

Biology 599

Advance Placement Biology

Course Syllabus

I. Lecture

A. Lecturer:

B. Lecture Materials:

The text book used in this class is: The World of Biology

Written by: P William Davis, Eldra Pearl Solomon and Linda Berg; Seventh Edition: Brooks/Cole a division of Thompson Learning Inc.

Suggested Book

It is highly recommended but not mandatory that you purchase the CliffsAP by Phillip Pack study guide. More information about this topic will be given in class.

II. Grading Policy

A. Homework

Homework is assigned during the school week. Students are expected to complete all homework assignments on time. If students run into difficulties with content from lecture or assignments they are expected to come in for extra help. Regular lack of preparation will ultimately have a negative effect on their grade. Homework assignments will count for 10% of the final grade.

B. Quizzes

Announced and unannounced quizzes will be given for most chapters. The unannounced quizzes will be based on reading assignments. Students will be allowed to use their notes for unannounced quizzes. They may include multiple choice, fill in the blank, short answer questions or essays. Also, announced quizzes may include multiple choice, fill in the blank, short answer questions or essays. The announced quizzes will count for 20% of the final grade. The unannounced quizzes will count as homework (10% of the final grade).

C. Tests

Tests are announced in advance. Tests include chapter or unit tests and long term projects. Chapter tests include questions such as multiple choice and short answer questions. There will be times when tests will be in essay form. Tests count for 50% of the final grade.

D. Labs

Labs are collected at the beginning of the next lab period. They count for 20% of the final grade. There will be times when lab quizzes will be given and counted as part of the laboratory grade. The course will conduct all of the Laboratory investigations suggested by the Advance Placement program. You will get a copy for each lab on the first day of school. You can determine which laboratory exercises are suggested by the AP program by the title and number of the investigation.

E. Make up work

There are no make-ups for tests due to poor performance. If missing work is not completed within a reasonable time period a zero is earned. (one week is a reasonable period).

F. Promptness

The school policy on tardiness to class is rigidly enforced.

Semester One

Independent Assignment:

Students will be expected to read and take notes on chapters 17,18,19, 20 and 21 relating to evolution. A test will be given on these chapters.

Book Assignment

Students will be asked to read “The Double Helix”. An assignment for this book will be given for second quarter (around December). Part I: Students will be asked to assume the role of one of the main scientists in the book. He/She must write a letter to the Nobel Prize Committee stating why he/she should be the one to receive this prestigious award. Part Two: Students will be asked to assume the role of the Nobel Prize Committee after some class discussion and other supplementary material is discussed in class. They will be asked to write a response letter to the scientist from part I and indicate whether or not they should receive the Nobel Prize in Biology.

Lecture Topic	Chapter	Test/Quiz
The World of Biology: This chapter will be covered as a review of freshman biology. Chapter outline include: A) characteristics of life. B) biological organization. C) Information transfer. D) The basic concept of evolution. E) The energy of life. F) The process and method of science. Suggested Lab: Animal Behavior AP Lab # 11	1	Quiz: General concepts: A) characteristics of life. B) Scientific method C) Energy Flow.
Methods of science: Students will be asked to browse through the chapter on their own. Students will be tested on general topics covered in chemistry and freshman biology. Chapter outline include: A) Elements and Atoms. B) Chemical reaction. C) Chemical Bonds. D) Redox Reactions E) Water F) Acids, bases and Salts.	2	Quiz: General Concepts: Redox Reactions and Water chemistry.

<p>The Chemical of Life: Organic Compounds :Students will be expected to recognize molecular and structural formulas of molecules. Also, they will need to develop an understanding for the importance of these molecules. Some of the information in this chapter will be review and some will be new information. Chapter Outline: A) Carbon atom and molecule B) Carbohydrates C) Lipids D) Proteins E) Nucleic Acids F) Identification of Biological Molecules</p> <p>Suggested Lab: Biochemical Tests</p>	3	<p>Quiz: Functional Groups</p> <p>Test: Chapter 1, 2 and 3</p>
<p>Organization of the Cell: The majority of this chapter will be covered as a review of cell structure and function. Approximately 10% of the chapter will be covered as new information. Chapter outline: A) Cell organization and Size. B) Methods for studying cells. C) Prokaryotic and Eukaryotic Cells. D) Cell membranes. E) Cell nucleus. F) Organelles in the cytoplasm. G) The cytoskeleton. H) Cell Coverings</p> <p>Suggested Lab: Introduction to the Microscope</p>	4	<p>Test: Organelles</p>
<p>Biological Membranes: This chapter focuses on the structure of biological membrane, passage of material through the membrane, cell signaling, and cell junction.</p> <p>Suggested Lab: Lab 1 Diffusion and Osmosis</p>	5	<p>Test Chapter 4 &5: Cell outline A- H in Organization of cell. Focus on detail of Cytoskeleton.</p>

<p>Chromosomes and mitosis pg. 175-184</p> <p>Most of the content in this section will be covered in the laboratory.</p> <p>Suggested Lab: Lab 3 Mitosis and Meosis</p>	9	Test: will focus on stages of mitosis.
<p>Energy and Metabolism.</p> <p>Students will be expected to read pg. 121-128 on their own. Lecture focus will be on Enzymes. Chapter outline:</p> <ul style="list-style-type: none"> A) Explain how an enzyme lowers the required energy of activation reaction. B) Describe how enzymes are regulated. <p>Suggested Lab: Lab 2 Enzyme Calalysis</p>	6	Test: Foccus on Enzymes
<p>How Cells make ATP: Energy-Releasing Pathways</p> <p>Lecture will focus on cellular respiration. Students will be asked to review Anaerobic respiration</p> <p>Chapter Outline: A) Redox Reactions;</p> <ul style="list-style-type: none"> B)4 Stages of Aerobic Respiration; C) Energy Yield of Nutrients Other than glucose; D) Anaerobic Respiration and Fermentation. <p>Suggested Lab: Online- biology Lab on Metabolism</p> <p>Suggested Lab: Lab5 Cell Respiration.</p>	7	Test will focus on chapter outline. Students will be expected to know some enzyme reactions.

<p>DNA: The Carrier of Genetic Information</p> <p>Lecture will consist on a discussion on viruses, history of DNA, DNA structure and replication</p> <p>Suggested Lab: Computer research lab and Movie: The Double Helix</p>	11	Test will focus on the history of DNA, Structure and DNA replication.
<p>Gene Expression</p> <p>Lecture will focus on the specifics about RNA and protein synthesis. Chapter Outline: A) Discovery of Gene-Protein relationship. B) DNA-Protein. C) Transcription. D) Translation. E) Variation of protein synthesis in different organisms. Mutations and Genes</p>	12	Test: will focus on chapter outline.
<p>Gene Regulation</p> <p>Lecture will focus on bacteria. Assignment will be given on gene regulation. Chapter Outline: A) Gene regulation in bacteria and Eukaryotes</p>	13	Test will focus on differences between Eukaryotic and Bacteria gene regulation.
<p>Chromosomes and Cell Division (Meiosis) pg. 184-192</p> <p>Lecture will focus on nondisjunction, oogenesis, spermatogenesis.</p> <p>Reproduction: Lecture will focus on the reproduction of animals.</p> <p>Suggested Lab: Lab 3 Part I: Meiosis</p>	9, 48	Test will be on sexual reproduction and Meiosis. Animal Reproduction and Hormones will also be included on the test.

<p>Basic Principles of Heredity and Biotechnology</p> <p>Lecture will focus on Mendelian and Modern Genetics. Human Genome Project and Biotechnology. Techniques such as PCR, DNA Sequencing and DNA Fingerprinting will be covered in detail.</p> <p>Suggested Lab: Lab 6 Molecular Biology</p> <p>Suggested Lab: Lab 7: Genetics of Organisms</p> <p>Suggested Lab: Lab 8: Population genetics and Evolution.</p>	<p>10, 14, 15</p>	<p>Test will focus on karyotypes, pedigrees, punnett squares, probability, Biotechnology techniques.</p>
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Semester Two

Independent Assignment:

Students will be expected to read and take notes on chapter 28, 29, 30 relating to the animal kingdom. A test will be given on these chapters. Students will be allowed to use their own notes.

Students will be expected to read and take notes on chapter 51, 52, 53, 54, 55 relating to the interactions of life: ecology, ecosystems, and humans and the environment. A test will be given on these chapters. Students will be allowed to use their own notes.

Book Assignment:

Students will be asked to read “Hot Zone” by Preston. Students will be asked to write a reflection paper on the book. They will be given questions to guide them and prepare them for a Socratic seminar.

Viruses, Prokaryotes and Protists Lecture will focus on viruses, viroids, prions, and Prokaryotic organisms. Human applications to topic will be covered. Protists will be introduced. Some of the chapter information in these chapters was covered in the introductory Biology course and will be covered here as a review.	23, 24	Test will be on both chapters.
The immune System: Internal Defense. Lecture will focus on specific and nonspecific immune responses. Students will be asked to complete an independent assignment. Chapter outline: A) Nonspecific and Specific Immunity. B) Cell mediated immunity C) Antibody mediated Immunity, Immunological memory. D) The immune System and Disease. E) Harmful immune Response	43	Take home test.

<p>Kingdom Fungi</p> <p>Lecture will focus on characteristics of fungi, fungal diversity, Lichens and medical importance of fungi. Some topics will be review some will be new.</p> <p>Suggested Lab: Fungi Lab</p>	25	Test: Will focus on life cycles and Phyla and specific fungi examples.
<p>The Plant Kingdom: Seedless Plants, Seed Plants, Flowering plants.</p> <p>Lecture will focus on plant reproduction (sexual and asexual), Bryophytes, seed plants, gymosperms, andgiosperms and seedless vascular plants.</p> <p>Suggested Lab: Plant Reproduction Lab</p>	26, 27, 35	Test will focus on phyla, examples of plants and reproduction.
<p>Plant Structure, Growth and Differentiation</p> <p>This chapter will focus on tissues, plant structure and plant meristems. Leaf form, structure and function; Transpiration.</p>	31	Test will focus on structure and function of tissues.
<p>Transpiration: Leaf Structure and Function.</p> <p>Lecture will focus on plant structure and function and transpiration.</p> <p>Suggested Lab: Lab 9 Transpiration</p>	32	Test on Tranpiration and Leaf structue and anatomy.
<p>Translocation: Stem and Plant Transport. Roots and Mineral Nutrition and Plant Growth and Development.</p> <p>Lecture will focus on roots and miniral nutrition, plant hormones, external stem structure, stem growth and transport in plant body.</p>	33, 34, 36	Test will be on three chapters.

<p>Photosynthesis:</p> <p>Lecture will focus on photosynthesis overview, light dependent reactions and carbon fixation reactions.</p> <p>Suggested Lab: Lab 4 Plant Pigments and Photosynthesis</p>	<p>8</p>	<p>Students will review aerobic and anaerobic respiration and make comparisons to photosynthesis.</p>
<p>Systems:</p> <p>Lectures will be held afterschool during March and April. It is your responsibility to make time for the lectures from 2:00-2:45.</p> <p>Suggested Lab (In Class): Lab 10 Physiology and Circulatory System.</p>		<p>System Questions will be on the semester exam.</p>
<p>Miscellaneous Lab: Lab 12 Dissolved Oxygen and Aquatic Primary Productivity.</p>		

Summer Assignments AP Biology

Assignment I.

Students will be expected to read and take notes on chapters 17,18,19, 20 and 21 relating to evolution. A test will be given on these chapters. Test scheduled for first week of classes in September.

Assignment II.

Read Chapter 1 and 2. Test 1 will include chapters 1, 2 and 3. Lectures will only focus on chapter 3.

Assignment III.

Read Chapter 9: Chromosomes, mitosis and Meiosis. 939-954

Assignment IV

Read Chapter 23 Viruses/Prokaryotes.

Assignment V.

Independent assignment on the kingdom animalia. Read Chapter 28-30. Test will be given during 3rd quarter.

Assignment VI.

Lectures sessions on **systems** will be held after-school during the months of March and April. Review AP Cliff Notes book.

Assignment VII

Parade Through the Kingdoms Assignment. Assignment is due at the beginning of second semester. Students are highly encouraged to get through most of the packet by the end of the summer. Assessments will be provided for each section.

