

EDWARD R. MURROW HIGH SCHOOL  
SCIENCE DEPARTMENT  
Allen Barge, Principal  
Carlos Reyes, Assistant Principal

Course Syllabus  
**SBS22X: Advanced Placement Biology II**  
Spring 2023

## 1. Instructor Information

Mr. D. Sprague  
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Course Web Page: <http://www.spraguescience.com>

Click on the “AP Biology” menu tab at the top. I will use this page to post course information, assignments, review sheets, practice exam questions, and relevant science news.

## 2. Course Description

The AP Biology course is designed to be the equivalent of a two-semester college introductory biology course usually taken by biology majors during their first year. Many colleges and universities will award college credit and/or permission to take upper-level biology courses to students who earn a qualifying score on the AP exam. The full course description is available from The College Board at [www.collegeboard.com](http://www.collegeboard.com).

Prerequisites: two semesters of Living Environment and two semesters of Chemistry

## 3. Course Themes

Course content centers around four 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 life processes.
- (4) Biological systems interact, and these systems and their interactions possess complex properties.

## 4. Course Objectives

Upon completion of the course, students will be able to:

- (1) Explain biological concepts, processes, and models presented in written format.
- (2) Analyze visual representations of biological concepts and processes.
- (3) Determine scientific questions and methods.
- (4) Represent and describe data.
- (5) Perform statistical tests and mathematical calculations to analyze and interpret data.
- (6) Develop and justify scientific arguments using evidence.

## 5. Required Materials

(1) Readings come from the following textbook:

Hillis, David M., Sadava, David E., Heller, H. Craig, & Price, Mary V. (2012). *Principles of Life*, 1<sup>st</sup> ed. Sinauer Associates & W. H. Freeman.

(2) You must purchase a bound composition notebook to be used for laboratory work.

(3) A four-function, scientific, or graphing calculator must be brought to class to class each day.

## 6. Grading Policy

|     |                               |
|-----|-------------------------------|
| 50% | Exams and quizzes             |
| 20% | Laboratory work and portfolio |
| 20% | Writing assignments           |
| 10% | Reading reflections           |

## 7. Exams

Comprehensive essay exams and multiple-choice quizzes will be given periodically throughout the semester. Students are responsible for registering for AP Classroom in order to access to assessment items. Make-up exams will only be given under extenuating circumstances; please understand that make-up exams will contain entirely different questions than those that appeared on a missed exam.

## 8. Laboratory Work

Because of the sensitivity of biological specimens and complexity of experimental set-ups, make-up opportunities may not be available for all labs. For safety reasons, students who arrive late to lab may not be permitted to enter the lab and may be required to make up the lab after school. Inappropriate or dangerous behavior will result in removal from the lab.

You will be responsible for creating a portfolio entry providing evidence of your proficiency in each of the six course objectives in the syllabus. Each portfolio entry should focus on a single course objective and include a visual artifact (image, screenshot, video, or series of up to six images) along with a paragraph explaining how the artifact you included provides evidence of proficiency in the objective. Due dates for individual portfolio entries will be staggered throughout the semester.

## 9. Assignments

All assignments must be submitted to Google Classroom by the due date. Each student is allowed to submit up to two assignments late for any reason over the semester, provided that all work from the first 12 weeks of the semester is submitted by Tuesday, May 9.

## 10. Classroom Protocol

It is expected that you will arrive on time, contribute to class discussions, adhere to written and oral directions, care for the microscopes and other equipment, keep your lab bench clean, treat everyone in the classroom with respect, and remain attentive. Cell phones and other electronic devices must be turned off and out of sight; jackets, bags, and other personal items must be stored under the lab bench.

## **11. Attendance**

Regular attendance is mandatory. Class begins five (5) minutes after the end of the previous band. Students who are not in the room at that time will be marked late without a pass. When you are absent from class, it is your responsibility to find out what class activities, assignments, or notes were missed and arrange to make up these activities and get the notes from a classmate. Students who are isolating after receiving a positive COVID-19 test are responsible for communicating with me over email and completing assignments on Google Classroom.

## **12. Academic Honesty**

All work that you turn in is expected to be your own. When you use someone else's ideas, you must give that person credit, even if you do not use his or her exact words. Anyone who is caught cheating, talking, or using a cell phone or other personal electronic device during an exam will receive a zero. It is not acceptable to look at another student's written work or show another student your written work.

### 13. Tentative Schedule

| <u>Week</u> | <u>Dates</u> | <u>Discussion Topic</u>           | <u>Lab Exercise</u>       | <u>Hillis Chapter</u> |
|-------------|--------------|-----------------------------------|---------------------------|-----------------------|
| 1           | 1/31–2/3     | Regulation of Gene Expression     | Epigenetics in Rat Pups   | 11                    |
| 2           | 2/6–2/10     | Biotechnology                     | Micropipette Practice     | 12, 13                |
| 3           | 2/13–2/17    | Evolutionary Developmental Theory | Gel Electrophoresis       | 14                    |
| 4           | 2/27–3/3     | Population Genetics               | Hardy-Weinberg Analysis   | 15                    |
| 5           | 3/6–3/10     | Evolution and Speciation          | Cladogram Construction    | 16                    |
| 6           | 3/13–3/17    | Phylogenetics                     | Life History Strategies   | 17, 19                |
| 7           | 3/20–3/24    | Population Dynamics               | Population Modeling       | 42, 43                |
| 8           | 3/27–3/31    | Competition                       | Allelopathic Interactions | 44                    |
| 9           | 4/3–4/5      | Trophic Interactions              | Dissolved Oxygen          | 45                    |
| 10          | 4/17–4/20    | Biogeochemical Cycles             | Net Primary Productivity  | 46                    |
| 11          | 4/24–4/28    | Homeostasis and Metabolism        | Transpiration Rate        | 29                    |
| 12          | 5/1–5/5      | Review                            |                           |                       |
| 13          | 5/8–5/12     | Review                            |                           |                       |
| 14          | 5/15–5/19    | Biology Career Week               |                           |                       |
| 15          | 5/22–5/26    | Portfolio and Presentation Work   |                           |                       |
| 16          | 5/29–6/2     | Student Presentations             |                           |                       |
| 17          | 6/5–6/9      | Student Presentations             |                           |                       |
| 18          | 6/12–6/13    | Course Reflection                 |                           |                       |

*This schedule is subject to modification by the instructor.*