

**PERSONAL PHILOSOPHY**

My AP Biology course is built around a number of principles:

**1. In high school, learning needs to remain fun to maintain student interest at a high level:**

My goal is — while maintaining high intellectual and academic standards — to keep this course fun, interesting and relevant to daily life. The study of life and how it works must not be made boring by distilling it down to mere lectures and textbook study. I want to spark the flame of excitement in these students which may turn them on to the wonderful world of inquiring minds and scientific endeavors. To that end, I have developed a course filled with activity — from brewing root beer and making cheese to analyzing research data from hands-on laboratory experiments. I also emphasize how biological principles are not merely in the pages of a textbook, they are woven throughout many seemingly disparate areas of life from cooking to health to athletics to environmental and sociopolitical issues.

**2. Don't teach biology as a second language.**

Learning biology should be about understanding overarching concepts and making connections between units and then the details will follow and fall into place. It should not focus on new vocabulary. My course is built around science as a process and not the accumulation and memorization of facts. We repeatedly look at common themes across each unit — the eight themes delineated in the *AP Biology Course Description* — so that students do not approach each unit as a disparate set of vocabulary words, but rather another application of the common themes.

**3. "Nothing in biology makes sense except in the light of evolution"**

As Theodosius Dobzhansky's quote so elegantly states, evolution is the underlying thread woven throughout our understanding of biology. This concept is how I start my course and it is the thread that is interwoven throughout the year.

**4. I am training high school students to become college students as much as I am teaching biology.**

As a former University instructor, I know what it takes to be successful in college and I take to heart my responsibility of preparing my students for this next phase of their life. I sprinkle throughout the course training in organization, study skills, work habits, and decision-making that will help my students be more successful in college.

## COURSE OVERVIEW

Classes meet every day for a double 42-minute period, so we have 84 minutes of class time. On most days, the first period involves either an inquiry exercise, laboratory research, or demonstration activity and the second period is lecture. However we regularly use the full double period to implement a longer research laboratory exercise like the 12 labs in the *AP Biology Lab Manual for Students*.

Lecture is centered around PowerPoint presentations developed by me over the years.

The course textbook is the seventh edition of *Biology* by Peter Raven and George Johnson, et al. Students are required to read the textbook chapters listed in the syllabus, and they take a test at the end of each unit. Each test has two components: a multiple choice in-class exam made up primarily of old AP exam questions and a take home essay exam. The essay exam is extensive. It standardly consists of 10 original questions authored by me and the students have one week to complete it. The questions usually ask the students to integrate and expand upon information they have learned in the unit and may require them to do additional book and Internet research. The students are encouraged to work in groups, because I believe study groups are an excellent strategy to use in college, but they are strictly required to hand in unique, original writing.

Throughout the course, I assign current outside reading from science sections of newspapers and popular science magazines as well as science journals, such as *Science* and *Nature*. My goal is to promote the idea that science is an evolving body of knowledge and that our understanding of the world around us is constantly changing. I also use these resources to weave the theme of biology, technology and sociopolitical issues throughout the course to show that science does not happen in a vacuum separate from society, politics and culture.

My course is supported by a Web site which gives students direct access to PPT presentations, labs, handouts, daily assignments, and external resources.

**COURSE PLANNER**

I organize my course quite differently than the chapter progression presented in the major AP Biology textbooks. This is very purposeful. I have organized my course into a series of thematic units that cut across the chapters. I believe strongly that this enables my students to make conceptual connections between seemingly disparate topics and therefore understand and retain the material more easily.

**Unit 1: Science As a Process**

Overview	We complete a series of labs that give students practice in the use of scientific reasoning to answer a question.
Chapters	1
Rationale	I begin the year in this way to teach my students how to look at a question/problem and approach its analysis/solution in a scientific approach
Labs	Experimental Design: Seed Germination Experimental Design: Slug Food Preference

**Unit 2: Evolution**

Overview	We study change over geologic time and the mechanisms that could generate those changes. We complete a series of labs modeling the genetic and phenotypic changes to understand underlying mechanisms.
Chapters	1, 4, 21, 22, 23, 27, 28, 31, 32, 33, 34
Rationale	I begin the core material of the course with evolution because it is so fundamental to the higher level understanding of biology that I expect of my students in AP biology. The concepts taught here are woven throughout the rest of the course. We also complete a quick survey of life on Earth
Labs	Natural Selection of Butterflies Natural Selection of Strawfish AP Lab 8. Population Genetics AMNH: Hall of Human Origins Field Trip Kingdoms Survey Pond Water Survey Fungi Survey Insect Survey Animal Survey

**Unit 3: Ecology— Interdependence in Nature & Energy Transfer**

Overview	We explore how organisms interact with each other, within their environment, and with their environment. Ecosystem energetics are also studied. Students study the movement, conversion, and storage of energy within an ecosystem as well as its loss from the system as heat.
Chapters	52, 53, 54, 55, 56, 57
Rationale	I move from evolution to ecology, because ecology is a very engaging unit and it is easy for students to relate to such a “big picture” topic so early on in the course. This allows the class to establish study skills with accessible material, and the class is able to build momentum before tackling unfamiliar and more challenging topics such as biochemistry.
Labs	AP Lab 11. Isopod Behavior (& Chi square extension) Goldenrod Gall Ecology & Evolution (& t-test extension)

	AP Lab 12. Dissolve Oxygen & Ecosystem Assessment Environmental Pollutants (Duckweed)
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#### **Unit 4: Building Blocks of Life—Biochemistry, Cells & Separating Inside from Out**

Overview	We explore the basic subunits of life from macromolecules to cells as well as membranes that define site at the boundary of life vs. environment.
Chapters	2, 3, 5, 6, 45, 46, 49
Rationale	We then move from the “big picture” to the building blocks of life — macromolecules & cells — since this is a foundation that we will quickly need to build upon throughout the rest of the course. I link the discussion of diffusion and osmosis to the study of the excretory and nervous systems, so that students quickly see applications of these basic principles at the organism level.
Labs	Building Carbohydrates, Lipids, Proteins, DNA Protein Chemistry (Cheese & Eggs) Cell Studies AP Lab 1. Diffusion & Osmosis (& extension) Agar Races Brain Cap Mapping

#### **Unit 5: Energy Transformations—Cellular Respiration, Photosynthesis & Associated Systems**

Overview	We study the processes that enable autotrophs to convert solar energy to living matter and then allow heterotrophs to convert that captured energy to usable chemical energy for their life processes. We also study the organism-level structures and systems that support these processes, like leaves, roots and vascular system in plants and digestive, respiratory and circulatory systems in heterotrophs and as well as the systems that benefit from the products such as muscular system in animals.
Chapters	5 (mitochondria, chloroplasts), 8, 9, 10, 29, 35, 36, 37, 38, 39, 41, 42, 43, 44, 48
Rationale	Now that we have warmed up, it is time to tackle some of the most difficult material in the course — metabolism in both animals and plants. This unit cuts across widely dispersed chapters in the textbook. I unify cellular respiration with the animal systems that support it (digestive, respiratory and circulatory systems) as well as the beneficiaries of it (motor systems). I then tie photosynthesis with structures and function in plants that have evolved to maximize metabolic efficiency
Labs	Properties of Enzymes (Pineapple & Jell-o) Properties of Enzymes (Lactose Intolerance & Lactaid) BODIES Exhibit Field Trip AP Lab 2. Enzyme Function Alcohol Fermentation (root beer fermentation) AP Lab 5. Cellular Respiration Lactic Acid Fermentation (yogurt production) AP Lab 10. Physiology of the Circulatory System Respiratory Response in Fish Spectrophotometer AP Lab 4. Plant Pigments & Photosynthesis Leaf Structure AP Lab 9. Transpiration Lab

	Plant Survey Plant Reproduction: Flower Structure Plant Reproduction: Fruit Structure
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### **Unit 6: Continuity and Change—Mitosis, Meiosis, Heredity, Reproduction**

Overview	We study how cells reproduce, how organisms reproduce and the inheritance patterns that result from the chromosomal arrangement of genes. This unit also explores the Central Dogma of molecular genetics as proposed by Francis Crick and as has been elaborated further by many others since then.
Chapters	5 (endoskeleton, nucleus, ribosomes), 11, 12, 13, 14, 15, 16, 18
Rationale	Now that students have a firm foundation in biochemistry, cellular energetics and cellular processes, it is now time to explore how cells and organisms reproduce to merely replace cells or to produce the next generation. We use the fruit fly model to study inheritance principles and patterns.
Labs	AP Lab 3. Mitosis & Meiosis DNA Extraction Chi Square AP Lab 7. Genetics of Organisms (FlyLab simulation) Paper Plasmid Model AP Lab 6. Molecular Biology: pGlo Transformation Restriction Analysis Model Restriction Analysis DNA sequencing Sanger Sequencing Model

### **Unit 7: Regulation & Development**

Overview	We study how organisms coordinate separate systems and regulate a changing internal environment to maintain homeostasis and create a coordinate whole out of the many working parts.
Chapters	47, 50
Rationale	Now that we have studied the body systems as separate but linked entities, we explore how they are regulated and coordinated into a cohesive whole organism.
Labs	Pregnant Cow Uterus Dissection

### **Unit 8: Science, Technology, and Society**

Overview	We look at a wide variety of issues, including environmental impact of human growth, ethical considerations of biotechnology, and the interrelationship of medicine and politics and economics.
Chapters	16, 57
Rationale	In this final unit, I push the students to place science within a sociopolitical and cultural context. Look what can we do now... but what are the possible ramifications of our actions.
Labs	Scavenger Hunt through the Human Genome Bioinformatics & Hemoglobin Genomics & Phylogeny

## LABORATORIES

I have built a course which places equal weight on laboratory experience as on lecture time. Laboratory investigations make up 50% of my course. Over the course of the year we complete about 50 labs. These entail a series of experiments (including the 12 AP Labs from the *AP Lab Manual for Students*), field studies, explorations, demonstrations, and simulations throughout the year. Depending on the lab, students work either individually, in pairs or in larger teams.

All of the labs are hands on except for the FlyLab genetic simulations which are implemented through the well-respected Biology Labs Online (developed by the California State University Center for Distributed Learning). The labs are listed on my Course Syllabus.

For each lab the assessment varies, students complete some type of write-up whether that is a formal lab report, or answering “summary questions”, or building models and drawing diagrams.

## STUDENT EVALUATION AND ASSESSMENT

Students are assessed in multiple ways.

Homework is assigned every night. Students are expected to spend an average of 1 hour each night on AP Biology whether it be reading the text, completing a lab or homework assignment, reviewing lecture notes, or studying for exams. In addition to all other work, I assign a daily homework, I call a QUAD (Question A Day). These include a question about or diagram from the text reading. The goal is to promote nightly textbook reading so the students do not get behind.

Exams and laboratory assignments are valued equally at 40% each toward the course grade  
Homework is valued at 10%.

Classwork and participation are also valued at 10%.

## APPENDIX

Attached are 2 appendices:

1. A Curriculum calculator that developed to determine how many days to dedicate to each unit based on a compromise between the percentages recommended in the *AP Biology Course Description* and my own course priorities.
2. My daily syllabus plan for 2007-2008.

## CURRICULUM CALCULATOR

What are your total number of teaching days? ----->	149	
	%	Days
<b>Introduction</b> (Scientific Method)	2.0%	3
<b>Evolution</b> (Darwin, Natural Selection, Population Genetics, H-W, Origin of Life)	8.0%	12
<b>Diversity</b> (Classification, Kingdoms Survey)	4.0%	6
<b>Ecology</b> (Populations, Communities, Ecosystems, Biosphere, Human Impact)	9.0%	13
<b>Biochemistry</b> (Water, Chemistry Review, Macromolecules)	5.0%	7
<b>Cells</b> (Cell Types & Structure, Membranes, Cell Cycle)	8.0%	12
<b>Enzymes &amp; Metabolism</b> (Enzymes, Cellular Respiration, Fermentation)	10.0%	15
<b>Photosynthesis</b> (C3, C4)	5.0%	7
<b>Plants</b> (Plant Evolution, Structure & Function, Reproduction)	8.0%	12
<b>Animal Structure &amp; Function</b>	20.0%	30
<b>Excretory System</b>	2%	3
<b>Nervous System</b>	2%	3
<b>Digestive System / Nutrition</b>	2%	3
<b>Circulatory System &amp; Gas Exchange</b>	3%	4
<b>Immune &amp; Lymphatic System</b>	2%	3
<b>Motor &amp; Skeletal System</b>	2%	3
<b>Animal Reproduction</b>	2%	3
<b>Hormones &amp; Regulation</b>	3%	4
<b>Animal Development</b>	2%	3
<b>Double Check</b>	20%	30
<b>Heredity</b> (Meiosis, Genetics, Inheritance, Eukaryote Chromosomes)	8.0%	12
<b>Molecular Genetics</b> (Central Dogma, Gene Regulation, Biotechnology)	9.0%	13
<b>Review</b>	4.0%	6
<b>These TOTALS must sum correctly</b> (100% & your total number of teaching days from the top cell)	<b>100.0%</b>	<b>149</b>

## AP Biology Syllabus 2007-08

AP is a rigorous course that will require significant effort for you to achieve your maximum success. Complete the assignments, labs and prepare for class regularly. As in any college course, responsibility for learning is in your hands. The pay-off is great. You will gain knowledge, skills, rich experience and college credit/placement.

Week (days)	Chapter / Subject (numbers refer to Raven Chapters)	Activities & Labs	Assessments
<b>9/5 (3)</b>	<b>W</b> Introduction 1 Discuss Summer Assignment Ch 1. The Science of Biology The Science of Biology	Lab 1. Experimental Design 1 (Seed Germination)	QUADs Chapter Guides
	<b>R</b> Evolution 1 Ch 1. The Science of Biology Darwin Scientific Method	CONTINUE Lab 1.	QUADs Chapter Guides
	<b>F</b> Evolution 2 Ch 1. The Science of Biology In the Light of Evolution Scientific Method	Lab 2. Experimental Design 2 (Slug Food Preference)	QUADs Chapter Guides
<b>9/10 (3)</b>	<b>M</b> Evolution 3 Ch 22. The Evidence for Evolution	CONTINUE Lab 2.	QUADs Chapter Guides
	<b>T</b> Evolution 4	Lab 3. Natural Selection of Butterflies	QUADs Chapter Guides
	<b>W</b> Evolution 5 Ch 21. Genes Within Populations	CONTINUE Lab 3.	QUADs Chapter Guides
	<b>R</b> —	ROSH HASHANAH	QUADs Chapter Guides
	<b>F</b> —	ROSH HASHANAH	QUADs Chapter Guides
<b>9/17 (5)</b>	<b>M</b> Evolution 6	Lab 4. Natural Selection of Strawfish	
	<b>T</b> Evolution 7	CONTINUE Lab 4.	
	<b>W</b> Evolution 8	Lab 5. (AP Lab 8) Population Genetics &	Take Home Essay Exam

<b>Week (days)</b>	<b>Chapter / Subject</b> (numbers refer to Raven Chapters)	<b>Activities &amp; Labs</b>	<b>Assessments</b>
	Ch 23. Origin of Species	Evolution (Hardy Weinberg)	Ch 1, 4, 21, 22, 23
<b>R</b>	Evolution 9	CONTINUE Lab 5.	QUADs Chapter Guides
<b>F</b>	Evolution 10 Ch 4. Origin of Life	Walking With Cavemen Video	QUADs Chapter Guides
<b>9/24 (5)</b>	<b>M</b> Evolution 11 Human Evolution	Walking With Cavemen Video	Evolution Review CONCEPT MAP
<b>T</b>	Evolution 12	EVOLUTION FIELD TRIP American Museum of Natural History Lab 6. Hall of Human Origins & Diversity of Life	QUADs Chapter Guides
<b>W</b>	Diversity of Life 1 Ch 27. Prokaryotes	Lab 7. Kingdoms Survey	QUADs Chapter Guides
<b>R</b>	Diversity of Life 2 Ch 28. Protists	EXAM Evolution	Multiple Choice Exam Ch 1, 4, 21, 22, 23
<b>F</b>	Diversity of Life 3 Ch 31. Fungi	Discuss Exam CONTINUE Lab 7 Pond Water Survey	QUADs Chapter Guides
<b>10/1 (5)</b>	<b>M</b> Diversity of Life 4 Ch 32 & 33. Invertebrates	CONTINUE Lab 7 Fungi Survey	Taxonomy Review CONCEPT MAP
<b>T</b>	Diversity of Life 5 Ch 34. Vertebrates	CONTINUE Lab 7 Insect Survey	Taxonomy Project
<b>W</b>	Ecology 1 Ch 52. Behavioral Biology	CONTINUE Lab 7 Animal Survey	QUADs Chapter Guides
<b>R</b>	Ecology 2	Lab 8. Isopod Behavior	QUADs Chapter Guides
<b>F</b>	Ecology 3 Ch 53. Population Ecology	Lab 8. Extension: Chi square introduction	QUADs Chapter Guides
<b>10/8 (4)</b>	<b>M</b> —	COLUMBUS DAY EXAM Taxonomy	Take Home Multiple Choice Exam Taxonomy Ch 25-34
<b>T</b>	Ecology 4	Lab 9. Goldenrod Gall Ecology & Evolution	QUADs Chapter Guides
<b>W</b>	Ecology 5 Ch 54. Community Ecology	Lab 9 Extension: t-Test introduction	QUADs Chapter Guides
<b>R</b>	Ecology 6	ECOLOGY FIELD TRIP	QUADs

<b>Week (days)</b>	<b>Chapter / Subject</b> (numbers refer to Raven Chapters)	<b>Activities &amp; Labs</b>	<b>Assessments</b>
		Lab 10. (AP Lab 12) Ecosystem Assessment (Dissolved Oxygen)	Chapter Guides
	<b>F</b> Ecology 7 Ch 55. Ecosystems	CONTINUE Lab 10	QUADs Chapter Guides
<b>10/15 (5)</b>	<b>M</b> Ecology 8	Lab 11. Environmental Pollutants (Duckweed)	Take Home Essay Exam Ch 52-57
	<b>T</b> Ecology 9 Ch 56. Biosphere	CONTINUE Lab 11	QUADs Chapter Guides
	<b>W</b> Ecology 10 Ch 57. Earth in the Balance: Environmental Crises & Conservation	CONTINUE Lab 11	Ecology Review CONCEPT MAP
	<b>R</b> Ecology 11	CONTINUE Lab 11	QUADs Chapter Guides
	<b>F</b> Ecology 12	EXAM Ecology	Multiple Choice Exam Ch 52-57
<b>10/22 (5)</b>	<b>M</b> Biochemistry 1 Ch 2. Nature of Molecules Water & Carbon	Discuss Exam	QUADs Chapter Guides
	<b>T</b> Biochemistry 2 Ch 3. Chemical Building Blocks of Life: Carbohydrates	Building Carbohydrates	QUADs Chapter Guides
	<b>W</b> Biochemistry 3 Ch 3. Chemical Building Blocks of Life: Lipids	Building Lipids	QUADs Chapter Guides
	<b>R</b> Biochemistry 4 Ch 3. Chemical Building Blocks of Life: Proteins	Building Proteins	QUADs Chapter Guides
	<b>F</b> Biochemistry 5 Ch 3. Chemical Building Blocks of Life: Nucleic Acids	Building DNA	Biochemistry Review CONCEPT MAP
<b>10/29 (5)</b>	<b>M</b> Biochemistry 6	Lab 12. Protein Chemistry (Cheese & Eggs)	Take Home Essay Exam Ch 2, 3
	<b>T</b> Biochemistry 7	EXAM Biochemistry	Multiple Choice Exam Ch 2, 3
	<b>W</b> Cells 1 Ch 5. Cell (overview)	Lab 13. Cell Studies	QUADs Chapter Guides

<b>Week (days)</b>	<b>Chapter / Subject</b> (numbers refer to Raven Chapters)	<b>Activities &amp; Labs</b>	<b>Assessments</b>
	<b>R</b> Cells 2 Ch 6. Diffusion	Lab 14. (AP Lab 1) Diffusion/Osmosis	QUADs Chapter Guides
	<b>F</b> Cells 3 Ch 6. Cell Membranes	CONTINUE Lab 14	Osmosis Challenge Wksht Diffusion Review CONCEPT MAP
<b>11/5 (4)</b>	<b>M</b> Cells 4	Review Osmosis Challenge Worksheet Diffusion Review CONCEPT MAP	QUADs Chapter Guides
	<b>T</b> —	SUPERINTENDENT'S CONFERENCE DAY	QUADs Chapter Guides
	<b>W</b> Ch 49. Excretory System 1	Lab 15. Osmosis Extension	QUADs Chapter Guides
	<b>R</b> Ch 49. Excretory System 2	CONTINUE Lab 15	QUADs Chapter Guides
	<b>F</b> Ch 49. Excretory System 3	Apple Head Dolls	QUADs Chapter Guides
<b>11/12 (4)</b>	<b>M</b> —	VETERANS DAY	Take Home Essay Exam Ch 5, 6, 45, 49
	<b>T</b> Ch 45. Nervous System 1	Body Story Video	QUADs Chapter Guides
	<b>W</b> Ch 45. Nervous System 2	Lab 16. Brain Cap Mapping	QUADs Chapter Guides
	<b>R</b> Ch 45. Nervous System 3	CONTINUE Lab 16	QUADs Chapter Guides
	<b>F</b> Ch 46. Sensory Systems	EXAM Diffusion / Cell Membrane / Excretory & Nervous Systems	Multiple Choice Exam Ch 5, 6, 45, 49
<b>11/19 (3)</b>	<b>M</b> Enzymes & Metabolism 1 Ch 8. Energy & Metabolism Enzyme Function	Discuss Exam	QUADs Chapter Guides
	<b>T</b> Enzymes & Metabolism 2 Ch 8. Ch 8. Energy & Metabolism Enzyme Function	Lab 17. Properties of Enzymes (Pineapple Enzymes & Jell-o Molds)	QUADs Chapter Guides
	<b>W</b> Enzymes & Metabolism 3 Ch 8. Energy & Metabolism	HUMAN SYSTEMS FIELD TRIP BODIES Exhibit Lab 18. BODIES Exhibit Field Trip Report CONTINUE Lab 17 (after Field Trip)	QUADs Chapter Guides

<b>Week (days)</b>	<b>Chapter / Subject</b> (numbers refer to Raven Chapters)	<b>Activities &amp; Labs</b>	<b>Assessments</b>
	<b>R</b> —	THANKSGIVING	QUADs Chapter Guides
	<b>F</b> —	THANKSGIVING	QUADs Chapter Guides
<b>11/26 (5)</b>	<b>M</b> Enzymes & Metabolism 4 Ch 8. Energy & Metabolism ATP	Lab 19. (AP Lab 2) Enzyme Function	QUADs Chapter Guides
	<b>T</b> Cells 5 Ch 5. Mitochondria	CONTINUE Lab 19	QUADs Chapter Guides
	<b>W</b> Enzymes & Metabolism 5 Ch 9. How Cells Harvest Energy Respiration 1: Overview	Lab 20. Properties of Enzymes 2 (Lactose Intolerance & Lactaid)	QUADs Chapter Guides
	<b>R</b> Enzymes & Metabolism 6 Ch 9. How Cells Harvest Energy Respiration 2: Glycolysis	CONTINUE Lab 20	QUADs Chapter Guides
	<b>F</b> Enzymes & Metabolism 7 Ch 9. How Cells Harvest Energy Respiration 3: Krebs Cycle	Lab 21. Alcohol (Root Beer) Fermentation	QUADs Chapter Guides
<b>12/3 (5)</b>	<b>M</b> Enzymes & Metabolism 8 Ch 9. How Cells Harvest Energy Respiration 4: Electron Transport Chain	Lab 22. (AP Lab 5) Cell Respiration PRACTICE	Take Home Essay Exam Ch 5, 8, 9
	<b>T</b> Enzymes & Metabolism 10 Ch 9. How Cells Harvest Energy Respiration 4: Electron Transport Chain	Lab 22. (AP Lab 5) Cell Respiration	QUADs Chapter Guides
	<b>W</b> Enzymes & Metabolism 11 Ch 9. How Cells Harvest Energy Respiration 5: Other Metabolites & Regulation	CONTINUE Lab 22	QUADs Chapter Guides
	<b>R</b> Enzymes & Metabolism 12 Ch 9. How Cells Harvest Energy Respiration 6: Review	Metabolism Review CONCEPT MAP Respiration Map	QUADs Chapter Guides
	<b>F</b> Enzymes & Metabolism 13	EXAM Metabolism	Multiple Choice Exam Ch 5, 8, 9
<b>12/10 (5)</b>	<b>M</b> Digestive System 1 Ch 43. Fueling Body Activities: Digestion	Discuss Exam Lab 23. Lactic Acid (Yogurt) Fermentation	QUADs Chapter Guides
	<b>T</b> Digestive System 2	Body Story Video	QUADs

<b>Week (days)</b>	<b>Chapter / Subject</b> (numbers refer to Raven Chapters)	<b>Activities &amp; Labs</b>	<b>Assessments</b>
	Ch 43. Fueling Body Activities: Digestion		Chapter Guides
<b>W</b>	Digestive System 3 Ch 43. Fueling Body Activities: Digestion	Body Story Video	QUADs Chapter Guides
<b>R</b>	Circulatory & Respiratory System 1 Ch 44. Circulation & Respiration Respiratory System 1	Lab 24. (AP Lab 10) Physiology of the Circulatory System	QUADs Chapter Guides
<b>F</b>	Circulatory & Respiratory System 2 Ch 44. Circulation & Respiration Respiratory System 2	CONTINUE Lab 24	QUADs Chapter Guides
<b>12/17 (5)</b>	<b>M</b> Circulatory & Respiratory System 3 Ch 44. Circulation & Respiration Circulatory System 1	Lab 25. Respiratory Response in Fish	Take Home Essay Exam Ch 42-44
	<b>T</b> Circulatory & Respiratory System 4 Ch 44. Circulation & Respiration Circulatory System 2	CONTINUE Lab 25	QUADs Chapter Guides
	<b>W</b> Motor System 1 Ch 42. The Animal Body & How it Moves	SuperSize Me Video	QUADs Chapter Guides
	<b>R</b> Motor System 2 Ch 42. The Animal Body & How it Moves	SuperSize Me Video	QUADs Chapter Guides
	<b>F</b> Motor System 3 Ch 42. The Animal Body & How it Moves	EXAM Body Systems	Multiple Choice Exam Ch 42-44
<b>12/24 (0)</b>	<b>M</b> —	HOLIDAY RECESS	Vacation Reading Assignment
	<b>T</b> —	HOLIDAY RECESS	
	<b>W</b> —	HOLIDAY RECESS	
	<b>R</b> —	HOLIDAY RECESS	
	<b>F</b> —	HOLIDAY RECESS	
<b>12/31 (3)</b>	<b>M</b> —	HOLIDAY RECESS	Vacation Reading Assignment
	<b>T</b> —	HOLIDAY RECESS	
	<b>W</b> Ch 48. Immune System 1	Vacation Reading Assignment Discussion	QUADs Chapter Guides
	<b>R</b> Ch 48. Immune System 2	Body Story Video	QUADs Chapter Guides
	<b>F</b> Ch 48. Immune System 3	Body Story Video	QUADs

<b>Week (days)</b>	<b>Chapter / Subject</b> (numbers refer to Raven Chapters)	<b>Activities &amp; Labs</b>	<b>Assessments</b>
			Chapter Guides
<b>1/7 (5)</b>	<b>M</b> Cells 6 Ch 5. Chloroplasts Photosynthesis 1 Ch 10. Light Reactions	QUIZ Immune System Adopt-A-Plant	QUIZ Ch 48
	<b>T</b> Photosynthesis 2 Ch 10. Light Reactions (cont.)	Lab 26. Spectrophotometer	QUADs Chapter Guides
	<b>W</b> Photosynthesis 3 Ch 10. Calvin Cycle	Lab 27. (AP Lab 4) Plant Pigments & Photosynthesis (Part 1)	QUADs Chapter Guides
	<b>R</b> Photosynthesis 4 Ch 10. Calvin Cycle (cont.)	Lab 27. (AP Lab 4) Plant Pigments & Photosynthesis (Part 2)	QUADs Chapter Guides
	<b>F</b> Photosynthesis 5 Ch 10. CAM & C4	CONTINUE Lab 27	Photosynthesis Review CONCEPT MAP
<b>1/14 (5)</b>	<b>M</b> Photosynthesis 6	EXAM Photosynthesis	Multiple Choice Exam Ch 10
	<b>T</b> Plants 1 Ch 35. Plant Structure	Discuss Exam Sprouts R Us: Mung Beans	QUADs Chapter Guides
	<b>W</b> Plants 2 Ch 35.	Sprouts R Us: Corn & Green Bean Sprouts Lab 28. Plant Structure	QUADs Chapter Guides
	<b>R</b> Plants 3 Ch 36. Plant Growth	CONTINUE Lab 28	QUADs Chapter Guides
	<b>F</b> Plants 4 Ch 36.	CONTINUE Lab 28	QUADs Chapter Guides
<b>1/21 (0)</b>	<b>M</b> —	MARTIN LUTHER KING DAY	
	<b>T</b> —	MIDTERMS	
	<b>W</b> —	MIDTERMS	
	<b>R</b> —	MIDTERMS	
	<b>F</b> —	MIDTERMS	
<b>1/28 (5)</b>	<b>M</b> Plants 5 Ch 37. Plant Transport	Sprouts R Us: Wheat Grass Lab 29. (AP Lab 9) Transpiration Lab	QUADs Chapter Guides
	<b>T</b> Plants 6 Ch 37.	CONTINUE Lab 29	QUADs Chapter Guides
	<b>W</b> Plants 7 Ch 38. Plant Nutrition	Sprouts R Us: Radish Seeds	QUADs Chapter Guides

<b>Week (days)</b>	<b>Chapter / Subject</b> (numbers refer to Raven Chapters)	<b>Activities &amp; Labs</b>	<b>Assessments</b>
	<b>R</b> Plants 8 Ch 39. Plant Defense	Lab 30. Plant Survey	QUADs Chapter Guides
	<b>F</b> Plants 9 Ch 29. Plant Evolution	CONTINUE Lab 30	QUADs Chapter Guides
<b>2/4 (5)</b>	<b>M</b> Plants 10 Ch 41. Plant Reproduction	Lab 31. Plant Reproduction: Flower Structure	QUADs Chapter Guides
	<b>T</b> Plants 11 Ch 41.	Lab 32. Plant Reproduction: Fruit Structure	QUADs Chapter Guides
	<b>W</b> Plants 12	CONTINUE Lab 31 & 32	QUADs Chapter Guides
	<b>R</b> Cells 7 Ch 5. Cell Structure Endoskeleton, Nucleus	Plant Review	Chapter Guides
	<b>F</b> Cells 8 Ch 11. How Cells Divide Cell Cycle (Mitosis)	EXAM Plants	Multiple Choice Exam Ch 5, 29, 35-41
<b>2/11 (5)</b>	<b>M</b> Cells 9 Ch 11. How Cells Divide Mitosis	Lab 33. (AP Lab 3, part 1) Mitosis	QUADs Chapter Guides
	<b>T</b> Cells 10 Ch 11. How Cells Divide Mitosis Regulation	CONTINUE Lab 33	QUADs Chapter Guides
	<b>W</b> Cells 11 Ch 11. How Cells Divide Mitosis & Cancer	Lab 34. DNA extraction	QUADs Chapter Guides
	<b>R</b> Catch Up Days		QUADs Chapter Guides
	<b>F</b> Catch Up Days	QUIZ: Mitosis	QUIZ Ch 5, 11
<b>2/18 (0)</b>	<b>M</b> —	WINTER RECESS	QUADs Chapter Guides
	<b>T</b> —	WINTER RECESS	QUADs Chapter Guides
	<b>W</b> —	WINTER RECESS	QUADs Chapter Guides

<b>Week (days)</b>	<b>Chapter / Subject</b> (numbers refer to Raven Chapters)	<b>Activities &amp; Labs</b>	<b>Assessments</b>
	<b>R</b> —	WINTER RECESS	QUADs Chapter Guides
	<b>F</b> —	WINTER RECESS	QUADs Chapter Guides
<b>2/25 (5)</b>	<b>M</b> Molecular Genetics 1 Ch14. DNA: The Genetic Material DNA: Path to Discovery	DNA Movie	QUADs Chapter Guides
	<b>T</b> Molecular Genetics 2 Ch14. DNA: The Genetic Material Replication	DNA Movie	QUADs Chapter Guides
	<b>W</b> Molecular Genetics 3 Ch14. DNA: The Genetic Material Replication	DNA Movie	QUADs Chapter Guides
	<b>R</b> Heredity 1 Ch 12. Sexual Reproduction & Meiosis Meiosis 1	DNA Movie	QUADs Chapter Guides
	<b>F</b> Heredity 2 Ch 12. Sexual Reproduction & Meiosis Meiosis 2	QUIZ: Replication	QUADs Chapter Guides
<b>3/8 (5)</b>	<b>M</b> Heredity 3 Ch 13. Patterns of Inheritance Mendel 1	Lab 35. (AP Lab 3, part 2) Meiosis	QUADs Chapter Guides
	<b>T</b> Heredity 4 Ch 13. Patterns of Inheritance Mendel 2	CONTINUE Lab 35	Practice Genetics Problems Chapter Guides
	<b>W</b> Heredity 5 Ch 13. Patterns of Inheritance Non-Mendelian Inheritance	Genetics & Probability Lab 36. Chi Square	Practice Genetics Problems Chapter Guides
	<b>R</b> Heredity 6 Ch 13. Patterns of Inheritance Human Genetics	CONTINUE Lab 36	Practice Genetics Problems Chapter Guides
	<b>F</b> Heredity 7 Ch 13. Patterns of Inheritance Human Chromosomal Abnormalities	Marked for Life video	Practice Genetics Problems Chapter Guides
<b>3/11 (5)</b>	<b>M</b> Heredity 8	Lab 37. (AP Lab 7) Genetics of Organisms	Practice Genetics

<b>Week (days)</b>	<b>Chapter / Subject</b> (numbers refer to Raven Chapters)	<b>Activities &amp; Labs</b>	<b>Assessments</b>
	Lab 36. (AP Lab 7) Genetics of Organisms Simulation via FlyLab	Simulation via FlyLab	Problems Chapter Guides
<b>T</b>	Heredity 9 Ch 13. Patterns of Inheritance CONTINUE Lab 36	CONTINUE Lab 37	Practice Genetics Problems Chapter Guides
<b>W</b>	Heredity 10 Ch 13. Patterns of Inheritance CONTINUE Lab 36	CONTINUE Lab 37	Practice Genetics Problems Chapter Guides
<b>R</b>	Molecular Genetics 4 Ch 14. DNA: The Genetic Material What is A Gene Cells 12 Nucleus & ribosomes Ch 5. Cell Structure	CONTINUE Lab 37	Practice Genetics Problems Chapter Guides
<b>F</b>	Molecular Genetics 5 Ch 15. Genes & How They Work Gene To Protein: Transcription	CONTINUE Lab 37	Genetics Review CONCEPT MAP
<b>3/18 (3)</b>	<b>M</b> Molecular Genetics 6 Ch 15. Genes & How They Work Gene To Protein: RNA Processing	Genetics Review CONCEPT MAP	Chapter Guides
<b>T</b>	Molecular Genetics 7a Ch 15. Genes & How They Work Gene To Protein: Translation	EXAM Mitosis, DNA Replication, Meiosis, Inheritance	Multiple Choice Exam Ch 11, 12, 13, 14
<b>W</b>	Molecular Genetics 7b Ch 15. Genes & How They Work Gene To Protein: Translation Cells 13 Endomembrane system Ch 5. Cell Structure	Review Exam	QUADs Chapter Guides
<b>R</b>	—	EASTER RECESS	Vacation Reading
<b>F</b>	—	EASTER RECESS	Vacation Reading
<b>3/25 (5)</b>	<b>M</b> —	EASTER RECESS	Vacation Reading
<b>T</b>	Molecular Genetics 8 Ch 18. Control of Gene Expression Bacterial Gene Expression	Lab 38. Paper Plasmid	QUADs Chapter Guides
<b>W</b>	Molecular Genetics 9 Lab 38. Bacterial Transformation	Lab 39. (AP Lab 6 Molecular Biology) pGlo Bacterial Transformation	QUADs Chapter Guides
<b>R</b>	Molecular Genetics 10	CONTINUE Lab 39	QUADs

<b>Week (days)</b>	<b>Chapter / Subject</b> (numbers refer to Raven Chapters)	<b>Activities &amp; Labs</b>	<b>Assessments</b>
	Ch 18. Control of Gene Expression Eukaryotic Gene Expression		Chapter Guides
	<b>F</b> Molecular Genetics 11 Lab 39. Restriction Analysis Simulation	Lab 40. Restriction Analysis Simulation	QUADs Chapter Guides
<b>4/8 (4)</b>	<b>M</b> Molecular Genetics 12 Ch 16. Gene Technology Biotech Basics 1	Lab 41 Restriction Analysis (Wet Lab)	Take Home Essay Exam Ch 15, 16
	<b>T</b> Molecular Genetics 13 Ch 16. Gene Technology Biotech Basics 1	CONTINUE Lab 41	QUADs Chapter Guides
	<b>W</b> Molecular Genetics 14 Ch 16. Gene Technology Biotech Advanced 2	Biotech Movie	QUADs Chapter Guides
	<b>R</b> Molecular Genetics 15 Ch 16. Gene Technology Biotech Advanced 2	Biotech Movie	QUADs Chapter Guides
	<b>F</b> Cold Spring Harbor Laboratory Dolan DNA Learning Center FIELD TRIP	FIELD TRIP Lab 42. DNA Sequencing	QUADs Chapter Guides
<b>4/15 (5)</b>	<b>M</b> Animal Reproduction 1 Ch 50. Sex & Reproduction	Discuss Lab 41	QUADs Chapter Guides
	<b>T</b> Animal Reproduction 2 Ch 50. Sex & Reproduction	Lab 43. Sanger Sequencing	QUADs Chapter Guides
	<b>W</b> Animal Reproduction 3 Ch 50. Sex & Reproduction	CONTINUE Lab 43	
	<b>R</b> Hormones & Regulation 1 Ch 47. The Endocrine System	Biotech Review	Chapter Guides
	<b>F</b> Hormones & Regulation 2 Ch 47. The Endocrine System	EXAM Biotechnology	Multiple Choice Exam Ch 15, 16
<b>4/21 (0)</b>	<b>M</b> —	PASSOVER RECESS	Vacation Reading
	<b>T</b> —	PASSOVER RECESS	Vacation Reading
	<b>W</b> —	PASSOVER RECESS	Vacation Reading
	<b>R</b> —	PASSOVER RECESS	Vacation Reading
	<b>F</b> —	PASSOVER RECESS	Vacation Reading
<b>4/28 (5)</b>	<b>M</b> Hormones & Regulation 3	Review 1	Practice exams

<b>Week (days)</b>	<b>Chapter / Subject</b> (numbers refer to Raven Chapters)	<b>Activities &amp; Labs</b>	<b>Assessments</b>
	Ch 47. The Endocrine System		
<b>T</b>	Hormones & Regulation 4 Ch 47. The Endocrine System	Review 2	Practice exams
<b>W</b>	Catch Up Days	Review 3	Practice exams
<b>R</b>	Catch Up Days	Review 4	Practice exams
<b>F</b>	Catch Up Days	Review 5	Practice exams
<b>5/5 (5)</b>	<b>M</b> (AP Exams begin this week) Review 6	Review 7	Practice exams
	<b>T</b> Review 8	Review 9	Practice exams
	<b>W</b> Review 10	Review 11	Practice exams
	<b>R</b> Review 12	Review 13	Practice exams
	<b>F</b> Review 14	Review 15	Practice exams
<b>5/12 (0)</b>	AP BIOLOGY EXAM (8 AM)		
<b>5/20 to end</b>	Student Projects	Lab 44. Fetal Calf dissection	
		Cold Spring Harbor Laboratory	
		Dolan DNA Learning Center FIELD TRIP	
		Lab 45. Scavenger Hunt through the Human Genome Lab	
		Lab 46. Bioinformatics Lab	
		Lab 47. Genomics & Phylogenetics Lab	