

## Advanced Placement Biology 2010-2011 Course Syllabus

**Course Name:** AP Biology

**Course Instructor:** Sandra Mitra, Ph.D.

**Course Number:** 15201

**Prerequisites:** Passing Science MCAS score and a desire to study biology at the college level

**Course Description:** This is a standards based course which incorporates the National Advanced Placement biology curriculum. This course is intended for the advanced biology student who has successfully completed the Science MCAS exam. Topics covered include cell structure and function from a molecular point of view, cellular energetics, genetics (both Mendelian and molecular), evolution, plant and animal anatomy and physiology, and ecology. AP laboratory exercises complement the lecture material. Students in this course are required to take the Advanced Placement Biology exam on May 9, 2011. Due to our participation in the Massachusetts Math and Science Initiative, any student who receives a qualifying score of 3, 4 or 5 on the AP exam will earn \$100!

Our textbook is *Biology* by Neil Campbell. These books will be distributed on the first day of class and we will be using them extensively. You should expect to read and outline 10 to 15 pages of material *every school night*. Additionally, you will have numerous written assignments to complete including lab reports and practice essays.

The course will emphasize hands-on learning activities which will be *supplemented* with content lectures. We will *discuss* the assigned readings from the text and any supplemental materials I may assign. We will use models, the computer lab, and the twelve required AP biology laboratory experiments. Because of the vast amount of material we need to cover and our severe time restraints, some of the work will be completed independently by the students.

### **Grading:**

Like most college courses, your grade will be based primarily on your test grades. Your term grades will be based on the following components:

Tests	50%
Laboratory grade	25%
Homework	15%
Classwork and other assignments	10%

Students wishing to meet for tutoring, help on assignments, or to make-up tests or labs throughout the term, should make arrangements as needed. I am available before school every morning from 7:00 as well as after school. You may not miss another course to come to my class.

Students are expected to submit their own work. Plagiarism is a serious offense and punishment will be commensurate with the offense. Cheating on a test or quiz will not be tolerated, and will automatically earn a grade of 0. If Durfee High School is ever closed because of inclement weather or other emergency, the assigned work or examination that was due that day will automatically be carried over to the next time we meet. **NO EXCEPTIONS!**

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Tests: tests will be given at the end of units, not chapters. All tests will be cumulative. They will consist of multiple choice questions and free response questions that are modeled on the type of question found on the AP exam. Quizzes will be announced. Laboratory: your laboratory grade will consist of prelab questions, your performance and behavior in lab, lab questions, lab reports and quizzes. Students will not be penalized for unexpected lab results but you should be able to deduce and explain any sources of error. Homework: homework will be given every night! You will be expected to read the chapters in the text and to take notes. These notes will be checked regularly. You will also answer questions and write essays as we prepare for the free response section of the AP exam. Since everyone has a bad day occasionally, I will accept *one* late assignment per term. You will be able to claim this “forgiveness” by attaching the colored LATE PASS to your assignment. Other late assignments will not be accepted and will earn a grade of 0.

Classwork and other assignments: We will complete group activities, write short essays, and answer review questions in class.

### **Science Fair:**

All students are encouraged to participate in our school’s Science Fair. Students who choose to submit a project will receive extra credit for their work.

### **Tardiness:**

Tardiness to class will not be tolerated, and students can refer to the school’s tardiness policy as described in their student handbooks. Remember, with our 7 period, 50 minute schedule, students will be expected to be *in their seats* at the start of the class so we can start class on time!

### **Absences:**

Regular attendance is essential for any student wishing to earn a qualifying score of 3 or higher on the AP exam. Missed work must be made up within one week of the student’s return to school. Students with special needs should speak with me privately.

With the threat of seasonal flu in the building, we cannot ignore the fact that some students may be absent for an extended period of time. It is imperative that you stay in contact with me either via the Internet or with a classmate acting as an intermediary. You can also send me email directly at [smitra@fallriverschools.org](mailto:smitra@fallriverschools.org).

### **General Advice:**

A few general points are worth noting. First, this is a cumulative course. **ANYTHING YOU MISS OR DON’T UNDERSTAND WILL RETURN TO CAUSE MORE TROUBLE LATER IN THE COURSE.** If you don’t understand something, get it straightened out right away! Second, make use of the class time. Be prepared for class. Keep a decent set of notes. Pay attention to what is going on – do your chatting elsewhere. You are mature enough that I should not need to remind you to stop talking. I will not be repeating in class if you did not hear it due to side conversations. I will honor your democratic right to not listen, but you will be accepting the resulting responsibilities.

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### Scope and sequence:

This sequence may change slightly, but we will cover these topics in this order.

Week	Dates	Topics Covered in Class	Chapters to Read
1	9/10	Introduction to the Course	Summer: 1, 2, 3
2	9/13-9/17	Sci Method, Chemistry, Water 1, 2, 3	4, 5
3	9/20-9/24	Macromolecules 4, 5	6, 7
4	9/27-10/1	Cells and membranes 6, 7	8, 11
5	10/4-10/8	Thermodynamics and Enzymes 8, 11	9,10
6	10/11-10-15	Respiration & Photosynthesis 9, 10	12, 13
7	10/18-10/22	Mitosis & Meiosis 12 & 13	14, 15
8	10/25-10/29	Mendelian & Chromosomal Genetics 14, 15	16
9	11/1-11/5	Catch up	17
10	11/8-11/12	DNA & RNA 16	18
11	11/15-11/19	Transcription, Translation Viruses 17 & 18	19, 20
12	11/22-11/26	Catch up	21
13	11/29-12/3	Eukaryotic Genomes DNA Tech 19, 20, 21	22, 23
14	12/6-12/10	Evolution 22 & 23	24, 25
15	12/13-12/17	Evolution 24 & 25	26
16	12/20-12/24	Biological Diversity 26	27, 28, 31
17	1/3-1/7	Biological Diversity 27, 28, 31	32, 33, 34
18	1/10-1/14	Biological Diversity 32, 33, 34	29, 30
19	1/17-1/21	Evolution of Plants 29 & 30	35, 36
20	1/24-1/28	Plant Structure and Transport 35 & 36	37, 38
21	1/31-2/4	Plant Nutrition and Reproduction 37, 38	39
22	2/7-2/11	Plant Growth Responses 39	40, 41, 42
23	2/14-2/18	Animals: Digestion, Circ & Resp 40, 41, 42	43, 44
24	2/28-3/4	Immune & Excretion 43 & 44	45, 46, 47
25	3/7-3/11	Hormones & Reproduction 45, 46, Begin 47	47, 48
26	3/14-3/18	Animal Development, Nervous 47 & 48	49
27	3/21-3/25	Sensory & Motor Mech. 49	50, 51
28	3/28-4/1	Ecology: Intro & Behavior 50 & 51	52, 53
29	4/4-4/8	Population Ecology 52 & 53	54
30	4/11-4/15	Ecosystems 54	Review
31	4/25-4/29	Review for AP Exam	Review
32	5/2-5/6	Review for AP Exam	Review
33	5/9-5/13	AP EXAM! Begin dissections - worm	TBD
34	5/16-5/20	Dissections - starfish	TBD
35	5/23-5/27	Dissections - frog	TBD
36	5/30-6/3	Dissections - rat	TBD
37	6/6-6/10	Owl Pellets	TBD
38	6/13-6/17	Final Exams	
39	6/20	Last Day of School	

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### **Class Rules and Student Expectations:**

As discussed above, students are expected to arrive to class on time with all of their required books, notebooks, etc. They will not be given passes to their lockers after class begins. Students should follow the following procedure.

1. Arrive to class on time.
2. Place your homework assignment that is to be collected in the drop off box on my desk.
3. Return to your assigned seat and take out your notebook, textbook and pen or pencil. Open your notebook to your most recent assignment.
4. Follow any instructions that are on the board.
5. Look at the graded assignments that are returned to you quickly and silently. Learn from your mistakes so you do not repeat them.
6. Begin to work on our Daily Activator.

Students will sit in assigned seats. They will show respect to school property, e.g.; they will not write on the desks or chairs, stick gum on furniture, etc. Students should treat the teacher and each other with respect. They should also keep their hands and feet to themselves. Any disagreements with fellow students should be brought to the teacher's attention. Cell phones and other electronic devices are to be turned off and out of sight at all times! If a student's cell phone rings or otherwise disrupts the class, I will confiscate the phone for the duration of the period. Students who fail to follow class rules will be given a first warning. Additional infractions will merit detention after school. Students who do not appear for detention will be referred to their vice principals.

When a chapter in the text is assigned, you will be expected to learn all of the material, unless otherwise instructed. Because our time in class is limited, it is likely that I will be unable to discuss everything with you. Therefore, if you do not understand a topic, it is your responsibility to ask for help. If nobody asks questions, it will be interpreted as meaning that everyone understands it, so going over it in class would be a waste of class time. It is imperative that students read each assigned chapter carefully and take good notes. Your notes should *not* be a rewriting of the text! They should be short summaries of important concepts that include vocabulary words with definitions. Do not forget to study the pictures as some important concepts in our text are discussed *only* in the figures.

**Saturday Prep Sessions:** Our mandatory Saturday Review Sessions will be held on November 20 at New Bedford High School, March 5 at Middleborough High School, and April 30 at Durfee. These events are designed to reinforce what you have learned. You can also win some great prizes! All students are expected to attend every session. Sport coaches are aware of these dates. Only extreme emergencies will merit dispensation.

### **The 5 P's: Your pathway to success!**

Be **P**resent – come to school regularly!

Be **P**unctual – get to class on time!

Be **P**repared – read the text and do your homework!

**P**articipate in class.

**P**ractice what you have learned.

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Advanced Placement courses are designed and accredited by the College Board. They maintain an informative web page at [www.collegeboard.com](http://www.collegeboard.com). Their Biology page includes the following:

The two main goals of AP Biology are to help students develop a conceptual framework for modern biology and to help students gain an appreciation of science as a process. The ongoing information explosion in biology makes these goals even more challenging. Primary emphasis in an AP Biology course should be on developing an understanding of concepts rather than on memorizing terms and technical details. Essential to this conceptual understanding are the following: a grasp of science as a process rather than as an accumulation of facts; personal experience in scientific inquiry; recognition of unifying themes that integrate the major topics of biology; and application of biological knowledge and critical thinking to environmental and social concerns.

What are the major themes in the course?

1. **Science as a Process** - Science is a way of knowing. It can involve a discovery process using inductive reasoning, or it can be a process of hypothesis testing.
2. **Evolution** - Evolution is the biological change of organisms that occurs over time and is driven by the process of natural selection. Evolution accounts for the diversity of life on Earth.
3. **Energy Transfer** - Energy is the capacity to do work. Organisms are active (living) because of their abilities to link energy reactions to the biochemical reactions that take place within their cells.
4. **Continuity and Change** - All species tend to maintain themselves from generation to generation using the same genetic code. However, there are genetic mechanisms that lead to change over time, or evolution.
5. **Relationship of Structure to Function** - The structural levels from molecules to organisms ensure successful functioning in all living organisms and living systems.
6. **Regulation** - Everything from cells to organisms to ecosystems is in a state of dynamic balance that must be controlled by positive or negative feedback mechanisms.
7. **Interdependence in Nature** - Living organisms rarely exist alone in nature.
8. **Science, Technology, and Society** - Scientific research often leads to technological advances that can have positive and/or negative impacts on society as a whole.

We will be discussing these themes and relating them to every chapter we cover. It is essential that we understand each of these themes and learn to integrate them across subject areas as they will form the basis of the free response questions on the AP exam. You will be able to measure your own progress in this area as we work on essay questions throughout the course.