

**Common Course Outline for:** CHEM 1020 ("Introductory Chemistry")**A. Course Description**

1. Number of credits: 4
2. Lecture hours per week: 3  
Lab hours per week: 2
3. Prerequisites: None
4. MnTC Goals : Goal 3: Natural Sciences

In this one-semester laboratory course, basic principles of chemistry are discussed and applied to everyday situations. Tools and methods of investigation used by chemists are introduced through weekly laboratory sessions.

**B. Date last reviewed:** Spring 2018**C. Outline of Major Content Areas**

- a. Chemical terms and measurements
- b. The chemical elements
- c. Compounds, formulas and equations
- d. Atomic structure and the periodic table
- e. Chemical bonds
- f. Chemical stoichiometry
- g. Water and solutions
- h. Acids and bases
- i. Organic chemistry

**D. Course Learning Outcomes**

Upon successful completion of the course, the student will be able to:

1. Demonstrate an understanding of the basic principles of chemical knowledge including quantitative relationships. (Goal 3: a,b)
2. Correlate chemical principles with practical applications. (Goal 3: a,b,d)
3. Apply the metric system. (Goal 3: a,b)
4. Carry out standard laboratory operations. (Goal 3: b,c)
5. Demonstrate an understanding of basic principles of inorganic, organic, and nuclear chemistry. (Goal 3: a,b,d)

## E. Methods for Assessing Student Learning

- a. Minimum of three one-hour exams.
- b. Methods of evaluation include quizzes and/or homework
- c. Laboratory experiments (13 lab experiments from the following list, and a lab exam)
  - i. Lab Safety
  - ii. Glassware and Measurement
  - iii. Separations of a Mixture
  - iv. Metric system and Density
  - v. Percent Water in Popcorn
  - vi. Density of Carbon Dioxide
  - vii. Elements and Compounds
  - viii. Observing Chemical Reactions
  - ix. Chemical Reaction Types
  - x. Molecular Shapes and Polarity
  - xi. Stoichiometry
  - xii. Solutions
  - xiii. Vinegar Titration
  - xiv. Chemistry and you
  - xv. Antacid analysis
  - xvi. Graphing data
  - xvii. Hydrates
  - xviii. Evaporation
- d. Comprehensive Final Exam

Statement of Departmental Policy:

The use of graphing calculators will not be allowed during quizzes or exams.

## F. Special information

- a. Requirements
  - i. Reading assignments, questions and problems from the textbook:  
*Introductory Chemistry, 5<sup>th</sup> Edition*, by TRO. Completion of 12 of assigned laboratory experiments.
- b. During the semester a number of assessments will be performed in order to monitor students' progress, provide students with feedback, and to identify areas that require additional attention.
- c. Grades
  - i. A – 90%
  - ii. B – 80%
  - iii. C – 70%
  - iv. D – 55%