CHM 104
Introduction to General Chemistry

I. CHM 104, Introduction to General Chemistry, 4 Semester Hours

II. Course Description
This course is a survey of general chemistry for students who do not intend to major in science or engineering and may not be substituted for CHM 111. Lecture will emphasize the fundamental facts, principles, and theories of general chemistry including math operations, matter and energy, atomic structure, symbols and formulas, nomenclature, the periodic table, bonding concepts, equations, reactions, stoichiometry, gas laws, phases of matter, solutions, pH, chemical equilibrium, and nuclear chemistry. Laboratory is required.

III. Prerequisite
MTH 092, MTH 098, or equivalent math placement score.

IV. Textbook
Due to the varied selection of quality college level textbooks, each college will select the textbook needed to meet the requirements of this course.

V. Course Competencies
At the end of the course the student will be able to:

A. Solve measurement problems using dimensional analysis.
B. Write chemical formulas and name compounds.
C. Balance chemical equations.
D. Solve stoichiometry problems.
E. Solve thermochemistry problems.
F. Discuss atomic structure.
G. Discuss bonding concepts.
H. Discuss the gas laws.
I. Discuss the kinetic-molecular theory.
J. Discuss the phases of matter.
K. Define terminology related to solutions and colloids.
L. Solve solution problems, including concentration and dilution.
M. Discuss chemical equilibrium reactions.
N. Discuss oxidation-reduction reactions.
O. Discuss acid base chemistry, including pH and buffers.
P. Discuss nuclear chemistry.

VI. Course Outline of Topics

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<th>Lecture Topics</th>
<th>Suggested Laboratory Topics</th>
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<td>Introduction to Inorganic Chemistry: Scientific Measures</td>
<td>Check-in; safety procedures; rules and regulations</td>
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<td>Matter and Energy</td>
<td>Densities; melting points</td>
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<tr>
<td>Atoms; Symbols; Formulas; Nomenclature</td>
<td>Identifying an unknown compound</td>
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<td>Periodic Table</td>
<td>Chemical and physical properties</td>
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<td>Atomic Structure; Periodicity</td>
<td>Synthesis of a compound/Empirical Formula</td>
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<td>Covalent Bonding; Ionic Bonding</td>
<td>Formula of a hydrate</td>
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<td>Equations</td>
<td>Specific heat determination</td>
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<td>Formulas and Reactions</td>
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<td>The Mole Concept</td>
<td>Thermal decomposition of a compound</td>
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<td>Stoichiometry</td>
<td>Titration</td>
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<td>Gases</td>
<td>Determination of the gas constant</td>
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<td>Liquids, Solids, and Changes of State</td>
<td>Molecular weight determination by vapor pressure</td>
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<td>Solutions</td>
<td>Molal freezing point depression 14</td>
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<td>Acids, Bases, Salts, and Buffers; Equilibrium Reactions</td>
<td>pH, buffers</td>
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<td>Nuclear Chemistry</td>
<td>Lab final exam; check-out</td>
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VII. Evaluation and Assessment

Grades will be composed of tests, lab work, a comprehensive final exam, and may include other assignments.
75-80 percent lecture, 20-25 percent laboratory
A minimum of 3 tests and a comprehensive final exam will be given.
A minimum of one test and a final exam will be given in laboratory.
Grades will be given based upon A = 90 – 100%, B = 80 – 89%, C = 70 – 79%, D = 60 – 69%, and F = below 60%.

VIII. Attendance

Students are expected to attend all classes for which they are registered. Students who are unable to attend class regularly, regardless of the reason or circumstance, should withdraw from that class before poor attendance interferes with the student’s ability to
achieve the objectives required in the course. Withdrawal from class can affect eligibility for federal financial aid.

IX. **Statement on Discrimination/Harassment**
The College and the Alabama State Board of Education are committed to providing both employment and educational environments free of harassment or discrimination related to an individual’s race, color, gender, religion, national origin, age, or disability. Such harassment is a violation of State Board of Education policy. Any practice or behavior that constitutes harassment or discrimination will not be tolerated.

X. **Americans with Disabilities Act**
The Rehabilitation Act of 1973 (Section 504) and the Americans with Disabilities Act of 1990 state that qualified students with disabilities who meet the essential functions and academic requirements are entitled to reasonable accommodations. It is the student’s responsibility to provide appropriate disability documentation to the College.