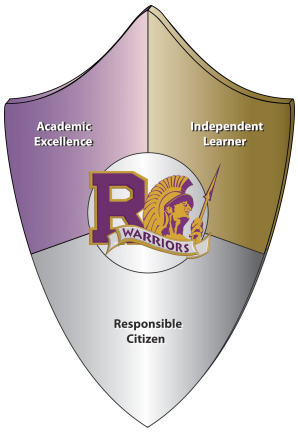
AP BIOLOGY SYLLABUS ~ 2020-2021

Instructor's Information

Course: Advance Placement Biology (A/B)
Instructor: Mrs. R. R. Wingerden
Phone: (805) 937-2051 x2121
E-mail: rwingerden@smjuhsd.org
Website: http://www.rwingerden.com/apbio/



Textbook

Biology AP Edition - Campbell & Reece (8th Edition)

Course Description AP Biology is a year-long course designed for high school students as an opportunity to earn AP credit on their high school transcript, as well as placement credit for an introductory college-level science course. Students who earn a qualifying score on the AP Biology Exam are typically eligible to receive college credit and placement in an advanced science course in college. This course is aligned to the College Board AP Biology Curriculum Framework and is based on four Big Ideas, which encompass core scientific principles, theories, and processes that cut across traditional boundaries and provide a broad way of thinking about living organisms and biological systems. Twenty-five percent of instructional time is devoted to hands-on laboratory work with an emphasis on inquiry-based investigations. Investigations require students to ask questions, make observations and predictions, design experiments, analyze data, and construct arguments in a collaborative setting, where they direct and monitor their progress.

This course is designed to prepare students for the **Biology College Board Advanced Placement Exam**. This course is also a ***concentrator course*** for the CTE Environmental Resources Pathway.

Prerequisites Junior or senior standing only. Successful completion of one year of the following courses: Biology (P) with an "A" **or** Honors Biology (P) with a "B" or better, **and** Chemistry (P) with a with a "B" or better.

Required Course Materials Electronic Device (Tablet, iPad, Laptop), binder with lined loose leaf paper or spiral notebook, one 5 x 5 quadrille ruled composition notebooks (100 pages, 9 3/4" x 7 1/2"), graph paper, pens, pencils, highlighters, and colored pencils.

Summer Assignment The summer assignment is due the first day of the course for the 2020 Fall semester. This assignment may be acquired from the AP Biology course website (http://www.rwingerden.com/apbio/SummerAssignment/) or ERHS Summer Homework page. This assignment is designed to re-familiarize students with the science of biology, the vast diversity of life, and how evolution serves as a foundation and unites modern biology. Secondly, this assignment serves as a review of the chemical foundation for which all life is built and an introduction to the level of academic dedication and maturity necessary to be successful in AP Biology.

Grades are calculated on a percentage basis. The value of each individual assignment varies. Students earn a grade based on the *quality* and *accuracy* of the work they complete. Overall class grades are based on a straight percentage, not a curve. *AP Biology course category percentages may change slightly to better reflect the work students are completing during distance learning.*

Assessments: 50% Laboratory: 25% Assignments: 25%

Distance Learning

- Canvas will be used to deliver AP Biology content and direct students to other digital tools, such as Albert, AP Classroom, Edpuzzle, Flipgrid, Gizmos, PIVOT Interaction, and Zoom.
- At the start of each week, preferably Sunday nights, students will access the **Weekly Assignments** page in their AP Biology Canvas Course which will outline the week's curriculum.
- As your instructor during this time of distance learning, I will do my best to provide you with the educational opportunities you will need to prepare yourself for the 2021 AP Biology Exam.
- That said, this is an AP level course and I am only one variable in the equation of *your* academic success. You will need to come prepared and ready to engage in all Zoom classes (*synchronous instruction*), complete assignments on time (*asynchronous instruction*), and advocate for your educational needs by accessing Zoom Office Hours.
- I am grateful for the opportunity to be your instructor. I am looking forward to working with each of you this school year and exploring the dynamic world in which we live.

Norms in ZOOM

- Sign in to our scheduled ZOOM class at least 5 minutes early so that you are in the Zoom WAITING ROOM and we can start instruction ON TIME. Thanks!
- All ZOOM students will be fully dressed. Seriously.
- All Zoom students will have their tablet/device focused on their full face in the cameral frame as this increases communication between everyone to increase learning.
- All Zoom students will do their best to remain engaged and focused for the duration of the Zoom class, which I will try to keep to 30 minutes.
- All Zoom students will eliminate outside distractions (TV, games, cell phones, other people/pets, etc.)
- Extend RESPECT in all ways to Zoom participants, at ALL times.
- AUDIO is off until called on by your instructor.
- Make sure you have a proper Zoom screen name which is your OFFICIAL STUDENT NAME.
- Make sure your Zoom background is school appropriate with enough light for visibility.
- Your instructor will share the process for asking questions while in a Zoom class.
- Taking screenshots of Zoom class is not permitted unless you are given permission by your instructor AND your class.
- Students displaying behaviors not appropriate to the norms above will be removed from the Zoom room and reported to school administration and parents.

Exams

At the end of each unit, an exam will be given, which is 50 percent multiple choice/grid-in and 50 percent free response. There will be a comprehensive final exam at the end of each semester. Final exams will be multiple choice and cumulative in nature.

Quizzes

At a minimum, one quiz will be given each week. Some quizzes will be announced and others will not. Quizzes will vary in format depending on the topic being covered.

Lab & Lab Reports

Lab reports are required for each of the recommended Inquiry-Based AP Biology Labs. These reports may include: title, introduction/background information, purpose, hypothesis, procedure, data/results, analysis, question, and conclusion. Students work in pairs to complete lab procedures, but are responsible for turning in individual lab reports. Students are encouraged to produce a high quality report and are given a week from the conclusion of the lab to submit their report.

A formal lab write-up for the remaining additional labs are not required. In these cases, student's lab papers will include pre-lab questions, data/results, analysis, and post-lab questions, which are geared to emphasize the key concepts of the lab.

Students may be asked to design an experiment, which they will implement at home. The student will propose, in writing, the scientific question they wish to investigate to the instructor. After question approval, students formulate a hypothesis and design an experiment to test their hypothesis. Experimental designs are then peer-reviewed, redesigned if needed, and conducted by the student out of class. This project gives students a chance to be creative and apply the scientific method to a question they wish to investigate. Students work individually and have four weeks to implement their approved experimental design and write their formal lab report.

Homework & Readings

An outline of this AP Biology course, which includes assignments and readings for the year, will be given to the students. Additionally, on the last day of each school week, students are reminded of upcoming assignments and due dates for the following week. This information is posted on the AP Biology Canvas Course.

Homework will take many forms and is designed to help with student understanding of the current unit being studied. Homework assignments for each unit include, but are not necessarily limited to, the following; completion of Major Themes Concept Maps, justify why the answers to the "self-quiz" multiple-choice section at the end of each assigned chapter are correct, answering the "evolution connection" question at the end of each assigned chapter, and answering free-response questions, which are related to the unit.

Readings for each unit include chapters from the textbook, which contain information that will be covered. Scientific abstracts and papers are assigned with the purpose of showing how discoveries are made and demonstrate that science is the process. Articles found in science magazines and online news sources are also assigned to promote discussion about social and environmental concerns.

Lab Component

The laboratory experience is extremely important in the AP Biology course and is used to emphasize that biology and science is a process, which involves development and testing of a hypothesis, collection, analysis, and presentation of data with a clear discussion of the results. To ensure the lab component of the course is met, on average, one day out of every four is devoted to laboratory work. Students are required to come in to the laboratory prepared and ready to complete the day's procedure. Lab reports are then completed at home.

During the course, students will complete the recommended laboratories in the *AP Biology Investigative Labs: An Inquiry-Based Approach.* The topics covered in these labs are:

Investigation 1	Artificial Selection
Investigation 2:	Mathematical Modeling; Hardy-Weinberg
Investigation 3:	Comparing DNA Sequences to Understand Evolutionary Relationship with BLAST
Investigation 4:	Diffusion and Osmosis
Investigation 5:	Photosynthesis
Investigation 6:	Cellular Respiration
Investigation 7:	Cell Division: Mitosis and Meiosis
Investigation 8:	Biotechnology: Bacterial Transformation
Investigation 9:	Biotechnology: Restriction Enzyme Analysis
Investigation 10:	Energy Dynamics
Investigation 11:	Transpiration
Investigation 12:	Fruit Fly Behavior
Investigation 13:	Enzyme Activity

The course also includes additional lab activities, which have been chosen to emphasize topics covered in the course that are not addressed in the recommended AP Biology Laboratories.

Topic Outline For The Year

The AP Biology Curriculum is framed around the AP Biology course and **Exam Description Effective Fall 2019** where 4 Big Ideas serve as the foundation of the course and allow student to create meaningful connections among course concepts. There is a set of core concepts called Enduring Understanding, which will be used to guide the AP Biology course curriculum. Below is an outline of the AP Biology Curriculum Big Ideas and the Enduring Understandings topics covered in this course. ***AP Biology is a rigorous course that demands personal responsibility from the student.*** In order for students to plan effectively, they are provided with due dates for all major projects, labs and tests. They are strongly encouraged to complete nightly readings and study each day's lecture notes on their own time.

Big Ideas	Enduring Understanding
Unit One The process of evolution drives the diversity and unity of life.	A. Change in the genetic makeup of a population over time is evolution. B. Organisms are linked by lines of descent from common ancestry. C. Life continues to evolve within a changing environment. D. The origin of living systems is explained by natural processes.
Unit Two Biological systems utilize energy and molecular building blocks to grow, reproduce, and maintain homeostasis.	A. Growth, reproduction, and maintenance of the organization of living systems require free energy and matter. B. Growth, reproduction, and dynamic homeostasis require that cells create and maintain internal environments that are different from their external environments. C. Organisms use feedback mechanisms to regulate growth and reproduction, and to maintain dynamic homeostasis. D. Growth and dynamic homeostasis of a biological system are influenced by changes in the system's environment. E. Many biological processes involved in growth, reproduction, and dynamic homeostasis include temporal regulation and coordination.
Unit Three Living systems retrieve, transmit, and respond to information essential to life processes.	A. Heritable information provides for continuity of life. B. Expression of genetic information involves cellular and molecular mechanisms. C. The processing of genetic information is imperfect and is a source of genetic variation. D. Cells communicate by generating, transmitting, and receiving chemical signals. E. Transmission of information results in changes within and between biological systems.
Unit Four Biological systems interact and these interactions possess complex properties.	A. Interactions within biological systems lead to complex properties. B. Competition and cooperation are important aspects of biological systems. C. Naturally occurring diversity among and between components within biological systems affects interactions with the environment.

Put this syllabus in your notebook for future reference.

Please ***sign***, ***remove*** this page from the packet, and ***return it to Mrs. Wingerden (room 121).***

AP Biology 2020-2021

STATEMENT OF UNDERSTANDING

By **completing** and **submitting** the **AP Biology Science** 2020-2020 STATEMENT OF UNDERSTANDING page, the parent/guardian and the student are acknowledging that they have read the course syllabus for Mrs. Wingerden's **AP Biology Science** class and they *understand* and *agree* to the commitment necessary to be successful in this course.

_____ /_____
printed student name / period

_____ /_____
signature of student / date

_____ /_____
signature of parent or guardian / date

Please return ***completed*** STATEMENT OF UNDERSTANDING to ***Mrs. Wingerden (room 121)***.

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