

## **Chemistry 1A Course Syllabus** **General Chemistry**

Santa Rosa Junior College      Fall 2017

Instructor: Dr. Mary J. Cornett  
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### **Office Hours**

Wed 9:00–11:25 AM, 1970 Bech Hall

Chem 42 Lecture

M/W 7:30am – 9:00 am 1999 Bech Hall

Chem 42 Lab

M 9:00am – 12:00 pm 1960 Bech Hall

**Lecture**

M/W 12:00pm – 1:30 pm 1999 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.

### **Important Dates**

Sunday, Sep. 10 – Last day to drop without a W

Sunday, Nov. 19 – Last day to withdraw with a W

Wednesday, Dec. 20, 10:00am-12:45am- Final exam

### **Course Description**

This course teaches general principles of chemistry including atomic theory, bonding, stoichiometry, kinetic molecular theory, properties of mixtures, the periodic table and thermodynamics. This is the first semester of a one-year program of general chemistry.

### **Prerequisites**

Course Completion of CHEM 42 AND Course Completion of MATH 154 or Course Completion of MATH 155 or higher (V2); OR Course Completion of CHEM 42 AND Qualifying Test Score in Math OR two years of high school algebra or equivalent.

### **Student Learning Outcomes:**

Upon completion of this course, students will be able to:

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.

**Objectives:**

After successful completion of this course, a student will be able to:

1. Use dimensional analysis and stoichiometry to solve quantitative chemical problems.
2. Apply atomic theory in describing matter, including chemical nomenclature and physical and chemical processes.
3. Summarize the quantum mechanical structure of the hydrogen atom in light of its emission spectrum, and apply it to many-electron systems.
4. Calculate energy changes in calorimetry and chemical reactions.
5. Use the periodic table of elements to recognize trends and patterns, and to perform calculations.
6. Describe the bonding and shapes of simple compounds with a range of models.
7. Apply kinetic-molecular theory to the behavior of ideal and real gases.
8. Relate intermolecular forces to the physical properties of matter.
9. Calculate the effects of solute concentration on the physical properties of solutions.
10. Use appropriate techniques to obtain accurate and precise measurements in the laboratory.
11. Identify the uncertainty and analyze experimental error associated with measurements.
12. Graph (as appropriate), interpret, and communicate the results of laboratory experiments in writing.
13. Apply chemical principles to real world situations.

**Required Course Materials**

1. **Textbook:** Chemistry: The Molecular Nature of Matter and Change, 8th Edition by Martin S. Silberberg and Patricia G. Amateis, McGraw-Hill, 2018. ISBN: 978-125931757 for the hard copy. Will use the on-line 'Connect' homework option, so we recommend buying the book and access code from the bookstore for the best price.
2. **Chemistry Laboratory Manual** Chem 1A General Chemistry (Fall 2017)
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. No programmable or graphing calculators, wireless or web-enabled devices, including cell phone calculators may be used during examinations.
5. **Protective eyewear and apron** (issued to you in the laboratory section and already paid for with your course fees) must be used in the laboratory at all times as required by California State law.

**Grading**

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

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

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.

**Unit Exams**                      500 points

Each of the three unit exams will be based on material covered in classroom, laboratory and homework completed to that date.

**Final Exam**                      150 points

The final exam will be a comprehensive, multiple choice exam covering all topics covered during the semester. The grade on one low scoring unit exam can be replaced with a better score in the corresponding unit in the final exam.

**Homework/Quizzes** 100 points

Quizzes may be given during either lecture or lab lecture and will be announced in advance. Homework will be assigned using the online 'Connect' program affiliated with the textbook as needed. The Connect website to log on to for homework varies according to your section (listed by lab day) and are listed below:

- (sec 1298) <http://connect.mheducation.com/class/m-cornett-thursday-lab-section>  
(sec 0356) <http://connect.mheducation.com/class/m-cornett-monday-lab-section>  
(sec 2868) <http://connect.mheducation.com/class/m-cornett-wednesday-lab-section>

**Laboratory** 250 points

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. See lab schedule for report due dates. 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. Your lab instructor may have addition rules or requirements.

**Student Expectations****Academic Decorum**

All students are expected to know the Student Conduct Code (<https://student-conduct.santarosa.edu/>) 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. If arriving late, please enter quietly. If you must leave due to exigent circumstances, please seat yourself such that you can exit with minimal disruption to other students and the instructor.

### 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: <https://rightsresponsibilities.santarosa.edu/academic-integrity> 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.

### Good Labkeeping

Maintaining a tidy work area in the lab and cleaning up after yourself are requirements for (1) participating in and (2) leaving the laboratory. The stockroom staff is friendly and helpful, but they do not have time to clean up after everyone. After each lab, the counters, floors, sinks and balances should be clean, stools well stacked in the closet, equipment in its proper location, and chemical waste disposed of in the correct container. All students in a section will be held accountable for cleaning up the lab, regardless of who made any messes. The lab will be clean when you come in, so please show consideration for your colleagues by leaving it in *better* condition than when you arrived.

### Attendance

Your regular attendance in lecture highly encouraged and laboratory is MANDATORY. 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. Any undue number of absences from lecture (5 or more per semester unless cleared by me – preferably ahead of time) may result in an individual being dropped from the course, or in a significant reduction of that student's course grade. Students are expected to notify the instructor of any anticipated absences or late/missed assignments prior to the due dates by email. Class meetings start on the half hour. Conversations should end at that time, and you should be prepared to commence taking notes and working on practice problems. If you arrive late, please enter the room quietly. All students should bring a calculator (phone/laptop calculator is acceptable for regular lecture, but NOT during quizzes or exams) and be prepared to work on problems in class.

Lab attendance is mandatory although it is understood that illnesses and emergencies do occur, please notify the instructor as soon as possible if you must miss a lab. There are typically no make-ups for lab, but in the case of illness or other serious circumstances, see the instructor for possible reassignment or partial credit options. Because the laboratory portion is such an integral part of the chemistry learning process, 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. Your lab instructor may have additional rules or requirements.

### **Course Policies**

#### **Re-evaluation of Graded Work**

If you believe that your work has been graded incorrectly, please attach a brief note explaining the suspected error and submit it to me within two weeks of the day it was returned to the class. Do not write on any work that you are submitting for a re-grade. If you are comparing your graded materials with that of other students, both your work and that of your colleague must be submitted together for consideration. The entire submission will be re-evaluated, and the score may be adjusted up, down, or not at all.

#### **Recording of Lectures**

The lectures in this course are for you to learn from and take notes from. They may not be recorded in video form. They may be recorded in audio form only with permission of the instructor, and then only for your personal use in studying for the class.

### **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 9/08/2013, last day to drop with 'W' is 11/19/2017. 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.

### **Safety and General Information**

#### **Laboratory Safety**

Safety in the laboratory is of primary importance. While in the laboratory, you must be appropriately dressed in long pants and closed-toed shoes. Backpacks and other loose articles must be stored in the cubbies provided, not on the floor. If you have long hair, it must be tied back. When anyone in class is working on chemistry, everyone must be wearing safety goggles. These may be worn over prescription glasses. Food and drink are strictly prohibited in lab. More complete safety instructions will be given to you in lab.

#### **Emergency Information**

In case of natural disasters, emergencies, or fires, we may need to evacuate Bech Hall. In the event of an evacuation, turn off any flame or heat source you are using and 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 or otherwise seek cover from falling overhead objects. 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. During a power outage, Bech Hall can be extremely dark. Remain calm and minimize your movement while your eyes adjust and flashlights and glowsticks are located for you. In the event of an evacuation, turn off any flame or heat source you are using and go to the lawn between Bech, Shuhaw and Baker halls. This is our designated assembly area. Wait here, as your instructor will take roll. Copies of the red *Emergency Preparedness Handbook* are posted throughout the building and have more detailed information and procedures for most imaginable emergencies. Any type of emergency can be reported to the District Police Dispatcher at (707) 527-1000.

#### Accommodations for Students with Disabilities

If you need disability-related accommodations for this class, such as a note taker, test-taking services, special furniture, etc., please provide the authorization letter from the Disability Resources Department (DRD) to your instructor as soon as possible. You may also speak with me privately during office hours about your accommodations. Please fill out any paperwork for testing accommodations in advance of the exam, and keep me informed of what you need. I am happy to provide accommodations, but I do appreciate having a few days' advance notice. If you do not have authorization from DRD, contact the office directly (527-4278).

## Chem 1A Class Calendar Fall 2017

### Tentative Dates for Lectures, Exams and Labs

Week	Day	Date	Lecture Topics	Laboratory
<b>1</b>	M	2017/08/21	Intro/Chap. 1	Introduction / Safety training
	W		Chapter 1: Keys to Chemistry	TBA
	Th			TBA
	Su		Last day to register/add w/o instructor's signature or add code	
<b>2</b>	M	2017/08/28	Chapter 2: Components of Matter	Lab 1 Measurement and Density
	W		Chapter 2: Components of Matter	Introduction / Safety training
	Th			Introduction / Safety training
	Su		Last day to drop semester length class and be eligible for a refund	
<b>3</b>	M	2017/09/04	<b>Labor Day Holiday</b>	
	W		Chapter 3: Stoichiometry	Lab 1 Measurement and Density
	Th			Lab 1 Measurement and Density
	Su		Last day to drop class w/o "W" symbol or add w/add code	
<b>4</b>	M	2017/09/11	First Census Day/ Chapter 3	Lab 2 Estimation of Avogadro's Constant
	W		Review	Lab 2 Estimation of Avogadro's Constant
	Th			Lab 2 Estimation of Avogadro's Constant
<b>5</b>	M	2017/09/18	Exam 1	Lab 3 Empirical Formula of a Compound
	W		Chapter 4: Classes of Reactions	Lab 3 Empirical Formula of a Compound
	Th			Lab 3 Empirical Formula of a Compound
<b>6</b>	M	2017/09/25	Chapter 4: Classes of Reactions	Lab 4 Synthesis $\text{Sr}(\text{IO}_3)_2 \cdot \text{H}_2\text{O}$
	W		Chapter 5: Gases	Lab 4 Synthesis $\text{Sr}(\text{IO}_3)_2 \cdot \text{H}_2\text{O}$
	Th			Lab 4 Synthesis $\text{Sr}(\text{IO}_3)_2 \cdot \text{H}_2\text{O}$
<b>7</b>	M	2017/10/02	Chapter 5: Gases	Lab 5 Six Solutions
	W		Chapter 6: Thermochemistry	Lab 5 Six Solutions
	Th			Lab 5 Six Solutions
<b>8</b>	M	2017/10/09	Chapter 7: Atomic Structure	Lab 6 Determination of Gas Constant, R
	W		Review	Lab 6 Determination of Gas Constant, R
	Th			Lab 6 Determination of Gas Constant, R
<b>9</b>	M	2017/10/16	Exam 2	Lab 7 Measuring Heat Capacity
	W		Chapter 8: Chemical Periodicity	Lab 7 Measuring Heat Capacity
	Th			Lab 7 Measuring Heat Capacity
<b>10</b>	M	2017/10/23	Chapter 8: Chemical Periodicity	Lab 8 Hess's Law
	W		Chapter 9: Chemical Bonding	Lab 8 Hess's Law
	Th			Lab 8 Hess's Law
<b>11</b>	M	2017/10/30	Chapter 9: Chemical Bonding	Lab 9 Atomic Spectrum of Hydrogen
	W		Chapter 10: Shapes of Molecules	Lab 9 Atomic Spectrum of Hydrogen
	Th			Lab 9 Atomic Spectrum of Hydrogen
<b>12</b>	M	2017/11/06	Chapter 10: Shapes of Molecules	Lab 10 Lewis Structures, VSEPR Theory
	W		Review	Lab 10 Lewis Structures, VSEPR Theory
	Th			Lab 10 Lewis Structures, VSEPR Theory
<b>13</b>	M	2017/11/13	Exam 3	Lab 11 Analysis of Aspirin
	W		Chapter 11: Theories of Bonding	Lab 11 Analysis of Aspirin
	F			
	Sat		Last day to drop class w/ "W" symbol	
<b>14</b>	M	2017/11/20	Chapter 11: Theories of Bonding	TBA
	W		Chapter 12: IMF	TBA
	Th		<b>Thanksgiving Holiday</b>	
<b>15</b>	M	2017/11/27	Chapter 12: IMF	Lab 12 Analysis of a Diprotic Acid
	W		TBD	Lab 12 Analysis of a Diprotic Acid
	Th			Lab 12 Analysis of a Diprotic Acid
<b>16</b>	M	2017/12/04	Review	Lab 13 Intermolecular Forces
	W		Exam 4	Lab 13 Intermolecular Forces
	Th			Lab 13 Intermolecular Forces
<b>17</b>	M	2017/12/11	Review	Check out
	W		Review	Check out
	Th			Check out
<b>18</b>	W	2017/12/20	<b>FINAL EXAM: 10:00-12:45</b>	
			Semester Break	