

CHEM 60 Course Outline as of Fall 2014**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:

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|----------------------|----------------------|---------------------|------------|-----------|
| AS Degree: | Area | | Effective: | Inactive: |
| | C | Natural Sciences | Fall 1981 | |
| CSU GE: | Transfer Area | | Effective: | Inactive: |
| | B1 | Physical Science | Fall 2016 | |
| | B3 | Laboratory Activity | | |
| IGETC: | Transfer Area | | Effective: | Inactive: |
| CSU Transfer: | Transferable | Effective: | Fall 1981 | Inactive: |
| UC Transfer: | | 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. Demonstrate a basic understanding of organic reactions.
3. Recognize the importance of solution chemistry in medicine.
4. Explain bulk properties of gases from a molecular scale perspective.
5. Relate intermolecular forces to physical properties of substances.
6. Draw Lewis structures, and relate them to isomerism and molecular geometry.
7. Calculate quantities related to concentrations of solutions.
8. Use moles and mole ratios to calculate quantities in reactions.
9. Assemble and handle appropriate lab equipment effectively and safely.
10. Develop skills of observation, record keeping, 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
 - e. Reaction mechanisms and associated energy changes
- V. Matter at the Sub Microscopic Level
- 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 Molecules
- a. Lipids
 - b. Carbohydrates
 - c. Amino acids and peptides
 - d. Proteins
 - e. Nucleic Acids
- VIII. 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) and final exam
6. Quizzes (0-12)

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.

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| Lab reports | Writing 15 - 35% |
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Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

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| Chapter exercises, quizzes | Problem solving 5 - 10% |
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Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

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| None | Skill Demonstrations 0 - 0% |
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Exams: All forms of formal testing, other than skill performance exams.

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| Multiple choice, completion, short essay, midterm and final exam | Exams 60 - 80% |
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Other: Includes any assessment tools that do not logically fit into the above categories.

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| Class and laboratory participation | Other Category 0 - 5% |
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Representative Textbooks and Materials:

- General, Organic and Biological Chemistry, 2nd Ed., Laura Frost & S. Todd Deal, Pearson 2014
- Chemistry: An Introduction to General, Organic, and Biological Chemistry, 11th Ed., by Karen Timberlake, Pearson 2012
- General Organic and Biological Chemistry: An Integrated Approach, 4th Ed., by Kenneth Raymond, Wiley 2014
- Foundations of General, Organic and Biochemistry, 1st Ed., by Katherine Denniston & Joseph Topping, McGraw Hill, 2008

Laboratory Materials:

- Instructor prepared materials
- Exploring Chemistry: Laboratory Experiments in General, Organic and Biological Chemistry, 2nd Ed., by Julie Peller, Pearson 2003