

Course Syllabus



General Chemistry I

CHEM 0110 SEC 1070 and
CHEM 0410 SEC 1090

MWF 11:00 – 11:50 am
152 Chevron Science Center

Instructor: Sean Garrett-Roe, Ph.D.

email: Use the Canvas Inbox to communicate directly with me

office: Eberly 216

Directions: Eberly is “behind” Chevron. The easiest way to get there is to take Chevron elevator to 5th floor. As you walk out of the elevator, go to your left and walk outside onto the courtyard. Go across the courtyard and up the stairs that enter the middle of the next building (Eberly). You will be on the 1st floor). To your right are stairs to the 2nd floor. Go to your right and you should find my office with the number 218.

<mailto:tds53@pitt.edu> **Study Sessions - No appointment needed!**


TWF 12:00 – 1:00 pm Chevron chalkboards (10 am on Sep 19, Oct 17, Nov 21)

Individual meetings - [Use this booking page](#) 

<https://outlook.office.com/bookwithme/user/10c9d919ae1a447c8c6eb0928d635414@pitt.edu/meetingtypebookingcode=c4bbf382-530d-4b87-8d72-f7610dd500eb&anonymous&ismsaljsauthenabed&ep=mLinkFromTile> to schedule

What you need to buy

Required Textbook: *Chemistry: A Guided Inquiry Third edition* (Kendall Hunt). ISBN 979-8-3851-9687-6. Print versions will be available at the Bookstore on Fifth. This customized text is *not* available through online stores.

Textbook: [Chemistry 2e OpenStax](https://openstax.org/details/books/chemistry-2e)  <https://openstax.org/details/books/chemistry-2e> Online and pdf download **free**; if you prefer a hard copy you can purchase the text in print.

Homework system subscription ALEKS (McGraw Hill). *Inclusive access:* You can link to it directly

from the Canvas sidebar navigation.

Lab information: Available through the Canvas page of your lab recitation section, which is different from this page. (You will need to purchase **googles** and **lab coat**. See bookstore information for specifications.)

Scientific calculator You will need one for assessments and labs in addition to in-class use.

Course structure

This course has three major components,

- Whole class meetings
- Recitations
- Laboratory

Everyone attends the whole class meetings ("classes"), which are scheduled at the times listed at the top of the syllabus. If you are enrolled in **CHEM 0110**, you complete all three components of the course: class, recitation, and lab. If you are enrolled in **CHEM 0410**, you *do not* take the laboratory component of the course, but *do* attend both class and recitation.

Recitation and laboratory are scheduled together as one block of time, back-to-back, in the same room. Recitation is the first hour of the scheduled time block, and the actual lab experiment is the last three hours of the time. There are different TAs for the recitation and laboratory, and they will explain their different roles to you.

Whole class meetings

The purpose of our whole class meetings is to give you a first exploration of the ideas of the concepts in General Chemistry 1. Much of our time will be spent in working in teams engaged in Process Oriented Guided Inquiry Learning (POGIL) activities. Whole class discussion will be interspersed. Various electronic platforms (Top Hat, Gradescope, GILT) will be used to award credit for your active engagement in the classroom. Graduate and undergraduate teaching assistants are also available to help answer questions in class.

Recitation and laboratory

Recitation is an opportunity for you to ask questions and practice your chemistry skills in a smaller group (24 students) with a teaching assistant (TA). You will complete the course's assessments at the beginning of recitation, so recitation attendance is mandatory.

Laboratory is required for all CHEM 0110 enrolled students. Due to the organizational complexity, the

laboratory runs somewhat independently from the lecture. The details of the expectations of the laboratory course will be explained by the Directory of the General Chemistry Labs (Dr. Tamika Madison). The lab involves pre-lab preparation, completing the in-person lab experiment, and a lab write-up.

Grading

Grades will be calculated based on total points and will be assigned according to the tables below.

Grade	Range	>=
A	100 to	91
A-	<91 to	89
B+	<89 to	87
B	<87 to	81
B-	<81 to	79
C+	<79 to	77
C	<77 to	71
C-	<71 to	69
D+	<69 to	67
D	<67 to	61
D-	<61 to	59
F	<59	

Scores for each category will be posted on Canvas in [Grades](https://canvas.pitt.edu/courses/216394/grades) (<https://canvas.pitt.edu/courses/216394/grades>) as soon as they are available. Each area is described in more detail below.

Learning Objectives and Assessments

Learning Objectives. The course has 13 sets of learning objectives, expressed at 4 levels of complexity from lower-level thinking to higher-level thinking. The learning objectives are listed in the [Modules](https://canvas.pitt.edu/courses/323982/modules/1021342) (<https://canvas.pitt.edu/courses/323982/modules/1021342>) of the course. The learning objectives are listed for four levels of content mastery, Level 1: Retrieval, Level 2: Comprehension, Level 3: Analysis, and Level 4: Knowledge Utilization.

Growth-oriented Testing. You will have assessments each week at the beginning of your recitation section. Each assessment will have four questions aligned with the learning objectives, one for each level. Each assessment item is graded on a proficient – not proficient basis. Proficient answers demonstrate mastery of the essential learning objective. Answers do not need to be perfect to be awarded proficiency! You will have up to three attempts for each learning objective set, and your highest score on any attempt will count towards your grade. The schedule of assessments is laid out in the calendar on the Canvas homepage.

The number of proficient responses is mapped to a score (out of 10 points total) as follows: Each Retrieval and Comprehension question is awarded 3 points for an attempt (proficient or not); all levels are also awarded 1 point for a proficient response.

Level	Proficient	Not proficient
Retrieval	4	3 (if attempted)
Comprehension	4	3 (if attempted)
Analysis	1	0
Knowledge Utilization	1	0

Below are the possible student scores on a single assessment attempt.

# of questions proficient* (out of 4)	Assessment score (out of 10)
4	10
3	9
2	8
1	7
0	6

*Assumes the Retrieval and Comprehension questions are attempted

MAKEUP Assessments. If you cannot attend a recitation and lab session, you must coordinate with your TAs to complete a makeup session and complete an appropriate assessment. More than 2 make up sessions per term require instructor approval. Failure to organize an appropriate make-up with your TA will result in a 0 on that assessment attempt.

REGRADES—Request a regrade through the Gradescope platform right away (< 7 days). If you feel that a assessment item was not graded accurately, you may request a re-grade. Leave a comment using the "regrade" feature and describe your rationale.

Additional Platforms and Tools

Course Home-page (Canvas)

- All materials needed for the course will be posted on Canvas.
- You can get to Canvas through “my.pitt.edu”.
- Please consult Canvas before you ask questions about the course, due dates, assignments, etc. If something is on Canvas and you ask me for the info by email, I will simply refer you back. If you have already looked and you still have a question, explain the issue.
- If something is supposed to be posted and it is missing, use the Canvas Inbox to message me, and I will get it up asap.

Homework System (ALEKS, McGraw Hill)

Homework will be assigned through the ALEKS learning system.

Access Instructions

1. Find the link to ALEKS content in the Navigation bar on the left or in the Modules tab (on left below Syllabus).
2. Follow the instructions.
3. Select your access option and continue to your assignment page.
4. You are now enrolled in the course and can access future assignments through the links on the course page.

The philosophy behind ALEKS

ALEKS is a web-based, artificially intelligent assessment and learning system. It adapts to each student's individual knowledge and learning needs, to provide a personalized learning experience. ALEKS provides you questions for each course topic until you have demonstrated that you have mastered the ideas. You can attempt each topic as many times as you need, and full explanations are provided to each problem.

ALEKS Initial Knowledge Check

Before accessing the first assignment, you will take an Initial Knowledge Check. Your performance on this knowledge check does not affect your grade. It is just a pre-assessment to determine what you already know so you don't have to "re-learn" this content. The result of your Initial Knowledge Check

is what ALEKS uses to create your own individualized learning path to work through the content of this course.

Your Path

After you complete this initial knowledge check, you will “Start your path.” ALEKS will identify the topics you are most ready to learn aligned with content introduced in class. A group of topics or “module” is assigned to be completed each week. Each ALEKS module is available at least one week prior to the due date (generally Monday at midnight). For each topic, you must answer a number of questions correctly before “learning” a topic. The exact number varies but it is about 5 or three-in-a-row. On average, you should expect to spend at least 2-3 hours to complete a single module. If you do not learn a topic by the module due date, that topic remains in your ready to learn queue. You can still learn it before the end of the course and that learning is reflected in the pie progress part of the grade.


Additional Knowledge Checks


Throughout the semester, ALEKS will assign a “Knowledge Check” While a knowledge check does not affect your grade, they must be completed before you can start the next module. These knowledge checks are designed to see how well you are retaining previous completed topics. When you correctly answer a question for a past assigned topic, ALEKS determines that you have “mastered” this topic. If additional practice on a topic is needed, the topic will appear in your ready to learn queue. It is very typical to have a few topics not mastered on a Knowledge Check.

The grade from ALEKS

The grade from ALEKS has two parts. Half of your grade is based on the number of topics completed for a module by the due date. The second half is your overall progress learning topics over the semester – your “pie progress.” When you learn a topic before the due date for that module, you receive full credit for it, regardless the number of attempts and independent of whether you answer the question correctly on a following Knowledge Check. The score for each module is based on the proportion of topics learned by the due date. The pie progress is based on the proportion of topics you have learned by the end of the course.

Technical Support


If you are having trouble registering for or accessing ALEKS, please contact ALEKS Customer Support. Live Chat, email, and phone support are available 7 days a week. Website: <https://www.aleks.com/support>.  (<https://www.aleks.com/support>) Phone: 800-258-2374 (Sun 4pm–1am; M–Th 7am–1am; F 7am–9pm). When contacting a support agent, you will receive a case number. It will be important to save this case number to assist with any additional follow up or

documentation. You can check that your computer meets the system requirements by [going here](https://www.aleks.com/support/system_requirements)  (https://www.aleks.com/support/system_requirements).

In-Class Team Participation

We will use a variety of electronic platforms (Top Hat, Gradescope, GILT) to award your team participation during class. If you miss class you will not receive credit. A buffer of 30% is added to your participation score to account for any technology issues or excused absences.

Gradescope

We will use [Gradescope](http://www.gradescope.com)  (<http://www.gradescope.com>) in the scoring and returning of assessments. When the first assessment is scored, you will receive an email explaining how to review your graded work.

Getting Help

There are many resources for additional help. Please use them.

Prof. Shepherd

- Office Hours, email, and by appointment

Teaching Assistants (TAs):

- Recitations
- Office Hours

TAs are also taking classes so please respect their requests regarding when/how to contact them.

[Departmental Tutoring: List of free and non-free tutors.](https://www.chem.pitt.edu/undergraduate/bachelor-science-chemistry/tutoring)

<https://www.chem.pitt.edu/undergraduate/bachelor-science-chemistry/tutoring>

[Study Lab](https://www.asundergrad.pitt.edu/study-lab) (<https://www.asundergrad.pitt.edu/study-lab>) provides tools and resources for you to discover the most efficient and effective ways for you to study. Experiment with strategies to customize a plan that works for you. Explore how you can study smarter, not harder, and make the most of your time at Pitt.

[Navigate Student](https://www.asundergrad.pitt.edu/schedule-tutoring-online-navigate-student) (<https://www.asundergrad.pitt.edu/schedule-tutoring-online-navigate-student>) To make an appointment with a tutor, you will need to download a mobile app called [Navigate Student](https://www.asundergrad.pitt.edu/schedule-tutoring-online-navigate-student). (<https://www.asundergrad.pitt.edu/schedule-tutoring-online-navigate-student>)

The Internet: Lectures, problems, and videos are widely available on the web.

Peers: Work with your classmates!

Respect in the classroom

I welcome everyone to my class, and everyone will be treated with respect by me, the teaching assistants, and all students. My belief in mutual respect and personal integrity guide me to help students from all backgrounds and identities feel welcomed and well-served by this course. If there are aspects of the design, instruction, or your experiences within this course that you feel are acting as barriers to your full participation or achievement, in any way, please bring them to my attention as soon as possible so that we can do better.

Additionally, the University of Pittsburgh does not tolerate any form of discrimination, harassment, or retaliation based on disability, race, color, religion, national origin, ancestry, genetic information, marital status, familial status, sex, age, sexual orientation, veteran status or gender identity or other factors as stated in the University's Title IX policy. The University is committed to taking prompt action to end a hostile environment that interferes with the University's mission. For more information about policies, procedures, and practices, visit the [Civil Rights & Title IX Compliance web page](https://www.diversity.pitt.edu/civil-rights-title-ix-compliance) (<https://www.diversity.pitt.edu/civil-rights-title-ix-compliance>).


Other policies

Letters of Recommendation: If you want a useful letter of recommendation at the end of the term, it is imperative that you go out of your way to make sure I know who you are. If you anticipate needing a letter in the future, arrange to make such a request by the end of the term—requesting a letter a year later is not as useful as I may not remember as many details then.

Religious Observances: I will make every effort to avoid conflicts between scheduled activities, such as exams, and religious observance dates. Please inform me as soon as possible if you identify such a conflict, and I will work with you to resolve it.

G-Grades: In the case extenuating personal circumstances that prevent a student from completing the assigned work, a G-Grade will be granted if the student has taken the three hourly exams with a combined passing grade on them, and has regularly attended the lectures, recitation, and the lab. To arrange for a G-grade, a contract must be negotiated and signed with the Professor prior to the due date for current course grades. The work must be completed within one year.

Academic Integrity: Students in this course will be expected to comply with the [University of Pittsburgh's Policy on Academic Integrity](https://www.provost.pitt.edu/info/ai1.html) (<https://www.provost.pitt.edu/info/ai1.html>). Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on

Academic Integrity. This may include, but is not limited to, the confiscation of the examination of any individual suspected of violating University Policy. To learn more about Academic Integrity, visit the [Academic Integrity Guide](http://pitt.libguides.com/academicintegrity/)  [\(http://pitt.libguides.com/academicintegrity/\)](http://pitt.libguides.com/academicintegrity/) for an overview of the topic.

Disability Services: If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and [Disability Resources and Services](https://www.studentaffairs.pitt.edu/drs/) [\(https://www.studentaffairs.pitt.edu/drs/\)](https://www.studentaffairs.pitt.edu/drs/) (DRS), 140 William Pitt Union, (412) 648-7890, drsrecep@pitt.edu, [\(mailto:drsrecep@pitt.edu\)](mailto:drsrecep@pitt.edu) (412) 228-5347 for P3 ASL users, as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.


Counseling and Mental Health Center

There are many helpful resources available on campus and an important part of the college experience is learning how to ask for help. If you or anyone you know experiences any academic stress, difficult life events, or feelings like anxiety or depression, we strongly encourage you to seek support. <https://www.shrs.pitt.edu/student-life/counseling-and-other-services>
[\(https://www.shrs.pitt.edu/student-life/counseling-and-other-services\)](https://www.shrs.pitt.edu/student-life/counseling-and-other-services)

Title IX and Confidentiality

If you are experiencing sexual assault, sexual harassment, domestic violence, and stalking, please report it to me and I will connect you to University resources to support you.

The University is committed to combating sexual misconduct. As a result, you should know that University faculty and staff members are required to report any instances of sexual misconduct, including harassment and sexual violence, to the University's Title IX office. What this means is that as your professor, I am required to report any incidents of sexual misconduct that are directly reported to me, or of which I am somehow made aware. After a report is made, you will be contacted by the Title IX Office for opportunities for support and options for proceeding.

You can also report directly to Office of Civil Rights and Title IX: 412-648-7860 (M-F; 8:30am-5:00pm) or via the Pitt Concern Connection at: [Make A Report](https://app.convercent.com/en-US/LandingPage/2d6327d5-9fec-ea11-a974-000d3ab9f296?_=1612800567898)  [\(https://app.convercent.com/en-US/LandingPage/2d6327d5-9fec-ea11-a974-000d3ab9f296?_=1612800567898\)](https://app.convercent.com/en-US/LandingPage/2d6327d5-9fec-ea11-a974-000d3ab9f296?_=1612800567898)

If you wish to make a confidential report, Pitt encourages you to reach out to these resources:

- The University Counseling Center: 412-648-7930 (8:30 A.M. TO 5 P.M. M-F) and 412-648-7856

(AFTER BUSINESS HOURS)

- Pittsburgh Action Against Rape (community resource): 1-866-363-7273 (24/7)

If you have an immediate safety concern, please contact the University of Pittsburgh Police, 412-624-2121

Any form of sexual harassment or violence will not be excused or tolerated at the University of Pittsburgh.

Course Summary:

Date	Details	Due
Tue Sep 2, 2025	 Review and Module 1.1 (https://canvas.pitt.edu/courses/323982/assignments/1893641)	due by 11:59pm
Fri Sep 5, 2025	 0 Prerequisite Knowledge [Mon recitations] (https://canvas.pitt.edu/courses/323982/assignments/1893537)	due by 11:59pm
Mon Sep 8, 2025	 Module 1.2 (https://canvas.pitt.edu/courses/323982/assignments/1893626)	due by 11:59pm
Mon Sep 15, 2025	 Module 1.3 (https://canvas.pitt.edu/courses/323982/assignments/1893627)	due by 11:59pm
Mon Sep 22, 2025	 Module 2.1 (https://canvas.pitt.edu/courses/323982/assignments/1893628)	due by 11:59pm
Mon Sep 29, 2025	 Module 2.2 (https://canvas.pitt.edu/courses/323982/assignments/1893629)	due by 11:59pm
Mon Oct 6, 2025	 Module 2.3 (https://canvas.pitt.edu/courses/323982/assignments/1893630)	due by 11:59pm
Mon Oct 13, 2025	 Module 3.1 (https://canvas.pitt.edu/courses/323982/assignments/1893631)	due by 11:59pm
Mon Oct 20, 2025	 Module 3.2 (https://canvas.pitt.edu/courses/323982/assignments/1893632)	due by 11:59pm

Mon Oct 27, 2025



Module 3.3

(<https://canvas.pitt.edu/courses/323982/assignments/1893633>)

due by 11:59pm

Mon Nov 3, 2025



Module 4.1

(<https://canvas.pitt.edu/courses/323982/assignments/1893634>)

due by 11:59pm

Mon Nov 10, 2025



Module 4.2

(<https://canvas.pitt.edu/courses/323982/assignments/1893635>)

due by 11:59pm

Mon Nov 17, 2025



Module 4.3

(<https://canvas.pitt.edu/courses/323982/assignments/1893636>)

due by 11:59pm

Mon Dec 1, 2025



Module 5.1-1

(<https://canvas.pitt.edu/courses/323982/assignments/1893637>)

due by 11:59pm

Mon Dec 8, 2025



Module 5.1-2

(<https://canvas.pitt.edu/courses/323982/assignments/1893638>)

due by 11:59pm

Tue Dec 9, 2025



Pie Progress Goal

(<https://canvas.pitt.edu/courses/323982/assignments/1893640>)

due by 11:59pm



0 Prerequisite Knowledge

(<https://canvas.pitt.edu/courses/323982/assignments/1893536>)



1.1a

(<https://canvas.pitt.edu/courses/323982/assignments/1893538>)



1.1b

(<https://canvas.pitt.edu/courses/323982/assignments/1893540>)



1.1c

(<https://canvas.pitt.edu/courses/323982/assignments/1893542>)



1.2a

(<https://canvas.pitt.edu/courses/323982/assignments/1893543>)



1.2b

(<https://canvas.pitt.edu/courses/323982/assignments/1893545>)



1.2c

(<https://canvas.pitt.edu/courses/323982/assignments/1893547>)



[1.3a](#)

(<https://canvas.pitt.edu/courses/323982/assignments/1893548>)



[1.3b](#)

(<https://canvas.pitt.edu/courses/323982/assignments/1893550>)



[1.3c](#)

(<https://canvas.pitt.edu/courses/323982/assignments/1893552>)



[2.1a](#)

(<https://canvas.pitt.edu/courses/323982/assignments/1893553>)



[2.1b](#)

(<https://canvas.pitt.edu/courses/323982/assignments/1893555>)



[2.1c](#)

(<https://canvas.pitt.edu/courses/323982/assignments/1893557>)



[2.2a](#)

(<https://canvas.pitt.edu/courses/323982/assignments/1893558>)



[2.2a v21 \[Friday Recitation\]](#)

(<https://canvas.pitt.edu/courses/323982/assignments/1893570>)



[2.2b](#)

(<https://canvas.pitt.edu/courses/323982/assignments/1893560>)



[2.2c](#)

(<https://canvas.pitt.edu/courses/323982/assignments/1893562>)



[2.3a](#)

(<https://canvas.pitt.edu/courses/323982/assignments/1893563>)



[2.3b](#)

(<https://canvas.pitt.edu/courses/323982/assignments/1893566>)



[2.3c](#)

(<https://canvas.pitt.edu/courses/323982/assignments/1893568>)



[3.1a](#)

<https://canvas.pitt.edu/courses/323982/assignments/1893569>

 [3.1b](#)

<https://canvas.pitt.edu/courses/323982/assignments/1893571>

 [3.1c](#)

<https://canvas.pitt.edu/courses/323982/assignments/1893573>

 [3.2a](#)

<https://canvas.pitt.edu/courses/323982/assignments/1893574>

 [3.2b](#)

<https://canvas.pitt.edu/courses/323982/assignments/1893576>

 [3.2c](#)

<https://canvas.pitt.edu/courses/323982/assignments/1893580>

 [3.3a](#)

<https://canvas.pitt.edu/courses/323982/assignments/1893581>

 [3.3b](#)

<https://canvas.pitt.edu/courses/323982/assignments/1893587>

 [3.3c](#)

<https://canvas.pitt.edu/courses/323982/assignments/1893592>

 [4.1a](#)

<https://canvas.pitt.edu/courses/323982/assignments/1893594>

 [4.1b](#)

<https://canvas.pitt.edu/courses/323982/assignments/1893598>

 [4.1c](#)

<https://canvas.pitt.edu/courses/323982/assignments/1893602>

 [4.2a](#)

<https://canvas.pitt.edu/courses/323982/assignments/1893603>

 [4.2b](#)

<https://canvas.pitt.edu/courses/323982/assignments/1893605>



4.2c

(<https://canvas.pitt.edu/courses/323982/assignments/1893607>)



4.3a

(<https://canvas.pitt.edu/courses/323982/assignments/1893609>)



4.3b

(<https://canvas.pitt.edu/courses/323982/assignments/1893615>)



5.1a

(<https://canvas.pitt.edu/courses/323982/assignments/1893618>)



ACS Exam

(<https://canvas.pitt.edu/courses/323982/assignments/1893620>)



ALEKS Total Grade

(<https://canvas.pitt.edu/courses/323982/assignments/1893621>)



Buffer

(<https://canvas.pitt.edu/courses/323982/assignments/1893639>)



Class 1.2 Chemical Formulas

(<https://canvas.pitt.edu/courses/323982/assignments/1948358>)



Class 2.2 Enthalpy Changes

(<https://canvas.pitt.edu/courses/323982/assignments/1951921>)



Class 2.2 Heat

(<https://canvas.pitt.edu/courses/323982/assignments/1949231>)



Class 2.3 Rxn Enthalpy

(<https://canvas.pitt.edu/courses/323982/assignments/1951922>)



Extra credit for >85% OMET participation

(<https://canvas.pitt.edu/courses/323982/assignments/1893622>)



Extra credit for Beginning of Term Survey

(<https://canvas.pitt.edu/courses/323982/assignments/1893623>)



**Extra credit for End of Term
survey**

(<https://canvas.pitt.edu/courses/323982/assignments/1893624>)



Laboratory

(<https://canvas.pitt.edu/courses/323982/assignments/1893625>)



TH-Totals

(<https://canvas.pitt.edu/courses/323982/assignments/1893642>)
