

EDWARD R. MURROW HIGH SCHOOL
SCIENCE DEPARTMENT
Allen Barge, Principal
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Course Syllabus
SBS22X: Advanced Placement Biology II
Spring 2024

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.

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) Describe and explain biological concepts, theories, structures, and processes.
- (2) Develop and use biological models.
- (3) Design experiments and conduct research using appropriate laboratory techniques and equipment.
- (4) Graph and analyze data to determine meaningful patterns.
- (5) Apply mathematics and statistics to solve biology problems.
- (6) Use evidence to support or refute biological claims.

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*, 1st 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

Students will be evaluated multiple times on each of six biology skills (see section 4, Course Objectives) listed in this syllabus through written examinations, laboratory work, writing assignments, oral presentations, and class discussions. Students will receive a separate evaluation of each biology skill on assessments (i.e., you will not receive a single score on an exam; instead, you will receive a separate mark for each biology skill that the exam assesses). Students will be provided with a rubric describing the criteria for success on each skill.

The final score for each biology skill will be based on the most recent, consistent evaluations of the skill rather than a simple average of scores. Thus, students who struggle with a particular skill on assessments early in the semester will not be penalized if they can consistently demonstrate proficiency by the end of the semester.

Please note that while extra credit is not available in this course, there will be an opportunity beyond the required exams and assignments to provide additional evidence of proficiency in the biology skills (see section 10, Class Journal).

7. Exams

Comprehensive exams will be given periodically throughout the semester. 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

Students are responsible for registering for AP Classroom in order to access to problem sets that will be assigned regularly. Written assignments must be submitted to Google Classroom by the due date. Each student is allowed to submit up to three assignments late for any reason over the semester, provided that all work from the first 12 weeks of the semester is submitted by Wednesday, May 15.

10. Class Journal

Students who are interested in taking on a leadership role in the class, improving their scientific writing skills, and an additional opportunity to provide evidence of proficiency in the biology skills in a non-exam format have the option of participating in a class project culminating in the production of an academic-style journal.

The class journal is a collection of academic writing from students in this class that documents the methodologies and findings from research conducted during our lab work. Once complete, the journal will be released to all students in the class so that it may serve as a review resource in preparation for the Advanced Placement Exam.

Students interested in contributing writing to the journal (or providing art for the cover page) should contact me early in the semester. Individual student contributors will each write a single lab report based on one of the lab exercises and revise the report based on my feedback.

11. 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.

12. 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.

13. 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 be penalized. It is not acceptable to look at another student's written work or show another student your written work, nor is it acceptable to submit work generated by artificial intelligence programs without clear acknowledgement.

14. Tentative Schedule

<u>Week</u>	<u>Dates</u>	<u>Discussion Topic</u>	<u>Lab Exercise</u>	<u>Hillis Chapter</u>
1	1/30–2/2	Regulation of Gene Expression	Epigenetics in Rat Pups	11
2	2/5–2/9	Biotechnology	Micropipette Practice	12, 13
3	2/12–2/16	Evolutionary Developmental Theory	Gel Electrophoresis	14
4	2/26–3/1	Population Genetics	Hardy-Weinberg Analysis	15
5	3/4–3/8	Evolution and Speciation	Cladogram Construction	16
6	3/11–3/15	Phylogenetics	Life History Strategies	17, 19
7	3/18–3/22	Population Dynamics	Population Modeling	42, 43
8	3/25–3/28	Competition	Allelopathic Interactions	44
9	4/2–4/5	Trophic Interactions	Dissolved Oxygen	45
10	4/8–4/12	Biogeochemical Cycles	Net Primary Productivity	46
11	4/15–4/19	Conservation Biology	Transpiration Rate	46
12	5/1–5/3	Homeostasis and Metabolism	Lung Capacity Correlation	29
13	5/6–5/10	Review		
14	5/13–5/17	Review		
15	5/20–5/24	Biology Career Week		
16	5/28–5/31	Portfolio and Presentation Work		
17	6/3–6/7	Student Presentations		
18	6/10–6/13	Student Presentations		

This schedule is subject to modification by the instructor.