

CHEM 0002Y - PROBLEM SOLVING FOR CHEMISTRY 2B

Catalog Description

Prerequisite: Completion of CHEM 2A with grade of "C" or better

Corequisite: Concurrent enrollment in CHEM 2B

Advisory: Eligibility for ENGL 1A

Hours: 18 lecture

Description: Optional problem solving course to accompany CHEM 2B. Students use critical thinking and problem solving strategies to solve organic and biochemistry problems. Both lecture and discussion groups utilized. (CSU)

Course Student Learning Outcomes

- CSLO #1: Demonstrate proficiency in solving problems related to structure and properties of organic functional groups.
- CSLO #2: Solve problems related to structure and properties of biochemical molecules.
- CSLO #3: Solve problems related to metabolism.
- CSLO #4: Develop strategies for problem solving that are effective in solving new sets of problems.

Effective Term

Fall 2022

Course Type

Credit - Degree-applicable

Contact Hours

18

Outside of Class Hours

36

Total Student Learning Hours

54

Course Objectives

Students will:

1. Apply problem solving techniques to solve problems in organic and biochemistry.
2. Identify by using a diagram, list, equation, and/or words the basic chemical concepts and principles affecting a given organic/biochemical system.
3. Solve problems related organic nomenclature, reactions, properties, and structure.
4. Solve problems related to biochemical molecules, their structure, chemical and physical properties, and how they relate to biological processes and systems.

General Education Information

- Approved College Associate Degree GE Applicability
- CSU GE Applicability (Recommended-requires CSU approval)

- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)

Articulation Information

- CSU Transferable

Methods of Evaluation

- Classroom Discussions
 - Example: In a discussion with your peers, compare and contrast the activation/inhibition of carbohydrate and lipid metabolic pathways in response to the release of insulin and/or glucagon. Grade based on participation.
- Problem Solving Examinations
 - Example: Students will solve problems by carefully reading, analyzing and applying problem solving techniques. Students will create and work out a solution for each problem. Problem Solving Examinations: Solve problems related to alkane nomenclature, properties, and reactions. For example, if pentane is reacted with bromine, what are the possible products? Draw the structure of each product and name it.

Repeatable

No

Methods of Instruction

- Lecture/Discussion
- Distance Learning

Lecture:

1. Instructor demonstrates problem solving skills/techniques for working on metabolism problems. Instructor presents problems regarding metabolism. Students are expected to use techniques demonstrated to work out problems related to metabolism.

Distance Learning

1. Instructor demonstrates problem solving skills/techniques for working on organic reactions in a video or online discussion. Instructor presents problems regarding organic reactions in LMS. Students are expected to use techniques demonstrated to work out problems related to organic reactions either in the discussion board or through online submission.

Typical Out of Class Assignments

Reading Assignments

1. Read the section from the textbook on proteins. Be prepared to participate in class discussion and to complete assigned problems.
2. Read the sample problem from a handout on enzymes and be prepared for discussion.

Writing, Problem Solving or Performance

1. Describe the intermediate steps in the metabolism of glucose, and determine the products and total energy produced.
2. Given a set of organic molecules, describe the intermolecular forces and determine the effect on the physical properties.

Other (Term projects, research papers, portfolios, etc.)

Required Materials

- General Organic and Biological Chemistry
 - Author: Stoker
 - Publisher: Cengage Learning
 - Publication Date: 2015
 - Text Edition: 7th
 - Classic Textbook?:
 - OER Link:
 - OER:
- Fundamentals of General, Organic and Biological Chemistry
 - Author: McMurry
 - Publisher: Pearson
 - Publication Date: 2017
 - Text Edition: 8th
 - Classic Textbook?:
 - OER Link:
 - OER:

Other materials and-or supplies required of students that contribute to the cost of the course.