

BIOLOGY SYLLABUS

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TEXTBOOK: Miller and Levine Biology
Pearson Education, Inc.

DAILY SUPPLIES: Book, Spiral Notebook, Notebook Paper, Blue or Black pen, pencil, 1 ½”
3-Ring Binder with Pockets, colored pencils

COURSE OBJECTIVE: This course investigates the composition, diversity, complexity and interconnectedness of life on Earth. It covers cellular biology, genetics, biotechnology, biochemistry, evolution, microbiology, comparative zoology, and ecology. Students engage in investigations to understand and explain the behavior of living things in a variety of scenarios that incorporate scientific reasoning, analysis, communication skills and real-world applications.

COURSE OUTLINE:

UNIT 1 THE NATURE OF LIFE

Chapter 1 The Science of Biology
Chapter 2 The Chemistry of Life

UNIT 3 CELLS

Chapter 7 Cell Structure and Function
Chapter 8 Photosynthesis
Chapter 9 Cellular Respiration and
Fermentation
Chapter 10 Cell Growth and Division

UNIT 4 GENETICS

Chapter 11 Introduction to Genetics
Chapter 12 DNA
Chapter 13 RNA and Protein Synthesis

UNIT 5 EVOLUTION

Chapter 16 Darwin's Theory of Evolution
Chapter 17 Evolution of Populations
Chapter 18 Classification
Chapter 19 History of Life

UNIT 6 FROM MICROORGANISMS TO PLANTS

Chapter 20 Viruses and Prokaryotes

UNIT 2 ECOLOGY

Chapter 3 The Biosphere
Chapter 4 Ecosystems and Communities
Chapter 5 Populations
Chapter 6 Humans in the Biosphere

This is an outline of material to be covered in the course listed. Dates of tests, homework, etc. will vary as necessitated by the pace at which the material is covered. Homework expectations, absences, the course grading system, etc. are explained on the Procedures for Room 112 handout.

Activities, labs and/or projects will be conducted during the study of each unit and in some cases each chapter.

During the 2nd semester the labs will include a plant collection of at least 20 plants.

GUIDELINES FOR SUBMISSION OF PLANT COLLECTIONS

1. All plants must be correctly identified. Incorrectly identified plants will **NOT** receive credit.
2. Each specimen who **represents a unique family** (*tribe in the Asteraceae; subfamily in the Fabaceae*) will receive 5 points.
Each specimen who **represents a new genus** within an already represented family will receive 3 pts.
Each specimen who **represents a new species** within an already represented genus will receive 2 pts.
Teams of 2 are allowed - Should you decide to work as a team, your goal is to accumulate 125 points. If doing the collection on your own, your goal is 75 points. The quantity grade will reflect this goal.

25 POINTS WILL BE AVAILABLE FOR EVERY PLANT DAY DURING THE SEMESTER(S)

350 POINT GRADE FOR FINAL TURN-IN

- 100 PTS - PUNCTUALITY** – was collection turned in on the due date or not
- 150 PTS - APPEARANCE/ACCURACY** - how much care was taken to press, mount, and write up each specimen/were plants' id correctly, was collection as a whole submitted according to guidelines (specifically; mold on flowers is a 10 point deduction per flower)
- 100 PTS - QUANTITY** – was goal achieved, if so to what degree

3. All plants must have the following information:

COMMON NAME

FAMILY – ends in aceae (Leguminosae=Fabaceae Compositae=Asteraceae)

GENUS – starts with an upper case letter

SPECIES – always written in lower case lettering

LOCATION OF PLANT – general location (so anyone could find it)

DATE FOUND

COLLECTED BY

IDENTIFIED BY

HABIT – how the plant grows (tree, shrub, herb)

4. All specimens in the collection must be securely attached (use tape) and individually submitted on a blank piece of paper in a binder and with a correctly filled-in herbarium label placed in the **bottom right corner**. The finished collection must be alphabetized using the same guidelines as the table of contents. (See below #6) The finished collection should also have your name written on the outside in an easily seen place.

5. From the above you are to *pick your best three plants* and glue them on herbarium paper. Place a stamp in the bottom right corner and fill it out with the correct information. Place these plants in the correct order, alphabetically, within your collection. (DO NOT hole punch these.)

6. A typed table of contents will accompany the finished collection. It will be alphabetized by family, then subfamily or tribe, then genus and finally species. The TOC will also include the common name of the flower and the point value. Be sure to include your best plants on herbarium paper. And remember, when writing *genus and species* you must set them apart by either italics or underlining.

DUE DATE FOR THE ENTIRE COLLECTION IS: MAY 3, 2021