DAKOTA COLLEGE AT BOTTINEAU

COURSE SYLLABUS

Course Prefix/Number/Title: BIOL 150 General Biology I

Number of Credits: 4

Course Description:
A two-semester sequenced study of the fundamental topics of biology, with an emphasis on cellular biology. Topics Include: bioenergetics, cell structure, physiology principles, genetic function and inheritance.

Pre-/Co-requisites: None

Course Objectives:

Demonstrate an understanding and proficiency in the following:

1. Understand cellular and viral structure and function.
2. Understand fundamental biochemical principles.
3. Understand rudimentary classical genetics.
4. Understand rudimentary molecular genetics and have a familiarity with various DNA technologies.
5. Use knowledge about mechanisms of cellular and molecular processes.

Instructor: Dr. Jessica Guerrero

Office: Virtual/Online

Office Hours: By Appointment

Phone: N/A

Email: jessica.guerrero@dakotacollege.edu

Lecture/Lab Schedule:

Lecture: ONLINE
Lab: ONLINE

Textbook(s):

- Connect Access Card with eBook. Biology. Raven, et al. 2019. 13th Edition. ISBN: 9781259188138
- Student lecture slides may be available on the course page.

Course Requirements:

A = 100-90%
B = 89.5-80%
C = 79.5-70%
D = 69.5-60%
F = below 59.5%

*Please do not request bonus points, rounding of a grade, or a grade change. If there is an opportunity for extra points you will be notified. If you have an 89.49 in Blackboard that does not constitute an 89.5.

Below is a table of course requirements. This is subject to slight modification based on the discretion of the instructor.

Lecture and Lab Requirements	Total
Orientation Assignments	120
Module 1 (includes labs)	560
Module 1 Exam	100
Module 2 (includes labs)	640
Module 2 Exam	100
Module 3 (includes labs)	645
Module 3 Exam	100
Module 4 (includes labs)	655
Module 4 Exam	100
Course Project	100
TOTAL	**3130**

Tentative Course Outline:

Lecture Outline:

- **Exam 1:** Introduction to Biology, Chemistry, Biomolecule
- **Exam 2:** Energy, Cells, Membranes
- **Exam 3:** Photosynthesis, Cellular Respiration, Mitosis, Meiosis
- **Exam 4:** DNA, Protein Synthesis, Genetics

*For a schedule of academic deadlines please reference the academic calendar on the DCB Website at: https://www.dakotacollege.edu/academics/academic-calendar

General Education Competency/Learning Outcome(s) OR CTE Competency/Department Learning Outcome(s):

- Competency 1: Identifies the interrelationships between humans and their environment.
  - Learning Outcome 1: Applies scientific methods of inquiry.
  - Learning Outcome 3: Applies scientific information in everyday life.

Relationship to Campus Focus:

- Class announcement/discussion on news items about technological developments in biology and how that influences the discipline as well as the societal aspects.
- Covers DNA analysis, genetic engineering, and DNA fingerprinting.
- Knowledge of cell structure and function related to microscope development discussed.
- Interject technological developments and how they influence scientific development and societal issues.

Classroom Policies:

Participation: required for both lecture and lab for this online course.

Late Policy: Work is not accepted late for any reason. Please check into the course daily to review due dates and assignment requirements.

- Do not leave work until the last minute or due date. Time management skills are required to be successful in this course.
- Technology issues are not an excuse for late work. Time management will prevent missing due dates and provide time to work through technological issues if they arise.
- **Missing Exam/Late Policy**: If you know you will be gone during an exam day you need to let me know THREE days in advance. If you miss an exam and I am not aware that you were going to miss it then your grade for that exam will result in a ZERO. There will be no make-up exams for those who do not inform me of their absences on exam days. If you show up late for an exam you are limited to the time period of the class. You will be required to turn in your exam at the close of the course.

Electronic Device Policy: Electronic devices should not be used during any examinations as they are prohibited and use of them will result in a Zero score and other academic integrity enforcement.

- **Blackboard Policy**: You are responsible for checking blackboard and doing coursework on blackboard for this class. If you do not do the assignments on blackboard you will get a ZERO for those assignments. Blackboard assignments must be completed by the time and date indicated by each assignment. No late assignments accepted. If you are going to be absent complete the assignment prior to your absence.

Student Email Policy:

Dakota College at Bottineau is increasingly dependent upon email as an official form of communication. A student's campus-assigned email address will be the only one recognized by the Campus for official mailings. The liability for missing or not acting upon important information conveyed via campus email rests with the student.

Academic Integrity:

According to the DCB Student Handbook, students are responsible for submitting their own work. Students who cooperate on oral or written examinations or work without authorization share the responsibility for violation of academic principles, and the students are subject to disciplinary action even when one of the students is not enrolled in the course where the violation occurred. The Code detailed in the Academic

Honesty/Dishonesty section of the Student Handbook will serve as the guideline for cases where cheating, plagiarism or other academic improprieties have occurred.

Disabilities or Special Needs:

Students with disabilities or special needs (academic or otherwise) are encouraged to contact the instructor and Disability Support Services.

Title IX:

Dakota College at Bottineau (DCB) faculty are committed to helping create a safe learning environment for all students and for the College as a whole. Please be aware that all DCB employees (other than those designated as confidential resources such as advocates, counselors, clergy and healthcare providers) are required to report information about such discrimination and harassment to the College Title IX Coordinator. This means that if a student tells a faculty member about a situation of sexual harassment or sexual violence, or other related misconduct, the faculty member must share that information with the College's Title IX Coordinator. Students wishing to speak to a confidential employee who does not have this reporting responsibility can find a list of resources on the DCB Title IX webpage.

AI Student Policy:

Unless otherwise indicated in the course syllabus, or in individual instructions for course assignments, or in the absence of the express consent of the course instructor, students are not allowed to utilize generative AI to help produce any of their academic work. Any violation of this policy will be considered an act of academic dishonesty as outlined within the Dakota College Code of Student Life.

RESPONSIBILITIES:

Students	• Responsible to follow the syllabus and assignment instructions regarding use of generative AI for all academic work. • Obtain permission of the instructor prior to the use of generative AI that is outside of the syllabus or assignment instructions. Provide appropriate rationale for how the use of generative AI will enhance the learning experience for the assignment. • In instances where generative AI is permissible, appropriately cite the generative AI program used and indicate where in the assignment it was used, in a brief submission statement.
Faculty	• Determine if the use of generative AI could enhance student learning in any assignment of project. • Clearly indicate in all course syllabi if generative AI is allowable for any academic work. • If allowable, give specific parameters for how and when generative AI may be used. • If a violation of generative AI for the individual course/syllabus is suspected, discuss the concern with the student. If violation is still suspected, inform the appropriate semester coordinator/program director.

CONTENT OUTLINE:

Orientation Assignments

Assignment	Points	Due Date
Review Course Syllabus	-	
Email Etiquette Agreement	10	
Honor Code Agreement: Plagiarism and Collusion	10	
McGraw-Hill: Connect Orientation Videos	10	
McGraw-Hill: SmartBook 2.0 Overview	10	
McGraw-Hill: Virtual Labs Orientation Videos	10	
McGraw-Hill: Fundamentals of Student Success	10	
McGraw-Hill: Fundamentals of Math and Statistics for Life Sciences	10	
McGraw-Hill: Scientific Study of Life	10	
McGraw-Hill: Chemistry of Life	10	
McGraw-Hill: Cells	10	
McGraw-Hill: Introduction to Graphing Data and Graphing Interactive	10	
McGraw-Hill: Graphing Data Interactive	10	

ORIENTATION TOTAL POSSIBLE POINTS- 120

Module 1- Introduction

Chapter 1- The Science of Biology

Assignment	Points	Due Date
Chapter 1 SmartBook	25	
Chapter 1 Assignment	10	
Scientific Thinking in Everyday Life Relevancy Module	10	
Chapter 1 Quiz (proctored)	40	

Chapter 2- The Nature of Molecules and Properties of Water

Assignment	Points	Due Date
Chapter 2 SmartBook	25	
Chapter 2 Assignment	10	
pH and Buffers Data and Graphing Interactive	10	
Properties of Water BioNow Video Activity	10	
Chapter 2 Quiz (proctored)	40	

Chapter 3- The Chemical Building Blocks of Life

Assignment	Points	Due Date
Chapter 3 SmartBook	25	
Chapter 3 Assignment	10	
Chapter 3 Animations	10	
Molecules in Milk Data and Graphing Interactive	10	
Chapter 3 Quiz (proctored)	40	

Module 1 Labs

Assignment	Points	Due Date
LAB- 1st Lab Virtual Lab Tutorial	20	
PRE-LAB: Lab Safety	10	
LAB- Lab Safety	20	
LAB- Lab Safety Hand Washing	20	
Lab Safety Quiz (proctored)	25	
PRE-LAB: Microscope	10	
LAB- How to use a Microscope!	20	
LAB- Microscope Observation of Pond Water	20	
Microscope Lab Quiz (proctored)	25	
PRE-LAB: Macromolecules (Chemical Composition of Cells)	10	
LAB- Macromolecules- Lipids	20	
LAB- Macromolecules- Proteins	20	
LAB- Macromolecules- Starches	20	
LAB- Macromolecules- Sugars	20	
Macromolecule Lab Quiz (proctored)	25	

Module 1 Exam

Assignment	Points	Due Date
Module 1 Exam: Introduction	100	

MODULE 1 TOTAL POSSIBLE POINTS- 660

Module 2- Cells

Chapter 4- Cell Structure

Assignment	Points	Due Date
Chapter 4 SmartBook	25	
Chapter 4 Assignment	10	
Chapter 4 Animation	10	
Chapter 4 Quiz (proctored)	40	

Chapter 5- Membranes

Assignment	Points	Due Date
Chapter 5 SmartBook	25	
Chapter 5 Assignment	10	
Chapter 5 Animation	10	
Membrane Fluidity Data and Graphing Interactive	10	
Enzyme Kinetics Data and Graphing Interactive	10	
Chapter 5 Quiz (proctored)	40	

Chapter 6- Energy and Metabolism

Assignment	Points	Due Date
Chapter 6 SmartBook	25	
Chapter 6 Assignment	10	
Chapter 6 Animations	10	
Chapter 6 Quiz (proctored)	40	

Module 2 Labs

Assignment	Points	Due Date
LAB- Cell Lab	20	
LAB- Passive v. Active Transport Cell Membrane Lab	20	
PRE-LAB: Diffusion	10	
LAB- Diffusion Across a Selectively Permeable Membrane	20	
LAB- Diffusion- Effect of Concentration	20	
LAB- Diffusion- Effect of Density	20	
LAB- Diffusion- Effect of Molecular Weight	20	
Diffusion Lab Quiz (proctored)	25	
PRE-LAB: Osmosis	10	
LAB- Osmosis- Movement of Water Across a Selectively Permeable Membrane	20	
LAB- Osmosis- Plant Cells	20	
LAB- Osmosis- Animal Cells	20	
Osmosis Lab Quiz (proctored)	25	
PRE-LAB: Enzymes	10	
LAB- Enzyme Lab Part 1	20	
LAB- Enzyme Lab Part 2	20	
LAB- Enzyme Lab Part 3	20	
LAB- Enzyme Lab Part 4	20	
Enzyme Lab Quiz (proctored)	25	

Module 2 Exam

Assignment	Points	Due Date
Module 2 Exam: Cells	100	

MODULE 2 TOTAL POSSIBLE POINTS- 740

Module 3- Cellular Processes

Chapter 7- How Cells Harvest Energy

Assignment	Points	Due Date
Chapter 7 SmartBook	25	
Chapter 7 Assignment	10	
Chapter 7 Animations	10	
Chapter 7 Quiz (proctored)	40	

Chapter 8- Photosynthesis

Assignment	Points	Due Date
Chapter 8 SmartBook	25	
Chapter 8 Assignment	10	
Chapter 8 Animations	10	
Photosynthetic Pigments Data and Graphing Interactive	10	
Energy Part II BioNow Video Activity	10	
Chapter 8 Quiz (proctored)	40	

Chapter 10- How Cells Divide

Assignment	Points	Due Date
Chapter 10 SmartBook	25	
Chapter 10 Assignment	10	
Chapter 10 Animations	10	
Regulation of the Cell Cycle Data and Graphing Interact.	10	
Chapter 10 Quiz (proctored)	40	

Chapter 11- Sexual Reproduction and Meiosis

Assignment	Points	Due Date
Chapter 11 SmartBook	25	
Chapter 11 Assignment	10	
Chapter 11 Animations	10	
Chapter 11 Calculations	10	
Chapter 11 Quiz (proctored)	40	

Module 3 Labs

Assignment	Points	Due Date
PRE-LAB: Cell Respiration	10	
LAB- Cellular Respiration Lab Part I	20	
LAB-Cellular Respiration Lab Part 2	20	
Cell Respiration Lab Quiz (proctored)	25	
PRE-LAB: Photosynthesis	10	
LAB-Photosynthesis Lab Part 1	20	
LAB-Photosynthesis Lab Part 2	20	
LAB-Photosynthesis Lab Part 3	20	
LAB-Photosynthesis Lab Part 4	20	
Photosynthesis Lab Quiz (proctored)	25	
PRE-LAB: Cell Division	10	
LAB- Mitosis	20	
LAB- Meiosis	20	
Cell Division Lab Quiz (proctored)	25	

Module 3 Exam

Assignment	Points	Due Date
Module 3 Exam: Cellular Processes	100	

MODULE 3 TOTAL POSSIBLE POINTS- 745

Course Project

Assignment	Points	Due Date
Biology 150- Course Project	100	

Module 4-Genetics and Inheritance

Chapter 14- DNA: The Genetic Material

Assignment	Points	Due Date
Chapter 14 SmartBook	25	
Chapter 14 Assignment	10	
Chapter 14 Animations	10	
Chapter 14 Calculations	10	
Chapter 14 Quiz (proctored)	40	

Chapter 15- Genes and How they Work

Assignment	Points	Due Date
Chapter 15 SmartBook	25	
Chapter 15 Assignment	10	
Chapter 15 Animations	10	
Mutation Data and Graphing Interactive	10	
Chapter 15 Quiz (proctored)	40	

Chapter 12- Patterns of Inheritance

Assignment	Points	Due Date
Chapter 12 SmartBook	25	
Chapter 12 Assignment	10	
Chapter 12 Animations	10	
Chapter 12 Calculations	10	
Chapter 12 Quiz (proctored)	40	

Chapter 13- The Chromosomal Basis of Inheritance and Human Genetics

Assignment	Points	Due Date
Chapter 13 SmartBook	25	
Chapter 13 Assignment	10	
Chapter 13 Animations	10	
Chapter 13 Calculations	10	
Variation on Mendelian Genetics D&G Interactive	10	
Chapter 13 Quiz (proctored)	40	

Module 4 Labs

Assignment	Points	Due Date
PRE-LAB: DNA Structure and Function	10	
LAB- DNA Structure Lab	20	
LAB- Gel Electrophoresis Lab	20	
LAB- Protein Synthesis Lab	20	
DNA Lab Quiz (proctored)	25	
PRE-LAB: Mendelian Genetics	10	
LAB- Mendelian Genetics Lab 1	20	
LAB- Mendelian Genetics Lab 2	20	
LAB- Mendelian Genetics Lab 3	20	
LAB- Mendelian Genetics Lab 4	20	
Mendelian Genetics Lab Quiz (proctored)	25	
PRE-LAB: Human Genetics	10	
LAB- Human Genetics Lab	20	
Human Genetics Lab Quiz (proctored)	25	

Module 4 Exam

Assignment	Points	Due Date
Module 4 Exam: Genetics and Inheritance	100	

MODULE 4 TOTAL POSSIBLE POINTS- 755