

# AP Biology/Dual Credit Biology

Mr. Carrell

## Course Description:

This AP/Dual Credit Biology is a class designed to prepare students for collegiate level coursework, especially if the student is planning to pursue a science degree. AP Biology is for students interested in earning college credit for two semesters of introductory Biology. Students earn college credit for the class by passing the class with a 70 or higher average and/or AP Biology Examination, which will be given on ***Wednesday, May 11<sup>th</sup>, 2022*** at ***8:00 a.m.*** College credit is determined by each university. All students are required to take the AP exam per LISD school board policy.

The class will be conducted at college level and students are expected to work accordingly. Students will be expected to come to class both prepared and on time. **The overall success of the program depends mostly on each student meeting their individual responsibilities.** Much of this course will be covered in the classroom, but much of it will be covered independently by each student. Allowances should be made for **substantial** study time.

## Major Themes of AP Biology

The AP Biology framework will be the standard for the course. This ensures that each student will be exposed in multiple ways to concepts within each of the four Big Ideas: Evolution; Energetics; Information Storage and Transmission; Systems Interactions. These four Big Ideas are taught within eight units (see below) using six Science Practices (see below).

The Units are as follows: (percentage of AP exam)

- Unit 1: Chemistry of Life (8-11%)
- Unit 2: Cell Structure and Function (10-13%)
- Unit 3: Cellular Energetics (12-16%)
- Unit 4: Cell Communication/Cell Cycle (10-15%)
- Unit 5: Heredity (8-11%)
- Unit 6: Gene Expression and Regulation (12-16%)
- Unit 7: Natural Selection (13-20%)
- Unit 8: Ecology (10-15%)

The Science Practices are as follows:

- SP 1: Concept Explanation
- SP 2: Visual Representations
- SP 3: Questions and Methods
- SP 4: Representing/Describing Data
- SP 5: Statistical Tests/Data Analysis
- SP 6: Argumentation

## Textbook

*Campbell Biology in Focus*, 3rd edition, 2019. ISBN 13: 978-0-13-521476-3

*Campbell Biology*, 9th edition, 2011, ISBN-13: 9780321558237

Biology AP Edition, 13th edition, 2019, ISBN 978-0-07-681223-3

## **Substance, Labs and Exam Dates**

Unit	Unit Name	Chapters	Days Covered	Labs Involved	Exam Date (Tentative)
1	Chemistry of Life	1-3	5-7	Research Project Set-Up	8/24-25
2	Cell Structure and Function	4-5	11-13	Investigation 4: Diffusion & Osmosis	9/15-16
3	Cellular Energetics	6-8	14-17	Enzyme Lab Photosynthesis Lab Cell Respiration Lab BLAST Lab	10/14-15
4	Cell Communication/ Cell Cycle	37-38; 9	9-11	Cell-to-Cell Communication Cell Signaling Mitosis Lab	11/2-3
5	Heredity	10-12	9-11	Meiosis Lab	11/18-19
Fall Final					12/6-10
6	Gene Expression and Regulation	13-16	18-21	From Gene to Protein Gel Electrophoresis Transformation Lab	2/10-11
7	Natural Selection	19-27	20-23	Artificial Selection Lab Mathematical Modeling	3/28-29
8	Ecology	40-43	18-21	Transpiration Lab Fruit Fly Behavior Lab Energy Dynamics Lab	5/2-3
	Review		5		5/8
	<b>AP Exam</b>				<b>May 11, 2022</b>
Spring Final					5/9-13

### **Review**

As of August 2020, I have scheduled 5 class days for review. I am also administering a mock exam on Sunday May 8, 2022. The Sunday review is not mandatory, but is highly recommended. Additional studying is **necessary** on your part. This includes nights, weekends, study groups, flashcards, online testing, etc.

### **AP Exam**

**(05/11/2022)**. All students are **required** to take the AP Exam. **No excuses**. This is why we're in this class. Your score on the AP exam is not only a representation of countless hours devoted to this class, but also impacts my AP score average, LHS's average, State average, and the US average. Your effort in this class will have a significant impact!

## **Laboratory**

Since we only have 45 minutes per class per day we will be conducting labs over the course of ideally one but up to 5 days. Due to the unpredictable nature of science labs there may be occasions where you will be asked to remain after class to finish a lab or to clean up a lab, etc. My hopes are that this will be rare. Again, this is a college course and therefore is heavily influenced and weighted by the labs. 100% participation in all labs is both expected and required.

All labs done are real labs, and **not** virtual labs in any way. For each lab students will be required to analyze data and conduct a concise write-up of background, methods, materials, data collected, and conclusions made from analyzing the data. After a lab is done and questions are answered, we will be reviewing what we learned and the overall lesson learned and purpose of each lab. Toward the end of the year students will be expected to complete full lab write-ups. The College Board (the good people who prescribe any and all things regarding AP classes) require us to perform at least 8 centralized AP Biology labs, and all will be performed during the course of the year. In addition to the required minimum AP Biology official labs, we will be performing numerous other labs as they come up during our school year and as they relate to our curriculum.

## **Class Supplies**

All students should maintain an orderly notebook organized as you wish. At a minimum please obtain the following by the first full week of school:

- Notebook paper
- Composition notebook for lab notes
- 1 box of nitrile gloves (your size)
- Clorox wipes

## **Exams**

Exams will be given according to the AP exam format which is as follows:

<b>Part</b>	<b>Time</b>	<b>Grade %</b>	<b>Content</b>
A	45 minutes	50%	20-40 multiple choice
B	45 minutes	50%	1-2 long free response and 1-4 short free response

Quizzes will be given on a regular basis and usually announced in advance.

The AP test is ugly and difficult. My tests will be smaller versions of that in order to get you familiar with the style, format, ugliness, and difficulty. By the time the AP exam comes around, you will be familiar with every part of the testing process and will have practice grading many essay answers. It is my hope that my exams will be harder than the AP exam. This is for a reason: I want the actual AP Exam to be as easy as possible for you.

## **Grading**

Grades will be awarded according to the standard format:

90-100%	A
80-89%	B
70-79%	C
60-69%	D
<60%	F

Grading is approximately as follows:

	Minor 40%		
Major 60%	Quizzes 10%	Lab 20%	Homework 10%

## **Corrections**

All failing grades that are turned in on time can be corrected for an improved grade. Assignments turned in late are not eligible for corrections. To correct a minor grade you must first fill out a minor grade correction form and plan a meeting with Mr. Carrell. Major grade corrections will be assigned in class.

## **Special Note**

AP Biology may possibly be the most difficult course you have ever attempted so far, aside from AP Chem. If taken seriously, it will be one of the most rewarding educational experiences of your life.

## **Common Complaints**

I included this little section to mention a couple of the common pitfalls of which I have been informed by other teachers of AP biology. READ THE BOOK. There is ***no substitute*** for sitting down, turning off the radio/TV, turning up the lights, turning off the computer, shutting off your cell phone and reading. Also, do the chapter outlines. Showing up for tests thinking you'll just "wing it" will result in **failure, guaranteed.**

There will be students in a million clubs/sports that score the highest in class or on the exam despite their hectic schedule, and there will be students with zero clubs/sports that will get a 1. ***The choice seems to lie within you somewhere. No one can prepare you for this class and exam better than yourself.***

Common traits of high performing students: Organized, reading ahead, chapter outlines done in advance, answering questions in class, positive outlook, focusing on work at hand.

Common traits of poorly performing students: Disorganized, never reading chapters, no homework done, dead quiet in class discussions. Not doing homework, participating, labs, or blowing off quizzes doesn't just take away the 20%. It affects the entire grade because you chose not to learn the material.

## **\*\*Cell Phones\*\***

As a classroom rule, students will be required to turn in their phones to me as they enter the classroom. I will lock and store away their phones. Failure to comply will result in an office referral. During labs, one student per group will be allowed to have their phone in order to photograph the steps of the lab if they wish to include them in their lab write up. The only other time students should have their phone is if I directly specify we are going to use them. **I reserve the right to revoke the privilege to use your phone during lab or other activities if you are found using it for anything other than working on the lab or assignment at hand.**

## **Discipline**

Acting out in class, unsafe laboratory behavior, bullying, disrespectful language, and misbehavior in general will result in swift repercussions. I will ask you **once** to cease the behavior. Any subsequent issues will be given an office referral and will count against your participation grade. Office referrals are worth 5% of your participation grade meaning you have two chances. If you are referred to the office twice you will drop one letter grade. No exceptions or excuses.

## **Contact**

The easiest way to contact me will be through email: [ccarrell@llanoisd.org](mailto:ccarrell@llanoisd.org) or stopping by my room. I will try to respond the same day but delays may occur depending on circumstances at the time. I understand the difficulty of this course and that everyone learns differently. Even if you just need encouragement, stop by my room and we'll talk through it.

## **University Policy**

### **Academic Honesty and the ASU Honor Code**

Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. Students are responsible for understanding the Academic Honor Code and the ASU policies on academic dishonesty, which is contained in both print and web versions of the Student Handbook. The penalty for ANY act of dishonesty in this class, including any form of cheating or plagiarism: 1) is a grade of ZERO on the assignment and, 2) disciplinary action as warranted in accordance with university guidelines. Please do NOT jeopardize your career; it's not worth it.

### **Accommodations for students with disabilities**

All students at Angelo State must have the capacity to undertake, with reasonable assistance from the faculty and administration, the academic challenges necessary to fulfill the academic requirements for the degree for certification programs that they are pursuing. If you have a disability and need special accommodations of any nature, you should contact the Student Life Office (Garden Level, University Center, (325) 942-2191 or [Student.Life@angelo.edu](mailto:Student.Life@angelo.edu)). I will be happy to make accommodations for you based on the recommendations from the Student Life Office. Please make your request early in the semester to allow time for appropriate arrangements.

### **Religious Holy Day**

A student who intends to observe a religious holy day during the semester should make that intention known in writing to the instructor during the first week of the semester and one week prior to the absence. If this submission is completed, a student who is absent from classes for the observance of a religious holy day shall be allowed to make up missed exams or assignments scheduled for that day in accordance with syllabus policy.

### **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.

## AP Biology Laboratory Safety Contract

1. The science laboratory can provide you with the exciting opportunity to do science. However, remember at all times that the laboratory is a place for serious work. Fooling around or disruptive behavior can result in removal from the laboratory.
2. Always prepare for an experiment by reading the directions in the manual before you come to the laboratory. Follow the directions carefully and intelligently, noting all precautions. Do not add to, omit, or change any of the directions unless your teacher instructs you to do so.
3. Do only the experiments assigned or approved by your instructor. Unauthorized experiments are prohibited.
4. When working with corrosive materials, chemical splash goggles, gloves, and lab aprons must be worn throughout the lab period until all your classmates have completed the lab and the chemicals are safely stored. When the teacher's protective equipment is on, your protective equipment is on. When the teacher takes off his or her protective equipment, you can take off your protective equipment.
5. Do not touch chemicals with your hands.
6. Never taste a chemical or solution. No food or drink is allowed in the laboratory. You may have a drink with a lid at your desk, NOT YOUR LAB TABLE.
7. When observing the odor of a substance, do not hold your face directly over the container. To observe safely, fan a little of the vapor toward you by sweeping your hand over the top of the container.
8. Allow ample time for hot glass to cool. Remember that hot glass looks the same as cool glass.
9. Know the location of the blanket station, emergency shower, eyewash, and the fire exit procedure. Know the location of the material safety data sheet (MSDS) notebook for reference in the event of an accident.
10. Know the location of your school's MSDS. MSDS information must be shared with students by the instructor or read by students, specifically those sections detailing handling precautions, disposal techniques, and other pertinent information for each chemical.
11. Report any accident, even a minor injury, to your instructor.
12. Discard all waste from lab activities into a chemical waste jar or other location specified by the teacher in accordance with MSDS instructions.

13. Read the label on any chemical bottle you are planning to use in a lab to verify that it contains the correct chemical. Do not use any chemicals stored in unlabeled bottles.
14. Never return unused chemicals to the stock bottle. Do not put any object into a reagent bottle except the dropper with which it may be equipped.
15. Keep your apparatus and work area organized. Avoid spillage, but if you do spill something, notify the teacher and clean up the spill immediately using the appropriate technique.
16. During clean-up time, attend to your assigned area duties. All duties must be completed before leaving the laboratory. Wash hands thoroughly with soap at the conclusion of each lab.
17. Respect your equipment and fellow laboratory workers.
18. You are not allowed to work in a laboratory unless an instructor is present. All student experiments are to be done under the direct supervision of an instructor. Students completing science project assignments at home must complete a permission form before any work is begun, and a parent or guardian must sign the form.
19. Open-toed shoes/sandals, loose-fitting clothing, and jewelry are not permitted during laboratory activities. Long hair must be tied back securely during laboratory activities.
20. Books and notebooks are to be stored on your desk for clear aisles and exiting. Backpacks need to be placed in your chair at your desk. No backpacks are allowed in the lab side of the room.
21. Science department regulation and State statutes require that all students, teachers, and visitors in the laboratory must wear chemical splash goggles during work periods, including clean-up time.
22. One student per lab group may be the designated photographer and have their phone during labs. Phones are to be locked and stored unless your instructor gives you permission to have them.

Science department policy and state statute

Any person who is working, teaching, observing, supervising, assisting or engaging in any work, activity or study in a public or private elementary or secondary school laboratory or workshop where the process used tends to damage the eyes or where protective devices can reduce the risk of injury to the eyes concomitant with such activity shall wear an eye protective device of industrial quality in the manner in which such device was intended to be worn. When in doubt, wear chemical splash goggles.

\*\*In order to maintain a safe working environment for all occupants, teachers are required by the school administrator to remove from the classroom any student out of compliance. This is for your own protection and fellow students.\*\*

Sign below to signify that you have read, understand and agree to abide by the guidelines for this classroom.

Parent/guardian please complete the following:

Student Name: \_\_\_\_\_

Course: AP Biology

Student Signature: \_\_\_\_\_

Preferred/Guardian Name: \_\_\_\_\_

Parent/Guardian Signature: \_\_\_\_\_

Best method to contact parent/guardian (provide either email, phone, or both):

\_\_\_\_\_

\_\_\_\_\_

I have read the attached safety rules and have been present when they were discussed in class or I discussed them directly with my science teacher.

Yes, I wear contact lenses.

I have allergies/sensitivities to:

\_\_\_\_\_

I have read and discussed the laboratory safety rules with my child.

Parent signature \_\_\_\_\_

Date \_\_\_\_\_