

# Minnesota State University Moorhead

## BIOL 111: Cell Biology

### A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 3

Lab Hours/Week: 3

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

MnTC Goals: Goal 03 - Natural Science

Fundamental concepts of the structure, function and reproduction of cells. Lab included. MnTC Goal 3L.

### B. COURSE EFFECTIVE DATES: 06/01/1995 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. Basics of Biological Chemistry
2. Basics of Water Chemistry
3. Basics of Carbon Chemistry
4. Macromolecules
5. Structure, Function, Organelles, Cytoskeleton, Protein Trafficking and Origins
6. Membrane Structure
7. Metabolism
8. Cellular Respiration
9. Photosynthesis
10. Origins of Mitochondria and Chloroplasts--Endosymbiosis
11. Cell Communication
12. Cell Cycle
13. Meiosis
14. Classical Genetics
15. Chromosomal Inheritance
16. Molecular Inheritance
17. Central Dogma of Molecular Biology
18. Biotechnology
19. DNA
20. Genetic Basis of Development

#### **D. LEARNING OUTCOMES (General)**

1. To build scientific vocabulary specifically focusing on cell biology terminology.
2. To learn basics of cell structure and how those various structures lead to different functions.
3. To understand cellular reproduction (cell cycle, DNA replication, mitosis and meiosis).
4. To provide the opportunity for students to read and interpret groundbreaking classic literature in the field of cell biology.
5. To assist students in understanding complex concepts in cell biology.
6. To communicate outcomes from class research effectively in writing and the construction of tables and figures.
7. To prepare students with strong knowledge base for advanced biology courses.

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

Goal 03 - Natural Science

1. Demonstrate understanding of scientific theories.
2. Formulate and test hypotheses by performing laboratory, simulation, or field experiments in at least two of the natural science disciplines. One of these experimental components should develop, in greater depth, students' laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty.
3. Communicate their experimental findings, analyses, and interpretations both orally and in writing.
4. Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments about science-related topics and policies.

#### **F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

#### **G. SPECIAL INFORMATION**

None noted