

**CHEM 42 Course Outline as of Fall 2007****CATALOG INFORMATION**

Dept and Nbr: CHEM 42      Title: INTRO GEN CHEM  
 Full Title: Introductory General Chemistry  
 Last Reviewed: 2/7/2022

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	4.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	4.00	Lab Scheduled	3.00	6	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	6.00		Contact Total	105.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00

Total Student Learning Hours: 210.00

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: CHEM 55

**Catalog Description:**

A basic introduction to fundamental laws and principles of the composition of matter, physical and chemical changes, atomic and molecular structure, chemical equilibria and kinetics, intermolecular forces, solutions, and qualitative and quantitative theory and techniques. For applied science or non-science majors.

**Prerequisites/Corequisites:**

MATH 155 or two years of high school algebra or equivalent.

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

Description: A basic introduction to fundamental laws and principles of the composition of matter, physical and chemical changes, atomic and molecular structure, chemical equilibria and kinetics, intermolecular forces, solutions, and qualitative and quantitative theory and techniques. (Grade or P/NP)

Prerequisites/Corequisites: MATH 155 or two years of high school algebra or equivalent.

Recommended:

Limits on Enrollment:

Transfer Credit: CSU;UC.

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 2005	
<b>CSU GE:</b>	<b>Transfer Area</b>		Effective:	Inactive:
	B1	Physical Science	Fall 2005	
	B3	Laboratory Activity		
<b>IGETC:</b>	<b>Transfer Area</b>		Effective:	Inactive:
	5A	Physical Sciences	Spring 2007	
	5C	Fulfills Lab Requirement		
<b>CSU Transfer:</b>	Transferable	Effective:	Fall 2005	Inactive:
<b>UC Transfer:</b>	Transferable	Effective:	Fall 2006	Inactive:

**CID:**

**Certificate/Major Applicable:**

Both Certificate and Major Applicable

## **COURSE CONTENT**

**Outcomes and 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 the various forms of matter.
2. State concise explanations which 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 and organic 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.
8. Recognize the use of experimental chemistry in a variety of professional fields.
9. Recognize the role of chemistry in history and today's society.

**Topics and Scope:**

Lecture Material

1. The Scientific Method and the Development of Chemical Theories

- Through History
- 2. Atomic Theory and Structure
- 3. Chemical Bonding
- 4. Chemical Reactions
- 5. Thermochemistry
- 6. Equilibrium
- 7. Rates of Chemical Reactions
- 8. Acid-Base Chemistry
- 9. States of Matter and Intermolecular forces
- 10. Introduction to Organic Chemistry
- 11. Applications of Chemistry to Other Fields of Study

#### Laboratory Material

- 1. Laboratory Safety
- 2. Laboratory Techniques
- 3. Maintaining a Laboratory Notebook
- 4. Measurement and Significant Figures
- 5. Graphing Data Obtained in the Laboratory
- 6. Limiting Reactants and Percent Yield
- 7. Qualitative Analysis/Identification of an Unknown
- 8. Application of Chemistry to Various Career Fields  
(e.g. Environmental Science, Agricultural Chemistry, Enology, Criminalistics)
- 9. Writing Laboratory Reports

#### Assignment:

- 1. Specific reading and study assignments from the textbook (20-30 pages per week).
- 2. Recommended Study Problems for Text (10-15 per week).
- 3. Writing approximately one lab report per week and completing the required pre-laboratory assignments.
- 4. Accurately analyze laboratory unknown samples.
- 5. Written Homework.
- 6. 3-5 quizzes; midterm; final exam.

#### 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.

Written homework
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Writing 10 - 30%
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**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems, Lab reports
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Problem solving 40 - 65%
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**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Accurate results of lab analyses.

Skill Demonstrations  
10 - 20%

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

Multiple choice, Completion, Short essay; problem solving

Exams  
15 - 25%

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

Participation

Other Category  
0 - 10%

**Representative Textbooks and Materials:**

General Chemistry: The Essential Concepts, Raymond Chang, McGraw Hill, 2003

Chemistry: Principles and Reactions Masterton & Hurley, Thomson/Brooks cole, 2004

Introductory Chemistry Laboratory Manual (2nd Ed.), Gloffke & Kimbrough, B. Cummings, 2002

Introductory Chemistry Laboratory Manual (3rd Ed.), Corwin, Prentice Hall, 2002