

Required Syllabus Information – all must be included in the course syllabus

CHE 102

Course Title: Intro to Chemistry II/Lab: SC1

Course Credits: 5

Course Description: Focuses on introductory organic and biochemistry (sequel to Introduction to Chemistry I). This course includes the study of hybridization of atomic orbitals for carbon, nomenclature of both organic and biochemical compounds, physical and chemical properties of various functional groups of organic chemistry, and physical and chemical properties of biochemical compounds along with their biochemical pathways. Laboratory experiments are included.

GT Pathways Requirements:

Guaranteed Transfer (GT) Pathways Course Statement:

The Colorado Commission on Higher Education has approved CHE 102 for inclusion in the Guaranteed Transfer (GT) Pathways program in the GT- SC1 category. For transferring students, successful completion with a minimum C– grade guarantees transfer and application of credit in this GT Pathways category. For more information on the GT Pathways program, go to <http://highered.colorado.gov/academics/transfers/gtpathways/curriculum.html>.

NATURAL & PHYSICAL SCIENCES (N&PS) CONTENT CRITERIA – GT-SC1

1. The lecture content of a GT Pathways science course (GT-SC1)
 - a. Develop foundational knowledge in specific field(s) of science.
 - b. Develop an understanding of the nature and process of science.
 - c. Demonstrate the ability to use scientific methodologies.
 - d. Examine quantitative approaches to study natural phenomena.

2. The laboratory (either a combined lecture and laboratory, or a separate laboratory tied to a science lecture course) content of a GT Pathways science course (GT-SC1)
 - a. Perform hands-on activities with demonstration and simulation components playing a secondary role.
 - b. Engage in inquiry-based activities.
 - c. Demonstrate the ability to use the scientific method.
 - d. Obtain and interpret data, and communicate the results of inquiry.
 - e. Demonstrate proper technique and safe practices.

COMPETENCIES & STUDENT LEARNING OUTCOMES FOR GT-SC1

Inquiry & Analysis:

4. **Select or Develop a Design Process**
 - a. Select or develop elements of the methodology or theoretical framework to solve problems in a given discipline.

5. Analyze and Interpret Evidence

- a. Examine evidence to identify patterns, differences, similarities, limitations, and/or implications related to the focus.
- b. Utilize multiple representations to interpret the data.

6. Draw Conclusions

- a. State a conclusion based on findings.

Quantitative Literacy:

1. Interpret Information

- a. Explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words).

2. Represent Information

- a. Convert information into and between various mathematical forms (e.g., equations, graphs, diagrams, tables, words).

SYSTEM REQUIREMENTS:

REQUIRED COURSE LEARNING OUTCOMES

1. Use hybridization to determine what kind of geometry exists in the structure of a compound.
2. Recognize what functional group(s) is/are present and decipher what possible chemical activity a compound can undergo.
3. Show how polarity can influence a chemical reaction and intermolecular interaction.
4. Use the functional group chemistry of organic compounds to determine the chemical activity of biochemical compounds.
5. Determine outcomes for a biosynthetic pathway given conditions such as pH, concentration, temperature, enzyme activity.
6. Write or give orally the correct linear process of protein synthesis, including the vocabulary associated with that process.
7. Write or orally explain the metabolic pathways, including the vocabulary associated with that process.
8. Determine the correct name of the compound given an organic or biochemical structure.
9. Draw the correct structure on paper given a name of an organic or biochemical compound or structure.
10. Read, analyze, and apply to new situations, written material related to the study of chemistry.
11. Demonstrate the ability to select and apply contemporary forms of technology to solve problems or compile information in the study of chemistry.

REQUIRED TOPICAL OUTLINE

I. Introduction

- a. Hybridization

- iv. Metabolism
- c. Amino Acids and Proteins
 - i. Nomenclature
 - ii. Physical and Chemical Properties
 - iii. Structure
 - iv. Metabolism
- d. Enzymes
 - i. Nomenclature
 - ii. Chemical Properties
 - iii. Uses Nucleic
- e. Acids
 - i. Nomenclature
 - ii. Chemical Properties
 - iii. Protein synthesis

CCCOnline Course Policies: <http://www.cconline.org/ccconline-course-policies/>

Effective Implementation date: Spring 2018, 201830