

College of San Mateo
Official Course Outline

1. **COURSE ID:** BIOL 121 **TITLE:** Immunoassays Workshop: Techniques and Applications

Units: 1.0 units **Hours/Semester:** 16.0-18.0 Lecture hours; and 32.0-36.0 Homework hours

Method of Grading: Letter Grade Only

Recommended Preparation:

The ability to read and understand a college-level science text, manufacturers' literature and industry standard operating procedures is advised.

2. **COURSE DESIGNATION:**

Degree Credit

Transfer credit: CSU

3. **COURSE DESCRIPTIONS:**

Catalog Description:

Workshop in principles, applications, and hands-on or modeling of techniques in Immunoassays. Immunoassays are one of the two fundamental approaches to detecting and measuring the presence of proteins and other molecules in clinical, research and biotechnology. Anyone interested in furthering their practical application of biotechnology lab skills and knowledge to support their educational or career goals is encouraged to take this course.

4. **STUDENT LEARNING OUTCOME(S) (SLO'S):**

Upon successful completion of this course, a student will meet the following outcomes:

1. Recognize, outline and implement the main steps of Immunoassays.
2. Understand and explain how Immunoassays work.
3. Describe some applications of Immunoassays.

5. **SPECIFIC INSTRUCTIONAL OBJECTIVES:**

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

1. Recognize, outline, and implement the main steps of Immunoassays.
2. Understand and explain how Immunoassays work.
3. Describe some applications of Immunoassays.

6. **COURSE CONTENT:**

Lecture Content:

1. Fundamental components of immunoassays
2. Types of Immunoassays
3. Experimental Design and troubleshooting
4. Interpretation of results and data.

Workshop exercises/techniques:

1. Using micropipets
2. Sample preparation
3. Enzyme-linked Immunosorbent assays (ELISA)
4. Gel electrophoresis
5. Western Blotting Analysis
6. Interpretation of results, qualitative, quantitative, others

Lab Content:

Class is a workshop with lecture/modeling and simulation components. See lecture content.

TBA Hours Content:

no TBA content

7. **REPRESENTATIVE METHODS OF INSTRUCTION:**

Typical methods of instruction may include:

- A. Lecture
- B. Directed Study
- C. Activity

- D. Discussion
- E. Guest Speakers
- F. Observation and Demonstration
- G. Other (Specify): Third party simulations and animations.

8. REPRESENTATIVE ASSIGNMENTS

Representative assignments in this course may include, but are not limited to the following:

Writing Assignments:

- Writing Assignments - Lab notebooks for GLP documentation
- Group Discussions
- Online third-party simulation Assignments

Reading Assignments:

- Textbook chapters
- Topical articles discussing applications of material covered in lecture.
- Manufacturer Standard Operating procedures.

9. REPRESENTATIVE METHODS OF EVALUATION

Representative methods of evaluation may include:

- A. Class Participation
- B. Class Work
- C. Homework
- D. Projects
- E. Simulation
- F. Completeness and adequacy of notebooks for Good Lab Practices standards.

10. REPRESENTATIVE TEXT(S):

Other:

- A. Background information and bench techniques provided by manufacturers of kits (BIO_RAD), supplies and equipment.

Origination Date: November 2021

Curriculum Committee Approval Date: January 2022

Effective Term: Fall 2022

Course Originator: Christopher Smith