

## Course Syllabus for Chemistry 60 (Chemistry for the Allied Health Sciences)

Santa Rosa Junior College in Petaluma Summer 2022

Instructor: Janice Crowley

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**Office:** Capri Creek Classroom PC1101

**Office hours:** Monday 3:10 – 4:10 p.m.

Tuesday 3:10 – 4:10 p.m. Wednesday 3:10 – 4:10 p.m.

Thursday 11:30 a.m. – 12:30 p.m.

**Class Lecture:** Section 8740 MTWTh 1:00 to 3:10 p.m. J.Crowley PC101

**Lab lecture:** Section 8740 TWTh 7:30 a.m. to 8:30 a.m. J. Branca PC103

**Lab:** Section 8740 TWTh 8:30 a.m. to 11:30 a.m. J. Branca PC103

**Class Lecture:** Section 8187 MTWTh 9:00 a.m. – 11:10 a.m. J.Crowley PC101

**Lab lecture:** Section 8187 TWTh 12:30 p.m. to 1:30 p.m. J. Branca PC103

**Lab:** Section 8187 TWTh 1:30 p.m. to 4:30 p.m. J. Branca PC103

### Introduction

Chemistry 60 is a prerequisite for physiology and microbiology courses required for health science programs. It is designed for students who are interested in nursing, dental hygiene, radiology or other health care fields, and who have little or no background in chemistry. It will give an overview of basic general, organic and biological chemistry.

This course is intended to help you see the importance of chemistry in the health sciences. Your daily hard work will pay off with understanding and better long-term retention.

### Required Course Materials

**Chemistry 60 Survivor Guide:** Notes and assignments study guide

**Textbook:** James Armstrong, *General, Organic and Biological Chemistry: An Applied Approach*, 2<sup>nd</sup> Edition (2015)

**Lab manual:** Tatjana Omrcen, *Chemistry 60 Laboratory Manual*

**Basic scientific calculator.** Cell phones, keyboard calculators, and sharing of calculators are not allowed on tests.

### Important Dates

Last day to drop with refund: June 15, 2022

Last day to withdraw with a W. July 12, 2022

Final Exam: Thursday, July 21, 2022

You will only remember 20 % of quickly learned material after a thirty-day period, says author Thomas H. Mentos in his book, The Human Mind. He says you lose about 80 % of what you learned because of cramming. Cramming stores information in short-term memory; therefore, doesn't create a long-lasting connection. The book, Making it Stick, provides compelling research. Daily quizzing helps interrupt forgetting.

Short-term memory is where we process everything in our brain and put it into temporary storage. It's where all the non-important stuff goes, like what you ate for breakfast two days ago and what you wore on Monday. Just because your short-term memory is active during a five-hour study stint, doesn't mean the rest of your brain will be able to reconstruct anything when you need it to. The reason so many people rely on cramming, despite knowing it's an inferior approach, is because it worked for them in the past. Old habits die hard. Chemistry requires a very strong foundation of information that can be retrieved and connected to new concepts. If the chemistry concepts learned were crammed early on, then the material becomes progressively harder for the student to grasp because of the way it was stored in the short term memory (due to cramming). Studying information learned the same day is best. Then practicing (homework) the same day. Then teaching someone what you learned helps you not only retain 90 – 95 % but also improves your overall understanding and ability to restate not just recall the information later.

Cognitive scientist, Professor Hal Pashler, has two important principles for studying. First principle is the spacing effect, which refers to the observation that a repetition (e.g., studying the material a second time) is more effective when the two presentations are spaced apart rather than consecutive in time. The second principle is the testing effect, which refers to the phenomenon of better retention of the material when the individual has practiced retrieving the information from memory, relative to merely reading the information. In other words, being tested on the material is a potent way to enhance one's retention of the material. This is one of the main reasons for giving daily quizzes.

## **Grading**

**Exams:** 450 points

Three midterms (150 points each) will be given in class. The exams will cover lecture material, homework, and reading assignments for the Survivor Guide & textbook. The exams will reflect the three levels of thinking questions (Bloom's Taxonomy). There will be no makeup exams. All exams count – no exams are dropped. Bring your calculator to all exams.

**Participation/Attendance, Homework and Quizzes:** 150 points

Daily attendance will be taken and count. Homework will be assigned, but not formally graded. Instead, you will be given quizzes almost daily to verify you are doing the homework and committing to learning the material as outlined in the introduction. The majority of students have told me they like the quizzes and it helped prepare them for the exams.

**Laboratory:** 250 points (Missed lab reports will be graded as zero.) Per department policy, **missing more than 3 reports results in a F for lab and the class.**

**Final Exam:** 150 points

**Final Grades:** 1,000 points possible

Final course letter grade will correspond to the following percentages:

A = 90 % or better

B = 78 % - 89 %

C = 66 % - 77 %

D = 54 % - 65 %

F = below 54 %

## **The Top 10 Reasons students are successful in chemistry.**

1. They actively study (re-work notes and pencasts) the same day of lecture for that material [increased memory retention 90 -95 %].
2. They are focused (mindful) in lecture. Their minds are actively thinking/analyzing/reflecting on what is being said and they are writing good notes and putting question marks next to material, for which they may need further clarification.
3. They utilize the instructor provided resources – outline, pencasts, reading assignments, all homework... They focus on these without distractions such as receiving and making phone calls or text message or surfing the internet or doing this in front of a TV. Typically they study in the same, clutter free, and media free area. Note: However, some music is conducive to studying (music with good tempo and no lyrics) while some music is not (in general - music with lyrics).
4. They DO the homework that pertains to the lecture after they have actively studied their notes from that lecture that day.
5. They are in class or at least on time, organized with all their materials needed (notes, paper, pen or pencil, calculator, reference sources such as periodic tables).
6. They come prepared to work effectively in study groups. They have done # 1-5 above and are ready to explain and ask clarifying questions from each other. They can easily find their resources because they are organized and have binders with proper tabs labeled...
7. They do not create gaps in their knowledge because they do # 1- 6 above. They can receive constructive criticism.
8. They start memorizing any material the instructor asked them to memorize right away and keep practicing. This helps them to have the basics needed to connect the dots to better understanding and comprehension of the material. They are prepared for daily pop quizzes.
9. They properly prepare for the final comprehensive exam by doing # 1-8 above, but they also start a more dedicated review on weekends, reworking previous material learned in preparation for the final. The week before, they are less stressed than others because they did not procrastinate.
10. They clearly demonstrate with extra paper they used, that they re-worked notes, wrote mock tests, or practice quiz type questions from notes and pencasts before doing the homework. They only look at the answer key after they have worked the homework problem.

## **TEACHING PHILOSOPHY**

I have taught for over 30 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 the simple guidelines I have provided 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.

## Course Content

**Lectures:** Attendance and focused attention in lecture is required. Notes that I go over in class are a big part of your success in this course. Refer to student decorum for more.

**Handouts:** Many of the course handouts will be made available to you online. You should print these before coming to class. These handouts aid your understanding and will keep you organized as well as save you time.

**Laboratory:** The lab portion of the course is designed to supplement the material you will be learning in lecture. Sometimes the content of the lecture material will precede or succeed the lab. You will be introduced to important practical lab skills and techniques in chemistry which will be helpful in health-related fields. It is important that you make good, detailed observations and keep clear, accurate records in a lab notebook. Each lab is preceded by a mandatory lab lecture that will review or explain the principles in the lab as well as procedural and safety considerations. Prepare for lab by reading the lab carefully beforehand and answer any prelab questions ahead of time.

**Office Hours:** Students may best utilize office hours by first re-reading class notes and attempting homework problems. I will answer clarifying questions. If you require a lot of one on one help - the Tutorial Center on campus has great tutors and student friendly hours.

## Student Expectations

**Academic Integrity:** All work submitted for grading must be your own work. I encourage you to collaborate with other students, discussing questions as you like, but make sure that you understand everything you put down for an answer. While in lab, you must make your own observations. Copying down and cheating is unacceptable behavior – it is unfair to other students and hinders your own learning. Work that is found to have been copied or plagiarized will be penalized or given a score of zero, whether it is the original or the copy.

**Academic Decorum:** Please arrive to class on time. If you arrive late, please enter quietly. If you must leave early, sit where you can leave with the minimal disruption to other students and the instructor. Side conversations are disrespectful to the instructor and make it difficult for other students to hear and concentrate. If you have a question about the lecture, please raise your hand and ask it or write it down on a piece of paper and ask after class.

Cellular phones must be silenced during lectures. Do not send text messages during class. It is disrespectful to the instructor and a distraction to others. If you are found “texting” or otherwise disrupting class, you will be dismissed for the remainder of the class period. You may return for the next class. If an emergency arises that requires you to send a text message or make a phone call, please step outside of class to do so. You may return when you are done with your call.

**Good Lab-keeping:** Maintaining a clutter free 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 does not have time to clean up after everyone individually. After each lab, the counters, floors, sinks and balances should be clean, 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 you arrived.

## Course Policies

**Missed Labs** If you are sick or have an acceptable reason for being unable to complete an experiment, the instructor may, at his discretion, excuse one lab report for the semester. After this, no further absences will be excused, regardless of the circumstances. **If you miss more than 3 labs, you will receive an F in the course regardless of your grade in lab or lecture as per department policy.**

**Late Labs:** All lab reports are due two class days after the lab is completed. Late labs will be marked down by 20 % of the value of the assignment (4 points on a 20 point lab). They will not be accepted more than three days after the regular due date. No more than three late labs will be accepted from each student for the semester. The most successful lab students turned in their completed labs on the same day as they did the lab.

**Accommodations for Students with Disabilities:** If you need disability-related accommodation for this class, please provide the Authorization for Academic Accommodations Letter from the Disability Resources Department (DRD) to your instructor as soon as possible. You may also speak with me privately during my office hours about your accommodations. Please fill out any paperwork necessary 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 have not received authorization from DRD, contact the office directly. It is located in 101 Jacobs Hall in Petaluma (778-2491) and Analy Village (527-4278) in Santa Rosa.

## Safety

**Laboratory Safety:** Safety in the lab is of primary importance. **While in the lab, you must be dressed in long pants and closed-toe shoes.** Backpacks and other loose articles must be stored in the cubbies provided, not on the floor. If you have long hair, you must tie it 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 the lab lecture and in the lab.

**Emergency Information:** In the event of an emergency, remain calm and take deliberate action as necessary. In an earthquake, seek cover from falling objects and hold on. In most other situations, your instructor will have time to tell you what to do. In the event of an evacuation from lab, turn off any flame or heat source you are using and exit using the exterior door if safe to do so. In an evacuation from Ellis or Call, meet at Rotary Plaza in front of the library. **Do not leave:** your instructor will take roll and give further instructions. Copies of the red Emergency Preparedness Handbook are posted in most rooms on campus and have detailed information and procedures for most imaginable emergencies. Any type of emergency can be reported to the District Police Dispatcher at (707) 527-1000.



**Course Calendar June 2022**

<i>Mon</i>	<i>Tue</i>	<i>Wed</i>	<i>Thur</i>
<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>
UNIT: 1 Introduction and Measurements Element symbols to Memorize pg 3 SG UNIT: 2 Atoms, Elements, Electrons	UNIT: 2 Atoms, Elements, Electrons  <b>LAB-</b> Safety & Intro Check In Dry Lab hand-out– metric measurements	UNIT: 3 Bonds, formulas  <b>LAB –</b> Exp. 2 Separation of a Heterogeneous Mixture	UNIT: 3 Lewis Structures & formal charges  <b>LAB –</b> Exp.1 Measurements
<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>
<b>EXAM 1:</b> Units 1–3 pg 3,7-54 SG After exam HW: Pencasts on NOMENCLATURE	Unit 6: SG pg 89 -104 Nomenclature and Balancing equations  <b>LAB –</b> Exp. 3 Identification of a Pure Substance	UNIT: 5 pg 75-88 Solutions LDF due to symmetry  <b>LAB –</b> Exp. 7 Observing Chemical Reactions	UNIT 4: pg 55-74 SG IMF and gases  <b>LAB –</b> Exp. 10 How Much Sugar is in My Drink?
<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>
UNIT 6: pg 89 -104 SG  Stoichiometry and finish gases from unit 4	UNIT: 7 pg 104-126 SG Acids/Bases/Buffers UNIT: 7 Acids/Bases <b>LAB –</b> Dry Lab Stoichiometry hand-out	UNIT: 7 A/B/Buffers/pH UNIT: 6 Equilibrium <b>LAB –</b> Exp. 12 Acids/Bases/Buffers	UNIT: 7 HH Buffers/pH Energy demo and write up <b>LAB:</b> Exp. 5 Ionic & Molecular Compounds

The first 3 weeks rely heavily on the use of the Survivor Guide (SG). Use of the textbook by Armstrong is supplemental to the SG. The last 3 weeks rely on both the SG and the textbook by Armstrong.

July 2022 Calendar:

<i>Mon</i>	<i>Tue</i>	<i>Wed</i>	<i>Thu</i>
<p style="text-align: center;"><b>4</b></p> <p>NO CLASSES</p>	<p style="text-align: center;"><b>5</b></p> <p><b>Exam 2:</b> UNITS 4-7</p> <p>After exam HW: Pencasts on hydrocarbons</p> <p>Make flash cards for prefix meth – dec and suffixes ane- yne</p> <p><b>LAB</b> – Lewis Structures &amp; Shapes Dry Lab 1 pg 113 lab manual</p>	<p style="text-align: center;"><b>6</b></p> <p>UNIT: 9 pg 127-144</p> <p>Flash card check at beginning of class</p> <p>Hydrocarbons – Nomenclature...</p> <p><b>LAB</b> – Exp. 8 Synthesis of Acetaminophen</p>	<p style="text-align: center;"><b>7</b></p> <p>UNIT: 10 pg 145-182</p> <p>Alcohols and Chirality</p> <p>Alcohols dehydration</p> <p><b>LAB</b> – Exp. 4 Vegetable Pigments</p>
<p style="text-align: center;"><b>11</b></p> <p>UNIT: 11</p> <p>Carbonyl Compounds</p>	<p style="text-align: center;"><b>12</b></p> <p>UNIT: 12</p> <p>Organic Acid/Bases</p> <p><b>LAB</b> – Exp. 13</p> <p>Synthesis of Soap</p>	<p style="text-align: center;"><b>13</b></p> <p>UNIT: 13</p> <p>Condensation/ Hydrolysis</p> <p>UNIT: 14</p> <p>Amino Acids/proteins</p> <p><b>LAB</b> – Polarimeter and GC lab work.</p>	<p style="text-align: center;"><b>14</b></p> <p>UNIT: 14</p> <p>Proteins</p> <p>UNIT: 15</p> <p>Lipids</p> <p><b>LAB</b> – Locker Check out</p>
<p style="text-align: center;"><b>18</b></p> <p><b>Exam 3:</b></p> <p>Units 9 – 14, 16</p>	<p style="text-align: center;"><b>19</b></p> <p>UNIT: 16</p> <p>Carbohydrates</p> <p><b>LAB Time –</b></p> <p><b>Mandatory review</b></p> <p><b>Session</b></p>	<p style="text-align: center;"><b>20</b></p> <p>UNIT: 16</p> <p>Carb Quiz</p> <p><b>LAB Time –</b></p> <p><b>Mandatory review</b></p> <p><b>Session</b></p>	<p style="text-align: center;"><b>21</b></p> <p><b>FINAL EXAM:</b></p> <p>Units 1-7</p>