



# AP/Dual Credit Biology Syllabus 2021-2022

**Teacher:** Ashley Kozora

**Conference Time:** 1:10-2:05 PM

**Room #:** 2406

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## Classroom Goals

In AP/Dual Credit Biology, students conduct laboratory and field investigations, use scientific methods during investigations, and make informed decisions using critical thinking and scientific problem solving. The science practices in the College Board's AP Biology Course and Exam Description (CED) are central to the study and practice of biology. Students should develop and apply the described practices on a regular basis. Students in AP/Dual Credit Biology will study a variety of topics, including evolution, energetics, information storage and transmission, and system interactions. The course content found in the College Board's AP Biology CED is organized into commonly taught units of study that provide a suggested sequence for the course. These units comprise the content and skills colleges and universities typically expect students to master to qualify for college credit and/or placement. This content is grounded in big ideas, which are crosscutting concepts that build conceptual understanding and spiral throughout the course.

Course Textbook: Urry, Lisa A. 2014. *Biology in Focus* 2nd Edition

## Activities

Fall Semester:

- Chemistry of Life
- Cell Structure & Function
- Cellular Energetics
- Cell Communication and Cell Cycle

Spring Semester:

- Heredity
- Gene Expression & Regulation
- Natural Selection
- Ecology

This course is divided into eight major units that each include all four of the big ideas that are the fundamental framework for the AP/Dual Credit Biology Curriculum. Within each unit, the enduring understands, essential knowledge, learning objectives and science practices that will be taught as outlined below.

## Big Ideas

1. The process of evolution drives the diversity and unity of life.
2. Biological systems utilize free energy and molecular building blocks to grow, to reproduce, and to maintain dynamic homeostasis.
3. Living systems store, retrieve, transmit, and respond to information essential to the processes.
4. Biological systems interact, and these systems and their interactions possess complex properties.

Biology is a scientific process that requires students to make observations and interpret information from the natural world. Because the process of science is such an important part of this course, students will be required to record their lab activities in a lab notebook in such a way as to mirror the process that is used in research laboratories. Students in this course meet for 50 minutes five days each week and will spend at least 40% of this time engaged in laboratory activities. Each of the Science Practices below will be addressed throughout the course within the context of the Essential Knowledge. They are listed in the curriculum framework along with the appropriate learning objectives. This document is available on the College Board website. Because students will be learning the practice of being a scientist, they will conduct at least two inquiry based lab activities per Big Idea in the curriculum framework. The products of these investigations will be either a formal lab report, mini-poster presentation, or a group presentation.

Science Practices:

1	<b>Concept Explanation: Explain biological concepts, processes, and models presented in written format.</b>	
	1A	Describe biological concepts and/or processes
	1B	Explain biological concepts and/or processes
	1C	Explain biological concepts, processes, and/or models in applied contexts
2	<b>Visual Representation: Analyze visual representations of biological concepts and processes</b>	
	2A	Describe characteristics of a biological concept, process, or model represented visually
	2B	Explain relationships between different characteristics of biological concepts, processes, or models represented visually: (a) in theoretical contexts, (b) in applied contexts
	2C	Explain how biological concepts or processes represented visually relate to larger biological principles, concepts, processes, or theories
2D	Represent relationships within biological models including: (a) mathematical models, (b) diagrams, (c) flow charts	
3	<b>Questions and Methods: Determine scientific questions and methods</b>	
	3A	Identify or pose a testable question based on an observation, data, or a model
	3B	State the null and alternative hypotheses, or predict the results of an experiment
	3C	Identify experimental procedures that are aligned to the question, including: (a) identifying dependent and independent variables, (b) identifying appropriate controls, (c) justifying appropriate controls
	3D	Make observations, or collect data from representations of laboratory setups or results (lab only; not assessed)
	3E	Propose a new/next investigation based on: (a) an evaluation of the evidence from an experiment, (b) an evaluation of the design/methods
4	<b>Representing and Describing Data: represent and describe data</b>	
	4A	Construct a graph, plot, or chart (X,Y; Log Y; Bar; Histogram; Line; Dual Y; Box and Whiskers; Pie): (a) orientation, (b) labeling, (c) units, (d) scaling, (e) plotting, (f) type, (g) trend line
	4B	Describe data from a table or graph, including: (a) identifying specific data points, (b) describing trends and/or patterns in the data (c) describing relationships between variables
5	<b>Statistical Tests and Data Analysis: Perform statistical tests and mathematical calculations to analyze and interpret data</b>	
	5A	Perform mathematical calculations, including: (a) mathematical equations in the curriculum, (b) means, (c) rates, (d) ratios, (e) percentages
	5B	Use confidence intervals and/or error bars (both determined using standard errors) to determine whether sample means are statistically different
	5C	Perform chi-square hypothesis testing
	5D	Use data to evaluate a hypothesis (or prediction), including: (a) rejecting or failing to reject the null hypothesis, (b) supporting or refuting the alternative hypothesis
6	<b>Argumentation: Develop and justify scientific arguments using evidence</b>	

6A	Make a scientific claim
6B	Support a claim with evidence from biological principles, concepts, processes, and/or data
6C	Provide reasoning to justify a claim by connecting evidence to biological theories
6D	Explain the relationship between experimental results and larger biological concepts, processes, or theories
6E	Predict the causes or effects of a change in, or disruption to, one or more components in a biological system based on: (a) biological concepts or processes, (b) a visual representation of a biological concept, process, or model, (c) data

### Course Sequence and Correlation to Textbook

Unit	Unit Name	Chapter	Chapter Name
1	Nature of Science & Biochemistry	1	Introduction/nature of science
		39.3-6	Animal Behavior
		2	Chemistry of Life
		3	Carbon
2	Cell Structure & Function	4	A Tour of the Cell
		5.1-5.5	Membrane Structure & Function
		24	Early Life and Diversification of Prokaryotes
		25	Origins of Eukaryotes
		32.3-4	Osmoregulation & Excretion
		37	Neurons, Synapses, & Signaling
		39.1-2	Muscle Contraction
3	Energetics	6	Intro to Metabolism
		7	Cellular Respiration
		32.1	Feedback & Thermoregulation
		8	Photosynthesis
		28	Plant Structure & Function
		29	Resource Transport
		42	Ecosystems
4	Cell Communication & Cell Cycle	5.6	Cell Signaling
		32.2	Endocrine
		35	Immune System
		9	Cell Cycle
		13.1-13.3	The Molecular Basis of Inheritance

		16.3	Cancer
5	Heredity	10	Meiosis & Sexual Life Cycles
		11	Mendelian Genetics
		12	Chromosomal Basis of Inheritance
6	Gene Expression & Regulation	14	Protein Synthesis
		15	Regulation of Gene Expression
		13.4	Biotechnology
		16.1-2, 36.4	Development
		17	Viruses
		18	Genomes and Their Evolution
7	Evolution	19	Descent with Modification
		21	Population Genetics
		22	Speciation
		23	Patterns of Evolution
		20	Phylogenetics
8	Ecology	40	Population Ecology & Distribution of Organisms
		41	Species Interactions
		43	Global Ecology & Conservation Biology

#### Grades for AISD AP Biology Credit

We will be following the [AISD Grading Guidelines](#)

(Advanced Placement)      Classwork-50%      Assessments-50%

Examples of minor grades may include, but are not limited to, the following: homework, weekly notebook checks, pop quizzes, warm-ups, worksheets, vocabulary, short essays, short presentations, cooperative learning group work, mini-assessments, etc. Minor grades are primarily based on the student's practice of academic skills.

Examples of major grades may include, but are not limited to, the following: projects, major papers, major tests, presentations, labs, unit tests, unit projects, 6 week tests, notebooks, etc. Major grades measure a student's academic achievement.

Progress Reports will be issued every three weeks to every student. On level courses will provide a minimum of 6 minor and 2 major grades in any 6-week grading period.

Grades for Angelo State University: We will be using Angelo State's Grading Policy [Grading Procedures](#)

### Incomplete Grade:

It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required.

### Exams:

Fall Semester Exam will occur the week of December 13, 2021.

AP Biology Exam is May 11, 2022.

Spring Semester Exam will occur the week of May 23, 2022.

### Statements on Angelo State University policy concerning the following:

#### - **Academic Honesty:**

- “Academic misconduct includes cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, violations of published professional ethics/standards, and any act or attempted act designed to give unfair academic advantage to oneself or another student. See the [Angelo State University Student Handbook](#), Part II B: [Academic Integrity](#) for more information.
- **Plagiarism** “Plagiarism is a serious topic covered in ASU’s [Academic Integrity Policy](#) in the Student Handbook. Plagiarism is the action or practice of taking someone else’s work, idea, etc., and passing it off as one’s own. Plagiarism is literary theft. In discussions and/pr your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list. Papers are subject to be evaluated for originality on Turnitin. Resources to help you understand this policy better are available at the [ASU Writing Center](#).”
- **Copyright Policy** “Students officially enrolled in this course should make only one printed copy of the given articles and/pr chapters. You are expressly prohibited from distributing or reproducing any portion of course readings in printed or electronic form without written permission from the copyright holders or publishers.”

#### - **Reasonable accommodations for students with disabilities: [Student Disability Services](#)**

- “ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA), and subsequent legislation.”
- “The Office of Student Affairs is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability, and it is the student’s responsibility to initiate such a request by contacting:”
  - Mrs. Jessica Gooch, Director of HSI Gran Projects/Special Projects
  - Dr. Dallas Swafford, Director of Student Disability Services

- **Student absence for observance of a religious holy day (ASU OP 10.19):** “A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence.

- ***Title IX***

- Angelo State University is committed to the safety and security of all students. If you or someone you know experience sexual harassment, sexual assault, domestic or dating violence, stalking, or discrimination, you may contact ASU's Title IX Coordinator
- Michelle Boone, Director of Title IX Compliance