and Radius	Quiz 2 (Topics 4-6)
Mon., Sept. 28	Topic 8 – Trends in IE and EA	
Wed., Sept. 30	<i>National Day for Truth and Reconciliation</i>	<i>No Class – University Closed</i>
Fri., Oct. 2	Mastery Exam 1	Covers Topics 1-7
Mon., Oct. 5	Topic 9 – Ionic Bonding	
Wed., Oct. 7	Topic 10 – Covalent Bonding	
Fri., Oct. 9	Topic 11 – Intro to Lewis Structures and Organic Naming	Quiz 3 (Topics 8-10)
Mon., Oct. 12	<i>Canadian Thanksgiving</i>	<i>No Class – University Closed</i>
Wed., Oct. 14	Topic 12 – Organic Naming with Functional Groups	
Fri., Oct. 16	Topic 13 – IR Spectroscopy	Quiz 4 (Topics 11-12)
Mon., Oct. 19	Topic 14 – Lewis Structures & Resonance	
Wed., Oct. 21	Mastery Exam 2	Covers Topics 8-14
Fri., Oct. 23	Topic 15 – Lewis Acids/Bases	
Mon., Oct. 26	Topic 16 – VSEPR Theory	
Wed., Oct. 28	Topic 17 – Drawing Molecules in 3D	
Fri., Oct. 30	Topic 18 – VBT: Hybridization	Quiz 5 (Topics 15-17)
Mon., Nov. 2	Topic 19 – VBT: Orbital Overlap Diagrams	
Wed., Nov. 4	Topic 20 – NMR Spectroscopy	
Fri., Nov. 6	Topic 21 – Intermolecular Forces	Quiz 6 (Topics 18-20)
Mon., Nov. 9	<i>Study Break</i>	<i>No Class</i>

Date	Class Content	Notes
Wed., Nov. 11	<i>Remembrance Day</i>	<i>No Class – University Closed</i>
Fri., Nov. 13	<i>Study Break</i>	<i>No Class</i>
Mon., Nov. 16	Topic 22 - Stereoisomers	
Wed., Nov. 18	Mastery Exam 3	Covers Topics 15-21
Fri., Nov. 20	Topic 23 – E/Z configurations	
Mon., Nov. 23	Topic 24 – R/S configurations	
Wed., Nov. 25	Topic 25 – MO theory of s-block	
Fri., Nov. 27	Topic 26 – MO Theory of p-block	Quiz 7 (Topics 22-24)
Mon., Nov. 30	Topic 27 – Behaviour of Gases	
Wed., Dec. 2	Topic 28 – Review of Stoichiometry	
Fri., Dec. 4	Topic 29 – Introduction to Equilibrium	Quiz 8 (Topics 26-28)
Mon., Dec. 7	Topic 30 – Quantitative Equilibrium in solution	
Tues., Dec. 8	Topic 31 – Quantitative Equilibrium in the gas phase	Follows Monday's class schedule
Wed., Dec 9	Mastery Exam 4	Covers Topics 22-31 Follows Wednesday's class schedule

Experience Points

Experience points (XPs) are acquired by practicing the material, preparing/studying for exams and engaging with the chemistry content. Essentially, these points equate to “homework” grades. There are three activities that contribute to the 10% assigned to experience points:

Daily Homework Questions

Daily homework questions are meant to keep students on task, avoid procrastination and check their understanding of the course material directly following each lecture. Submitted through Microsoft forms, these questions become available at 12pm after class and are due at 8am before the next lecture class. Each Mastery Exam Unit has its own daily homework questions worth 1% each (for a total of 4%). The grade given on each Mastery Exam Unit's homework question depends on the percent of correct answers complete based on the following table:

Min. % of correctly answered questions	Grade on Mastery Exam Unit Homework Questions
25%	0.33 out of 1
50%	0.67 out of 1
75%	1 out of 1
100%	1.125 out of 1 (i.e. bonus 0.125 mark per unit!)

In-class Quizzes

To prepare students for exam like questions and the format used in exams, there will be eight (8) 10-minute in-class quizzes throughout the term, held at the very beginning of class. Each Mastery Exam Unit has 2 quizzes associated with it worth a total of 1% each (for a total of 4%). The highest graded quiz from each Mastery Exam Unit will count towards the final grade. For example, the higher of Quiz 1 and 2 will count towards the Mastery Exam 1 Unit grade of 1%. The in-class quiz schedule is as follows:

Mastery Exam Unit	Quiz Number	Topics Covered	Date
1	1	1-3	Fri., Sept 18
	2	4-6	Fri., Sept 25
2	3	8-10	Fri., Oct 9
	4	11-12	Fri., Oct 16
3	5	15-17	Fri., Oct 30
	6	18-20	Fri., Nov 6
4	7	22-24	Fri., Nov 27
	8	26-28	Fri., Dec 4

Unlike exams, the quiz style is “think-pair-share.” In this style of quiz, students get 5 minutes to work on the question(s) alone (exam style) then they pair-up with the folks sitting near them to discuss the questions for the remaining 5 minutes. Each quiz timeslot (8:35am, 9:35am and 10:35am) will have a totally different quiz, and within each timeslot there will be different versions. In addition, **one quiz question per quiz set will be re-used on the associated Mastery Exam.**

Beyond the Classroom Reflective Assignments

Beyond the Classroom Reflective Assignments can be found on the “CHEM1011 & CHEM1021 – Concepts in Chemistry I – Lecture – 2026/2027 Fall” Brightspace Course Site and are submitted via MS Forms. These assignments are an opportunity for students to reflect on their learning, and how they learn, outside of the classroom.

Students are graded for completing the assignments on time. As these assignments are largely reflective in nature, there is often no “right” or “wrong” answer. **Students are expected to complete a minimum of 2 out of 3 assignments (worth 1 marks each) for a total of 2% of the course grade.** Students who complete all 3 assignments will be awarded a 0.5 mark bonus to their final numerical grade.

The Beyond the Classroom Reflective Assignment themes and due dates are listed below. When one assignment closes, the next one opens.

Assignment	Theme	Due Date (at 11:30pm)
1	Chemistry and You	Fri., Sept. 25
2	Out of Your Element	Fri., Oct. 30
3	Academic Underdog	Fri., Nov. 27

Mastery Points

Mastery points are acquired through Mastery Exams, which will be evaluating the learning objectives of the course. To be successful in subsequent courses (for example CHEM1012/1022 and beyond) it is critical that students have mastered the learning objectives in CHEM1011/1021. Mastery points will be awarded based on the final overall grade for each Mastery Exam. Together, the combination of all four (4) Mastery Exam grades is worth 60% of the course overall at **15% per exam**.

Mastery Exams are graded based on skills mastery. The skills that we will be examining can be found in the course textbook at the beginning of each topic. Skills will be graded on a pass/fail basis, meaning part marks on questions are not awarded (i.e. the skill graded as fully mastered or not). The “Additional Exercises” for each Topic serve as a sort of “Exam Bank” of Questions that we will pull from when creating exams.

Mastery Exams

The details of each individual Mastery Exam are as follows:

- Mastery Exams, including the main content covered on each, will occur on the following dates:

Mastery Exam 1: Friday, October 2 covering Topics 1-7

Mastery Exam 2: Wednesday, October 21 covering Topics 8-14*

Mastery Exam 3: Wednesday, November 18 covering Topics 15-21*

Mastery Exam 4: Wednesday, December 9 covering Topics 22-31*

*on these exams there will be 1 question from ***any previously tested Topic***.

Therefore, Mastery Exams 2, 3 and 4 have a “cumulative” element to them.

- Each Mastery Exam will occur during regular class time in your assigned lecture classroom.
- Each Mastery Exam will last **45 minutes**. This allows time for students to enter the room and get seated and exams to be passed out at the beginning, and time for exams to be collected at the end of the exams.
- Each Mastery Exam is worth **15% of the final grade**.
- The intention of each Mastery Exam is for students to demonstrate mastery of the skills they have been developing over the classes leading up to the exam. Students will be provided with a copy of the Periodic Table, as well as any relevant constants, formulae or data tables. A copy of what is provided on the exam can be found on the “CHEM1011 & CHEM1021 – Concepts in Chemistry I – Lecture – 2026/2027 Fall” Brightspace Course Site to help you prepare for each exam. In addition, students will need to **bring their own approved non-programmable scientific calculator**. **Be sure to have an approved calculator as all other calculators are prohibited.** See the “Required Lecture Materials” section of this syllabus for information on approved calculators. Besides a calculator and writing utensils, no other materials are permitted in the exam. This includes, but is not limited to the course textbook, course notes, extra paper, “cheat” sheets and pocket periodic tables.
- Mastery Exams are **individual assessments**, therefore no collaboration with other students (i.e. cheating) is allowed.

Make-up Mastery Exams

There are no make-up exams for Mastery Exams. If you miss a Mastery Exam you will be assigned a grade of 0 for that Mastery Exam, but you will have the opportunity to replace this 0 grade by completing the Mulligan exam during the exam period (see the next section for details).

Mulligan Exam

During the exam period (December 11-20, 2026) we will be offering a “**Mulligan Exam**”.

A “mulligan” is a sports term for a second chance to perform a task, especially after a mistake or miss was made during the first chance, that recognizes that the mistake or miss is probably not representative of the player’s ability. This term is used commonly in golf.

In this spirit, in Chem 1011/1021 the Mulligan Exam is an **optional exam opportunity whereby students will be able to retake any number of Mastery Exams**. This means, depending on your grade on the original Mastery Exams, you can choose to “redo” 1, 2, 3 or 4 Mastery Exams – or you can choose to opt-out entirely and take the grade you got on your original exams as the final grade.

Note: *The Mulligan Exam will be different but cover the same materials as the original Mastery Exam.*

The date and time of the Mulligan Exam will be determined in October based on the full Dalhousie Exam Schedule so there are no conflicts with other exams from other classes. The Mulligan Exam will last 3 hours. This means that if you redo all 4 Mastery Exams you will have ~45 minutes per exam, but if you redo less than 4 Mastery Exams you will have more time per exam.

Due to the Mulligan Exam, any student who did poorly on a Mastery exam, or missed a Mastery exam entirely, will have a second chance to improve their grade on that exam. **If the Mulligan Exam grade is not an improvement, the original exam grade will remain unchanged.** This means there is no penalty for taking a Mulligan exam. **Note:** Students cannot “mix and match” questions from the original Mastery exam and the Mulligan exam. The full grade on the original Mastery Exam will be compared to the full grade on the Mulligan exam to determine which grade is higher and used in final grade calculations.

More information about the details of the Mulligan Exam will be posted to the “CHEM1011 & CHEM1021 – Concepts in Chemistry I – Lecture – 2026/2027 Fall” Brightspace Course Site near the end of the semester.

Section 3: Laboratory Component

**Location:**

Basement of the Chemistry Building
Room 100-108P

Fall 2026 Lab Schedule:

The lab schedule is posted on Brightspace and in the syllabus.

Labs Begin:

Online Asynchronous Lab Work: September 8, 2026

In-Person Lab Work: October 5, 2026

Contacting Your Lab Instructor:

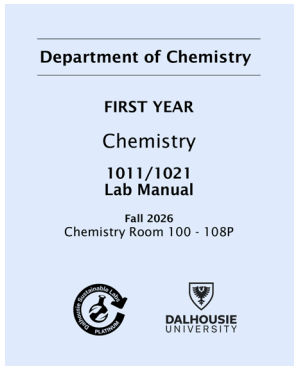
The laboratory instructor team communicates with students through one common email address, chemlab@dal.ca. Please include your lab section in the email subject line.

Laboratory Instructors

Please note that differing laboratory sections have differing laboratory instructors. Refer to the sections written on the right to determine who your laboratory instructor is. Please note that lab sections/instructors may change, and for the most up-to-date list of instructors and sections, please refer to the Lab Brightspace Page.

Instructor Photo	Instructor Name	Lab Sections
	Dr. Jennifer MacDonald (pronouns: she/her) Lab Coordinator	B09, B10, B19, B20, B23, B59
	Clarke Brown (pronouns: he/his)	B07, B08, B17, B18, B21, B22, B53, B54, B57, B58
	Peter Fox (pronouns: he/his)	B01, B02, B03, B04, B05, B06, B15, B16, B51, B52, B55, B56
	Ryan Snitynsky (pronouns: he/his)	B11, B12, B13, B14

Required Materials for Lab

Lab Material Photo	Lab Material Description
	Lab Manual Available at the Dalhousie Bookstore (~\$25.99 + tax)
	Hardcover Lab Notebook Available at the Dalhousie Bookstore (~\$10.99 + tax)
	Safety Glasses Must be stamped with standards numbers of: CSA-Z94-3 (Class 1A) Available at the Dalhousie Bookstore Safety Glasses (~\$8.99 + tax)
	Knee-length Lab Coat (100% cotton) Available at the Dalhousie Bookstore (~\$29.99 + tax)

Safety Module and Lab Map

As a chemistry student, part of your training involves understanding the hazards that are present within a chemistry lab and learning the measures that must be taken in order to maximize your safety and the safety of your peers. As part of your lab assignment, you are required to complete a Chemistry Safety Module and Lab Map. The Safety Module and Lab Map Content is found in the “CHEM1011 & CHEM1021 – Concepts in Chemistry I – Lab – 2026 Fall” Brightspace Course Site in the content area “Laboratory Orientation and Safety”. Successful completion of the Safety Module Assignment includes reading the General Safety Statement on Brightspace and obtaining a perfect mark (i.e., 100%, 25 out of 25) on the five Safety Module Quizzes (located in CAPA on the First Year Chemistry Labs – 2026 Fall course space). Successful completion of the Lab Map Assignment includes completing the virtual laboratory tour on Brightspace, submitting your responses on CAPA, and obtaining a perfect mark (i.e. 100%, 35 out of 35). After completion of these requirements, you should feel comfortable working in a chemistry lab and have the tools you need to promote a safe lab environment.

Completion of the Safety Module and Lab Map, which is evaluated based on the submission of the CAPA Assignments, is **worth 1% of the overall final grade**. To receive a grade of 1 out of 1 on the Safety Module and Lab Map Assignment, the Safety Module and Lab Map Assessments must be submitted via CAPA by **11:30 pm local Halifax time on Sunday, October 4, 2026**.

Any Safety Module and Lab Map Assessments completed after the due date will not be graded, and partially complete Safety Module and Lab Map Assessments will receive a grade of zero (0).

No deadline extensions will be given on the Safety Module and Lab Map Assessments and “Student Declaration of Absence” forms cannot be applied to the Safety Module and Lab Map Assessments, as the assessments are open and available to students for more than 3 days.

Students who do not successfully complete this requirement will not be allowed to perform experiments in any Dalhousie undergraduate chemistry lab. Experiments missed due to incomplete Safety Module and Lab Map Assessments do not qualify for a make-up lab session.

WHMIS Course Module

WHMIS, the Workplace Hazardous Materials Information System, is a global harmonized system used to classify and label hazards and regulate handling procedures within industry and academic fields, especially those in science and engineering. Regardless of your chosen field of study within science and engineering beyond first year, being familiar with WHMIS is a significant asset. As such, it is required that ALL students in first year chemistry enrol in and complete the Dalhousie University WHMIS Safety course provided by the Dalhousie Environmental Health and Safety Office offered through the Faculty of Open Learning and Career Development. As this course is substantial in nature, **completion of the course will be worth 2.5% of your final grade.** Instructions for how to register for the course are found on the Lab Brightspace Site under the content area "Laboratory Orientation and Safety." Please ensure that you register and complete the WHMIS course well in advance of the deadline (**11:30 pm local Halifax time on Sunday, October 4, 2026**).

Only the Dalhousie WHMIS Safety Course Completion will be accepted for credit in Chem 1011/1021.

Any WHMIS Course Modules completed after the due date will not be graded for credit and partially complete WHMIS Course Modules will receive a grade of zero (0).

No deadline extensions will be given on the WHMIS Course Module and "Student Declaration of Absence" forms cannot be applied to the WHMIS Course Module, as the Module is open and available to students for more than 3 days.

NOTE: Please ensure that you retain a copy of your WHMIS Completion Certificate. If you take any further chemistry courses at Dalhousie or work in a chemistry research lab, you will be required to provide your proof of WHMIS training.

Students who do not successfully complete this requirement will not be allowed to perform experiments in any Dalhousie undergraduate chemistry lab. Experiments missed due to incomplete WHMIS Training do not qualify for a make-up lab session.

Mastering Purpose, Conclusion, and Observations Module

Students often have questions about how to write complete purpose, observation, and conclusion statements. This module explains how to write each type of statement and includes practice activities with example answers. The module is available in Brightspace under **CHEM1011 & CHEM1021 – Concepts in Chemistry I – Lab – 2026 Fall – Laboratory Orientation and Safety.**

Completion of the module is **worth 0.5% of your overall final grade** and is due by **11:30 pm local Halifax time on Sunday, October 4, 2026.** Your grade is based on the CAPA Assignment submission.

You will have **13 tries per question.** The first **3 tries** are worth full marks. Each try after the first 3 tries will reduce the question's value by **10%.**

No deadline extensions will be given because the module is available for more than three days.

Laboratory Format, Expectations and Policies

You will complete seven lab sessions this term. Some experiments run for 1.5 hours while others run for 3 hours. Please be sure to check your experiment start time in the course syllabus as it may differ from the start time noted on your DalOnline class schedule. Before leaving your first lab period, make sure that you understand your Lab Schedule.

Experimental work must be completed during the scheduled time for your particular section. Attendance is mandatory.

Online Experiments:**Suggested Pathway Through a Lab Module**

Each lab module contains:

1. Experimental background and theory
2. Pre-Lab assignment support, including practice questions and a link to CAPA Site
3. Experiment content, including data collection and recording observations
4. Post-Lab Report

When beginning your experiment, you should work through the experimental background/theory sections of the module and the Pre-Lab assignment support/practice questions. Once you have completed these sections of the module and feel comfortable with the content, launch your CAPA Pre-lab Assignment and work through this assignment before the deadline.

After you have completed the Pre-Lab Assignment, you should move on to the experimental section of the laboratory module. Within this section of the module, you will be guided through the laboratory procedure and observe the experiment as it is being carried out through video. You will be able to record your observations in real-time in the module, this will become your experimental raw data set. Your experimental raw data set will be summarized at the end of the experimental section as a "Raw Data Summary" page. It is strongly recommended that you print (there is a print button available on the raw data slides) or write down a copy of your data to ensure a secondary back-up of your work. This raw data set will be required to complete your Post-Lab report.

For online experiments, Raw Data Sheets will not be collected, and your notebook entries will not be checked. However, you may want to use a notebook and Raw Data Sheet to practice the process you will use during in-person experiments. Keeping a complete record of your online experiment can also help you review your work later.

Post-Lab Reports for online experiments will be submitted at your first in-person laboratory session.

In-Person Experiments:**Before Your Experiment**

You are expected to read the experiment, prepare your hard-covered notebook, and complete the pre-lab questions on CAPA.

A hard-covered notebook is required for this course. The notebook is a permanent record of your work; therefore, all entries must be written in ink and only on the right-hand page. Prior to each lab period, your notebook must be prepared with:

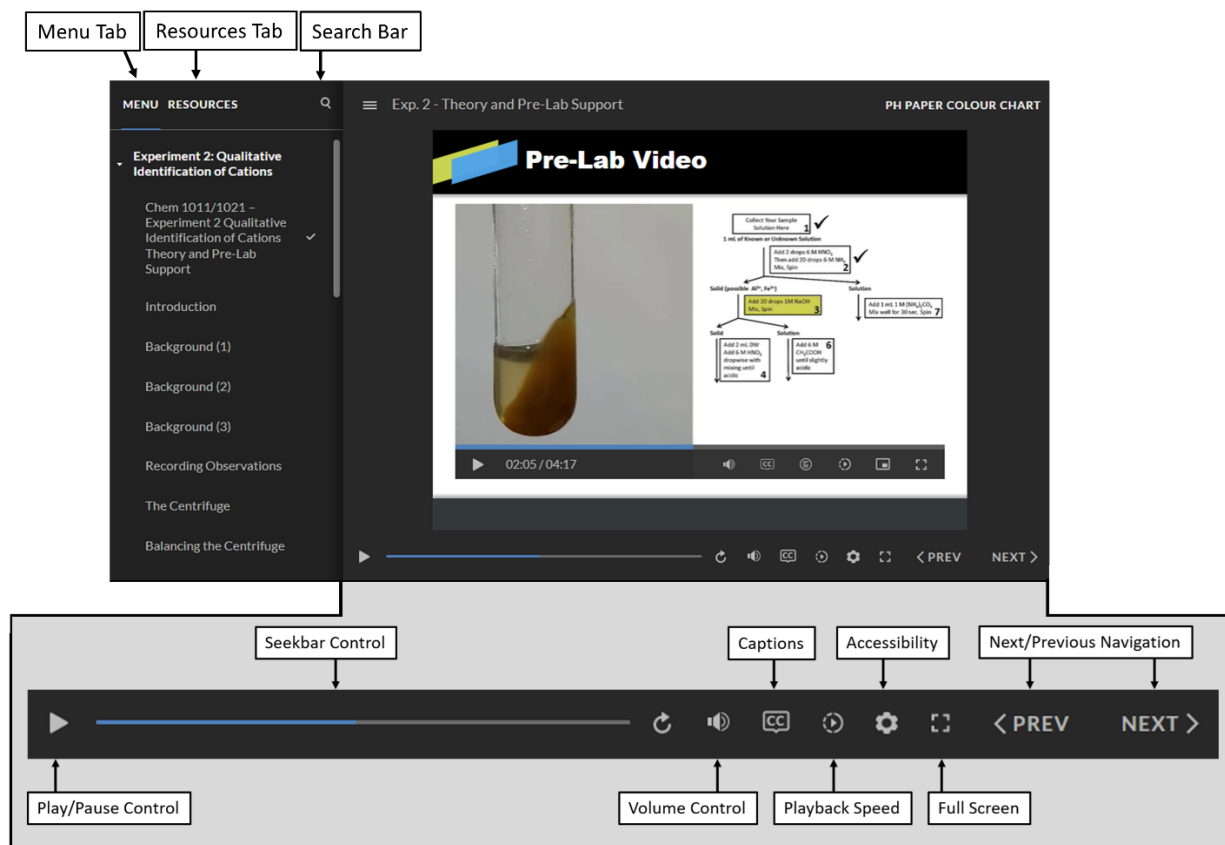
- Date
- Title of Experiment
- Data Tables and Observations from Raw Data Sheet. *If the experiment does not have a Raw Data Sheet, please use the Grade Sheet in your lab manual as a guide to prepare your lab notebook.*

Theory and Pre-Lab Support Module Structure

In addition to the content in your lab manual, there are optional Theory and Pre-Lab Support Modules on Brightspace that you may wish to use as you prepare for your CAPA Pre-Lab Assignments and your upcoming experiments. These modules contain a detailed walkthrough of theory, experimental videos, and interactive practice problems (with solutions!).

The lab module player features a menu, resources tab, and many more navigation controls to customize your experience. The Menu at the left allows you to navigate to any point in the module by slide title. The Resources tab at the left contains useful links and downloadable files (printable audio transcripts, data tables, and links to the CAPA Pre-Lab assignment site).

An image of a Theory and Pre-Lab Support module can be found below, pointing out the menu and resources tabs, as well as the search bar, play/pause, seekbar, volume, captions, playback speed, accessibility, full screen, and previous/next navigation controls.



During Your Experiment

Each laboratory period begins with a lab lecture and/or video. New techniques are demonstrated, and safety considerations discussed. During this time, a teaching assistant will check and initial your notebook for the above entries and collect laboratory reports that are due that day.

During the experiment, **all data must be recorded in ink** in your notebook. Erasers or liquid paper are not permitted. Simply cross out errors, which are part of the scientific process.

After completing the experiment, you must have the data in your notebook initialed again by the instructor or teaching assistant. If the experiment requires the submission of a Raw Data Sheet, your instructor or teaching assistant will initial this sheet at the same time as your data in your notebook. **Only the initialed data from the Raw Data Sheet may be used to complete your post-lab report.** Ensure your glassware and lab bench are left clean and neat.

After Your Experiment

There will be a Post-Lab report (the Grade Sheet found in the lab manual). More information about the Post-Lab report weighting scheme and due dates can be found in the Post-Lab Report Weighting Scheme and Post-Lab Due Dates sections of the syllabus. Written reports **must be completed in dark pen (blue or black ink)**.

Laboratory Schedule

The exact laboratory schedule will be different for each student depending on their laboratory section. Please find **your lab section** and highlight the row to find **your laboratory experiment schedule**. Online lab sessions are asynchronous and in-person lab sessions are synchronous.

Sect.	Day	Exp. 1	Exp. 2	Exp. 3	Exp. 4	Exp. 5	Exp. 6	Exp. 7
B01	Mon.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 5 1:30-3pm	Oct. 19 1:30-4:30pm	Nov. 2 1:30-3pm	Nov. 16 1:30-4:30pm	Nov. 30 1:30-3pm
B02	Mon.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 5 3-4:30pm	Oct. 26 1:30-4:30pm	Nov. 23 3-4:30pm	Nov. 23 1:30-4:30pm	Nov. 30 3-4:30pm
B03	Mon.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 5 2:30-4pm	Oct. 19 2:30-5:30pm	Nov. 2 2:30-4pm	Nov. 16 2:30-5:30pm	Nov. 30 2:30-4pm
B04	Mon.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 5 4-5:30pm	Oct. 26 2:30-5:30pm	Nov. 2 4-5:30pm	Nov. 23 2:30-5:30pm	Nov. 30 4-5:30pm
B05	Tues.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 6 8:30-10am	Oct. 20 8:30-11:30am	Nov. 3 8:30-10am	Nov. 17 8:30-11:30am	Dec. 1 8:30-10am
B06	Tues.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 6 10-11:30am	Oct. 27 8:30-11:30am	Nov. 3 10-11:30am	Nov. 24 8:30-11:30am	Dec. 1 10-11:30am
B07	Tues.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 6 2:30-4pm	Oct. 20 2:30-5:30pm	Nov. 3 2:30-4pm	Nov. 17 2:30-5:30pm	Dec. 1 2:30-4pm
B08	Tues.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 6 4-5:30pm	Oct. 27 2:30-5:30pm	Nov. 3 4-5:30pm	Nov. 24 2:30-5:30pm	Dec. 1 4-5:30pm
B09	Wed.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 7 10:30am-12pm	Oct. 21 10:30am-1:30pm	Nov. 4 10:30am-12pm	Nov. 18 10:30am-1:30pm	Dec. 2 10:30am-12pm
B10	Wed.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 7 12-1:30pm	Oct. 28 10:30am-1:30pm	Nov. 4 12-1:30pm	Nov. 25 10:30am-1:30pm	Dec. 2 12-1:30pm
B11	Wed.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 7 1:30-3pm	Oct. 21 1:30-4:30pm	Nov. 4 1:30-3pm	Nov. 18 1:30-4:30pm	Dec. 2 1:30-3pm
B12	Wed.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 7 3-4:30pm	Oct. 28 1:30-4:30pm	Nov. 4 3-4:30pm	Nov. 25 1:30-4:30pm	Dec. 2 3-4:30pm
B13	Wed.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 7 2:30-4pm	Oct. 21 2:30-5:30pm	Nov. 4 2:30-4pm	Nov. 18 2:30-5:30pm	Dec. 2 2:30-4pm
B14	Wed.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 7 4-5:30pm	Oct. 28 2:30-5:30pm	Nov. 4 4-5:30pm	Nov. 25 2:30-5:30pm	Dec. 2 4-5:30pm
B15	Thurs.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 8 8:30-10am	Oct. 22 8:30-11:30am	Nov. 5 8:30-10am	Nov. 19 8:30-11:30am	Dec. 3 8:30-10am
B16	Thurs.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 8 10-11:30am	Oct. 29 8:30-11:30am	Nov. 5 10-11:30am	Nov. 26 8:30-11:30am	Dec. 3 10-11:30am
B17	Thurs.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 8 2:30-4pm	Oct. 22 2:30-5:30pm	Nov. 5 2:30-4pm	Nov. 19 2:30-5:30pm	Dec. 3 2:30-4pm
B18	Thurs.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 8 4-5:30pm	Oct. 29 2:30-5:30pm	Nov. 5 4-5:30pm	Nov. 26 2:30-5:30pm	Dec. 3 4-5:30pm
B19	Fri.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 9 1:30-3pm	Oct. 23 1:30-4:30pm	Nov. 6 1:30-3pm	Nov. 20 1:30-4:30pm	Dec. 4 1:30-3pm
B20	Fri.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 9 3-4:30pm	Oct. 30 1:30-4:30pm	Nov. 6 3-4:30pm	Nov. 27 1:30-4:30pm	Dec. 4 3-4:30pm
B21	Fri.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 9 10:30am-12pm	Oct. 23 10:30am-1:30pm	Nov. 6 10:30am-12pm	Nov. 20 10:30am-1:30pm	Dec. 4 10:30am-12pm
B22	Fri.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 9 12-1:30pm	Oct. 30 10:30am-1:30pm	Nov. 6 12-1:30pm	Nov. 27 10:30am-1:30pm	Dec. 4 12-1:30pm
B23	Fri.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 9 4-5:30pm	Oct. 30 2:30-5:30pm	Nov. 6 4-5:30pm	Nov. 27 2:30-5:30pm	Dec. 4 4-5:30pm
B51	Tues.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 6 10-11:30am	Oct. 20 10am-1pm	Nov. 3 10-11:30am	Nov. 17 10am-1pm	Dec. 1 10-11:30am
B52	Tues.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 6 11:30am-1pm	Oct. 27 10am-1pm	Nov. 3 11:30am-1pm	Nov. 24 10am-1pm	Dec. 1 11:30am-1pm
B53	Tues.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 6 1-2:30pm	Oct. 20 1-4pm	Nov. 3 1-2:30pm	Nov. 17 1-4pm	Dec. 1 1-2:30pm
B54	Tues.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 6 2:30-4pm	Oct. 27 1-4pm	Nov. 3 2:30-4pm	Nov. 24 1-4pm	Dec. 1 2:30-4pm
B55	Thurs.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 8 10-11:30am	Oct. 22 10am-1pm	Nov. 5 10-11:30am	Nov. 19 10am-1pm	Dec. 3 10-11:30am
B56	Thurs.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 8 11:30am-1pm	Oct. 29 10am-1pm	Nov. 5 11:30am-1pm	Nov. 26 10am-1pm	Dec. 3 11:30am-1pm
B57	Thurs.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 8 1-2:30pm	Oct. 22 1-4pm	Nov. 5 1-2:30pm	Nov. 19 1-4pm	Dec. 3 1-2:30pm
B58	Thurs.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 8 2:30-4pm	Oct. 29 1-4pm	Nov. 5 2:30-4pm	Nov. 26 1-4pm	Dec. 3 2:30-4pm
B59	Fri.	Sept. 14-18 Online	Sept. 21-25 Online	Oct. 9 2:30-4pm	Oct. 23 2:30-5:30pm	Nov. 6 2:30-4pm	Nov. 20 2:30-5:30pm	Dec. 4 2:30-4pm

Pre-Lab CAPA Assignments

All Pre-Lab Assignments will be hosted on the online learning platform, CAPA in the First Year Chemistry Labs – 2026 Fall course space, which can be accessed by going to <https://capa.chemistry.dal.ca>. Please refer to the instructions in the syllabus when logging into CAPA for the first time.

Pre-Lab Assignments will open at least 1 week before the Pre-Lab Assignment due date.

The online pre-lab assignments have been developed to help you prepare for the lab. Pre-Labs are **individual assessments**. Students may seek support through the online Theory and Pre-Lab Support Modules, Concept Room, Resource Centre, and discussion boards from TAs/Instructors, the laboratory coordinator, and classmates. However, all Pre-Lab work submitted for grading must be completed individually. This includes, but not limited to, data analysis (such as calculations and graphs) and discussions (such as answers to questions and conclusions). The Theory and Pre-Lab Support Module for each experiment contains content to support you in completing the Pre-Lab assignment. We encourage you to start early to ensure you are able to get help with the questions that cause you difficulty. You will be given **13 tries at each question**. The first 3 tries will be for full marks. For each subsequent try 10% of the questions point value will be deducted. **Each Pre-Lab is worth equal weight for a total of 5%.**

Online Labs: CAPA Pre-Labs assignment for Experiments 1 and 2 are due by **11:30 pm local Halifax time on Sunday, October 4, 2026**.

In-Person Labs: CAPA pre-labs for in-person labs are due **5 minutes before your regularly scheduled lab**. For example, if a student is in lab section B01 and has a lab session beginning on Oct. 5, 2026 at 1:30 PM, their Pre-Lab would be due on Oct. 5, 2026 at 1:25 PM. **If for any reason you have made alternate arrangements for your lab session, your Pre-Lab deadline will remain the same, 5 minutes before your regularly scheduled lab.** No deadline extensions will be given on CAPA Pre-Lab Assignments as these assessments are open and available to students for more than 3 days.

Preparedness

When working in the lab it is important and expected that you arrive prepared for your session to ensure that you are a supportive and safe member of your lab group. For each Laboratory Experiment, students will be graded on their preparedness for the experiment. Preparedness includes completing the Pre-Lab Assignment on CAPA as well as arriving to the lab with their laboratory notebook prepared for in-person experiments. Student preparedness is **worth 1% of the overall lab grade**. A student who is unprepared 3 or more times during term will not be awarded this grade.

Participation: Data Collection and Raw Data Submission

Chemistry is first and foremost an experimental science. Your time in the laboratory is an important part of your chemical education. As such, participation is worth 3% of the overall lab grade. Participation is assessed via submission of your experimental data set through raw data sheets or in-lab report submissions for experiments that do not have a raw data sheet. **Each experiment's participation grade is worth equal weight for a total of 3%.**

Lab Station Clean-Up

Developing good lab housekeeping habits reduces the occurrence of lab accidents while also improving efficiency and quality of lab work completed in shared lab spaces. It is our shared responsibility (students and teaching team) to ensure the laboratory is a safe working environment. As such, lab station clean-up is worth 1% of the overall lab grade. The lab station clean-up grade will be assessed at the end of all 3-hour lab sessions. To be awarded this grade, your locker should contain only the required glassware and your bench space is left clean. **Each lab station clean-up grade is worth equal weight for a total of 1%.**

Post-Lab Due Dates

A detailed table of all Post-Lab due dates is to follow. Please find **your lab section** and highlight the row to find **your Post-Lab due date schedule**.

Sect.	Exp. 1	Exp. 2	Exp. 3	Exp. 4	Exp. 5	Exp. 6	Exp. 7
B01	Oct. 5, 1:30pm	Oct. 5, 1:30pm	Oct. 19, 1:30pm	Nov. 2, 1:30pm	Nov. 16, 1:30pm	Nov. 30, 1:30pm	Nov. 30, 3:00pm
B02	Oct. 5, 3:00pm	Oct. 5, 3:00pm	Oct. 26, 1:30pm	Nov. 2, 3:00pm	Nov. 23, 1:30pm	Nov. 30, 3:00pm	Nov. 30, 4:30pm
B03	Oct. 5, 2:30pm	Oct. 5, 2:30pm	Oct. 19, 2:30pm	Nov. 2, 2:30pm	Nov. 16, 2:30pm	Nov. 30, 2:30pm	Nov. 30, 4:00pm
B04	Oct. 5, 4:00pm	Oct. 5, 4:00pm	Oct. 26, 2:30pm	Nov. 2, 4:00pm	Nov. 23, 2:30pm	Nov. 30, 4:00pm	Nov. 30, 5:30pm
B05	Oct. 6, 8:30am	Oct. 6, 8:30am	Oct. 20, 8:30am	Nov. 3, 8:30am	Nov. 17, 8:30am	Dec. 1, 8:30am	Dec. 1, 10:00am
B06	Oct. 6, 10:00am	Oct. 6, 10:00am	Oct. 27, 8:30am	Nov. 3, 10:00am	Nov. 24, 8:30am	Dec. 1, 10:00am	Dec. 1, 11:30am
B07	Oct. 6, 2:30pm	Oct. 6, 2:30pm	Oct. 20, 2:30pm	Nov. 3, 2:30pm	Nov. 17, 2:30pm	Dec. 1, 2:30pm	Dec. 1, 4:00pm
B08	Oct. 6, 4:00pm	Oct. 6, 4:00pm	Oct. 27, 2:30pm	Nov. 3, 4:00pm	Nov. 24, 2:30pm	Dec. 1, 4:00pm	Dec. 1, 5:30pm
B09	Oct. 7, 10:30am	Oct. 7, 10:30am	Oct. 21, 10:30am	Nov. 4, 10:30am	Nov. 18, 10:30am	Dec. 2, 10:30am	Dec. 2, 12:00pm
B10	Oct. 7, 12:00pm	Oct. 7, 12:00pm	Oct. 28, 10:30am	Nov. 4, 12:00pm	Nov. 25, 10:30am	Dec. 2, 12:00pm	Dec. 2, 1:30pm
B11	Oct. 7, 1:30pm	Oct. 7, 1:30pm	Oct. 21, 1:30pm	Nov. 4, 1:30pm	Nov. 18, 1:30pm	Dec. 2, 1:30pm	Dec. 2, 3:00pm
B12	Oct. 7, 3:00pm	Oct. 7, 3:00pm	Oct. 28, 1:30pm	Nov. 4, 3:00pm	Nov. 25, 1:30pm	Dec. 2, 3:00pm	Dec. 2, 4:30pm
B13	Oct. 7, 2:30pm	Oct. 7, 2:30pm	Oct. 21, 2:30pm	Nov. 4, 2:30pm	Nov. 18, 2:30pm	Dec. 2, 2:30pm	Dec. 2, 4:00pm
B14	Oct. 7, 4:00pm	Oct. 7, 4:00pm	Oct. 28, 2:30pm	Nov. 4, 4:00pm	Nov. 25, 2:30pm	Dec. 2, 4:00pm	Dec. 2, 5:30pm
B15	Oct. 8, 8:30am	Oct. 8, 8:30am	Oct. 22, 8:30am	Nov. 5, 8:30am	Nov. 19, 8:30am	Dec. 3, 8:30am	Dec. 3, 10:00am
B16	Oct. 8, 10:00am	Oct. 8, 10:00am	Oct. 29, 8:30am	Nov. 5, 10:00am	Nov. 26, 8:30am	Dec. 3, 10:00am	Dec. 3, 11:30am
B17	Oct. 8, 2:30pm	Oct. 8, 2:30pm	Oct. 22, 2:30pm	Nov. 5, 2:30pm	Nov. 19, 2:30pm	Dec. 3, 2:30pm	Dec. 3, 4:00pm
B18	Oct. 8, 4:00pm	Oct. 8, 4:00pm	Oct. 29, 2:30pm	Nov. 5, 4:00pm	Nov. 26, 2:30pm	Dec. 3, 4:00pm	Dec. 3, 5:30pm
B19	Oct. 9, 1:30pm	Oct. 9, 1:30pm	Oct. 23, 1:30pm	Nov. 6, 1:30pm	Nov. 20, 1:30pm	Dec. 4, 1:30pm	Dec. 4, 3:00pm
B20	Oct. 9, 3:00pm	Oct. 9, 3:00pm	Oct. 30, 1:30pm	Nov. 6, 3:00pm	Nov. 27, 1:30pm	Dec. 4, 3:00pm	Dec. 4, 4:30pm
B21	Oct. 9, 10:30am	Oct. 9, 10:30am	Oct. 23, 10:30am	Nov. 6, 10:30am	Nov. 20, 10:30am	Dec. 4, 10:30am	Dec. 4, 12:00pm
B22	Oct. 9, 12:00pm	Oct. 9, 12:00pm	Oct. 30, 10:30am	Nov. 6, 12:00pm	Nov. 27, 10:30am	Dec. 4, 12:00pm	Dec. 4, 1:30pm
B23	Oct. 9, 4:00pm	Oct. 9, 4:00pm	Oct. 30, 2:30pm	Nov. 6, 4:00pm	Nov. 27, 2:30pm	Dec. 4, 4:00pm	Dec. 4, 5:30pm
B51	Oct. 6, 10:00am	Oct. 6, 10:00am	Oct. 20, 10:00am	Nov. 3, 10:00am	Nov. 17, 10am	Dec. 1, 10:00am	Dec. 1, 11:30am
B52	Oct. 6, 11:30am	Oct. 6, 11:30am	Oct. 27, 10:00am	Nov. 3, 11:30am	Nov. 24, 10am	Dec. 1, 11:30am	Dec. 1, 1:00pm
B53	Oct. 6, 1:00pm	Oct. 6, 1:00pm	Oct. 20, 1:00pm	Nov. 3, 1:00pm	Nov. 17, 1pm	Dec. 1, 1:00pm	Dec. 1, 2:30pm
B54	Oct. 6, 2:30pm	Oct. 6, 2:30pm	Oct. 27, 1:00pm	Nov. 3, 2:30pm	Nov. 24, 1pm	Dec. 1, 2:30pm	Dec. 1, 4:00pm
B55	Oct. 8, 10:00am	Oct. 8, 10:00am	Oct. 22, 10:00am	Nov. 5, 10:00am	Nov. 19, 10am	Dec. 3, 10:00am	Dec. 3, 11:30am
B56	Oct. 8, 11:30am	Oct. 8, 11:30am	Oct. 29, 10:00am	Nov. 5, 11:30am	Nov. 26, 10am	Dec. 3, 11:30am	Dec. 3, 1:00pm
B57	Oct. 8, 1:00pm	Oct. 8, 1:00pm	Oct. 22, 1:00pm	Nov. 5, 1:00pm	Nov. 19, 1pm	Dec. 3, 1:00pm	Dec. 3, 2:30pm
B58	Oct. 8, 2:30pm	Oct. 8, 2:30pm	Oct. 29, 1:00pm	Nov. 5, 2:30pm	Nov. 26, 1pm	Dec. 3, 2:30pm	Dec. 3, 4:00pm
B59	Oct. 9, 2:30pm	Oct. 9, 2:30pm	Oct. 30, 2:30pm	Nov. 6, 2:30pm	Nov. 20, 2:30pm	Dec. 4, 2:30pm	Dec. 4, 4:00pm

Post-Lab Report Weighting Scheme

Each Post-Lab Report contributes to your lab grade according to the following weighting scheme:

Experiment 1:	1.5%
Experiment 2:	2.5%
Experiment 3:	1.5%
Experiment 4:	2.5%
Experiment 5:	2.0%
Experiment 6:	3.0%
Experiment 7:	2.0%
Total:	15%

Time Management

Besides arriving to the laboratory experiments on time, we expect students to manage their time outside of lab accordingly such that their Post-Lab reports are submitted on time. Therefore, effective time management is **worth 1% of the overall lab grade**. We do realize that occasionally a student may submit a Post-Lab report late; therefore, students with a maximum of 1 late report will still receive the time management grade. Post-Lab reports submitted after the scheduled due dates will be accepted, but marked late, **if and only if** the Post-Lab report is submitted **BEFORE** the Late Work Submission Deadline. Late work is not accepted after the Late Work Submission Deadline as marked reports and feedback will be returned to students.

Missed Labs and Make-up Experiments

Online Labs: All online experiments will be available for students to complete after the Post-Lab Due Dates and until the Late Work Submission Deadlines. You do not need to make arrangements for a make-up lab for online experiments.

In-Person Labs: Please note that due to our high course enrollment, you are only guaranteed that your timetabled lab session will be available to you for your experiments as outlined in the syllabus. If you miss a lab, **you must email your lab instructor (chemlab@dal.ca) within 24 hours** of the missed lab to schedule a make-up experiment. Failure to do so may result in a grade of 0 for the missed lab. Make-up experiments are scheduled based on available seats in the laboratory, as a result, make-up lab session availability cannot be guaranteed.

Your email must include:

Subject line:	Body of your message:
1. course number	1. your name
2. lab section (e.g. B01)	2. student ID (B0#)
	3. course number and lab section
	4. experiment(s) missed
	5. your availability to attend lab sections leading up to the last opportunity for make-up labs (see the Lab Schedule and Last Opportunity for Make-up Labs Schedule before providing your availability)

This process filters your message to the correct instructor automatically (based on section in the subject line) which allows us to help you faster! The lab instructor will then email you a letter of permission to do a make-up experiment at an agreed-upon time and assign a due date for your post-lab report. When you arrive to your make-up experiment you must check-in with the instructor to be assigned a temporary locker space.

A few notes about make-up experiments:

1. No student will be admitted to the lab for a make-up experiment without prior instructor permission.
2. No student will be allowed to do a make-up after posted deadlines.
3. No report will be accepted after the posted late submission deadlines.

Final Dates for Make-up Experiments and Late Work Submissions

Exp.	Last Opportunity for Make-up Lab (Group A)	Last Opportunity for Make-up Lab (Group B)	Late Work Submission Deadline (ALL Groups)
1	Online	Online	Oct. 19 before 1:30pm
2	Online	Online	Oct. 19 before 1:30pm
3	Oct. 23	Oct. 23	Nov. 2 before 1:30pm
4	Oct. 30	Nov. 6	Nov. 16 before 1:30pm
5	Nov. 20	Nov. 20	Nov. 30 before 1:30pm
6	Nov. 27	Dec. 4	Dec. 7 before 1:30pm
7	Dec. 4	Dec. 4	<i>In-lab submission only</i>

Please ensure that you know what group you are in (based on your lab section) to adhere to the above deadlines.

Group A: B01, B03, B05, B07, B09, B11, B13, B15, B17, B19, B21, B51, B53, B55, B57, B59

Group B: B02, B04, B06, B08, B10, B12, B14, B16, B18, B20, B22, B52, B54, B56, B58, B23

Laboratory Exemptions

Lab exemptions will be granted to those who have already completed the course (with a letter grade of A-F) **and** have a lab grade of 67% (20 out of 30) or better on the lab component of the course.

Lab grades for lab exemption carry forward if the student repeats the course within a 24-month period of the original start date. For example, if a student enrolls in Chem 1011/1021 in Fall 2026 and completes the course with a grade of F **and** a lab score greater than 67% (20 out of 30) the student would qualify for lab exemption in the following terms: Summer 2027, Fall 2027, and Summer 2028. After the 24-month window has passed the student will be required to retake the lab component when repeating the course.

Lab exemptions will not automatically be granted. You must contact the first year lab coordinator (chemlab@dal.ca) prior to the term add/drop date to apply for a lab exemption.

Section 4: Concept Room & Chemistry Resource Centre

The **Concept Room** is staffed by members of the First Year Chemistry Lecture team who are available to assist with lecture questions and members of the First Year Chemistry Lab team who are available to assist with lab content, CAPA Pre-Lab Assignment questions and lab reports.

The **Chemistry Resource Centre** is a study space with tables, chairs, and computers that students are welcome to use to complete their work.

The **Full Concept Room schedule** will be posted on the “CHEM1011 & CHEM1021 – Concepts in Chemistry I – Lecture – 2026/2027 Fall” Brightspace Course Site and “CHEM1011 and CHEM1021 – Concepts in Chemistry I – Lab – 2026 Fall” Brightspace course sites in the “First Year Chemistry Concept Room” content area.

Section 5: Course Content & Learning Objectives

Course Description

Credit Hours: 3

The electronic structures of atoms and molecules are used to explain the reactivity and properties of chemicals. Topics include atomic structure, bonding models, structure and shape of molecules and ions, and acid/base chemistry.

It is recommended that students have Nova Scotia grade 12 chemistry or equivalent before taking this course.

COORDINATORS: A. Crane, J. MacDonald

FORMAT: Lecture | Lab

LECTURE HOURS PER WEEK: 3

LAB HOURS PER WEEK: 3

EXCLUSIONS: Credit will be given for only one of the following combinations:

CHEM 1011.03/1012.03 or CHEM 1021.03/1022.03

Course Objectives and Goals

Our primary objective for First Year Chemistry is to offer you a comprehensive and relevant course on the fundamental concepts in chemistry. Our focus is on using problem solving techniques which are applicable and transferrable to all fields of science and engineering and are not limited to just the chemistry lens used in this course. We aim to help students build good independent study habits, time management skills, group collaborations and foster critical thinking in the sciences. By exemplifying the role of chemistry in our daily lives and in an interdisciplinary way, we hope that our students gain an appreciation for chemistry, regardless of their end academic goals.

Course Learning Outcomes

- State the name or chemical formula for common chemical species.
- Demonstrate problem solving skills in the context of chemistry.
- Draw orbitals and molecules using atomic and bonding theories.
- Predict, compare and explain properties of atoms and molecules using electronic and energetic arguments.

- Draw and name organic molecules using multiple representations including stereoisomers.
- Apply spectroscopic theories to determine chemical structure from spectra.
- Use curly arrow mechanisms to show molecular and reaction transformations.
- Demonstrate understanding of proper laboratory techniques including pipetting, titrating, spectroscopy, and separations (centrifuging), while maintaining safety standards in the context of a chemical laboratory.
- Analyze and interpret observations and data to arrive at experiment conclusions.
- Report laboratory observations and data in an organized and logical manner.

Course Content

- Topic 1 – Atomic Structure: Isotopes and Average Atomic Mass
- Topic 2 – Confirming Electronic Structure: Emission and Absorption Spectra
- Topic 3 – An Introduction to UV-visible Spectroscopy & Beer's Law
- Topic 4 – Re-examining Electronic Structure: Quantum Numbers
- Topic 5 – Applying Quantum Numbers to a One-Electron System: Atomic Orbitals
- Topic 6 – Applying Quantum Numbers to a Multi-Electron System: Electron Configurations
- Topic 7 – Effects of Electron Structure on the Periodic Trends (Part 1 – Effective Nuclear Charge and Atomic Radius)
- Topic 8 - Effects of Electron Structure on the Periodic Trends (Part 2 – Ionization Energy and Electron Affinity)
- Topic 9 – Putting Atoms Together: Ionic Bonding and Crystal Lattices
- Topic 10 – Putting Atoms Together: Covalent Bonding and Molecule
- Topic 11 – Drawing Covalent Compounds: Lewis Structures, the Octet Rule and Organic Molecules
- Topic 12 - Covalent Compounds: More Organic Compounds and Multiple Functional Groups
- Topic 13 – Confirming Organic Structure: An Introduction to Infrared (IR) Spectroscopy
- Topic 14 – When Lewis Structures “Fail”: Expanded Valence, Radicals and Resonance
- Topic 15 – Using Lewis Structures to Predict Molecular Reactivity (Lewis Acid/Base Theory)
- Topic 16 – VSEPR Theory: Using Lewis Theory to Predict Molecular Shape and Polarity
- Topic 17 – Manipulating 3D Molecules in 2D Space
- Topic 18 – Valence Bond Theory – Shape and Hybridization
- Topic 19 – Valence Bond Theory – Orbital Overlap Diagrams
- Topic 20 – Consequences of Molecular Shape: Chemical Environment and Nuclear Magnetic Resonance (NMR) Spectroscopy
- Topic 21 – Consequences of Molecular Shape: Intermolecular Forces (IMFs) and their effects on bulk samples
- Topic 22 – Consequences of Molecular Shape: Stereoisomers
- Topic 23 – Assigning the Configuration in Geometric Isomers: An Introduction to the CIP Rules
- Topic 24 – Assigning the R and S Configuration of sp² Asymmetric Carbons in Enantiomers and Diastereomers
- Topic 25 – Molecular Orbital Theory: An Introduction to Molecular Orbitals
- Topic 26 – Molecular Orbital Theory: Homonuclear Diatomics of the 2nd Row
- Topic 27 – Behaviour of Gases
- Topic 28 – A Review of Chemical Reactions and Stoichiometry
- Topic 29 – Chemical Equilibria: More than Just a Balancing Act
- Topic 30 – Solving Quantitative Equilibrium Problems in Solution
- Topic 31 - Solving Quantitative Equilibrium Problems in the Gas Phase

Laboratory Experiments

- Exp. 1 – Using Indicators to Distinguish Acidic, Basic, and Neutral Solutions
- Exp. 2 – Qualitative Identification of the Cations
- Exp. 3 – Relative Solubilities & Limiting Reagents
- Exp. 4 – Laboratory Techniques
- Exp. 5 – Organic Qualitative Analysis
- Exp. 6 – Acid/Base Titrations
- Exp. 7 – Bonding Theories and Molecular Models

Section 6: Course Syllabus Appendix

This course is governed by the academic rules and regulations set forth in the University Calendar and by Senate

Please refer to the online Course Syllabus Appendix (<https://dalu.sharepoint.com/sites/learn-teach/SitePages/syllabus-appendix.aspx>) for the most up to date information on:

- Student Supports
 - Academic supports
 - Holistic supports
- University Statements
 - Code of Student Conduct
 - Culture of Respect – Diversity and Inclusion
 - Culture of Respect – Conduct in the Classroom
 - University Closures and Cancellations
 - Class Recordings
 - Student Use of Course Materials
 - Fair Dealings
- University Policies and Guidelines
 - Academic
 - Respect and Safety
 - Environmental Health and Safety