

Chemistry 42 Syllabus

Introductory General Chemistry – Section 4340

Santa Rosa Junior College, Spring 2019

Instructor: Osman F. Güner, PhD

Email: oguner@santarosa.edu

Class: Bech 1999

Class Hours: Monday & Wednesday, 7:30 am – 9:00 am

Laboratory: Bech 1980

Lab Hours: Monday, 9:00 am – 12:00 pm

Office: Bech 1970

Office Hours: Monday & Wednesday, 7:00 am – 7:30 am

Monday, 9:00 am – 9:30 am

Monday & Wednesday, 2:30 pm – 3:00 pm

Course Information:

Basic, introductory chemistry for students with little or no experience with chemistry. This course is a prerequisite for either a year of general chemistry (Chem 1A, 1B, Chem 4A, 4B) or one semester of organic chemistry (Chem 8). It provides an introduction to fundamental laws and principles of the composition of matter, physical and chemical changes, atomic and molecular structure, chemical equilibria, intermolecular forces, solutions, qualitative and quantitative theory and techniques.

Student Learning Outcomes:

Upon completion of this course, the 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.

Student Objectives:

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 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 laboratory 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

General Course Policies:

1. Prerequisites

Course completion (with a grade of C or higher) of Math 155 or two years of high school algebra (or equivalent)

2. Textbook:

Introductory Chemistry: Atoms First, 5th Edition, Russo • Silver, Publisher- Pearson,

ISBN 978-0-321-92711-8

Books available on reserve at Doyle Library: Bring your SRJC Student ID card to the Reserve desk and provide the call number: QD33.2 .R87 2015

Lab Manual: Chemistry 42 Laboratory Manual, Omrcen, Publisher-Arbor Crest,

ISBN 281-8-1201461-4-4

3. Attendance

Attendance is critical for this course. Progressive nature of the material requires a thorough understanding of the previous material in order to understand and build upon the next one. There will not be any make-ups on labs or exams (without a documented medical excuse). Missing more than three labs will result with an automatic fail.

4. Standards of Conduct

All work submitted for grading must be the student's own work. In lab, you must make your own observations and report using your own words. Collaboration is encouraged, but final work

submitted must be your own. Students who plagiarize or cheat may be suspended [for one or two class meetings by the instructor] and referred to the Vice President of Student Services for discipline sanction, in cases of egregious violation.

Cellular phones must be silenced during lectures. Texting is not allowed. In case of an emergency that requires you to send a text message or a phone call, you should step outside to do so.

5. Laboratory

Attending lab is mandatory. The concepts learned in the class come alive in the lab. The lectures in class and the experiments in the lab are aligned in a way to complement each other. There will be 13 lab sessions (but only 12 experiments since one of the experiments will take two weeks to complete). Lab notebook is required to write down the objective, experimental procedure, observations and results. **The lab reports and any pre-lab or post-lab questions, if applicable, are due by the end of the lab session.** Failure to deliver lab report at the end of the session or missing a lab will result with a zero grade for that session. Late reports (no longer than 5 days late) will be marked down by 20% of the actual grade. Missing more than three labs will result with an “F” grade for the entire course. There will be 12 lab-reports 20 points each; one lab-report with the lowest grade will be dropped, yielding a total point of 220 (i.e., 22% of the final grade).

6. Homework

Following the completion of each chapter, a homework assignment will be due before the next lesson. The homework will be posted in Canvas, submitted by the students on-line, and will be automatically graded. Each homework will be 10 points worth and there will be 15 homework assignments, yielding a total grade of 150 points (i.e., 15% of the final grade). Missing the deadline for homework will result with an automatic zero grade.

7. Exams

There will be three midterm exams and one final comprehensive exam. The midterm exams will be during regular class hours and it will be based on the previously completed four chapters. The final exam will be cumulative with more emphasis on the last four chapters that were not covered in the midterm exams. No make-up exams will be given. Missing an exam will result with a zero grade. A medical excuse will be granted only if proper documentation from a doctor is provided. The three midterm exams will constitute 45% of the final grade (15% each). The comprehensive final exam will constitute 18% of the final grade.

8. Emergency Evacuation Plan:

In the event of an emergency during class or lab that requires evacuation of the building, please leave the class immediately, but calmly. Our class will meet at the lawn between Bech, Shuhaw, and Baker Halls to make sure everyone got out of the building safely and to receive further instructions.

9. Accommodation for students with disabilities

Authorization for Academic Accommodations Letter from the Disability Resources Department is needed for any disability-related accommodations, including note-taking, test taking services, and special equipment/furniture, etc. Please let your instructor know about such a need as soon as possible.

10. Grading

Homework (15%): There will be 15 homework assignments following completion of each chapter, 10 points each.

Total points 150.

Laboratory (22%): There will be 12 lab-reports 20 points each; one lab-report with the lowest grade will be dropped.

Total points 220.

Midterms (45%): There will be three midterms each covering 3-4 chapters, 150 points each.

Total points 450.

Final Exam (18%): The final exam will be comprehensive.

Total points 180.

Final grade (100%): Total points 1000.

The grading scale:

| | |
|--------|------------------|
| ≥88% A | 880-1000 points |
| ≥76% B | 760-879 points |
| ≥65% C | 650-759 points |
| ≥50% D | 500-649 points |
| <50% F | below 500 points |

11. Exam dates:

Midterm 1 (Chapters 1-4): Monday, February 11, 2019, 7:30 – 8:50 am

Midterm 2 (Chapters 5-8): Monday, March 25, 2019, 7:30 – 8:50 am

Midterm 3 Chapters (9-12): Monday, April 22, 2019, 7:30 – 8:50 am

Final Exam (comprehensive): Monday, May 20, 2019, 7:00 – 9:45 am

12. Lab schedule

| Week | Day | Date | Lab This Week |
|---------------------|-----|-----------|--|
| 1 | M | 1/14/2019 | Lab Intro/Safety |
| 2 | M | 1/21/2019 | Martin Luther King Holiday |
| 3 | M | 1/28/2019 | Dimensional Analysis/Locker Check |
| 4 | M | 2/4/2019 | Measurements |
| 5 | M | 2/11/2019 | Separation of a Ternary Mixture |
| 6 | M | 2/18/2019 | Washington's Day Holiday |
| 7 | M | 2/25/2019 | Atoms and the Electromagnetic Spectrum |
| 8 | M | 3/4/2019 | Ionic and Molecular Compounds |
| 9 | M | 3/11/2019 | Lewis Dot Diagrams |
| 3/18 to 3/24 | | | No Classes-SPRING BREAK |
| 10 | M | 3/25/2019 | Chemical Reactions |
| 11 | M | 4/1/2019 | Electrochemistry and the Activity Series |
| 12 | M | 4/8/2019 | Synthesis of Indigo |
| 13 | M | 4/15/2019 | Gas Laws |
| 14 | M | 4/22/2019 | Solutions, week 1 |
| 15 | M | 4/29/2019 | Solutions, week 2 |
| 16 | M | 5/6/2019 | Acetic Acid Titration |
| 17 | M | 5/13/2019 | Locker Check |
| 18 | M | 5/20/2019 | FINALS |

13. Lecture Schedule

| Week | Day | Date | Lecture Topics |
|------|-----|-----------|---|
| 1 | M | 1/14/2019 | Chapter 1/Course Intro (Physical Transformations) |
| | W | 1/16/2019 | Chapter 2 (Significant Figures/Scientific Notation) |
| | Su | 1/20/2019 | Last day to register w/o instructor's add code |
| 2 | M | 1/21/2019 | Martin Luther King Holiday |
| | T | 1/22/2019 | PD Flex Day (no classes) |
| | W | 1/23/2019 | Chapter 2 (Units/Density/Dimensional Analysis) |
| | Su | 1/27/2019 | Last day to drop and be eligible for a refund |
| 3 | M | 1/28/2019 | Chapter 3 (Atomic Theory/Atomic Structure) |
| | W | 1/30/2019 | Chapter 3 (Atomic Theory/Periodic Table) |
| | Su | 2/3/2019 | Last day to add w/instructor's add code; Last day to drop without a "W" |
| 4 | M | 2/4/2019 | First Census Day |
| | M | 2/4/2019 | Chapter 4 (Modern Atomic Model/Bohr Theory) |
| | W | 2/6/2019 | Chapter 4 (Electron Configuration/Octet Rule) |
| 5 | M | 2/11/2019 | Exam I, Chapters 1-4 |
| | W | 2/13/2019 | Chapter 5 (Bonding/Nomenclature) |
| | Th | 2/14/2019 | PDA Day (no classes) |
| | F | 2/15/2019 | Lincoln's Day Holiday |

| | | | |
|---------------------|-----|-----------|--|
| 6 | M | 2/18/2019 | Washington's Day Holiday |
| | W | 2/20/2019 | Chapter 5 (Dot Structure/Electronegativity) |
| | Su | 2/24/2019 | Last day to opt for P/NP |
| 7 | M | 2/25/2019 | Chapter 6 (Molecular Shape) |
| | W | 2/27/2019 | Chapter 6 (VSEPR) |
| 8 | M | 3/4/2019 | Chapter 7 (Intermolecular Forces) |
| | W | 3/6/2019 | Chapter 7 (Phases of Matter) |
| 9 | M | 3/11/2019 | Midterm progress indicators posted in student portal |
| | M | 3/11/2019 | Chapter 8 (Reactions) |
| | W | 3/13/2019 | Chapter 8 (Solubility/Acid-Base rxns) |
| 3/18 to 3/24 | | | No Classes-SPRING BREAK |
| 10 | M | 3/25/2019 | Exam II, Chapters 5-8 |
| | W | 3/27/2019 | Chapter 9 (Stoichiometry/Moles) |
| 11 | M | 4/1/2019 | Chapter 9 (Stoichiometry/Moles) |
| | W | 4/3/2019 | Chapter 10 (Electrochemistry) |
| 12 | M | 4/8/2019 | Chapter 10 (Electrochemistry) |
| | W | 4/10/2019 | Chapter 11 (Gas Law) |
| 13 | M | 4/15/2019 | Chapter 12 (Solutions) |
| | W | 4/17/2019 | Chapter 12 (Molarity) |
| | Su | 4/21/2019 | Last day to drop with a "W" |
| 14 | M | 4/22/2019 | Exam III, Chapters 9-12 |
| | W | 4/24/2019 | Chapter 13 (Kinetics) |
| 15 | M | 4/29/2019 | Chapter 13 (Kinetics) |
| | W | 5/1/2019 | Chapter 15 (Acids/Bases) |
| 16 | M | 5/6/2019 | Chapter 15 (Acids/Bases) |
| | W | 5/8/2019 | Chapter 16 (Nuclear Chemistry) |
| 17 | M | 5/13/2019 | Chapter 16 (Nuclear Chemistry) |
| | W | 5/15/2019 | Chemistry Review |
| 18 | M | 5/20/2019 | Final Exam, Comprehensive |
| | Sat | 5/25/2019 | Commencement Exercises |
| | Fr | 5/31/2019 | Final Grade Rosters Due |
| | Sa | 6/1/2019 | Spring semester processing finalized |