

**Course Outline for:** BIOL 1100 Survey of Biology**A. Course Description**

1. Number of credits: 4
2. Lecture hours per week: 3  
Lab hours per week: 3
3. Prerequisites: ENGC 0960 (C- or better) OR READ 0960 (C- or better) OR High School GPA of 2.60+ OR ACT Sub-Score of 21+ OR ACT Sub-Score of 19+ and High School GPA of 2.50+ OR SAT Read/Write score of 480+ OR SAT Read/Write score of 440+ and High School GPA of 2.50+ OR Accuplacer Reading score of 250+ OR Accuplacer Reading score of 236+ and High School GPA of 2.50+ OR MCA Reading score of 1047+ OR MCA Reading score of 1042-1046 and High School GPA of 2.50+
4. Corequisites: None
5. MnTC Goal: #3 Natural Sciences

A non-majors general education lab course that explores the organization of life. Topics include the scientific method, cells, metabolism, molecular biology, genetics, species diversity, ecology, and evolution. Lecture 3 credits, 3-hour lab 1 credit.

**B. Date last reviewed/updated:** January 2023**C. Outline of Major Content Areas**

**Lecture:** Subtopics listed under each main topic may vary due to recent developments in the field and current events.

1. Scientific Process
  - a. Observations
  - b. Formulating hypotheses
  - c. Experimental design
  - d. Data collection and analysis
  - e. Science communication
  - f. The culture of science
2. Cells and Biochemistry
  - a. The macromolecules of life
  - b. The working cell
  - c. Cellular respiration
  - d. Photosynthesis
  - e. Cell division
3. Molecular Biology and Genetics
  - a. Structure of DNA
  - b. Central Dogma and gene expression
  - c. Inheritance of genetic material

- d. Current and new biotechnologies
- 4. Evolution
  - a. Natural selection
  - b. Microevolution
  - c. Macroevolution
  - d. The diversity of life: domains and major kingdoms
  - e. Using current data model evolution
- 5. Ecology
  - a. Population ecology
  - b. Communities and ecosystems
  - c. Human impact on the environment
  - d. Climate change

**Laboratory:** Students will actively participate in lab by engaging in studies related to:

1. Scientific process
2. Macromolecules
3. Microscopy and cells
4. Cell respiration
5. Photosynthesis
6. Molecular biology
7. Evolution and natural selection
8. Human evolution
9. Human biology
10. Microbial world
11. Plant life cycles and plant structures
12. Ecology

#### **D. Course Learning Outcomes**

Upon successful completion of the course, the student will be able to:

1. Identify and use the basic steps in the scientific method. This will be accomplished in both lecture and laboratory. (Goal 2a, 2c, 3b)
2. Formulate and test hypotheses and predictions, collect data, and interpret these data. (Goal 2a, 2b, 2c, 3b)
3. Communicate their experimental results through the process of writing laboratory reports and/or short responses on their work. (Goal 2a, 3c)
4. Communicate their experimental results verbally, by interacting with faculty (in lecture and laboratory) in an accurate manner. (Goal 3c)
5. Relate societal issues to biological news (and vice versa), by responding verbally or in writing to a topic presented in class. (Goal 3d)
6. Demonstrate (verbally or in writing) knowledge of classical ideas in biology as well as current biological issues and research. (Goal 2c, 3a, 3d)
7. Develop their ability to make accurate observation and interpretations of organisms and biological phenomena. They will do this primarily through independent study and group work in the Biology Learning Center. (Goal 2a, 2c, 3b)
8. Develop and practice broadly transferrable skills such as collaboration, communication, observation, and quantitative interpretation. (Goal 3c)

9. Perceive of biology as an integral part of society and apply scientific information in decision-making. (Goal 3d)

**E. Methods for Assessing Student Learning**

A variety of evaluation and assessment methods may be used:

1. Written examinations which include multiple choice, true-false, fill-in-the-blank, matching, short answer, and essay questions.
2. Assignments outside of class
3. Discussions
4. Graphical presentation of data
5. Quizzes
6. In-class group work
7. Laboratory assignments and/or exams
8. A final comprehensive exam

**F. Special Information**

Instructors will include the most recent version of the Departmental Expectations document in their course syllabus.

When offered on-campus, the laboratory portion of the course is delivered in the Biology Learning Center (BLC). Instructors will include the most recent version of the Biology Learning Center (BLC) Expectations document in their course syllabus.