CHEMISTRY 42: INTRODUCTORY GENERAL CHEMISTRY **Spring 2020**

Lecturer: Janice Crowley E-mail: jcrowley@santarosa.edu

Lecture Room: Bech Hall, Room 1910 [Sect 4340] Monday and Wednesday 12:00 -1:30 pm

Lab Room: Room 1948 Meets on Mondays 9:00 am until 12:00 pm

Office: Room 1916 **Office hours:** Wednesday 9:30 am – 12:00 pm

In addition to my office hours, there is a wonderful tutorial center (Room 4251 in Doyle Library) that I recommend you utilize if you have never had chemistry or it has been longer than 2 years.
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, I reserve the right to modify, supplement and make changes as the course needs arises.

OVERVIEW

This course is a basic introductory chemistry course for students who are preparing for either one year of general chemistry (Chem 1A & Chem 1B) or for Chem 8 (one semester organic chemistry course).

STUDENT OBJECTIVES (as stated in the official Course outline of Record of SRJC.)

Upon completion of this course, the student will be able to:

1. Solve problems involving fundamental processes in chemistry, including basic atomic theory, structure and bonding, chemical reactions, equilibrium, and the various forms of matter.
2. Demonstrate a basic understanding of the above fundamental processes in chemistry and how the scientific method was used to develop the theories behind these processes.
3. Interpret and utilize the vocabulary and nomenclature that is specific to a basic level of general chemistry.
4. Follow fundamental safety procedures in a lab environment.
5. Perform simple chemical experiments and associated calculations efficiently and accurately.
6. Use fundamental processes in chemistry to investigate phenomena in the applied sciences.
7. Arrange, sort, and graphically represent chemical data.

STUDENT LEARNING OUTCOMES (as stated in the official Course outline of Record of SRJC.)

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

1.) Analyze basic quantitative problems in chemistry and apply them to real life situations.
2.) Correlate macroscopic properties of matter with its structure and behavior at the atomic scale.
3.) Communicate effectively using common chemical conventions and notation.
4.)Evaluate available information to plan, perform and interpret basic laboratory experiments.

TEACHING PHILOSPHY

I have taught for over 25 years and have enjoyed working with students with different learning styles. Artists, historians, statisticians, scientists… have a proclivity toward certain learning styles in life. I have been fortunate to have had great science mentors in my life including my early years with my dad as an informal instructor. I believe my college chemistry students can experience great success if they follow simple guidelines which are aimed at reaching every type of student learner. Chemistry is all around us and the relevancy of chemistry in our everyday life is probably more critical now than ever before. I hope you find the terrific sense of wonder in our world around us and that you can use this

knowledge and learning to make better informed decisions in your life in addition to using these credit hours toward your required graduation requirements.

GENERAL COURSE POLICIES:

1. Prerequisites: Course completion of MATH 155 or two years of high school algebra or equivalent.

2. Required Course Materials:

   Chemistry 42 Survivor Guide: A comprehensive set of notes and assignment for success in an introductory chemistry course. available at the SRJC book store. By J.P. Crowley and John C. Branca.

   Recommended Text book: Introductory Chemistry by Russo and Silver 5th edition

   Scientific or graphing calculator. No phones or other devices are permitted for use on exams.

   Standard Laboratory Notebook (I have a sample copy for you to view).
   Laboratory Manual CHEM 42 (available at the SRJC bookstore only). Protective eyewear and apron will need to be purchased as well – also available at the SRJC bookstore.
   Long pants or other clothing that covers the legs completely and closed toe shoes.

3. **Attendance:** Attendance is important and expected of all students. In fact, attendance is so vital for your student learning that I have incorporated points into your grade based on your daily quizzes and participation. Please do not miss or be consistently late to class. The first five minutes are an incredible overview of what you will be learning including quizzes and demos. To be fair to all students, there will not be any make-ups on labs or exams for any reason other than a thoroughly explained and correctly dated document from a medical doctor for reasons you were not able to attend lab or exam. If you miss a quiz it is a zero and no make-ups. In addition, since this is a lab-based course, missing more than 3 labs will result in an "F" for the entire course, regardless of the student's performance in the class (department policy).

4. **Standards of Conduct:** All students are expected to do their own work. I applaud collaboration, but at the end of the group study it is the responsibility of the individual to turn in their own work that is not a copy in any sense of other students. Cheating, or anything that can be construed as cheating will result in no credit given, or even worse.
   No inter-student communication is allowed during exams. Any comments or questions you may have, must be directed toward the instructor by raising your hand and the instructor acknowledging you. No eating food in the classroom.
   Laboratory experiments will often be done in pairs, but each student is expected to record his or her own data. For example, it is not acceptable for one partner to take notes and the other partner to copy their results at the end of the lab.
   To ensure an effective learning experience: use of cell phones in class and in lab is prohibited. Refrain from talking while lecturing is taking place because it is a distraction from learning.
   Laptops are not necessary for this course and should not be used in class.
   Do not ask me for extra credit. Do the appropriate recommended study tips I have stated. Violation of appropriate student behavior may result in my giving the student 2 class days dismissal with zero credit for what is covered during the dismissal days. That includes, quizzes, tests, lab reports…

Student Conduct: The Sonoma County Junior College District supports a safe, productive learning environment to foster intellectual curiosity, integrity and accomplishment as defined in the District Mission and Goals. The District holds that students shall conduct themselves in a manner which reflects their awareness of common standards of decency and the rights of others. Interference with the District's mission, objectives, or community life shall be cause for disciplinary action. Policy 8.2.8: The full policy may be found here. Procedure 8.2.8P: The full procedure may be found here. Also, refer to policy 3.11 and 3.11 P for academic dishonesty. The last two pages of this guideline has more specifics on classroom etiquette and behavior.

The following link will take you to the above policy and procedures:
https://www.boarddocs.com/ca/santarosa/Board.nsf/Public?open&id=policies#

5. **Reading Assignments, Pencast Assignments, and Animation Assignments**: Any additional assignment be it homework, pencast viewing or animation viewing are an important part of learning in this course. To attain the greatest success in this course, you should always do these recommended assignments the same day they are assigned after you have actively reworked your notes. These assignments are typically found in Canvas.

6. **Homework Assignments**: Chemistry is a vertical subject that is best learned in appropriate chunks. As an instructor I have gone to great lengths to not overburden you with an inordinate amount of information per lecture. Therefore, it is imperative that you complete the recommended homework assignments before the next class period to avoid gaps in understanding. Studying on a daily basis and not cramming increases your ability to retain long-term information and perform more successfully on comprehensive final exams. I will be providing answers to almost all your written assignments so you can double check your work immediately and know whether you are studying and learning what you need to know for proper preparation for the daily quizzes and the exams. Please note that I use Bloom's Taxonomy of questions on the exam which means I will ask recall questions, application questions, and higher order critical thinking questions. Cramming will not enable you to perform at the higher level.

7. **Laboratory**: Laboratory work is designed to give you a hands-on experience with the chemical concepts. Before lab, read the experiment and do a pre-lab write up (use blue or black ink only) which includes writing a short 1 -2 sentence purpose of the lab, a brief but lucid write up of the procedures. It also includes answering any pre-lab questions. This is due BOL (at the beginning of the lab).
Be sure to arrive on time in appropriate safety approved clothing. No food or drink in the lab. Follow all lab safety rules. Late lab are marked down by 20 % off the value of the lab report if turned in within one week after the due date. Lab reports received later will receive a zero. Please do not miss labs because a zero has at a minimum of a 10 % effect on your overall lab grade. Zeroes are given, there are no incomplete (I) grades given for missing labs.
I.O.W. TO RECEIVE A PASSING GRADE IN THE COURSE, PASSING WORK MUST BE DONE IN BOTH THE LAB AND LECTURE PORTIONS. IF YOU MISS MORE THAN 3 LABS or FAIL TO TURN IN 4 LAB REPORTS, YOU WILL NOT PASS THE COURSE (department policy). You must do your own lab reports and not copy your partners work.
Be sure to record all your lab work in your lab notebook in pen. It is an important part of the lab experience and is the permanent record of what you have observed and done in the lab. Do not write down your work in your lab manual or other paper. Record work and observations

directly into lab notebook - failure to comply may result in penalty points or zero credit. You will be graded on your typed lab reports, the organization and quality of your lab notebook.

8. **Exams:** There will be 4 exams and a final comprehensive exam in the course. No make-up exams will be given. An excused absence from an exam will be granted only if proper documentation (a thoroughly explained and correctly dated document from a medical doctor for reasons for you not being able to attend lab or exam). I will discuss make-up work only after having received proper documentation from the individual during my office hours.
   In general, if you miss an exam you will receive zero points and no make - up. However, if you have a medical condition that requires you to miss an exam, you need to present written documentation from the doctor on their letterhead that explains the illness that prevented you from coming to class to take the exam and has the date and time you were being treated. If I do not receive the medical note from the physician within two weeks of the absence, it will then be considered an unexcused absence and no make-up points. Routine medical checkups do not count for a reason to miss class.

9. **Accommodations for students with learning disabilities.** If you provide the appropriate authorization letter from the Disability Resources Department to me during my office hours a week before exams, you will be given appropriate accommodations as per our discussion.

10. **Re-evaluation of Graded Work:** Graded work may be submitted for re-evaluation within one class period from when it was received. In comparing ones graded materials with that of fellow students, any difference must be confirmed by submission of both students' work for consideration. The document in question must be submitted with written detailed rationale for any changes requested. Based on this rationale, the entire assignment will be thoroughly evaluated. This re-evaluation can result in positive, negative, or no change to the original grade.

11. **Grading:** Grades will be broken down as follows:

Factors:	**1,000 points total**
Lab Grade:	240 Cannot miss more than 3 lab days or F for class
4 Exams:	500
Participation, Assignments & Quizzes:	130
Final Cumulative Exam:	130

Final course letter grade will correspond to the following percentages:

A = 90 % or better	900 points – 1,000 points
B = 78 % - 89 %	780 points – 899 points
C = 66 % - 77 %	660 points – 779 points
D = 54 % - 65 %	540 points – 659 points
F = below 54 %	below 540 points

TOPICS AND SCOPE:

1) Fundamental principles of the composition of matter (atoms, matter and the mole)
2) Physical and chemical changes, measurement and significant figures, unit conversions
3) Atomic and molecular structure, nuclear chemistry
4) Bonding, naming and oxidation numbers
5) Formulas, formula writing, molar mass
6) Chemical reactions and kinetics

7) Solution chemistry and solids, liquids and gases
8) Acids, bases, salts, and equilibrium
9) pH, electrochemistry, Lewis structures and intermolecular forces
10) Gas Laws, basic stoichiometry, yield calculations, lab theory and techniques

Tentative Lab Schedule:

Week #	Date	Lab Title/Topic
1	1/13	Lab Safety and Chem 42 Intro and Metric conversions
2	1/20	Labor Day Holiday – no lab
3	1/27	Calculations and Dimensional Analysis
4	2/3	Measurements Lab Locker Check in
5	2/10	TBA
6	2/17	Separation of a Ternary Mixture Lab
7	2/25	Atoms and the Electromagnetic Spectrum
8	3/2	Ionic and Molecular Compounds
9	3/9	Lewis Structures and Molecular Geometry
10	3/16	Spring Break – no classes
11	3/23	Observing Chemical Reactions
12	3/30	Synthesis of Indigo Dye
13	4/6	Electrochemistry and the Activity Series
14	4/13	Gas Laws
15	4/20	Preparation and Concentration of a Solution & Hydrometer Lab
16	4/27	Preparation and Concentration of a Solution (week 2)
17	5/4	Acetic Acid Titration
18	5/11	**Lab Practical Exam and LAB CHECK OUT**

Exam dates: **Exam # 1: 02/10/2020**
Exam # 2: 03/09/2020
Exam # 3: 04/13/2020
Exam # 4: 05/11/2020

Cumulative Final Exam: Wednesday, May 20, 2020 from 1:00 – 3:45 PM

Study skills for vertical subjects such as chemistry: This is very important.

1.) Same day of lecture, actively review notes taken in class first. Re-work any problems done in class. Check yourself to see if you can do these problems from scratch (without referring to the answers). For those problems you cannot do, carefully review the concepts you are not remembering.

2.) After doing step 1. Do the assigned homework preferably right after doing step 1. Check the key after you do each problem to make sure you are doing it correctly. Work all the problems.

3.) Review any available pencasts related to the concepts being covered. Actively do these.

4.) Do the reading from the textbook and accompanying sample problems.

5.) Utilize office hours for clarification. The SRJC Santa Rosa Library has a tutorial center for chemistry so utilize that if you are needing tutoring.

6.) Make sure you thoroughly review your notes and homework you completed before the exam. Basically you are studying every day and then using 2 days before the exam to make sure the stuff you did earlier still sticks☺

Tentative SYLLABUS for Spring 2020 CHEM 42

Day	Date	Lecture Topics
M	1/13	Atoms, matter, mole, significant figures, structure of the atom……
W	1/15	Atoms, matter, mole, significant figures, structure of the atom……
Sun	1/19	Last day to register/add without instructor's signature or add code
M	1/20	Holiday – no classes
W	1/22	Quantum numbers, Periodic Table…
M	1/27	Atomic and ionic radius size, electronegativity…
W	1/29	Percent composition, molar mass of compounds, empirical formula
Sun	2/2	Last day to drop class without a "W" symbol or add with an add code
M	2/3	Molecular formulas…
W	2/5	Oxidation numbers, bonding, naming, formula writing…
M	2/10	**Exam 1** over units 1 – 5 SG
W	2/12	Lewis Structures
M	2/17	Holiday – no classes
W	2/19	IMF
M	2/24	IMF, Balancing Reactions
W	2/26	Balancing Reactions, Oxidation numbers of elements in polyatomic ions
M	3/2	Redox and Electrochemistry
W	3/4	Electrochemistry
M	3/9	**Exam 2** over units 6, 14, 15 & 16 SG
W	3/11	Gas Laws
M	3/16	Spring Break – no classes
W	3/18	Spring Break – no classes
M	3/23	Stoichiometry
W	3/25	Stoichiometry
M	3/30	Acids, Base & Salts
W	4/1	Acids, Base & Salts
M	4/6	Acids, Base & Salts, pH
W	4/8	pH & Concentration problems % m/v, % v/v, $M_1V_1=M_2V_2$, MaVa= MbVb
Sun	4/12	Last day to drop a class with a "W"
M	4/13	**Exam 3** gas, stoichiometry, acids, bases, salts, pH and concentration problems
W	4/15	Nuclear
M	4/20	Kinetics & Antilog
W	4/22	Equilibrium
M	4/27	Equilibrium
W	4/29	Equilibrium Buffers
M	5/4	Buffers and naming acids
W	5/6	Brief review equilibrium, buffers, naming, antilog, kinetics, nuclear
M	5/11	**Exam 4** nuclear, kinetics, antilog, equilibrium, buffers, naming acids
W	5/13	Go over grades, review Q and A
W	5/20	**Final Exam TIME: 1:00 pm – 3:45 pm Comprehensive**

For student privacy reasons (FERPA): I do not give or discuss individual grades via email.

FINAL NOTE: Classroom Etiquette and Student Behavior Guidelines:

The purpose of this is information is to assist students in understanding proper classroom behavior. The classroom should be a learning centered environment in which faculty and students are unhindered by disruptive behavior. Students are expected to maintain proper decorum in the classroom. Santa Rosa Junior College is an institution of higher education that promotes the free exchange of ideas. However, students must adhere to the rules set forth by the instructor. Failure to comply with classroom rules may result in dismissal from class and/or the college. Faculty have the authority to manage their classrooms to ensure an environment conducive to learning. Students should conduct themselves in a manner that reflects the awareness of common standards of decency and the rights of others.

1) Take responsibility for your education. There is a common myth among students that because they pay tuition they deserve to receive credit for the class. This is not true. In fact, students pay only a portion of the cost of their education; taxpayers pay the rest. Instructors are here to create a learning environment. Whether you learn depends on your willingness to listen, ask appropriate question, and do the work necessary to pass the course. If your academic preparation from high school is weak or if you have been out of school for a period of time, you may have to work harder and seek more help in order to succeed. The library has a wonderful tutoring staff available to help students who need chemistry help outside of class.

2) Attend every lecture. You will find that students who attend every class, listen to the instructor and take good notes will be more likely to pass (with a higher grade). A local study showed that students who missed the first class meeting were more likely later to withdraw or fail. In fact, each class covers approximately 4 % of information for the semester and each class builds off the previous class.

3) Get to class on time. Students who walk into the classroom late or leave early distract other students and disrupt the learning environment.

4) Do not have private conversations during class. The conversations are distracting to other students regardless of what is being said. This also means – be focused in lab as well.

5) Turn cell phones off. It is very distracting to hear someone's phone go off in class. Texting in class is prohibited.

6) Do not dominate other students' opportunities to learn by asking too many questions. It is good to ask question and make comments, but if you dominate the class time with too many questions and/or comments, the instructor and other students cannot participate in class discussions. When asking questions or making comments, keep them related to the discussion at hand. No "Aunt Emma" type stories.

7) Respect your instructor. Openly challenging the instructor's knowledge or authority in the classroom is not proper. Grandstanding is not appropriate. If you take issue with the instructor's information or instructional methods, make sure that your comments are made privately with the instructor without confrontation or antagonism.

8) Instructors' classroom policies, procedures and teaching styles vary. Some instructors enforce attendance policies vigorously; other instructors are more lenient about attendance. Assignments and classroom activities are at the prerogative and expertise of the instructor. Each instructor has the

freedom and authority to set the guidelines and policies for their classroom within the overall policies of the college.

9) Your classmates deserve your respect and support. Others may have different ideas and opinion from yours, they may ask question you perceive to be "stupid," but they deserve the same level of respect from you as you wish from them.

10) Come to class prepared. Students who forget common classroom supplies such as pencil, paper, study guide, previous hand-outs, calculators… usually waste class time. Student who have not completed their previous assigned homework many times ask question that could have been answered through doing their homework.

11) Turn in your work on time. It is important to plan ahead. Students who wait until the last minute to do their work usually make lower grades and are more likely to miss deadlines. Study and do your ongoing daily studying and assignments. If a problem occurs at the last minute such as a computer malfunction, you will still be prepared.

12) Do not bring children to class. Children in the classroom are distracting to the instructor, other students, and you. You need to plan ahead for child-care.

13) Utilize the instructor's office hours for clarification of content. Use the tutorial center if additional help is needed. Don't forget to follow the proper study guidelines first including viewing pencasts and recommended readings…

Here is a list of some skills that universities and medical related schools look for in a student when reviewing letters of recommendation written by instructors:

Verbal communication, abstract conceptional analysis ability, appreciation of diverse views, creative thinking, self-motivation, ability to work in groups, ability to work independently, ability to follow directions, reliability, time management, attendance, decision making, written communication, ability to be objective, critical thinking, receptive to feedback, commitment, application of knowledge, problem solving, passion for learning, trustworthiness, respectful, long-term retention of material learned, and positive leadership,