Minnesota State University Moorhead

BIOL 611: Molecular Biology and Bioethics

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 3

Lab Hours/Week: 0

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: None

This course will address molecular mechanisms of gene expression, epigenetic modifications to gene expression, and modern biotechnology to edit genes, as well as ethical, legal, and social implications of these topics. We will approach fundamental concepts of the central dogma of molecular biology and apply that understanding to the detection of variants in genomes and potential editing of genomes. Most units will include background reading (textbook and/or review articles) and selected primary literature demonstrating classical or modern techniques. The goal of this graduate course is deepening your background in molecular biology and assumes undergraduate understanding of concepts from genetics/molecular biology and general and organic chemistry.

B. COURSE EFFECTIVE DATES: 02/02/2019 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

D. LEARNING OUTCOMES (General)

1. Explain modern DNA sequencing technologies and the underlying molecular biology.
2. Explain the central dogma of molecular biology and regulation of gene expression, including epigenetic markers.
3. Interpret experimental evidence from molecular biology and related experiments.
4. Apply foundational knowledge of gene expression to current uses of biotechnology. Identify stakeholders and multiple points-of-view for the use and possible regulation of current and future biotechnology.

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

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted