



Chemistry 1020: Interpretive Chemistry (4 credits)
Spring 2023 Course Syllabus

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Prerequisite

- You must meet at least one of the prerequisites [listed on the official course schedule](#).

Student Help Hours (Online Office Hours)

- Monday** 7:00-7:50 pm
- Tuesday** 9:00-9:50 am
- Wednesday** 1:00-1:50 pm
- Thursday** 10:00-10:50 am
- Access **Student Help Hours** via Zoom:
 - <https://minnstate.zoom.us/j/935816719> Password: **Provided within D2L**
 - Zoom Meeting ID: **935-816-719** Password: **Provided within D2L**
- Meet the Professor** and **Learn to Navigate the Course** sessions will be held in conjunction with **Student Help Hours** during the **first week** of class.

Chemistry Lab Managers

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Faculty Support

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MATERIALS REQUIRED

- **eText**
 - **Introduction to Chemistry**, LibreTexts OER, Lance S. Lund, Vicki MacMurdo, et al
 - eText available at <https://bit.ly/LibreChem>. It's **FREE!**
 - Also accessed through our D2L course under **Materials > Content > eText**.
 - A paper copy of the text may be purchased through the **Downloads** tab at **Introduction to Chemistry**. *Please Note: This text is subject to revision throughout the semester.*
- **Windows, Mac, or Chromebook Computer with an Open USB (or USB-C) Port**
 - Data collection for several lab activities will be performed using a USB temperature probe found in the online lab kit (a USB-C to USB adapter is included).
 - Students using an iPad or Android tablet in place of a computer for labs will need to swap out the USB temperature probe in their lab kit for a wireless (Bluetooth) temperature probe. [Complete this form](#) to initiate the exchange process.
 - iPads and Android tablets are **not** compatible with the **Respondus** remote proctoring solution used by ARCC and for this course (see p.7 for more details)
 - Loaner computers are available for ARCC students by [completing this request online](#).
 - Several lab activities also require the use of **Vernier Graphical Analysis**, which is available through our D2L course or your respective app store. *Vernier Graphical Analysis* for older operating systems is available through our D2L course.
- **Microsoft Word**
 - ARCC students have a **FREE** subscription to **Microsoft 365** (formerly Office 365) that includes *Word*, *Excel*, and *PowerPoint*.
 - To access your **Microsoft 365** subscription on Windows and macOS, [click here](#).
 - ChromeOS, Android, iOS, and iPadOS users may download *Word* (or the entire **Microsoft 365** suite) from their respective app store for FREE.
 - Login to *Word* or other **Microsoft 365** app with your StarID@go.minnstate.edu and StarID password credentials.
- **Scientific Calculator**
 - Smartphone, tablet, smartwatch, computer, or web apps may **not** be used on exams, nor may other aids be used in place of a calculator.



LAB MATERIALS REQUIRED

- **CHEM 1020 Online Lab Kit**: Purchase for \$1 through the [ARCC Campus Store](#) during the pandemic (may be charged **up to \$150** for failure to return the lab kit)
- **Additional Student-Provided Materials**: Listed in Lab H1 (available on D2L)
- **Online Lab Activities & Manual**: Delivered via D2L

SUPPLEMENTAL INSTRUCTION

This semester, you will have a unique opportunity to participate in a new program called Supplemental Instruction (SI). The SI lead for this class is **Dominic Santa Lucia**, or **Dom**, who took this very same class as an online student during the Spring 2022 semester and crushed it.

Dom will host one or two one-hour sessions a week throughout the semester. He will post 1-2 days in advance of each session, announcing the time, topic, and location (mostly via Zoom). While your participation cannot guarantee success, other colleges that have implemented Supplemental Instruction have found that students participating in the program are more likely to be successful in the course.

Chem 1020 students that participated last semester were much more likely to finish the course with a higher grade than those students that did not participate. Please help us continue the success of the Supplemental Instruction program by participating if you can!

TUTORING SERVICES

- **ARCC Tutoring:** Link to schedule posted through our D2L course and at the Academic Support Center on each campus.
- **Online Tutoring:** Click the **Tutor.com** widget on the right-hand panel within this D2L course. ARCC students are provided with 15 hours of free access per academic year. 24/7 access is available 361 days a year.
- See <https://www.anokaramsey.edu/resources/tutoring-services> for more information.

COURSE OUTCOMES

Upon completion of the course, the student should be able to:

- understand and explain basic principles of chemistry using chemical vocabulary.
- name and write chemical formulas for simple compounds.
- complete and balance chemical equations.
- set up and solve elementary chemical problems.
- perform basic laboratory procedures.
- correlate lecture topics with laboratory procedures and practical applications.

LABORATORY

This is a laboratory-based course and laboratory activities must be completed to receive a passing grade in the course. A list of **laboratory activities** is found under the **Materials > Content** menu of this course in D2L.

Lab Activity H1 must be completed with a minimum score of 80% or higher before the remaining lab activities are visible since it involves an introduction to safety procedures and the online laboratory kit. Beginning with Lab Activity H2, **you must view a prelab video** specific to that lab activity and **pass a prelab quiz with a minimum score of 2/3** to gain access to the lab report and dropbox for that lab activity.

You are **initially** provided with **up to three attempts** for each prelab quiz. You may use all three attempts to better your score, even if you passed the prelab quiz on an earlier attempt. If you do **not** pass the prelab quiz in three attempts, a 2nd Chance prelab quiz with three additional attempts will become available in D2L. If you do not pass either the initial prelab quiz or 2nd Chance prelab quiz with a minimum score of 2/3 in six aggregate attempts, you will not be able to complete the given lab activity. In all cases, the **last attempt** of the **initial** prelab quiz is recorded into the gradebook, even if it is not the highest score of all attempts.

A missing lab activity counts as a ZERO. However, the lowest laboratory score for the semester will be dropped, as will the lowest prelab quiz score. **Two no-penalty extensions** up to a maximum of **one week** are available for **lab activities**. Additional extensions for lab activities will be subject to a 10% deduction per day late for up to a maximum of one week. **Credit for lab activities is not available if more than one week late.**

Since this is a laboratory-based course, students that **fail to complete***

- **three** lab activities will have their course grade reduced by **one full letter grade**.
- **four** lab activities will have their course grade reduced by **two full letter grades**.
- **five or more lab activities will fail the course and/or will have an LDA** assigned.**

*It should go without saying that “to complete” a lab activity means to substantially complete the lab activity before submitting for a grade, with all observations, data, and questions completed to the best of your ability. **An empty or mostly incomplete lab report submission counts as a missing lab.**

**LDA = Last Day of Attendance. Having an LDA assigned will remove you from the course and an “F” grade will be assigned. Students still have the option to withdraw and receive a “W” grade as long as they withdraw before the Last Day to Withdraw.

While one lab score will be dropped in the final grade, a missing lab activity is a missing lab activity. In other words, failure to complete five lab activities counts as missing five lab activities even though the lab score for one lab activity will be dropped at the end of the semester. For students taking this course pass/fail or pass/no credit, the threshold for passing the course is a C-equivalent final grade or above. Therefore, a student with a C-equivalent grade that has **three missing labs** will fail the course.

READING ASSIGNMENTS AND PRACTICE PROBLEMS

Exam	Chapter	Title	Read	End-of-Chapter Exercises	D2L Practice and Quizzes
1	1	<i>What is Chemistry?</i>	All sections	All	Syllabus Quiz
	2	<i>Measurements</i>	All sections	Enough to achieve proficiency.	*Practice Set 2A, 2B, 2C Chapter 2 Homework Quiz
	3	<i>Matter and Energy</i>	All sections	Enough to achieve proficiency.	* Practice Set 3A, 3B Chapter 3 Homework Quiz
	4	<i>Atoms and Elements</i>	All sections	Enough to achieve proficiency.	* Practice Set 4A, 4B, 4C Element Quiz Chapter 4 Homework Quiz
2	5	<i>Chemical Nomenclature</i>	All sections	Enough to achieve proficiency.	* Practice Set 5A, 5B, 5C Chapter 5 Homework Quiz Nomenclature Quiz
	6	<i>Chemical Composition</i>	All sections	Enough to achieve proficiency.	* Practice Set 6A, 6B, 6C Chapter 6 Homework Quiz
	7	<i>Chemical Reactions</i>	All sections	Enough to achieve proficiency.	* Practice Set 7A, 7B, 7C Chapter 7 Homework Quiz
3	8	<i>Stoichiometry</i>	All sections	Enough to achieve proficiency.	* Practice Set 8A, 8B, 8C Chapter 8 Homework Quiz
	9	<i>Gases</i>	All sections	Enough to achieve proficiency.	* Practice Set 9A, 9B Chapter 9 Homework Quiz
	10	<i>Electrons in Atoms</i>	Skip 10.7	Enough to achieve proficiency.	* Practice Set 10A, 10B Chapter 10 Homework Quiz
	11	<i>Chemical Bonding</i>	All sections	Enough to achieve proficiency.	* Practice Set 11A, 11B Chapter 11 Homework Quiz Lab H6
4	12	<i>Organic Chemistry</i>	All sections	Enough to achieve proficiency.	* Practice Set 12A, 12B, 12C Chapter 12 Homework Quiz
	13	<i>States of Matter</i>	All sections	Enough to achieve proficiency.	* Practice Set 13A, 13B, 13C Chapter 13 Homework Quiz
	14	<i>Solutions</i>	All sections	Enough to achieve proficiency.	* Practice Set 14A, 14B, 14C Chapter 14 Homework Quiz
Final	15	<i>Acids and Bases</i>	All sections	Enough to achieve proficiency.	* Practice Set 15A, 15B Chapter 15 Homework Quiz
		The Final Exam is cumulative, so a review of ALL course material is appropriate.			

The end-of-chapter exercises and practice problems provide a broader view of what to expect on the midterm and final exams, as will the reading assignments and other course content provided on D2L. Homework quizzes provide a narrower view of what to expect on your midterm and final exams – they are intended to be quizzes.

*As an incentive to practice, the **Practice Sets** available through D2L denoted with the letters A, B, or C may be completed for extra credit (see p. 6 for details).

ASSIGNMENTS AND QUIZZES

A complete list of **assignments** may be found under the **Materials > Content** heading of our D2L course. Several sections of your text will also be accompanied by specific topic videos, ✓QuickCheck worksheets, and ✓QuickCheck solution videos. It is helpful if these items are completed prior to attempting the **Practice Sets, End-of-Chapter Exercises, and Homework Quizzes** for each chapter.

Homework Quizzes will be assigned for each chapter through D2L and are worth 5 points each. There are no late penalties for Homework Quizzes, as long as they are completed within 24-72 hours of the due date (24 hours if an exam is due the following day; 72 hours for all other homework quizzes). You will be provided up to 3 attempts for each Homework Quiz. **Two no-penalty extensions** up to a maximum of **one week** are available for **Homework Quizzes**. The lowest Homework Quiz score of the semester will be dropped.

There will be **three “special” Quizzes** during the semester. One quiz will be on the syllabus and introductory materials. The second will be on selected elements and chemical symbols. The third will be on chemical nomenclature. The special quizzes are worth 10 points each, with availability and due dates shown on the course calendar. Extensions for the special quizzes may be granted at the discretion of the professor.

EXTRA CREDIT

You may earn **up to 10 points extra credit**. Only those opportunities described below will be considered for extra credit.

0.25 extra credit points. Awarded for each **Practice Set** completed with a score of **80% or above**. The Practice Sets are available through D2L and denoted with the letters A, B, or C. You will be provided up to 5 attempts for each Practice Set. There are no late penalties for Practice Sets, as long as they are completed by the due date for the **Homework Quiz** for that chapter.

0.25 extra credit points. Awarded to the **first** person that identifies each of these types of errors in the D2L portion of this course or in the eText:

- typo, spelling (also grammatical, if it affects interpretation, such as missing words)
- wrong answers on assignments, quizzes, exams, etc.
- Note: discussion boards, emails, other informal writing excluded

1 extra credit point. Awarded for installing and trying the **Respondus** proctoring solution on a practice quiz before the first exam. The quiz must be completed by the announced due date.

2 extra credit points. Awarded for an extra credit lab opportunity that may be announced in D2L near the end of the semester. It must be completed by the announced due date.

PARTICIPATION, DISCUSSION BOARDS, AND EMAIL

A maximum of 20 points will be awarded over the course of the semester through your **Online Participation** in various course activities.

- **View materials posted under the Materials > Content menu of this D2L course.**
 - Your score will be based on the percentage of items viewed out of 80% of the available items to that point in the course.
 - This category will account for 10 of the 20 participation points in the course.
 - Example: If there were 200 items available through Exam 2 in the course, 80% of this amount is 160 items. If 120 of these items were viewed, this is 75% of 160 and you would receive 75% of the points available for this category or 7.5 points.
- **Read posts under the Communications > Discussions menu of this D2L course to remain informed.**
 - Your score will be based on the percentage of posts viewed out of 80% of the posts made to that point in the course.
 - This category will account for 5 of the 10 participation points in the course.
 - Example: If there were 300 posts made through Exam 3 in the course, 80% of this amount is 240 posts. If 216 of these posts were viewed, this is 90% of 240 and you would receive 90% of the points available for this category or 4.5 points.
- **Post to the D2L discussion boards *and* participate in online office hours.**
 - Examples of qualifying posts:
 - providing tips on learning strategies or completing lab activities
 - posting questions about problems sets, exercises, or lab activities (do **not** post questions on quizzes or exams until the due date has passed)
 - **correctly** answering questions posted by your peers
 - sharing recent chemistry in the news (avoid religious or political issues)
 - A simple post such as “thank you”, “I agree” is not a qualifying post. To qualify, it should require some thought or effort.
 - 1 point will be awarded for each qualifying post made and 1 point will be awarded for each time you participate in online office hours.
 - Attending a **Meet the Professor** and **Learn to Navigate the Course** session via **Zoom** during the first week of class counts as attending an online office hour.
 - This category is capped at 5 points and will account for 5 of the 10 participation points in the course.
 - You must make **at least one qualifying post** and **visit the online office hours at least one time** during the semester to earn the maximum number of points in this category.

When should I send the professor an email and when should I post to the discussion boards?

The **discussion boards are preferred for most forms of communication and inquiry** in this course. It is also **your responsibility to keep up with the Discussion Boards**. You may not realize it, but if you have a question about something in the course, there are likely several others that have the same question but just haven't asked. Most content questions fall into this category. It is requested that discussion board postings are written in a manner that avoids inflaming issues you may be experiencing.

Reserve email for issues that require private communication between the professor and student. Examples of this might be grades, death in the family, a problem you have with a classmate or the professor, or issues that may be inflammatory if posted to the discussion boards. In many cases, your peers will reply faster on the discussion boards than the professor replies by email. **Emails sent to the professor *must be* from your ARCC-assigned (StarID@go.minnstate.edu) email account to confirm your identity. Private data will not be shared with unverified email accounts.**

CONDUCT

I believe in conducting my course with mutual respect amongst all of us. Please bring issues related to the course to the professor's attention in a manner that avoids inflaming the issue any further. Inflamed issues are often the result of misunderstanding.

Students are responsible for all information and assignments given in the course. Skipping assignments and/or waiting until the last minute to complete assignments usually results in poor or failing grades. Contact the professor in advance if you know you will have an extended absence from access to course materials.

Problem students may be removed from the course and may not return until meeting with the Dean of Student Life and meeting the guidelines set forth in the [Student Conduct Code](#).

ACCOMMODATIONS FOR STUDENTS WITH DOCUMENTED DISABILITIES

Students requiring accommodation for a disability should make an appointment during the first week of class to meet with the professor to ensure the accommodations may be made. Disabilities must be documented through the Office of Disability Services at 763.433.1350.

KEEPING TRACK OF YOUR PROGRESS IN THIS COURSE

You may use the table below to keep track of your scores. To determine where you stand in the course, divide the total of your points earned by the total number of points possible. Then multiply by 100. This will give you a percentage, which you can use to determine your letter grade.

Item	Points Earned	Points Possible	Item	Points Earned	Points Possible
PreLab H2		3	HW Quiz 2		5
PreLab H3		3	HW Quiz 3		5
PreLab H4		3	HW Quiz 4		5
PreLab H5		3	HW Quiz 5		5
PreLab H10		3	HW Quiz 6		5
PreLab H11		3	HW Quiz 7		5
PreLab H12		3	HW Quiz 8		5
PreLab H6		3	HW Quiz 9		5
PreLab H17		3	HW Quiz 10		5
PreLab H20		3	HW Quiz 11		5
PreLab H13		3	HW Quiz 12		5
PreLab H14		3	HW Quiz 13		5
			HW Quiz 14		5
Lab H1		10	HW Quiz 15		5
Lab H2		10			
Lab H3		10	Syllabus Quiz		10
Lab H4		10	Element Quiz		10
Lab H5		10	Nomenclature Q		10
Lab H10		10			
Lab H11		10	Participation		20
Lab H12		10	Extra Credit		0
Lab H6		10			
Lab H17		10	Exam 1		100
Lab H20		10	Exam 2		100
Lab H13		10	Exam 3		100
Lab H14		10	Exam 4		100
Lab H25		10	Final Exam		100
Total		163*	Total		615*
Grand Total		778*			

*Please Note:

- Lowest Midterm Exam score replaced with Final Exam score (if Final Exam score is better).
- In addition, the Final Exam score will also count as the Final Exam score.
- Lowest prelab quiz score will be dropped.
- Lowest lab score will be dropped.
- Lowest Homework Quiz score will be dropped.

GRADES

Your final grade will be based on a total point system using the following letter grades:

- A** 90.0 % and above
- B** 80.0 - 89.9 %
- C** 70.0 - 79.9 %
- D** 60.0 - 69.9 %
- F** below 60.0 %

If you registered for the course Pass/Fail:

- P** 70.0% and above
- F** below 70.0%

If you registered for the course Pass/No Credit:

- P** 70.0% and above
- NC** below 70.0%

Here is the breakdown of points, by category:

1. Laboratory (Including Prelab Quizzes)	163 points
2. Quizzes /Participation	115 points
3. Midterm Exam scores	400 points
4. <u>Final Exam</u>	100 points
Total	778 points

Calculating percentages are always a part of a chemistry course, which means you should always be able to calculate your own grade and know exactly where you stand at any point in time. In general,

$$\text{Percentage} = \frac{\text{part}}{\text{whole}} \times 100, \text{ so } \text{Grade \%} = \frac{\text{total points earned}}{\text{total points possible}} \times 100$$

If you are unable to calculate your own grade in a chemistry class, you probably don't deserve the grade you desire.



ACADEMIC HONESTY

It is expected that all work in this course be completed in an honest manner. Rules of student conduct are outlined in the [Student Handbook](#) and on the [college website](#). Cheating is a serious issue. It includes use of unauthorized materials or resources during exams or assignments and will result in a score of zero for the exam or assignment in question. Cheating may also result in a failing grade for the course and referral to the Dean of Student Life.

SUCCEEDING IN THIS COURSE

One of the questions I am often asked by current and prospective students: **What does it take to succeed in this course?** The last page of this syllabus gives you some idea of the amount of **study time** you should expect, but I usually find it difficult to come up with the magical answer that students are looking for, since everyone is different. There are different work ethics, natural abilities, work schedules, maturity levels, personal issues, and family lives. This said, there are a few typical profiles of students that I have found:

Students Receiving a Grade of “D” or “F” or Withdrawing from the Course:

- Uses very little of the provided D2L Content (✓ QuickChecks, Videos, Practice Sets)
- Missing Lab Activities or waits until the last minute to start the Lab Activities (so questions cannot be answered before the deadline)
- Missing or late Homework Quizzes
- Does not do the Reading Assignments
- Does not do the Practice Problem Sets
- Does not read or post to the D2L Discussion Boards
- Never attends Student Help Hours (Online Office Hours)

Students Passing the Course, but Dissatisfied with Their Grade:

- Uses some of the provided D2L Content (✓ QuickChecks, Videos, Practice Sets)
- Waits until the last minute to start the Lab Activities (so questions cannot be answered before the deadline)
- Waits until the last minute to do the Homework Quizzes
- Does some of the Reading Assignments
- Does some of the Practice Problem Sets
- Occasionally reads or posts to the D2L Discussion Boards
- Never or rarely attends Student Help Hours (Online Office Hours)

Students Passing the Course AND Satisfied with Their Grade:

- Uses all the provided D2L Content (✓ QuickChecks, Videos, Practice Sets)
- Starts and/or completes the Lab Activities early (so there is adequate time to address questions)
- Does all the Reading Assignments
- Does all the End-of-Chapter Exercises **and** Practice Sets
- Starts and/or completes Homework Quizzes early
- Reads and posts frequently to the D2L Discussion Boards
- Often attends Student Help Hours (Online Office Hours)

As a reminder, these are typical profiles. There are always exceptions. In general, the more time you put into the course, the better you will do. The less time you put in, the poorer you will do. As I often told my own sons:



“Homework is when you only do what is required of you. Studying goes above and beyond homework. It is what you do to master the material. **You will likely find yourself disappointed in the end if you have only done the homework.**”

When I first started teaching, I was mentored by a well-seasoned colleague of mine that conveyed this message to students in his classes:



“It is very important that you *discipline* yourself to become an organized, conscientious student who studies regularly (daily). Last-minute cramming for cumulative exams usually results in poorer understanding of concepts and lower exam scores. **You should view difficulty as a challenge to overcome and mediocrity as unacceptable.**”

STUDYING

Another question I often hear from both my seated and online students: **How much time should I set aside for this course?**

For a seated course, the general guidelines suggest that for each hour spent in lecture, you should spend two hours outside of class. More difficult classes such as those in math and science or those requiring more independent work may require three hours outside of class for each hour spent in lecture. Also, for each two-hour lab such as the one attached to this course, there should be one additional hour spent outside of lab.

The table below shows how much time I spend with my seated students on each chapter and the online course time total equivalents.

Chapter	Time in Class	Time Outside of Class	Online Course Equivalent Time
Intro/1	1 hour	2 to 3 hours	3 to 4 hours
2	5 hours	10 to 15 hours	15 to 20 hours
3	2 hours	4 to 6 hours	6 to 8 hours
4	3 hours	6 to 9 hours	9 to 12 hours
5	3 hours	6 to 9 hours	9 to 12 hours
6	2 hours	4 to 6 hours	6 to 8 hours
7	3 hours	6 to 9 hours	9 to 12 hours
8	3 hours	6 to 9 hours	9 to 12 hours
9	2 hours	4 to 6 hours	6 to 8 hours
10	2 hours	4 to 6 hours	6 to 8 hours
11	3 hours	6 to 9 hours	9 to 12 hours
12	5 hours	10 to 15 hours	15 to 20 hours
13	3 hours	6 to 9 hours	9 to 12 hours
14	3 hours	6 to 9 hours	9 to 12 hours
15	3 hours	6 to 9 hours	9 to 12 hours
Review	1 hour	2 to 3 hours	3 to 4 hours

Total Time Spent on Lecture Material = 132 to 176 hours

Lab	Time in Lab	Time Outside of Class	Online Course Equivalent Time
H1	2 hours	1 hour	3 hours
H2	2 hours	1 hour	3 hours
H3	2 hours	1 hour	3 hours
H4	2 hours	1 hour	3 hours
H5	2 hours	1 hour	3 hours
H10	2 hours	1 hour	3 hours
H11	2 hours	1 hour	3 hours
H12	2 hours	1 hour	3 hours
H6	2 hours	1 hour	3 hours
H17	2 hours	1 hour	3 hours
H20	2 hours	1 hour	3 hours
H13	2 hours	1 hour	3 hours
H14	2 hours	1 hour	3 hours
H25	2 hours	1 hour	3 hours

Total Time Spent on Lab Material = 42 hours

Total Course Time Commitment (Lecture and Lab) = 174 to 218 hours

This yields an **average time commitment of 11 to 14 hours per week for this course.**