

Fond du Lac Tribal and Community College
COURSE OUTLINE

I. Catalog Information

A. Title of Course: Cellular Biology B. Course Designator: BIOL 2025

C. Number of Credits: Lecture 3 Lab 1 D. Control Number: 60/24

E. Catalog/Course description:

Structure and function of prokaryotic and eukaryotic cells, including cell surface, membranes, organelles, cytoskeleton, cell growth, cell physiology, experimental methods used in cell studies including research techniques and hypothesis testing, and communication of research results. Lecture and laboratory. (Meets MnTC goal area 3).

F. Course prerequisites:
BIOL 1101 General Biology I or consent
of instructor

G. Date Approved: _____
Date Revised: 04/03/09, 07/10/10

II. Course Materials (Recommended course materials and resources. List all that apply, e.g. textbooks, workbooks, study guides, lab manuals, videos, guest lecturers)

Course materials including a textbook will be selected by faculty based on relevance to the study of Cellular Biology and course objectives.

III. Learning Goals, Outcomes, and Assessment Minimum of one goal and two learning outcomes in each competency. *If your course does not meet one of the Competencies Across the Curriculum, please justify your rationale.* Minimum of two assessment measures for each learning outcome. Add other goals and outcomes as needed. If this course is part of the Minnesota Transfer Curriculum (MnTC), attach the MnTC goals, outcomes, and your assessment measures to this form; if possible, use them to complete the information below.

A. Information Literacy (the ability to use print and/or non-print tools effectively for the discovery, acquisition, and evaluation of information as well as core computer tools for the manipulation and presentation of information.)

1. Learning Goals:

Goal: Effectively use lab, library and internet materials to engage in the study of biology.

2. Learning Outcomes and Assessments:

Outcome 1: Students will practice and be able to explain scientific procedures in data collection, analysis and dissemination.

Assessment: Written exams

Assessment: Lab Reports

Outcome 2: Students will be able to explain and present examples of the importance of the scientific method in biological studies including the review of scientific literature.

Assessment: Written exams

Assessment: Lab Reports

B. Ability to Communicate (the ability to listen, read, comprehend, and/or deliver information in a variety of formats.)

1. Learning Goals:

Goal: Students will be able to effectively communicate ideas and concepts central to the study of biology.

2. Learning Outcomes and Assessments:

Outcome 1: Students will be able to define and apply terminology associated with biology.

Assessment: Written exams

Assessment: Lab Reports

Outcome 2: Students will communicate effectively in writing, speech, and visual presentations within a variety of contexts.

Assessment: Written exams

Assessment: Lab Reports

C. Problem Solving (the ability to conceptualize, apply, analyze, synthesize, and/or evaluate information to formulate and solve problems.)

1. Learning Goals:

Goal: To evaluate the importance of the scientific method and thought, in biological science.

2. Learning Outcomes and Assessments:

Outcome 1: Students will identify scientific issues and use scientific approaches and strategies.

Assessment: Written exams

Assessment: Lab Reports

Outcome 2: Students will demonstrate an understanding of the scientific research process

Assessment: Written exams

Assessment: Lab Reports

D. Culture (knowledge of Anishinaabe traditions and culture, knowledge of one's own traditions and culture, knowledge of others' traditions and cultures, and/or respect for global diversity.)

1. Learning Goals:

Goal: To introduce students to various cultural perspectives of biological science.

2. Learning Outcomes and Assessments:

Outcome 1: Students will be able to discuss the role of biological science in today's society

Assessment: Written exams

Assessment: Outside assignments

Outcome 2: Students will gain knowledge of different cultural views of biology.

Assessment: Written exams

Assessment: Outside assignments

Documentation for MnTC

Goal 3: Natural Sciences

IV. Course Content (Outline the major topics covered in this course.)

Lecture topics:

- Definition of life and science
- Chemical basis of life

- Cellular diversity and morphology
 - Visualizing, fractionating, and culturing cells
 - Biomembrane structure
- Cellular energetics-metabolism
 - Moving proteins into membranes and organelles
 - Vesicular traffic, secretion, and endocytosis
 - Cell signaling: signal transduction and short-term cellular responses
 - Cell organization and movement: microfilaments, microtubules, and intermediate filaments
 - Transmembrane transport of ions and small molecules
- Cellular division-mitosis and meiosis
 - Regulating the eukaryotic cell cycle
 - Cell birth, lineage and death
 - The molecular cell biology of development
- DNA structure
 - Basic molecular genetic mechanisms
 - Molecular genetic techniques
- Gene function
 - Gene, genomics, and chromosomes
 - Transcriptional control of gene expression
 - Post-transcriptional gene control
- Transmission of genetics
- Origin and diversification of life
- Introduction to tissues

Lab topics to closely follow lecture material

(revised October 2009)