

CIP Code: 26.0202

METROPOLITAN STATE COLLEGE OF DENVER
Office of Academic Affairs

REGULAR COURSE SYLLABUS

SCHOOL: Letters, Arts & Sciences

DEPARTMENT: Chemistry

SEMESTER(S) OFFERED: Fall, Spring

PREFIX & COURSE NUMBER: CHE 4350

COURSE TITLE: Biochemistry Laboratory

CREDIT HOURS: 1 (0 + 3)

CONTACT HOURS: Lecture 0 Lab 45 Internship 0 Practicum 0

RESTRICTIONS (VARIABLE TOPICS COURSES): None

PREREQUISITE OR COREQUISITE(S): CHE 4310

CATALOG COURSE DESCRIPTION:

This course introduces the basic techniques and instrumentation of biochemical research and offers opportunities for independent work in both the library and laboratory.

REQUIRED READING MATERIALS (Title, Author, Publisher, Copyright Date):

Fundamental Lab Approaches for Biochemistry and Biotechnology, Ninfa and Ballou, Fitzgerald, 2000.

APPROVED:

Department Chair

Dean

V.P., Academic Affairs

DATE:

4/9/00
2/10/00
2/27/00

DISTRIBUTION: Original to Vice President for Academic Affairs
Copies retained by Dean and Department Chair

Revised 9/94: Academic Affairs-Curriculum-Regular Course Syllabus
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SPECIFIC (MEASURABLE) STUDENT BEHAVIORAL LEARNING OBJECTIVES:

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

1. Prepare a buffer.
2. Conduct colorimetric assays using a spectrophotometer (e.g., spectronic 20).
3. Measure the activity of enzymes; e.g., bromelain, acid phosphatase or lysozyme.
4. Determine the catalytic constants for an enzyme using kinetic techniques.
5. Separation and identification of proteins, lipids and carbohydrates.
6. Conduct basic manipulations of nucleic acids.

OUTLINE OF COURSE CONTENT (Major Topics and Subtopics):

1. Buffers
 - A. Calculation of pH
 - B. Preparation of buffer
2. Bradford determination of protein concentration
3. Separation and qualitative identification of egg yolk lipids
4. Properties of egg white lysozyme
 - A. Effects of heat, enzyme concentration, pH, inhibitor and cofactor on enzyme activity.
 - B. Determination of K_M and V_{MAX} .
 - C. Determination of energy of activation (Arrhenius plot)
5. Gel Filtration Chromatography
6. Introduction to recombinant DNA techniques

EVALUATION OF STUDENT PERFORMANCE:

Evaluation of student performance is based on submitted written work including laboratory reports, a short research paper, lab notebook and a final examination.