1. **COURSE TITLE\*:** First Year Chemistry I
2. **CATALOG – PREFIX/COURSE NUMBER/COURSE SECTION\*:** CHEM 1151
3. **PREREQUISITE(S)\*:** CHEM 1120 or one year of high school chemistry and high school algebra, or its equivalents

**COREQUISITE(S)\*:** CHEM 1161

1. **COURSE TIME/LOCATION/MODALITY: (*Course Syllabus – Individual Instructor Specific*)**
2. **CREDIT HOURS\*:** 4 **LECTURE HOURS\*:** 4

**LABORATORY HOURS\*:** 0  **OBSERVATION HOURS\*:** 0

1. **FACULTY CONTACT INFORMATION: *(Course Syllabus – Individual Instructor Specific)***
2. **COURSE DESCRIPTION\*:**

A college level chemistry course covering measurement, significant figures, moles, chemical formulas, chemical equations, stoichiometry, acids and bases, oxidation-reduction, thermochemistry, quantum mechanics, atomic orbitals, bonding theories, and gases.

1. **LEARNING OUTCOMES\*:**

Upon completion of this course the student should be able to:

1. Read, write and talk about chemistry using a basic chemistry vocabulary.

2. Express measurements and calculated values in the correct number of significant figures.

3. Solve problems pertaining to

a. unit conversions,

b. density,

c. moles,

d. the determination of empirical and molecular formulas,

e. reaction stoichiometry, and

f. solution concentration.

4. Demonstrate a fundamental understanding of atomic and molecular structure and the periodic table.

5. Name and write chemical formulas for compounds.

6. Balance the chemical equations associated with exchange reactions and oxidation-reduction reactions.

7. Classify chemical reactions.

8. Demonstrate a basic understanding of aqueous solutions including acids and bases.

9. Demonstrate a fundamental understanding of the Bohr model of the atom, the wave mechanical view of the atom, and the scientific developments that led to each.

10. Apply the Pauli exclusion principle and orbital energies to the writing of electron configurations of atoms and ions.

11. List and explain the periodic trends.

12. Draw Lewis structures to represent bonding in molecules. Use electronegativities to evaluate bond polarities.

13. Predict electron-pair and molecular geometries.

14. Discuss and compare the valence bond and molecular orbital theories.

15. Determine orbital hybridization from electron pair geometries.

16. Explain the advantages and disadvantages of molecular orbital theory.

17. Use molecular orbital theory to predict the stability of molecules

18. Discuss and apply the concepts of thermochemistry, the heat involved in chemical and physical changes.

19. Solve problems pertaining to specific heat, heat capacity, enthalpy, and calorimetry.

20. Solve problems pertaining to the gas laws,

21. Use the gas laws to solve problems pertaining to reaction stoichiometry,

22. List the principle tenets of kinetic molecular theory and use the theory to explain the gas laws.

1. **ADOPTED TEXT(S)\*:**

*Chemistry & Chemical Reactivity*, Hybrid Edition, 9th Edition

By: Kotz, Treichel, and Townsend

Cengage Learning, 2014

ISBN: 978-1-285-46253-0

1. **OTHER REQUIRED MATERIALS: (SEE APPENDIX C FOR TECHNOLOGY REQUEST FORM.)\*\***

A calculator is required.

1. **GRADING SCALE\*\*\*:**

Grading will follow the policy in the catalog. The scale is as follows:

A: 90 – 100

B: 80 – 89

C: 70 – 79

D: 60 – 69

F: 0 – 59

1. **GRADING PROCEDURES OR ASSESSMENTS: (*Course Syllabus – Individual Instructor Specific)***
2. **COURSE METHODOLOGY: *(Course Syllabus – Individual Instructor Specific)***

**14. COURSE OUTLINE: *(Course Syllabus – Individual Instructor Specific)***

***(Insert sample course outline with learning objectives tied to assignments / topics.)***

**15. SPECIFIC MANAGEMENT REQUIREMENTS\*\*\*:**

* You may not use programmable calculators or cell phone calculators for tests.
* Please understand that your work may be seen by others. Others may see your work when being distributed, during group project work, or if it is chosen for demonstration purposes. There is also a possibility that your papers may be submitted electronically to other entities, for reasons such as for plagiarism checks.
* ACADEMIC MISCONDUCT: Any student who commits any type of academic misconduct as stated in the current college catalogue will receive an "F" for the exam, quiz, or evaluated project.

**16. FERPA:\***

Students need to understand that your work may be seen by others. Others may see your work when being distributed, during group project work, or if it is chosen for demonstration purposes. Students also need to know that there is a strong possibility that your work may be submitted to other entities for the purpose of plagiarism checks.

**17. DISABILITIES:\***

Students with disabilities may contact the Disability Services Office, Central Campus, at 800-628-7722 or 937-393-3431.

**18. OTHER INFORMATION\*\*\*:**

**SYLLABUS TEMPLATE KEY**

**\*** Item cannot be altered from that which is included in the master syllabus approved by the Curriculum Committee.

**\*\*** Any alteration or addition must be approved by the Curriculum Committee

**\*\*\*** Item should begin with language as approved in the master syllabus but may be added to at the discretion of the faculty member.