# 1/5/2023

# brcc keystone logo

Baton Rouge Community College

*Academic Affairs Master Syllabus*

Date Approved: 2 February 2023

Term and Year of Implementation: Spring 2023

**Course Title:** Chemistry for PTEC Majors

**BRCC Course Rubric:** CHEM 1043

**Previous Course Rubric**: CHEM 104

**Lecture Hours per week-Lab Hours per week-Credit Hours**: 3-0-3

**Per semester: Lecture Hours-Lab Hours-Instructional Contact Hours**: 45-0-45

**Louisiana Common Course Number:**

**CIP Code:** 40.0501

**Course Description:** Introduces fundamental principles of general/organic chemistry. Introduces polymeric materials and relates organic chemical reactions to the field of applied organic chemistry in the petrochemical, refining and polymer industries.

**Prerequisites:**  None

**Co-requisites:** None

**Suggested Enrollment Cap:** 30

**Learning Outcomes.** *Upon successful completion of this course, the students will be able to:*

1. Demonstrate a fundamental knowledge of chemistry including modern atomic theory, bonding, chemical reactions, stoichiometry, periodicity, and inorganic and organic chemical nomenclature.

2. Write balanced chemical equations.

3. Explain the structure, nomenclature, reactivity, and chemical use for a number of chemical families.

4. Relate organic chemical reactions, including the identification and handling of toxic chemicals, to the field of applied organic chemistry in the petrochemical, refining and polymer industries.

**Assessment Measures.** Assessment of all learning outcomes will be measured using the following methods:

1. Administration of unit exams during the semester and a comprehensive final exam at the end of the semester.

2. Instructor-designed assignments including, but not limited to, written and oral assignments, projects, homework, and quizzes. All assignments will be graded using an instructor-designed rubric.

**Information to be included on the Instructor’s Course Syllabi:**

* ***Disability Statement*:** Baton Rouge Community College seeks to meet the needs of its students in many ways. See the Office of Disability Services to receive suggestions for disability statements that should be included in each syllabus.
* ***Grading:*** The College grading policy should be included in the course syllabus. Any special practices should also go here. This should include the instructor’s and/or the department’s policy for make-up work. For example in a speech course, “Speeches not given on due date will receive no grade higher than a sixty” or “Make-up work will not be accepted after the last day of class”.
* ***Attendance Policy*:** Include the overall attendance policy of the college. Instructors may want to add additional information in individual syllabi to meet the needs of their courses.
* ***General Policies*:** Instructors’ policy on the use of things such as beepers and cell phones and/or hand held programmable calculators should be covered in this section.
* ***Cheating and Plagiarism*:** This must be included in all syllabi and should include the penalties for incidents in a given class. Students should have a clear idea of what constitutes cheating in a given course.
* ***Safety Concerns:*** In some courses, this may be a major issue. For example, “No student will be allowed in the lab without safety glasses”. General statements such as, “Items that may be harmful to one’s self or others should not be brought to class”.
* ***Library/ Learning Resources:*** Since the development of the total person is part of our mission, assignments in the library and/or the Learning Resources Center should be included to assist students in enhancing skills and in using resources. Students should be encouraged to use the library for reading enjoyment as part of lifelong learning.

**Expanded Course Outline:**

I. Measurement

A. Units of Measurement

B. Measured Numbers and Significant Figures

C. Significant Figures in Calculations

D. Prefixes and Equalities

E. Problem Solving Using Conversions Factors

F. Density

G. Temperature

II. Atoms and Elements

A. Elements and Symbols

B. The Periodic Table

C. The Atom

D. Atomic Number and Mass Number

E. Isotopes

F. Electron Energy Levels

III. Compounds and Their Bonds

A. Valence Electrons

B. Octet Rule and Ions

C. Ionic Compounds

D. Naming Ionic Compounds

E. Polyatomic Ions

F. Covalent Compounds

G. Bond Polarity

H. Shapes and Polarity of Molecules

IV. Chemical Reactions and Quantities

A. Chemical Changes

B. Chemical Equations

C. Types of Reactions

D. Oxidation-Reduction Reactions

E. The Mole

F. Molar Mass

G. Mole Relationships in Chemical Equations

H. Mass Calculations for Reactions

V. Solutions

A. Types of Solutions

B. Formations of Solutions

C. Solubility and Saturated Solutions

D. Electrolytes

E. Percent Concentration

F. Molarity and Dilution

G. Colloids and Suspensions

VI. Acids and Bases

A. Acids and Bases

B. Bronsted-Lowry Acids and Bases

C. Strengths of Acids and Bases

D. Ionization of Water

E. The pH Scale

F. Reactions of Acids and Bases

G. Buffers and Indicators

VII. Introduction to Organic Chemistry

A. Organic Compounds

B. Bonding in Organic Compounds

C. Alkanes

D. Naming Alkanes

E. Haloalkanes

F. Properties of Alkanes

G. Functional Groups

VIII. Unsaturated Hydrocarbons

A. Alkenes and Alkynes

B. Naming Alkenes and Alkynes

C. Cis-Trans Isomers

D. Addition Reactions

E. Polymers of Alkenes

F. Aromatic Compounds