

**CHEM 60 Course Outline as of Fall 2008****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:**

Basic concepts of general, organic and biological chemistry. Satisfies the requirements of nursing and related majors that require one semester of chemistry.

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

Eligibility for ENGL 100 or ESL 100 and Eligibility for MATH 150B

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

Description: Basic concepts of general, organic and biological chemistry. Satisfies the requirements of nursing and related majors that require one semester of chemistry. (Grade or P/NP)

Prerequisites/Corequisites:

Recommended: Eligibility for ENGL 100 or ESL 100 and Eligibility for MATH 150B

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

**CID:**

**Certificate/Major Applicable:**

Major Applicable Course

## **COURSE CONTENT**

### **Outcomes and Objectives:**

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

1. Recognize the structures and functional groups of lipids, carbohydrates, proteins and nucleic acids.
2. Apply an understanding of organic reactions.
3. Demonstrate the appreciation of the importance of solution properties in medicine.
4. Analyze bulk properties of gases from a molecular scale perspective.
5. Relate intermolecular forces to physical properties of substances.
6. Interpret and draw molecular geometries, structures and isomerism in three dimensions.
7. Calculate quantities related to concentrations of solutions.
8. Use moles and mole ratios to calculate quantities in reactions.
9. Assemble and handle lab equipment effectively.
10. Develop skills of observation and lab notebook maintenance.
11. Interpret observations using chemical principles.

### **Topics and Scope:**

- I. Atomic Theory
  - a. Structure of the atom
  - b. Organization of the periodic table
  - c. Ions
  - d. Mole concept
- II. Laboratory measurements and calculations
- III. Chemical Bonding and Molecular Structure
  - a. Ionic compounds
  - b. Covalent compounds
  - c. Organic structures and functional groups

- d. Isomerism and stereochemistry
- IV. Chemical Reactions
  - a. Balancing reactions
  - b. Basic organic reactions
  - c. Simple acid-base reactions
  - d. Le Chatelier's principle
- V. Matter and Energy
  - a. Gases, liquids and solids
  - b. Qualitative atomic theory of gases
  - c. Intermolecular forces
- VI. Solutions
  - a. Measures of concentration
  - b. Diffusion, osmosis and dialysis
  - c. pH and buffers
- VII. Biological Chemistry
  - a. Lipids
  - b. Carbohydrates
  - c. Amino acids and peptides
  - d. Proteins
  - e. Nucleic Acids
  - f. Metabolism

Lab material will be chosen each semester to supplement or reinforce most of the topics above.

Sample Labs:

1. Measurements, Metric System and Conversions
2. Lewis Structures and Molecular Geometry
3. Reactions and Observations
4. Gases
5. Stoichiometry
6. Diffusion, Osmosis and Dialysis
7. Solutions
8. Lipids
9. Acids, Bases and Buffers
10. Carbohydrates
11. Amino Acids
12. Enzymes
13. Lab Skill Evaluation

### **Assignment:**

1. Weekly reading and study (averaging 1 chapter)
2. Weekly chapter exercises (averaging 20 problems)
3. Weekly laboratory reports
4. Previewing upcoming laboratory experiments and completing any pre-lab exercise
5. Semester exams, 3-5 midterms plus a final

### **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

Writing  
15 - 35%

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Chapter exercises

Problem solving  
1 - 10%

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Lab skill evaluation

Skill Demonstrations  
1 - 5%

**Exams:** All forms of formal testing, other than skill performance exams.

Multiple choice, completion, short essay, midterm and/or final exam

Exams  
60 - 80%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

Class and laboratory participation

Other Category  
0 - 5%

### **Representative Textbooks and Materials:**

General, Organic and Biological Chemistry: An Integrated Approach,  
by Kenneth W. Raymond, 1st Ed., Wiley, 2006

Foundations of General, Organic and Biochemistry,  
by Katherine J. Denniston and Joseph J. Topping, 1st Ed., McGraw-Hill, 2007

Chemistry: An Introduction to General, Organic and Biological Chemistry,  
9th Ed., by Karen C. Timberlake, Pearson Prentice Hall, 2005

Laboratory Manuals:

Laboratory Manual for General, Organic and Biological Chemistry,  
by Karen C. Timberlake, Pearson Benjamin Cummings, 2007

Exploring Chemistry: Laboratory Experiments in General, Organica and  
Biological Chemistry, 2nd Ed., by Julie R. Peller, Pearson Prentice Hall,  
2004