

# Minnesota State University Moorhead

## BCBT 464: Cell Culture, Histology, and Immunochemistry

### A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 3

Lab Hours/Week: 0

OJT Hours/Week: \*.\*

Prerequisites:

This course requires all three of these prerequisites

BIOL 350 - Microbiology

CHEM 355 - Organic Chemistry I Lab

CHEM 350 - Organic Chemistry I

Corequisites: None

MnTC Goals: None

This course will provide students with a suite of techniques to study and manipulate mouse tissues and eukaryotic cells in a laboratory setting. The course will include histological procedures, which are used in diagnostic labs for diagnosing diseases, such as cancer. Students will also process the tissues to culture eukaryotic cells. Cell culture is a core laboratory technique in many molecular biology, immunology, neurobiology and developmental biology laboratories. It is one of the fundamental techniques performed prior to molecular analysis, or for bio manufacturing of therapeutic proteins. Finally, students will be investigating protein expression in cells and/or tissues using immunochemistry principles. This course is designed to provide students with the necessary technical and scientific skills required in the biotechnology industry or graduate school.

**B. COURSE EFFECTIVE DATES:** 10/26/2022 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. This course covers growing, maintaining, and utilizing mammalian tissue culture as well as acquisition, processing, and sectioning of mammalian tissue. Both of these larger approaches will be explored through immunochemistry. Emphasis is on lab time to ensure competency in these techniques. Lecture will cover theory and practice.

### D. LEARNING OUTCOMES (General)

1. Demonstrate basic lab techniques, such as record keeping, aseptic technique, pipetting and laboratory math.
2. Demonstrate aseptic techniques required for eukaryotic cell culture.
3. Explain histology and immunochemistry based principles for gene or protein analysis.
4. Understand/demonstrate the writing and speaking processes through invention, organization, drafting, revision, editing and presentation.
5. Locate, evaluate, and synthesize in a responsible manner material from diverse sources and points of view.
6. Construct logical and coherent arguments.
7. Employ syntax and usage appropriate to academic disciplines and the professional world.
8. Apply the scientific process and technical skills to address a neuroimmunology pertinent research question.

### E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

**F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

**G. SPECIAL INFORMATION**

None noted