

General Chemistry 1A Syllabus

Dr. Wakeham Summer 2022

This course will explore the fundamental concepts, principles, and laws that describe the chemistry of solids, liquids, gases, and solutions. This course is divided into two separate instructional periods; the lecture and laboratory sections. The lecture portion is devoted to discussing concepts and practicing the related calculations, while the laboratory portion gives a chance for students to use their acquired knowledge in a lab setting. Scores for both parts will be combined for one final grade in the class, with laboratory representing about a third of the class total. You must receive a passing grade for the laboratory portion in order to pass the class.

Intended Audience:

This is a rigorous class is aimed at science majors, pre-health, and pre-medical students. In addition, it is appropriate for returning students interested in chemistry and professionals in other disciplines considering a career change to the sciences.

Prerequisites:

It is recommended that students have completed the equivalent of high school algebra. A knowledge of high school level chemistry sufficient to pass the DeAnza chemistry placement exam is also helpful, especially in the summer session in which topics move very rapidly.

Instructor:

Diane Wakeham, Ph.D. wakehamdiane@fhda.edu

<https://orcid.org/0000-0001-9893-372X>

Course Location:

Live, in person Lecture at DeAnza Campus SC1102

Live, In person Lab at De Anza Campus SC2202

Course Meeting Times and Dates Summer 2022:

Lecture 2:30p- 3:45pm MTWTh June 27- August 4.

Lab 11:30am-2:20pm MTWTh June 27- August 4.

Course Materials:

- A bound **laboratory notebook** with prenumbered, duplicate pages is **required** (sold in the bookstore or elsewhere) ISBN: 9781524937898
- **Scientific Calculator.** Logarithm and exponential functions required, NO GRAPHING CALCULATORS during exams. You are encouraged to bring your calculator each day to work through examples as they are presented. Phones will not be allowed for calculations during tests.
- **Lecture Text:** CHEMISTRY: The Molecular Nature of Matter and Change, Silberberg and Amateis, 9e. Other editions will be essentially the same and will work great to study, and problem sets will NOT be taken from the textbook so **any** edition may be used. Although there are online text options, we will NOT be using CONNECT or ALEKS this quarter. There are multiple options to obtain the text for this course, depending on your specific needs.
 - **Option 1** – Hard copy text. This can be a used copy of any edition. This is the way to go if you prefer hard copies and is a great choice if you want a quality chemistry textbook to reference in the future.
 - **Option 2** – 90 day access to an electronic text specifically for CHEM 1A. This is a great, cheap option that will give you 90 day access to an electronic text for the chapters in this class (CHEM 1A) only. At the De Anza online book store has this option with ISBN: 9781307600940
- **Safety Goggles.** Proper eye protection is required for every lab. Goggles must seal to the face with an elastic strap and be specifically for chemistry. Sometimes the department is able to provide Chem 1A students with goggles. If they do not, you must acquire them
- **Internet Access** – The laboratory manual is available online at <https://www.deanza.edu/chemistry/Chem1A.html>. The homework is on Aktiv. For much of your work, you will need to either take a picture of your work or type in a document and submit to CANVAS.
- Aktiv Chemistry Activation (ISBN: 9781955404648) for homework

Technical Requirements and Access to Online Resources:

Please check your computer specifications. This course uses the Learning Management System (LMS) called CANVAS to turn in some assignments. In order to use CANVAS, your computer will need to meet the technical specifications and follow instructions as per the [Canvas Student Guide](#). Please review our online classroom orientation resource to learn more about CANVAS.

- CANVAS 24/7 Help Support (for technical issues):
- Phone: 855-308-2758
- Email: support@canvas.com

Class Registration. We are limited by the space in the lab. The class will be filled based on the official roster provided by the De Anza Admissions and Records, including an official waitlist. Students on this waitlist are welcome to come for the first week of lecture. To maintain

their spot on a waiting list, the students must attend the lecture and the portions of the first week of lab session.

Laboratory Safety

Safety in the laboratory is our top concern. A student who disregards safety rules might be asked to leave the room, therefore earning zero points for the experimental observations. See laboratory safety guidelines link for a full list of safety rules. You do not have a lab partner and all experiments are expected to be done individually. Duplicate data on two students lab reports or falsification of data to obtain the "right" result are considered cheating. Students will not be penalized for errant data as long as a good faith effort was made to follow directions, it was collected safely and carefully, experiment was completed, and they can recognize and explain the most probable errors in the laboratory report.

Attendance

Please note that good attendance is critical. Laboratory absences usually cannot be made up due to constraints on available laboratory space (limited under covid rules), materials, and time. A missed experiment or portion thereof will earn zero points.

Lab Section Grade Weighting:

- Laboratory Report+ Discussion (9 labs x 25 pt ea) 225 pt
- Laboratory Report without Prelab/Analy (10 pt x 2) 20 pt
- Worksessions (10 pts x 8) 80 pt
- Lab Practical Final 25 pt
- Quizzes (1 x 50 pt; 2 x 75 pt) 200 pt
- Midterm Exams (2 x 150 pt) 300 pt
- Final Exam 150 pt
- TOTAL 1000 pt

Midterm Exams. This quarter, there will be a total of 2 midterm exams (150 points each). Questions will range from easy to difficult. Midterm questions will be multiple choice, short answer, or free calculation. If you are having difficulty completing the homework and worksession questions for that chapter, I urge you to get help *before* taking the test.

Midterms will be done in person during the lecture period. A reference page of equations and a periodic table will be provided for all exams.

Lecture Quizzes. Quizzes will be given between the exams to make sure everyone is keeping up with the material throughout the quarter. The quizzes are worth **75 points** each, will take about 15-20 minutes, and will be given at the beginning of lecture, so late attendance may result in missing time for the quiz. Quizzes will be multiple choice or matching conceptual questions, and may be on paper or with the quiz given in Canvas.

Lecture Final. The lecture final is worth **150 points** and will cover all chapters but will have about 60% of the questions from chapters that have not been covered on midterms. The date and time for the final exam will be Thursday August 4 during the lecture or laboratory time. Delivery is the same as the other exams. Final exam questions will be multiple choice, short answer, and multi-step calculation.

Homework.

Homework problems will be assigned and due weekly, and are not necessarily drawn from the textbook. The assignments may be worksessions distributed online, or assignments on Aktiv Chemistry.

Doing all of the suggested homework/ worksession problems is recommended and you are strongly encouraged to go beyond the listed problems and try other problems throughout the book.

Worksessions

Worksessions differ from homeworks, in that worksessions are intended to be collaborative and completed during lab time together, and homework is done individually at home. If you have completed an experiment with ample time to spare, you should then tackle the lab worksession assignment. Such assignments can be done through in person collaboration with classmates, or individually, as you prefer, but ideally is attempted during lab time with ample opportunity to ask the instructor for guidance. Each person shall turn in their own worksession even if it represents a group effort. You will be graded based on effort, or problems credibly attempted and work shown, and spot checked for correctness of answers. I will also give a solution key and strongly recommend that you check your own work. Late work may be accepted with a penalty until an answer key is posted. If you lack time to complete your worksession during lab, it becomes a homework.

Laboratory Reports

The majority of your lab grade will come from your laboratory reports. This has a specific required formatting with three general sections.

- **Prelab (done before you come to lab, duplicate pages are due as you walk into lab)**
You read through the experimental procedure and prepare for lab by writing relevant sections in your notebook.

Prelabs must include

1. Purpose of experiment (one or two sentence summary)
2. Hazards (looking up MSDS for all chemicals used)
3. Procedure, summarized briefly
4. Hypothesis (what do you think the results will be like?)
5. **Blank Tables** to hold the collected data.

- **Experimental Observations (due as you walk out of the laboratory when the experiment is finished)**

(All laboratory work/data must be handwritten DIRECTLY into the lab book (not on a printout of the lab manual) in ink. Electronic recording is not acceptable. I reserve the right (and will occasionally exercise it) to discard any lab information not written directly into the lab book; I will not accept work that does not reflect the actual observation of the student. Safety violations may result in expulsion from that laboratory experiment with no opportunity to make up the grade.

Experimentals must include

1. Raw data collected in the lab
2. Observations, a written note about what you saw or noticed while you did the lab, especially notes if something maybe went wrong.

- **Analysis and Results (due one week after lab completion)** This may be done on duplicate pages or a Canvas scan/ photo of lab manual, or in your own electronic document.

○ Analysis must include

1. Calculations and calculated data tables. You must show one example (the long way, what was multiplied by what) for each type of calculation. I understand that for multiple trials, you may enter the data straight into your calculator or even use a computer program, so I do not need to see every single calculation, but please include the result of all trials when reporting a final average.
2. Sources of Error: A paragraph discussion on probable sources of error in your results. This description should go beyond simple factors like human error and should connect an aspect of the experimental design or procedural step to any discrepancies between the experimental and expected values. That is, explain thoughtfully how an error could have affected your result by following this error through the calculation process.

- Conclusions, as appropriate. Restate the key results (only include the values or conclusions that directly relate to the experimental goal) and a sentence or two about how they were obtained.

NOTE you are NOT penalized for weird lab results. You might be penalized for not following instructions, for not properly recording your data (sig figs are a big deal), not showing enough work to convince me you actually did the experiment, or for failing to explain a weird result with a source of error.

Lab Quiz

I anticipate only one lab quiz. The final Quiz will be given during the next to last laboratory period.

A lab quiz is an individual's independent work. It may be written or practical work (ie. Make a solution...)

This class is not curved. Standard grades with +/- (0-59% F, 60-69% D, 70-79% C, 80-82.5% B-, 82.5-86.5% B, 86.5-89% B+, 90-100% A) will be assigned.

Tentative Class Schedule

WEEK OF	WEEK	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
06/26/2022	1	Lecture: Introduction to Chemistry (Ch1) Lab: CHECK-IN/ Safety Worksession 1 SigFigs	Lecture: Matter and Measurement Ch 1/2 Lab: Expt A1 MEASUREMENT Worksession 1 SigFigs	Lecture: Matter and Measurement Ch 1/2 Lab: Expt A2 NOMENCLATURE Worksession 2 Nomenclature	Lecture: Quiz 1; Atoms, Molecules, and Ions Ch 2 Lab: Expt A3 HYDRATE Worksession 2 Nomenclature

07/03/2022	2	HOLIDAY	Lecture: Stoichiometry (Ch3) Lab: Expt A3 HYDRATE Worksession 3 Stoichiometry	Lecture: Stoichiometry (Ch3) Lab: Expt A4 PRECIPITATION Worksession 3 Stoichiometry	Lecture: Midterm 1 (Ch 1-3) Lab: Expt A4 PRECIPITATION Worksessions 1-3 any topic
07/10/2022	3	Lecture: Solution Chemistry Ch4 Lab: Expt A5 TYPES OF REACTIONS Worksession 4: Solution Chemistry	Lecture: Chemical Reactions Ch4 Lab: Expt A5 TYPES OF REACTIONS Worksession 4: Solution Chemistry	Lecture: Thermochemistry Ch6 Lab: Expt A6 CONDUCTIVITY	Lecture: Quiz 2; Thermochemistry Ch6 Lab: Expt A6 CONDUCTIVITY
07/17/2022	4	Lecture: Thermochemistry Ch6 Lab: Expt A7 ACID-BASE TITRATION	Lecture: Structure of Atoms Ch 7 Lab: Expt A7 ACID-BASE TITRATION	Lecture: Structure of Atoms Ch7 Lab: Expt A8 CALORIMETRY	Lecture: Midterm 2 Ch 4, 6-7 Lab: Expt A8 CALORIMETRY
07/24/22	5	Lecture: Periodicity Ch8 Lab: Expt A9 REDOX TITRATION Worksession 8 Electron configuration	Lecture: Periodicity Ch8 Lab: Expt A9 REDOX TITRATION Worksession 8 Electron configuration	Lecture: Bonding Ch9 Lab: Expt 10 LINE SPECTRA Worksession 9 Chemical Bonds	Lecture: Quiz 3; Bonding Ch 9 Lab: Expt 11 MOLECULAR MODEL Worksession 10 Lewis Structures

07/31/22	6	Lecture: Molecular Shape Ch 10 Lab: Expt 11 MOLECULAR MODEL Worksession 10: Lewis Structures	Lecture: Molecular Shape Ch 10/11 Lab: CHECK- OUT Worksession 11: Theories of Bonding	Lecture: Hybridization Ch 11 Lab: LAB Practical Final Worksession 11: Theories of Bonding	Lecture: Final Exam
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Important deadlines:

June 29- last day to drop with a refund

July 1- last day to add classes

July 27- last day to drop without a W

Standards of Student Conduct

Each student has the right and shares the responsibility to exercise the freedom to learn. Each student is expected to conduct himself/ herself appropriately, treating the instructor and fellow classmates with respect. Pursue your coursework with integrity and honesty.

Academic misconduct is any action or attempted action that may result in creating an unfair academic advantage for you or any other members of the academic community. This misconduct includes a wide range of behaviors such as cheating, plagiarism, altering academic documents or transcripts, gaining access to materials before they are intended to be available, and helping another student to gain an unfair advantage.

As a student at De Anza College, you are encouraged to reach out to your fellow students to avoid isolation, to discuss materials, and to work together on problem sets and studying. There are limits to this collaboration. Please review the following link on [Academic Integrity](#). This clearly defines what constitutes cheating, plagiarism, and other forms of academic misconduct. Students are also responsible for informing themselves about FHDA [Code of Student Conduct](#) and its grounds for discipline.

De Anza College takes academic misconduct very seriously. Depending on the nature of the incident, the academic disciplinary sanction may vary but can result in consequences such as a failing grade for the assignment, for the course, or even probation, suspension and expulsion.

During quizzes all notes, books must be closed, and electronic devices must remain with volumes off and not visible from any student's seat. Cheating during an exam/quiz or copying/using work other than your own for a lab will result in a zero for the entire assignment, regardless of what percentage of the work is from cheating, and a report to the disciplinary

committee, who will make a note of the incident on your transcript, which then becomes visible to 4 year colleges upon reviewing your transfer application. Students observing academic dishonesty are encouraged to report it confidentially to the instructor.

You will be assigned a laboratory locker. You will be responsible for broken or missing equipment. Failure to properly check out of the lab may result in additional costs.

Student Disability Services

De Anza College has the policy to accommodate all individuals regardless of disabilities. All students who have special needs can and should receive appropriate accommodations. The DSPS office must determine or verify these accommodations before they can be offered. Students requesting accommodations are responsible for contacting DSPS before the term begins or immediately upon the start of the course. Students who are seeking support from the Disability Support Programs and Services (DSPS) should contact them directly at their office in LCW 110 or at (408) 864-8839 or via www.deanza.edu/dsps. Any students are welcome to come and speak with me privately regarding any accommodations necessary. Please plan to bring your Accommodation Memo from the DSPS. Anything discussed will be kept in strict confidence and will not influence or affect your grade.

Reasonable Accommodation for Religious Beliefs, Observations, and Practices

In compliance with the Education code, Section 92640(a), I will permit any student to complete an exam, quiz or lab, without penalty, at a time when that activity would not violate the student's religious creed, unless administering the examination at an alternate time would impose an undue hardship which could not have been reasonably avoided. Please contact me for more information, and notify me as soon as possible before a conflict to arrange an alternative.

Other Policies

I am personally committed to creating an inclusive, safe learning environment for all students. We all benefit from a diversity of shared life experience and points of view. De Anza College is committed to nondiscrimination, freedom from sexual harassment, and to securing your privacy, safety, and security. Please see [official policies](#) for further details and do not hesitate to contact me if you have a specific concern.

Below are four helpful tips that make learning much easier this quarter.

1. **Complete all homework problems and worksession problems and the textbook in-chapter reviews and practice exams/ suggested problems.** Extensive practice is the best way to ensure concept mastery. The more you practice, the more comfortable you will be, and the better you will perform on exams. Beyond the minimum of the assigned worksessions and homework, you are encouraged to do the in-chapter problems as well as end of the chapter problems that are recommended.

2. **Don't fall behind.** This summer session goes extremely fast and is demanding. In chemistry, each new topic will build on the previous, so it is essential to stay caught up with the class material. Following a lecture when you do not understand the previous material is not an effective learning method and will lead to further problems.

3. **Get help.** If you are having a difficult time with a topic, it is your responsibility to get help. There are plenty of resources for aiding in material comprehension, but it all starts with you making an effort to get this help. You are also encouraged to email me, find a study group or tutor, and come to office hours.

Resources:

Academic support can be found at the Learning Resources Division

<https://www.deanza.edu/learningresources/>.

Information about tutoring can be found at the

Math Science and Technology Resource Center <https://www.deanza.edu/studentssuccess/mstrc/>.

Additionally, you are encouraged to email me with class questions and come to office hours.

Student Learning Outcome(s):

*Identify and explain trends in the periodic table.

*Construct balanced reaction equations and illustrate principles of stoichiometry.

*Apply the first law of thermodynamics to chemical reactions.

Office Hours:

In-Person

SC1206

W

04:00 PM

05:00 PM