

<p style="text-align: center;">AP BIOLOGY Centennial High School 2010-2011</p>
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****E-mail is the most reliable and efficient form of communication.**

Course Description:

AP Biology is designed to be the equivalent of a two semester college introductory biology course. Students can expect challenging content, a rigorous pace, extensive lab work, and a significant time commitment to studying and reading. Along with the required effort are the REWARDS of learning about the fascinating world of biology, the skills developed to be successful in a post secondary science course, and the relationships built with others in the course. The AP Biology course is designed to help students develop a conceptual framework of modern biology and an appreciation of science as a process. This conceptual framework is built around 8 major themes:

- **science as a process**
- **evolution**
- **energy transfer**
- **continuity and change**
- **relationships of structure and function**
- **regulation**
- **interdependence in nature**
- **scientific technology and its impact on society**

Course Objectives:

- Understand that science is a process rather than an accumulation of facts
- Understand how the major topics/concepts relate to the unifying themes in Biology
- Experience science through laboratory and inquiry activities
- Apply biological knowledge and critical thinking to environmental and social concerns

Why take AP Biology?

- You enjoy biology and want to take that learning to the next level in a rigorous laboratory based class
- You are a self directed learner and need the challenge that an AP class offers
- You have an interest in a science related career (medicine, research, veterinarian, forensics, forestry, etc...)
- You would like to earn college credit while in high school

AP Biology Exam.....May ?, 2011

Format:

1. Multiple Choice (80 min)—Composed of 100 multiple-choice Questions. This is worth 60% of the final grade.
2. Free-Response questions (90 min) – Consists of four mandatory questions that must be in essay form. The topics are as follows:
 - Molecules and Cells – 1 question
 - Heredity and Evolution – 1 question
 - Organisms and Populations – 2 questions

Note: There is a 10 minute reading and study time prior to the free response section. We will be practicing the free response questions throughout the year

Scoring:

A composite score is translated into an AP score ranging from 1 to 5 (5 being the highest score). A minimum score of 3 on the exam is required to earn college credit, however each university/college is different on their AP score requirements and credit policies. Check with individual universities on those requirements.

Prerequisites:

Textbook and Resource Materials: (supplied by school)

- o *Biology*, Neil A. Campbell and Jane B. Reece, 8th edition, Pearson Benjamin Cummings
- o *AP Biology Lab Manual for Students*. The College Board

Recommended Resources: (provided by student)

- o *Preparing for Biology AP EXAM for Campbell and Reece's 8th ed. Biology*

Material for Course: (supplied by student)

- o Composition Notebook (not spiral)
- o 3" 3-ring binder
- o "sticky tabs" for organizing binder
- o Spiral notebook or loose leaf paper
- o Calculator
- o Colored pencils

Grading:

- Assignments*.....25%
- Free response questions
 - Reading assignments
 - Unit Reviews
 - Article Reviews
 - Activities
 - Vocabulary
- Labs*.....25%
- Lab Notebook
 - Lab Assessment
- Tests/Quizzes*.....50%

Grading Scale: Is consistent with the Science Department at CHS

A = 94-100	C = 74-76
A- = 93-90	C- = 70-73
B+ = 87-89	D+ = 67-69
B- = 80-83	D = 64-66
C+ = 77-79	F = 0-59

Grades can be checked on **CAMPUS**

EXPECTATIONS:

- This course will require **5-8 hours of homework outside of class per week**. Check due dates and keep up on your reading!
- Bring all necessary materials (Book, Binder, Pen/Pencil) to class! **EVERYDAY!**
- Class starts when the bell rings
- Class ends when I dismiss you
- Use passing time to go to the restroom (that's what its for)
- **NO FOOD or DRINK in this LAB CLASS** (I don't care what other teachers allow you to do)
- Treat others as you would want to be treated
- Respect the property and contents in classroom....If you choose not to you will get to replace them
- Stay awake in class; I can help you with this if needed 😊
- Be a positive participator. You'll be amazed at how much fun it can be when you put forth effort in a positive way

Class Participation:

Much of class time will be spent in small group work whether activities or labs. You will be expected to be involved in class discussions and activities. It is vital for all students to share the workload in the laboratory and support the team to accomplish the goals of the lab. You are expected to be respectful of others and participate in a positive manner.

Communication:

I am available before/after school or at pre-arranged times to provide help to students. Students must arrange for a meeting time outside of class. Please do not play the game “Mr. Marquardt, guess what I’m thinking?” You need to communicate your concerns before they become a runaway freight train. I will do my best to help get you back on track.

Absences:

- Unexcused will not receive credit
- It is the student’s responsibility to find out what happened while you were absent; I will not chase you!
- If you have pre-determined absences, please get work ahead of time so that you can stay caught up
- CHS Attendance Policy will be followed and grade reductions will be applied accordingly

Late Work:

Definition: *“Work that is turned in after (even one minute) teacher collects assignment.”*

Learning to manage time and meet deadlines is a life skill that is essential in the “real world”. Late work will be given 50% of total points until assignments have been graded and handed back to the class at which time the assignment **WILL NOT BE ACCEPTED**. If you are absent for class, but in school earlier in the day your work is due.

TESTS ARE TO BE MADE UP ON THE DAY YOU RETURN AFTER A ONE DAY ABSENCE. If you are absent the day before the test you are NOT excused from taking the test on the scheduled date. Any exceptions to this policy will be handled by the teacher on an individual basis.

Extra Credit:

Extra credit opportunities will be offered to the entire class and not to individuals needing “extra” due to the fact that they did not do what was required. Extra credit offered will always meet the objectives of the course.

Course Outline

Topic	Lecture/Reading	Labs
Major Themes Connecting Biological Concepts/Nature of Science	Ch. 1: Themes in the Study of Life	
	Read Intro to “Only a Theory” by Kenneth Miller	
Evolutionary Biology (8% of AP Exam) <ul style="list-style-type: none"> • <i>What is the evidence for evolution?</i> • <i>What are the mechanisms behind evolution?</i> 	Ch. 22: Descent with Modification: A Darwinian View of Life	
	Ch. 23: Population Genetics	AP #8 Hardy Weinberg
	Ch. 24: Origin of Species	
	Ch. 25: History of Life on Earth	
Biodiversity (8% of AP Exam) <ul style="list-style-type: none"> • <i>What is some evidence that organisms are related? How do scientists classify the immense diversity of living things?</i> • <i>What are the major body plans of plants and animals?</i> 	Ch. 26: Phylogeny and the Tree of Life	Phylogenetic Tree Activity
	Ch. 27: Bacteria	Mouthwash Lab
	Ch. 28: Protists	
	Ch. 31: Fungi	
	Ch. 29-30: Plant Diversity	
	Ch. 32-34: Animal Diversity	
Ecology (10% of AP Exam) <ul style="list-style-type: none"> • <i>What factors influence population growth?</i> • <i>How does energy flow through ecosystems?</i> • <i>How do biotic and abiotic factors affect communities and ecosystem function?</i> 	Ch. 52: Intro to Ecology and Biomes	
	Ch. 53: Populations	
	Ch. 54: Communities and Ecosystems	AP #11 Animal Behavior
	Ch. 55: Ecosystems	AP #12 Primary Productivity
Molecules and Cells (7% of AP Exam) <ul style="list-style-type: none"> • <i>How do the unique chemical and physical properties of water make life on earth possible?</i> • <i>What role do the biologically important molecules play in living systems?</i> 	Ch. 2: Chemistry of Life	
	Ch. 3: Water’s Role in Living Systems	
	Ch. 4-5: Organic Chemistry and Macromolecules	

Topic	Lecture/Reading	Labs
Molecules and Cells (10% of AP Exam) <ul style="list-style-type: none"> • How do cell structures relate to their function? • How does the structure of membranes allow transport and recognition? 	Ch. 6: Cells	
	Ch. 7: Cell Membranes	AP # 1 Diffusion and Osmosis
Cellular Energy (8% of AP Exam) <ul style="list-style-type: none"> • What is the role of ATP in coupling the cells anabolic and catabolic processes? • What is the role of oxygen in producing energy for cells? • How do cells generate ATP in the absence of oxygen? • How does photosynthesis convert light energy into chemical energy? • What interactions exist between photosynthesis and respiration? 	Ch. 8: Metabolism	AP #2 Enzyme Catalysis
	Ch. 9: Respiration/Fermentation	AP #5 Cell Respiration
	Ch. 10: Photosynthesis	AP #4 Photosynthesis
Animal and Plant Form and Function (32% of AP Exam) <ul style="list-style-type: none"> • What are the basic animal body plans and how does scaling account for them? • How does the hierarchy of organization determine structure and function in animals? • How do organ systems in animals interact? 	Ch. 40: Animal Form and Function	
	Ch. 41: Nutrition and Digestion	
	Ch. 42: Gas Exchange and Circulation	AP #10 Physiology of Circulation
	Ch. 43: Immune System	
	Ch. 44: Osmoregulation and Excretion	Lab: Osmoregulation in Crayfish
Form and Function <ul style="list-style-type: none"> • What features have plants developed to be successful on land? • What patterns of reproduction and development are found in plants and how are they regulated? • How do plants respond to environmental stimuli and what regulates those responses? 	Ch. 45: Nervous and Endocrine	
	Ch. 35: Plant Structure, Growth, and Development	
	Ch. 36: Acquiring and Transporting Resources in Vascular Plants	AP #9 Transpiration
	Ch. 38: Reproduction in Angiosperms	
	Ch. 39: Plant Responses	

Topic	Lecture/Reading	Labs
<p>Cell Reproduction (8% of AP Exam)</p> <ul style="list-style-type: none"> • How does meiosis contribute to one of the great strengths of sexual reproduction? • 	Ch. 12: Mitosis and the Cell Cycle	
	Ch. 13: Meiosis and Sexual Reproduction	AP #3 Mitosis and Meiosis
<p>Genetics (9% of AP Exam)</p> <ul style="list-style-type: none"> • How did Mendel's work lay the foundation for modern genetics? • What are the principle patterns of inheritance? • How do nucleic acids store information and function in the making of proteins? • How does gene expression lead to cell differentiation? 	Ch. 14-16: Genetic Inheritance	AP #7 Genetics
	Ch. 17: From Gene to Protein	
	Ch. 18: Gene Regulation	
<p>Biotechnology</p> <ul style="list-style-type: none"> • How do viruses transfer genetic information to cells? • What are some current recombinant technologies? • What are some practical applications of nucleic acid technologies? • Bioethics? 	Ch. 19: Viruses	
	Ch. 20: Biotechnology	AP #6 Transformation Lab

AP Biology is designated to be a *lab based course*. There will be additional lab activities to the twelve College Board required labs. Due to the length of some of the labs, extended time outside of class may be required to complete them. Some labs will not be able to be made up due to the complexity or perishable nature of materials. Students absent for these labs will be assigned alternative activities to help them learn the concepts.