

**CHEM 60 Course Outline as of Fall 2000****CATALOG INFORMATION**

Dept and Nbr: CHEM 60 Title: CHEM ALLIED HEALTH

Full Title: Chemistry for the Allied Health Sciences

Last Reviewed: 5/9/2022

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	5.00	Lecture Scheduled	4.00	17.5	Lecture Scheduled	70.00
Minimum	5.00	Lab Scheduled	3.00	6	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	7.00		Contact Total	122.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 140.00

Total Student Learning Hours: 262.50

Title 5 Category: AA Degree Applicable

Grading: Grade or P/NP

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly:

**Catalog Description:**

General aspects of general, organic, and biological chemistry.

**Prerequisites/Corequisites:****Recommended Preparation:**

MATH 150A.

**Limits on Enrollment:****Schedule of Classes Information:**

Description: Required for students planning to enroll in the SRJC registered nursing program.

General aspects of general, organic and biological chemistry. (Grade or P/NP)

Prerequisites/Corequisites:

Recommended: MATH 150A.

Limits on Enrollment:

Transfer Credit: CSU;

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>		<b>Effective:</b>	<b>Inactive:</b>
	C	Natural Sciences	Fall 1981	
<b>CSU GE:</b>	<b>Transfer Area</b>		<b>Effective:</b>	<b>Inactive:</b>
	B1	Physical Science	Fall 2016	
	B3	Laboratory Activity		
<b>IGETC:</b>	<b>Transfer Area</b>		<b>Effective:</b>	<b>Inactive:</b>
<b>CSU Transfer:</b>	Transferable	<b>Effective:</b>	Fall 1981	<b>Inactive:</b>
<b>UC Transfer:</b>		<b>Effective:</b>		<b>Inactive:</b>

**CID:**

**Certificate/Major Applicable:**

Not Certificate/Major Applicable

## **COURSE CONTENT**

### **Outcomes and Objectives:**

A successful student in Chemistry 60 should be able to:

1. Perform calculations involving conversions between different units of measurements and follow the rules of significant figures.
2. Perform calculations and laboratory experiments involving the measurements of mass, volume, length, density and temperature.
3. Know the difference between potential and kinetic energy, and know the units for energy. Classify matter by kind and state. Know the difference between chemical and physical change.
4. Know the symbols, corresponding names and electron configurations for more common elements. Be familiar with common features of the periodic table. Know what ions are and how ions are formed.
5. Know how to name simple inorganic compounds from their formulas and vice versa. Know the difference between ionic and covalent bond.
6. Interpret the qualitative and quantitative meaning of a balanced chemical equation. Perform calculations involving conversions between grams and moles of substances based on a balanced chemical equation.
7. Know what pressure is and the units for pressure. Know the relationship between pressure, volume, temperature and moles of a gas.
8. Know the properties of water as a solvent. Know different types of solutions. Know different ways of expressing solution's concentration. Know the principles of osmosis and dialysis.
9. Know the common properties of acids and bases. Know how to recognize an acid or a base. Know the quantitative meaning of pH. Have a basic understanding of how buffers work.
10. Know what organic chemistry is and recognize an organic compound. Know the meaning of different formulas used to depict an organic compound (structural, condensed, molecular).
11. Know how to name and draw the formulas from the names of the simple:

hydrocarbons, alcohols, ethers, aldehydes, ketones, amines, carboxylic acids, and esters.

12. Know the simple reactions involving: hydrocarbons, alcohols, ethers, aldehydes, ketones, amines, carboxylic acids, esters.
13. Predict the solubilities in water of hydrocarbons, alcohols, ethers, aldehydes, ketones, amines, carboxylic acids, and esters.
14. Know the fundamental features and classifications of carbohydrates, lipids and proteins. Know simple reactions of carbohydrates, lipids, and proteins.
15. Know the biological role of enzymes and vitamins.
16. Know what nucleic acids are and have a basic knowledge of the protein synthesis on a molecular level.

## **Topics and Scope:**

### **LECTURE MATERIAL**

1. Factor-label method of problem solving, significant figures, SI units of measurements.
2. Atoms and elements.
3. Compounds and their bonds.
4. Stoichiometry, chemical equations and mass relationships.
5. Properties of gases.
6. Energy and states of matter.
7. Solutions.
8. Acids and bases.
9. Introduction to organic chemistry.
10. Hydrocarbons.
11. Alcohols, ethers, aldehydes and ketones.
12. Carboxylic acids and derivatives.
13. Amines and amides.
14. Carbohydrates.
15. Lipids.
16. Proteins.
17. Enzymes, vitamins, and digestion.
18. Chemistry and heredity: DNA and RNA.

### **LABORATORY MATERIAL**

1. Introduction, including safety, graphical analysis, and recording data.
2. Measurements in the chemistry lab.
3. Mass relationships in chemistry.
4. Gas laws.
5. Properties of solutions.
6. Acids and bases.
7. Introduction to organic chemistry.
8. Analysis for functional groups.
9. Synthesis of simple organic compounds.
10. Detection of carbohydrates.

## **Assignment:**

Assignments for Chemistry 60 include:

1. Specific reading and study assignments (averaging 25-30 pages per

- week).
2. Completion of end-of-chapter exercises (averaging 15-20 problems per week).
  3. Writing (on average) one laboratory report per week and previewing upcoming laboratory experiments and completion of the required pre-laboratory assignment.

### Methods of Evaluation/Basis of Grade:

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Lab reports, Essay exams	Writing 20 - 30%
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**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Lab reports, Quizzes, Exams	Problem solving 10 - 20%
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**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

LAB SKILL EVALUATION	Skill Demonstrations 2 - 5%
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**Exams:** All forms of formal testing, other than skill performance exams.

Multiple choice, EXAMS, QUIZZES	Exams 50 - 60%
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**Other:** Includes any assessment tools that do not logically fit into the above categories.

None	Other Category 0 - 0%
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### Representative Textbooks and Materials:

#### LECTURE:

AN INTRODUCTION TO GENERAL, ORGANIC, AND BIOLOGICAL CHEMISTRY, by Bettelheim and March, 5th Ed., Saunders, 1998.

CHEMISTRY, AN INTRODUCTION TO GENERAL, ORGANIC, AND BIOLOGICAL CHEMISTRY,

by Karen C. Timberlake, 7th Ed., Addison Wesley Co., 1999.

#### LABORATORY MANUALS:

LABORATORY MANUAL FOR CHEMISTRY 60, by Dr. D.K. Fujita, 1st Ed., 1999.

LABORATORY MANUAL FOR AN INTRODUCTION TO GENERAL, ORGANIC, AND BIOLOGICAL

CHEMISTRY, by Karen C. Timberlake, 7th Ed., Addison Wesley Longman Co.