

Chemistry 1A Course Syllabus

General Chemistry Spring 2017

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Office Hours Tue/Thurs 8:15am-9:00am
 Tue/Thurs 10:30am-11:00am

Lecture (6896/6897)	Tue/Thurs	9:00am-10:30am	1999 Bech Hall
Lab Lecture (6896)	Tue	11:00am-12:00pm	1910 Bech Hall
Lab (6896)	Tue	12:00pm-3:00pm	1980 Bech Hall
Lab Lecture (6897)	Thurs	11:00am-12:00pm	1910 Bech Hall
Lab (6897)	Thurs	12:00pm-3:00pm	1980 Bech Hall

This syllabus is to be considered as an agreement. Continued registration in this course means that you agree to the policies and procedures outlined in this syllabus. This syllabus is intended to give the student guidance in what may be covered during the semester and will be followed as closely as possible. However, the instructor reserves the right to modify, supplement and make changes as the course needs arise.

Course Description

General principles of chemistry, including atomic theory, bonding, stoichiometry, kinetic molecular theory of gases, properties of mixtures, the periodic table, and thermochemistry. First semester of a one year program of general chemistry.

Prerequisite: Course Completion of Chem 42 OR placement on the Chemistry Diagnostic Test; AND Math 155 or higher or two years of high school algebra or equivalent.

Student Learning Outcomes:

1. Describe matter, its transformations and corresponding energy changes according to prevailing chemical theories.
2. Collect accurate data in the laboratory, and analyze with methods such as graphical and error analysis.
3. Communicate the findings of laboratory work in written laboratory reports.

Required Course Materials

1. **Textbook:** Chemistry: An Atoms-focused Approach Gilbert/Kirss/Foster. Either hardcover (ISBN 9780393124194) or loose leaf (9780393124200) textbook may be purchased either from the SRJC bookstore or other sources that may be cheaper.
2. **Chemistry Laboratory Manual** Chem 1A General Chemistry (Spring 2017) available only from SRJC bookstore.
3. **Chemistry Laboratory Notebook** capable of making duplicate copies
4. A scientific calculator HP 30s, TI-30X IIS, Casio FX-115ES or similar with exponential & logarithmic capabilities.
5. **Protective eyewear and apron** must be used in the laboratory at all times as required by California State law.

Course Content and Format

This course is designed to provide the student with an understanding of the fundamental principles of chemistry. We will build an understanding of the nature of matter and the vocabulary used to describe its components and interactions. Lecture material will be coupled with practical laboratory experience to develop the ability to analyze and communicate scientific concepts and data in both qualitative and quantitative manners. We will cover almost one chapter and perform one lab experiment per week. Each week will involve reviewing chapter materials, preparing for laboratory and writing laboratory reports.

Grading Policy

Your semester grade is based on four unit exams, laboratory reports, and the final exam.

Unit exams	500 points
Final exam	150 points
Labs	250 points
Quizzes	<u>100 points</u>
Maximum Possible	1000 points

Quizzes may be given during either lecture or lab lecture and will not be announced in advance. Each of the four unit exams will be based on materials covered in classroom, laboratory work and other assigned work. Final exam will be a comprehensive, multiple choice exam covering all topics covered during the semester.

Grades are neither bestowed upon students by instructors, nor are they an entitlement, but are entirely *earned* by students. Realize that both objective factors (such as exam scores and problem/homework scores to which numerical values can be assigned) and subjective factors (such as effort, improvement, initiative, honesty, participation, academic growth, etc., which cannot be easily tagged with a number) will be taken into account at the end of the semester when letter grade assignments are made. Borderline cases will be decided after taking into consideration such factors as: *academic growth, classroom participation, initiative, attendance, punctuality, positive attitude and individual motivation.*

Approximate Scale for Letter Grades

A (88-100%) B (77 – 87%) C (66 – 76%) D (50 – 65%) F (Below 50%)

Make-up Policy

There will be no early or late exams. All exams will be given at the scheduled time and make-up exams are not possible. Missed exams due to medical and family emergencies will be addressed on an individual basis; however, valid documentation must be provided. There are no make-up labs.

Special Needs

Any student who has a special need, such as a learning disability, physical disability, or medical alert, please inform me at your earliest convenience. Any exam scheduled through DRD (Disability Resources Department) must be scheduled at the DRD (located in Analy Village) on the Santa Rosa campus. All exam parameter forms must be submitted to me at least 5 days prior to the scheduled exam date.

Classroom Policies

All students are expected to know the Student Conduct Code (http://www.santarosa.edu/for_students/rules-regulations/scs/section1.shtml) and adhere to it in this class. Inappropriate behavior in the classroom will result in a referral to the Vice President of Student Services for disciplinary due process. Each student is expected to be considerate and polite to fellow students and instructor. Please turn off all potentially disruptive electronic devices before start of class.

Academic Integrity

Students are expected to complete all assignments, lab reports and examinations with total honesty. Although working together on these assignments is allowed, each student must do his/her own work and use his/her own words. **Copying another student's work or laboratory assignments is considered cheating and both students will receive a ZERO for the assignment.**

Please read the college policy/procedure on academic integrity at:

<http://www.boarddocs.com/ca/santarosa/Board.nsf/goto?open&id=A63TJQ77A2C8#>

<http://www.santarosa.edu/polman/3acadpro/3.11P.pdf> Students who violate the district standards of academic honesty by engaging in cheating, plagiarism, impersonation, mis-representation of facts or committing other acts of dishonesty will be dismissed and a grade of "F" will be assigned, regardless of their level of performance up to that point in the semester.

Lecture Attendance

Class attendance is a critical component of the learning process. A large amount of material will be covered in class and you are putting yourself at a disadvantage by missing class. In each class, understanding new concepts is dependent on your grasp of material covered in previous classes.

Re-evaluation of Exams

Unmodified exams may be re-evaluated, but the request for re-evaluation should not be based on frivolous reasons. In comparing your graded materials with that of other students, any difference must be confirmed by submission of both students' work for consideration. Students desiring a re-evaluation of exams must submit the document in question with written detailed rationale for any changes requested. The outcome of re-evaluation may be positive, negative, or no change at all.

Drops, Withdrawals, and Incompletes

Please be aware, it is the students' responsibility to drop any course that they do not intend to complete and accept a grade. Last date to drop this course without a 'W' is 2/5/2017, last day to drop with 'W' is 4/23/2017. The instructor may drop any student enrolled in a course that is not present or has not made prior arrangements with the instructor by the second class roll call.

Incompletes will only be assigned to students with medical or family emergencies, which will not allow the completion of the course. Incompletes will be addressed on an individual basis. The student must have a passing grade at the time of requesting an incomplete.

Emergency Preparedness

In case of natural disasters, emergencies, or fires, we may need to evacuate Bech Hall. Exit the building quickly and orderly. Do not stop for personal items. Find the nearest exit for the building and exit the building. (Bech Hall is a circular building with 2 exits.) Assemble in the quad area between the buildings of Baker, Bech, and Shuhaw until your instructor takes roll and provides you with instructions. In case of an earthquake, hide under the desk. Brace yourselves and hold on for the duration of the quake. Once the quaking has stopped, quickly exit the building. In case of a major

chemical spill or if the chemical spill alarm is triggered, leave everything and evacuate the building. In case of a fire or if the fire alarm is triggered, leave everything and evacuate the building.

Laboratory:

The laboratory experiments are an integral part of the class. Experiments will serve to reinforce concepts covered in lecture and will also be used to introduce new ideas. Additionally, they allow you to gain the experience of being an experimental scientist and allow you to see Chemistry in action. There will be a mixture of experiments, conceptual worksheets, and additional lecture topics. Note that any of these activities are also potential sources of material for exams. You should come to each lab session with **1) your lab notebook, 2) a pen to record data, and 3) your lab manual.** The section of your lab manual describing the scheduled activity must be read before lab commences and any pre-lab assignment must be completed. A student who receives an “incomplete” rating on **three or more lab activities will receive a grade of F for the entire course.** Completion of a lab activity requires attendance of the lab session and submission of a lab report. Lab reports due dates can be found in the schedule at the end of this syllabus and must be submitted to the instructor in lab before start of new experiment.

Of primary importance during the lab sessions is **safety**. For this reason, **anyone who arrives late to a lab lecture and does not hear the introductory lecture may be prohibited from performing that experiment.** Students must wear approved safety goggles at all times while in the laboratories. Goggles and aprons will be provided during lab check-in. If you arrive more than 10 minutes late to lab or do not have your pre-laboratory assignment, you will not be allowed to start the lab.

Laboratory notebook

Your laboratory experience will not be complete until all data and observations have been properly recorded and reported. Hence, an accurate record of experimental results is an indispensable part of all scientific research. In many university, government, and industrial laboratories, for example, a notebook must be maintained so that it can be admitted as evidence in court should a dispute arise as to the priority of discovery for patent rights. In such a notebook, each page is dated and all significant results are witnessed. Although, we need not take such elaborate precautions, we will also not treat the lab notebook as *a private diary* whose contents are decipherable only by you. Since the material in the notebook is subject to the scrutiny of others, it must be intelligible to anyone conversant with chemistry and in such a format as to leave no doubt of its reliability and honesty.

The following format for your lab notebook is suggested. Print the following information on the inside cover or the first page of the laboratory notebook; your name, section number, course name and laboratory number. Use black or blue **ink** to write in the lab notebook. Press firmly while writing to create a legible copy. Record all data and observations directly and immediately into the laboratory notebook. When they are written days or even hours after the experiment was conducted, they inevitably are unreliable records of what actually happened in the laboratory. Only the original, unedited record has any scientific significance.

Your name, section and the experiment number should be written at the top of each page since the copy pages occasionally get shuffled. Each day's entry should be dated even if it appears in the middle of a page. Do not record data on any surface other than your lab notebook. It is extremely important that you acquire this habit and compliance with this rule will be strictly enforced. **Mistakes should be crossed out, never erased or obliterated. Draw a single line through a mistake and write the correct entry above or beside it, but never on top of it.** All deletions should be accompanied by a brief explanation. If considerable material on a page is to be disregarded, cross it out with a large X. In

every case the deleted entry must still be legible. Record all data (masses, volumes, temperatures, times, colors, odors, evidence of physical or chemical changes, descriptions of experimental problems, etc.). Since this written record serves as the basis on which your report will be composed outside of the laboratory at a later date, it is important that a generous amount of information be recorded in the notebook. Whenever possible, organize data in table. **At the completion of an experiment, have the instructor initial your lab notebook page.**

Laboratory reports

After completion of each laboratory session, you must prepare a laboratory report. Any work that is sloppy, poorly organized or inaccurately done will be returned with a zero grade and/or instructions for a one-time rewrite. The pages of the report should be stapled in the upper left-hand corner.

The lab report will consist of any **pre-lab assignments, the completed data sheets outlined in your lab manual, examples of all your calculations, correctly annotated tables and graphics (if required), a summary and discussion of your experimental results, and the answers to the questions found at the end of the experiment.** You can type this report, but neatly handwritten work will also be accepted. Neatness, organization, completeness and accuracy of assignments are expected. A **cover page** including experiment title, your name, course name and date of experiment must be prepared. The major sections of a report must be discussed under the following heading:

Purpose: The purpose or objective of the experiment should be stated concisely in a few sentences.

Data: Numerical data should be presented in tables, with headings and clearly labeled rows and columns. Include the units on all measured quantities and detailed observations. Indicate the amount, concentration and identity of the chemicals used. Graphs should be used to illustrate the relationships between the measured quantities. Graphs must have heading, clearly labeled x- and y axis and include the units. Organization and neatness are extremely important.

Calculations: Only **one sample** of each type of calculation performed in obtaining your results needs to be presented. First show the equation to be used, and then insert a typical set of data being certain to identify from which trial it was derived. All final results expressed numerically should be rounded so as to be consistent with the rules for significant figures. Include the units in all calculation examples. Use your word processor equation editor or similar software to insert all the calculations and equations in your report. Present the numerical values corresponding to the results of assigned computations or other significant findings in tabular form. In some instances, results may be shown effectively in graphical form.

Discussion: Begin your discussion with a consideration of the results just presented in the table of results. Relate them to the objectives set forth in the experiment, and demonstrate your understanding of the concepts used in this exercise. Comment on the precision of your work. Compare your results for accuracy with literature values whenever they are available, and comment on the agreement or disagreement. If you use information obtained from other reference materials, acknowledge these sources with footnotes (author, title, page number, edition or volume, publisher, date) at the bottom of the page of your report where the borrowed information is presented. Included in this section should be a detailed and quantitative discussion of the errors likely to be found in the data and the influence these errors had on the final results. Experimental error is that error which remains in spite of the experimenter's best efforts. "Spilling samples, carelessness, misreading the buret, or errors in calculations" are not considered experimental errors. These are mistakes, and they can be eliminated by being more careful and repeating the work. Students are encouraged to consult more advanced

textbooks, specific reference books and journal articles containing material related to the experiment being studied. The open stacks and the Reserve Book Desk of the Doyle Library on the SRJC campus or the Sonoma State Library are likely sources of information.

Conclusions: You must address specifically which of the purposes of the experiment were accomplished and any failure to accomplish such purposes.

Post-laboratory questions: Answer the assigned questions and problems for the experiment and attach them to the end of the report. Attach all other sheets that may be required for a particular experiment such as charts and/or graphs.

Copies of the notebook pages: Duplicate copies of the laboratory notebook pages that were prepared during the experimental study should be placed on the back of the completed report. Ensure that all of the pages are included and arranged in the correct order. **DO NOT**, under any circumstances, attach the original pages from the laboratory notebook to the report. The laboratory notebook must be maintained as an original record of your work with all pages bound.