1. **COURSE ID:** CHEM 100  
**TITLE:** Survey of Chemistry  
**Units:** 3.0 units  
**Hours/Semester:** 48.0-54.0 Lecture hours  
**Method of Grading:** Letter Grade Only

2. **COURSE DESIGNATION:**  
   **Degree Credit**  
   **Transfer credit:** CSU  
   **AA/AS Degree Requirements:**  
   CSM - GENERAL EDUCATION REQUIREMENTS: E5a. Natural Science

3. **COURSE DESCRIPTIONS:**  
   **Catalog Description:**  
   An introductory course in Chemistry for non-science majors. Students are introduced to basic concepts of chemistry and requires analyses of the socio-cultural contexts within which chemistry plays a central role. Key concepts include classification of matter; atomic structure; chemical bonding and their properties; chemical formulas, equations and stoichiometry; classification of chemical reactions; electronic structure and periodic trends; gases; solutions. Recommended for non-science majors or as an exploratory course for further studies in chemistry.

4. **STUDENT LEARNING OUTCOME(S) (SLO'S):**  
   Upon successful completion of this course, a student will meet the following outcomes:  
   1. Use units of measurements and dimension analysis in chemistry problems. (topics 1, 5 and 8)  
   2. Explain atomic and electronic structure of atoms. (Topic 2, 3)  
   3. Understand ionic and covalent bonding and the relationship between bonding types and properties. (topic 3 and 6)  
   4. Represent chemical elements and simple chemical compounds in balanced equations. (Topics 6 & 8)  
   5. Understand classification of matter including solids, liquids, gases, solutions, acids and bases. (topics 6, 7 and 8)  
   6. Explain chemical processes which impact daily activities, society and the environment. (topics 4, 5, 7 and 8)  
   7. Explore independently contemporary topics in which chemistry has a significant role. (Independent study topic)

5. **SPECIFIC INSTRUCTIONAL OBJECTIVES:**  
   Upon successful completion of this course, a student will be able to:  
   1. Use units of measurements and dimension analysis in chemistry problems (topics 1, 5 and 8)  
   2. Explain atomic and electronic structure of atoms. (Topics 2 and 3)  
   3. Understand ionic and covalent bonding and the relationship between bonding types and properties (topic 3 and 6)  
   4. Represent chemical elements and simple chemical compounds in balanced equations. (topics 6 and 8)  
   5. Understand classification of matter including solids, liquids, gases, solutions, acids and bases. (topics 6, 7 and 8)  
   6. Explain chemical processes which impact daily activities, society and the environment. (topics 4, 5, 7 and 8)  
   7. Explore independently contemporary topics in which chemistry has a significant role. (Independent study topic)

6. **COURSE CONTENT:**  
   **Lecture Content:**  
   Topic 1: Introduction to Chemistry in our everyday; working with scientific units.  
   Topic 2: Atoms and elements: atomic structure, isotopes, atomic masses, introduction to the periodic table.  
   Topic 3: Chemical bonding: ionic and covalent bonds, properties of ionic and covalent compounds, nomenclature of simple compounds.  
   Topic 4: Chemicals and Energy: fossil fuels, petroleum refining and gasoline, the carbon cycle, greenhouse gases and climate changes; renewable energy sources.  
   Topic 5: Energy of Food: metabolism, calorimetry, classification of fats, oils, carbohydrates and proteins.
Topic 6: States of Matter - classification by state or by composition; properties of gases and liquids.
Topic 8: Acids and Bases - Bronsted-Lowry Acids and Bases; Strengths of acids and bases; pH scale; Acid-base reactions; acid-base reactions in everyday processes.
Independent study topic: Examples include Lighting and human environment; transportation; nutrition; drug-design, pollution and climate issues.

Lab Content:
None

TBA Hours Content:
None

7. REPRESENTATIVE METHODS OF INSTRUCTION:
Typical methods of instruction may include:
A. Lecture
B. Directed Study
C. Activity
D. Discussion
E. Guest Speakers
F. Other (Specify): Online instructional videos and forum discussions

8. REPRESENTATIVE ASSIGNMENTS
Representative assignments in this course may include, but are not limited to the following:

Writing Assignments:
Homework questions and tutorial assignments to assess students' understanding and application of key chemistry concepts.
End-of-topic quizzes and group-discussion questions posted on online forums. These provide progress reports on students' learning on key chemical concepts.

Reading Assignments:
Reading posted lecture notes and relevant articles from textbook or other sources.
Reading assignments accompanied by self-test questions.
The reading assignments, lecture notes, instructional videos and audio podcasts presents concepts students need to understand to do the self-tests and assessments.

9. REPRESENTATIVE METHODS OF EVALUATION
Representative methods of evaluation may include:
A. Class Participation
B. Exams/Tests
C. Homework
D. Papers
E. Quizzes
F. Written examination

10. REPRESENTATIVE TEXT(S):
Possible textbooks include:

Origination Date: October 2014
Curriculum Committee Approval Date: November 2014
Effective Term: Fall 2015
Course Originator: Yin Mei Lawrence