**Course Title:** General Chemistry I  

**Department:** Mathematics and Science  

**Curriculum:** Chemistry  

**Course Code:** CHE*121  

**Course Type:**  
- X: Combined Lecture/Lab  
- C: Clinical  
- L: Lecture  
- S: Studio  
- D: Distance Learning  
- I: Individual/Independent  
- M: Seminar Internship  
- U: Studio  
- A: Clinical  
- B: Lab  
- E: English  
- FA: Fine Arts  
- FL: Foreign Language  
- G: General  
- HI: History  
- HU: Humanities  
- LAS: Liberal Arts & Sciences  
- M: Math  
- S: Science  
- SS: Social Science  

**Credit Hours:** 4  

**Corequisites:** None  

**Other Requirements:** Safety glasses, scientific calculator, technology skills  

**Course Descriptors:**  
Make certain that the course descriptors are consistent with college and Board of Trustees policies, and the current course numbering system.

**Elective Type:** G/LAS/S

**Catalog Course Description:** The fundamental principles, theories, and laws of chemistry are studied. Topics include: atomic theory and the structure of the atom, the aggregated states of matter, kinetic molecular theory, chemical bonding, stoichiometry, periodicity, solutions and colloids. Lecture and laboratory.

**Topical Outline:**  
1. Science and scientific method  
2. Measurement, units, accuracy and significant figures  
3. Atomic theory, elements, compounds and mixtures  
4. Chemical formulae and equations  
5. The mole, molecular and formula weights and gram molecular and gram formula weights  
6. Atomic and molecular models  
7. Molecular geometry  
8. Thermochemistry  
9. Ideal gas laws  

**Prerequisites:**  
C- or better in Intermediate Algebra (MAT*137) OR C- or better in Elementary Algebra/Intermediate Algebra Combined (MAT*139). Intermediate Algebra for Liberal Arts (MAT*137L) is NOT sufficient for entry into this course.
<table>
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<tr>
<th>10. Solutions and molarities</th>
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<tr>
<td>Laboratory:</td>
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<tr>
<td>1. Densities of liquids and solids</td>
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<td>2. Resolution of matter into pure substances, paper chromatography</td>
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<td>3. Determination of chemical formula</td>
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<td>4. Identification of a compound by mass relationships</td>
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<td>5. Boyle’s Law</td>
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<td>6. Atomic spectrum of hydrogen</td>
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<td>7. Alkaline earths and halogens</td>
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<td>8. Geometrical structure of molecules</td>
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<td>9. Calorimetry</td>
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<td>10. Vapor pressure of a liquid</td>
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<td>11. Molar mass by freezing point depression</td>
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<td>12. Classification of chemical substances</td>
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<td>13. Acid-base titration</td>
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<td>14. Structure of crystals</td>
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**Upon successful completion of this course, the student will be able to do the following:**

1. explain the concepts of significant figures and the relationships in the metric system
2. explain an overview of the atomic theory
3. describe the law of conservation of mass
4. explain the concept of the mole
5. distinguish the difference between ions and atoms, cations, and anions
6. apply Avogadro’s number to chemical problems
7. correctly determine chemical formulae and equations
8. apply the laws of thermochemistry and the heat of bond formation in appropriate problems
9. describe the quantum theory
10. differentiate between ionic and covalent bonding
11. distinguish between polar and nonpolar bonds
12. recognize organic compounds
13. explain the methods of expressing solution concentrations

**PROGRAM:** (Numbering reflects Program Outcomes as they appear in the college catalog)
N/A

**COMPETENCY FULFILLED:**
Scientific Knowledge & Understanding (SCKX) OR Scientific Reasoning (SCRX)

**Evaluation:**
List how the above outcomes will be assessed.

Assessment will be based on the following criteria:
quizzes
examinations
laboratory reports

**Instructional Resources:**
Required: Scientific calculator
Desired: Software
List library (e.g. books, journals, on-line resources), technological (e.g. Smartboard, software), and other resources (e.g. equipment, supplies, facilities) required and desired to teach this course.

<table>
<thead>
<tr>
<th>Textbook(s)</th>
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<tbody>
<tr>
<td>Slowinski, <em>Chemical Principles in the Laboratory</em>, 8th ed.; Thomson</td>
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<tr>
<td><em>Chemical Periodic Table</em>, 8th ed.; Permachart</td>
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