

Curricular Requirements	Page(s)
CR1 Students and teachers use a recently published (within the last 10 years) college-level biology textbook.	1
CR2 The course is structured around the enduring understandings within the big ideas as described in the AP [®] Biology Curriculum Framework.	2,3,4,5,6,7,8,9,10
CR3a Students connect the enduring understandings within Big Idea 1 (the process of evolution drives the diversity and unity of life) to at least one other big idea.	3,4,9
CR3b Students connect the enduring understandings within Big Idea 2 (biological systems utilize free energy and molecular building blocks to grow, to reproduce, and to maintain dynamic homeostasis) to at least one other big idea.	4
CR3c Students connect the enduring understandings within Big Idea 3 (living systems store, retrieve, transmit, and respond to information essential to life processes) to at least one other big idea.	6
CR3d Students connect the enduring understandings within Big Idea 4 (biological systems interact and these systems and their interactions possess complex properties) to at least one other big idea.	2,3,5,10
CR4a The course provides students with opportunities outside of the laboratory investigations to meet the learning objectives within Big Idea 1.	2,3,4,8
CR4b The course provides students with opportunities outside of the laboratory investigations to meet the learning objectives within Big Idea 2.	2,3,4,5
CR4c The course provides students with opportunities outside of the laboratory investigations to meet the learning objectives within Big Idea 3.	3,4,6
CR4d The course provides students with opportunities outside of the laboratory investigations to meet the learning objectives within Big Idea 4.	3,10
CR5 The course provides students with opportunities to connect their biological and scientific knowledge to major social issues (e.g., concerns, technological advances, innovations) to help them become scientifically literate citizens.	4,5,6,9,10
CR6 The student-directed laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Biology Curriculum Framework and include at least two lab experiences in each of the four big ideas.	1,2,3,4,5,6,7,8,9,10
CR7 Students are provided the opportunity to engage in investigative laboratory work integrated throughout the course for a minimum of 25 percent of instructional time.	1
CR8 The course provides opportunities for students to develop and record evidence of their verbal, written and graphic communication skills through laboratory reports, summaries of literature or scientific investigations, and oral, written, or graphic presentations.	1,2,3,4,5,9,10

Course Overview

In AP Biology, an emphasis is on students making connections between the big ideas within the AP Biology Curriculum Framework. I teach the equivalent of an introductory college-level biology course, and it is designed to prepare students for the AP Biology Exam.

My philosophy is to actively engage students in the process of science through class assignments and discussions which inform their laboratory experiences. For example, I increase students' critical thinking and problem solving abilities by actively requiring them to anticipate experimental set ups in group discussions, journal readings and hands-on labs. Emphasis is also given to journal article readings in order to expose students to present day technologies and procedures to familiarize them to limitations of testable hypotheses in order to develop better designed experimental investigations.

Lab techniques are learned through researching journal papers, hands-on labs which make up at least 25% of instructional time, and at least two field trips to pharmaceutical companies. **[CR7]** Labs emphasize development and testing of the hypothesis, collection, analysis and presentation of data, as well as discussion of results to discover unanswered questions about the particular topics addressed. A minimum of two labs in each big idea will be conducted. **[CR6]** Students are required to report on all laboratory investigations. **[CR8]** The student-directed and inquiry-based laboratory investigations used throughout the course enable students to apply the seven science practices as defined in the Curriculum Framework.

Materials

Campbell, Neil and Reece, Jane B. 2008. *AP Edition Biology*, Eighth Edition, San Francisco, CA: Pearson Benjamin Cummings. **[CR1]**

Campbell, Neil. *Student AP Edition Biology Student Study Guide*, Eighth Edition (ISBN 0-8053-7155-9)

Biology Laboratory Manual, 8/e by Vodopich and Moore, 2008

AP Biology Investigative Labs: An Inquiry-Based Approach, The College Board, 2012

Extra interest reading: *Survival of the Sickest*. Maolem, Sharone.

Laboratory/classroom combination that includes the space, facilities, and equipment to safely conduct hands-on inquiry-based investigations.

Released multiple choice tests and Free Response biology questions from 1968 to present.

Selected websites and electronic media: (see longer list at end of document)

AP Central.

There are many sites available with labs, exercises, quizzes etc. to be used as supplementary study resources (indicated in each section as well).

Eduweblabs site offers labs as excellent online practice for students before coming into wet lab.

CR7: Students are provided the opportunity to engage in investigative laboratory work integrated throughout the course for a minimum of 25 percent of instructional time.

CR6: The student-directed laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Biology Curriculum Framework and include at least two lab experiences in each of the four big ideas.

CR8: The course provides opportunities for students to develop and record evidence of their verbal, written and graphic communication skills through laboratory reports, summaries of literature or scientific investigations, and oral, written, or graphic presentations.

CR1: Students and teachers use a recently published (within the last 10 years) college-level biology textbook.

Course Schedule

READINGS Include textbook/ journal articles. Students are provided with guided reading questions and are required to take notes.

ACTIVITY/LABS 1day = 1 class period [1week = 10days] Some activities are expected to be performed outside of class time & students are expected to hand in lab reports for evidence of completion. Eduweblabs explained above are all done on student time.

ASSESSMENT A variety of assessments are used throughout the course.

A representative sample is included here in the course schedule.

MOLCEULES, CELLS & ENERGY Big ideas 1, 2, 3 & 4 [CR2]			
TOPICS	READINGS	ACTIVITY/LABS	ASSESSMENT
A. MOLECULES Big idea 4 Polarity of water & its importance to biological systems Carbon's role in the molecular diversity of life Monomers, polymers & reactions involved in building & breaking them down considering polar/nonpolar interactions Various levels of structures in protein & carbohydrates Enzyme structure as a special protein Cohesion, adhesion, specific heat of water & its importance to biological systems Acids, bases, and buffers	Chemistry of Life Chapters 2-5 from textbook	Using kits to build macro-molecule models [CR4a] (SP 1) Exercises: protein folding software [CR4b] Acid/base/buffer lab activity [CR6] (SP 2) Adhesion/ cohesion lab Students do variations by adding different macro-molecules to solution to see effects adhesion etc. (EU4.A connects to BI 1) [CR3d] (SP 4) Given specific heat equation, in groups students try to come up with a way to determine specific heat of water-15min (EU 4.C connects to BI 1) [CR3d] , [CR4a] & [CR4b] (SP 3)	Student generated concept maps Reading quizzes Unit test with free response practice Written lab reports [CR8]

CR2: The course is structured around the enduring understandings within the big ideas as described in the AP Biology Curriculum Framework.

CR4a: The course provides students with opportunities outside of the laboratory investigations to meet the learning objectives within Big Idea 1.

CR4b: The course provides students with opportunities outside of the laboratory investigations to meet the learning objectives within Big Idea 2.

CR6: The student-directed laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Biology Curriculum Framework and include at least two lab experiences in each of the four big ideas.

MOLCEULES, CELLS & ENERGY Big ideas 1, 2, 3 & 4 [CR2]				
TOPICS	READINGS	ACTIVITY/LABS	ASSESSMENT	
Identifying macro-molecules in our foods Supplements & Add-ons: Cohesion/adhesion in nature Various macro-molecules in our foods Cycling of chemical elements in ecosystem	Portion of Chapter 55	LAB: Using and understanding how different indicators are used to identify proteins, lipids, carbohydrates (incl. reducing sugars analysis) using Biuret, Benedict's, Sudan etc. [CR6] (SP 6) Research exploring how animals use water's properties for survival (comparing specific heat) (EU 4.C connects to BI 1) [CR3d] Students make posters of different element cycles including relative amts. of transfer [CR4b] , [CR4d] & [CR8]	Students compose chart comparing structural differences & how indicators physically work Students use chart to predict contents of unknown samples Students share one example they have found how animals use water's properties for survival. Student generated short PowerPoints on macro-molecules and nutrition. (Ex. Butter vs margarine vs oil OR summarizing different artificial sweeteners)	<div style="border: 1px solid black; padding: 5px;"> <p>CR6: The student-directed laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Biology Curriculum Framework and include at least two lab experiences in each of the four big ideas.</p> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>CR3d: Students connect the enduring understandings within Big Idea 4 (biological systems interact and these systems and their interactions possess complex properties) to at least one other big idea.</p> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>CR4b: The course provides students with opportunities outside of the laboratory investigations to meet the learning objectives within Big Idea 2.</p> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>CR4d: The course provides students with opportunities outside of the laboratory investigations to meet the learning objectives within Big Idea 4.</p> </div>
B. HISTORY OF LIFE Big idea 1 Theories of how macro-molecules joined to support origin of life Was RNA 1 st genetic material? Age of earth	Text chapter 25 outline notes guided reading	Clay catalyzed RNA polymerization activity with role playing focus on theories, redevelopment of theories over time (EU 1.B connects to BI 3) [CR3a] & [CR4c] (SP 6, 7) Discussion of journal article	Concept maps Reflection on the development and reformulation of scientific theories (extra) model or cartoon explaining the theories of origin of life [CR4a]	<div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>CR4b: The course provides students with opportunities outside of the laboratory investigations to meet the learning objectives within Big Idea 2.</p> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>CR4d: The course provides students with opportunities outside of the laboratory investigations to meet the learning objectives within Big Idea 4.</p> </div>

MOLCEULES, CELLS & ENERGY **Big ideas 1, 2, 3 & 4 [CR2]**

TOPICS	READINGS	ACTIVITY/LABS	ASSESSMENT
<p>C. CELLS (structure & function) Big idea 1 & 2</p> <p>Explain similarities, differences & evolutionary relationships between prokaryotic & eukaryotic cells</p> <p>Cell membrane structure & function</p> <p>Cell communication (signals, receptors, responses hormones)</p> <p>Methods of transport across membranes</p>	<p>Text chapters 6,7,11</p> <p>Outline notes</p> <p>Guided reading questions</p> <p>Journal articles on organelle based health issues [CR5]</p>	<p>Mini poster/ models comparing structures of cells from 3 different cell types from 3 different kingdoms (EU 1.A connects to BI 3) [CR3a], [CR4a], [CR4c] & [CR8]</p> <p>LAB: Normal vs Plasmolyzed Cells using Plant cells (teacher generated) [CR6]</p> <p>Eduweblabs: Osmosis & diffusion prelabs 1 & 2 [CR4b], [CR4c] & [CR6]</p> <p>Cell size lab teacher generated</p> <p>Mini Poster Presentations comparing 3 feedback mechanisms [CR8]</p> <p>Inquiry lab # 4 Diffusion and Osmosis [CR6] (SP 3, 4)</p> <p>LAB: Microscope techniques for observing & measuring different types of cells.</p>	<p>Student generated concept maps</p> <p>Reading quizzes</p> <p>Mini poster comparing structures of cells from 3 different kingdoms</p> <p>Unit test with Free Response practice</p> <p>Written lab reports [CR8]</p> <p>Eduweblabs graph & calculations</p> <p>Cell Size lab calculations</p> <p>Formal Lab Writeup for Inquiry lab Diffusion & Osmosis [CR8]</p> <p>Microscope drawings & calculation</p> <p>Analyze & Discuss chart comparing different types of cells & their functions in the human body</p> <p>Discussion of the endosymbiont hypotheses of the evolution of eukaryotic cells [CR3b]</p>
<p>D. IMMUNITY Big idea 2 & 3</p> <p>Innate vs Acquired Response</p> <p>Humoral responses B cells vs T cells</p> <p>Self vs non-self</p> <p>Field Trip to Pharmaceutical Company</p>	<p>Text chpt. 43</p> <p>Background information on immunoassays from the company.</p>	<p>LAB: Immunoassays: Antibody purification</p> <p>Dot Blot (1 full day at BTI Pharmaceutical company where students completely perform both labs) [CR6] (SP 5)</p>	<p>Student generated concept maps</p> <p>Flow chart for immunoassay labs</p> <p>Post-fieldtrip quiz</p>

CR3a: Students connect the enduring understandings within Big Idea 1 (the process of evolution drives the diversity and unity of life) to at least one other big idea.

CR4c: The course provides students with opportunities outside of the laboratory investigations to meet the learning objectives within Big Idea 3.

CR8: The course provides opportunities for students to develop and record evidence of their verbal, written and graphic communication skills through laboratory reports, summaries of literature or scientific investigations, and oral, written, or graphic presentations.

CR3b: Students connect the enduring understandings within big idea 2 (biological systems utilize free energy and molecular building blocks to grow, to reproduce, and to maintain dynamic homeostasis) to at least one other big idea.

MOLCEULES, CELLS & ENERGY Big ideas 1, 2, 3 & 4 [CR2]			
TOPICS	READINGS	ACTIVITY/LABS	ASSESSMENT
E. CELL ENERGY	Text chpts 8, 9, 10	Eduweblabs: Prelab "Enzyme Catalysis"	Student generated concept maps
ATP structure & function	Outline notes	Investigative lab #13: Enzyme Activity (EU 4.A connects to BI 2) [CR3d] & [CR6]	Reading quizzes
Redox reactions in relation to cellular respiration	Guided reading questions		Unit test with free response practice
Enzyme catalysis		Prelab: Toothpickase	Eduweblab graphs
Activation energy & specificity		Investigative Lab: Enzymes: Factors affecting the rate of activity [CR6] (SP 2, 5)	Toothpickase graphs & questions
Cellular respiration glycolysis, citric acid cycle, electron transport chain & chemiosmosis		Eduweblab: Respiration [CR4b]	Presentation of students group lab results to class [CR8]
Mitochondria form & function		Investigative Lab #6 Cellular Respiration [CR6] (SP 2)	Eduweblabs graphs & calculations
Photosynthesis mechanisms; light/dark		Fermentation in Yeast Lab (Flynn kit) student generated variations required	Presentations of lab data and results [CR8]
Compare/contrast to respiration		Eduweblabs: Prelab Plant pigments [CR4b]	Graphs & discussion on Yeast Lab with variations [CR8]
Alternative mechanisms		Eduweblabs: Prelab Photosynthesis [CR4b]	Eduweblabs chromatography calculations, graphs
Understanding light energy & the nano scale (the size of small things inside cells)		Investigative Lab #5 Photosynthesis [CR6]	Presentations on lab results
		Internet activity comparing different wavelengths of light in relation to photosynthesis (teacher generated)	Lab writeup and analysis [CR8]
		Discussion on nanotechnology & implications of our smaller world [CR5]	Students make a chart comparing sizes of cellular parts & larger items to evaluate range of metric distance measurements down to the nano scale [CR4b]

CR3d: Students connect the enduring understandings within Big Idea 4 (biological systems interact and these systems and their interactions possess complex properties) to at least one other big idea.

CR6: The student-directed laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Biology Curriculum Framework and include at least two lab experiences in each of the four big ideas.

CR5: The course provides students with opportunities to connect their biological and scientific knowledge to major social issues (e.g., concerns, technological advances, innovations) to help them become scientifically literate citizens.

HEREDITY, GENETICS & EVOLUTION Big ideas 1 & 3 [CR2]			
TOPICS	READINGS	ACTIVITY/LABS	ASSESSMENT
<p>A. MOLECULAR BASIS OF INHERITANCE</p> <p>DNA structure & replication</p> <p>RNA structure</p> <p>Protein Synthesis transcription & translation</p> <p>Mutations –basis for natural selection</p>	<p>Text chapters 16, 17</p> <p>Journal Article Reading</p> <p>Watson and Crick’s original Nature paper from 1953</p>	<p>DNA extraction</p> <p>Comparing DNA & protein sequences from an internet based computer database in discussing evolutionary implications of mutations (SP 7)</p>	<p>Student generated concept maps</p> <p>Reading quizzes</p> <p>Journal article discussions</p> <p>Unit test with Free Response practice</p> <p>Bioinformatics results</p>
<p>B. MITOSIS & MEIOSIS</p> <p>Cell Cycle mechanism & control</p> <p>Chromosomes</p> <p>Sexual vs asexual reproduction & evolutionary advantages</p> <p>Stages of meiosis</p> <p>Genetic variation in offspring, mechanisms & impact on evolution</p> <p>Investigating genetics: environmental influences</p>	<p>Text chapters 12, 13</p>	<p>Eduweblabs: Prelab Crossing Over Lab</p> <p>Investigative Lab #7: Mitosis and Meiosis (EU 3.A connects to BI 1) [CR3c] & [CR6]</p> <p>Karyotyping exercise (teacher generated-students will have to do this on their own time) [CR4c]</p>	<p>Student generated concept maps</p> <p>Reading quizzes</p> <p>Unit test with Free Response practice</p> <p>Eduweblabs results</p> <p>Investigative LAB Analyses</p> <p>Karyotyping results</p> <p>Students choose & research controversial topics and the arguments supporting their genetic and/or environmental basis. Ex. Obesity, alcoholism, etc. [CR5]</p>

CR2: The course is structured around the enduring understandings within the big ideas as described in the AP Biology Curriculum Framework.

CR3c: Students connect the enduring understandings within Big Idea 3 (living systems store, retrieve, transmit, and respond to information essential to life processes) to at least one other big idea.

CR4c: The course provides students with opportunities outside of the laboratory investigations to meet the learning objectives within Big Idea 3.

HEREDITY, GENETICS & EVOLUTION Big ideas 1 & 3 [CR2]			
TOPICS	READINGS	ACTIVITY/LABS	ASSESSMENT
C. MENDELIAN GENETICS MENDEL'S LAWS Patterns of inheritance Predicting genetic outcomes genetic counseling Gene linkage & mapping Mutations revisited	Text chapters 14, 15 Scientific American Article Reading	Prelab activity: Looking at corn crosses & analyzing results Eduweblabs: Prelab Population Genetics Eduweblabs: Prelab Fruit fly genetics	Student generated concept maps Reading quizzes Journal article discussions Unit test with free response practice Eduweblabs prelab report
D. MOLECULAR GENETICS Regulation of gene expression Viruses Gene expression in bacteria Biotechnology DNA Technology, Recombinant DNA, PCR, Gel electrophoresis Applications of DNA technology Use of bioinformatics to analyze genomes Comparing & discussing genomic sequences in relation to evolution	Text chapters 18-21 Journal Article Reading Article by Kary Mullis on PCR.	Eduweblabs: Prelab Bacterial transformation Eduweblabs: Prelab DNA Electrophoresis Investigative lab #9: Biotechnology I and Biotechnology II. Bacterial Transformation and Restriction Enzyme Analysis of DNA [CR6] Field trip to Promega in Wisconsin will expose students to these techniques in industry	Student generated concept maps Reading quizzes Journal article discussions Unit test with free response practice Eduweblabs results for both transformation & electrophoresis labs Analysis and group presentation of Investigative lab Post field trip test Report on Bioinformatics activity

CR2: The course is structured around the enduring understandings within the big ideas as described in the AP Biology Curriculum Framework.

CR6: The student-directed laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Biology Curriculum Framework and include at least two lab experiences in each of the four big ideas.

HEREDITY, GENETICS & EVOLUTION Big ideas 1 & 3 [CR2]			
TOPICS	READINGS	ACTIVITY/LABS	ASSESSMENT
E. EVOLUTIONARY BIOLOGY	Text chapters 22-25	Activity: Genetics Survey Project analyzing traits of those around us	Student generated concept maps
Darwin's explorations and theory of descent with modification & natural selection	Journal Article Reading <i>Beak of the Finch</i> by Jonathan Weiner	Lab Investigation "2 Mathematical Modeling: Hardy-Weinberg [CR6] (SP2, 4, 5, 7)	Reading quizzes Book discussions Unit test with Free Response practice
Galapagos Islands Overview		Activity: Students create Geologic timeline	
Evidence for evolution (molecular analyses & morphological analyses)		Activity: Hands on fossil analysis (obtained from nearby college) [CR4a] (SP 6, 7)	
Phylogeny & systematics			
Evolution of populations			
Hardy-Weinberg Law			

CR6: The student-directed laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Biology Curriculum Framework and include at least two lab experiences in each of the four big ideas.

CR4a: The course provides students with opportunities outside of the laboratory investigations to meet the learning objectives within Big Idea 1.

ORGANISMS & POPULATIONS Big ideas 1, 3 & 4 [CR2]			
TOPICS	READINGS	ACTIVITY/LABS	ASSESSMENT
A. BIOLOGICAL DIVERSITY & MICROBIOLOGY Early life on earth Evolution of prokaryotes & eukaryotes	Text chapters 25, 26, 27 Text 29, 30	Students are to find an article involving genetic recombination using prokaryotes and present to class [CR5] Investigative LAB # 3: Analyzing Genes with BLAST (EU 1.B connects to BI 4) [CR3a] & [CR6]	Article presentation to class Student generated concept map Section test
B. PLANTS & THEIR DIVERSITY How plants colonized land Evolution of seed plants Structure, growth & development Plants responses to internal & external stimuli Plant nutrition Angiosperm Reproduction	Text 35, 36 Text 37, 38, 39	Eduweblabs: Prelab Transpiration Investigative LAB # 11: Transpiration (EU 1.B connects to BI 4) [CR3a] & [CR6] (SP 2, 3, 5) LAB: Flower dissection LAB: Students conduct a long term (exp't) lab investigation plant growth from seeds under various conditions in our greenhouse. [CR6] (SP 3.5, 6, 7)	Practical Test specimen identification & placing on phylogenetic tree Student generated concept map Section test Eduweblab transpiration results Investigative labs analysis Flower dissection practical Formal writeup for students' own plant lab [CR8]
C. ANIMAL DIVERSITY Characteristics (body plans & systems) of invertebrates as you go up the phylogenetic tree Basic anatomy principles Analysis of structure & function of body systems Digestive, Circulatory, Respiratory, Excretory, Endocrine, Nervous, Muscular Systems	Text chapters 32-34 and 40-49	Survey of animal phyla in concept map/chart form generated by students (Practical with actual animal specimens) Eduweblabs - Daphnea heart rate Eduweblabs - Cardiac Physiology Human Biology: Circulation and Blood Pressure Lab: Examining circulation of the goldfish [CR6] (SP 7) Lab: Dissection – either fetal pig or cat	Student generated concept maps (one for each system & animal diversity examination) Reading quizzes Unit test with Free Response practice Eduweblab reports Practical quiz observing various specimens and classifying them using students' own made chart of animal phyla Practical test with dissection specimen

CR5: The course provides students with opportunities to connect their biological and scientific knowledge to major social issues (e.g., concerns, technological advances, innovations) to help them become scientifically literate citizens.

CR3a: Students connect the enduring understandings within Big Idea 1 (the process of evolution drives the diversity and unity of life) to at least one other big idea.

CR6: The student-directed laboratory investigations used throughout the course allow students to apply the seven science practices defined in the AP Biology Curriculum Framework and include at least two lab experiences in each of the four big ideas.

ORGANISMS & POPULATIONS Big ideas 1, 3 & 4 [CR2]			
TOPICS	READINGS	ACTIVITY/LABS	ASSESSMENT
<p>D. ECOLOGY</p> <p>Ecological interactions–biotic vs abiotic</p> <p>Behavioral ecology–natural selection involvement</p> <p>Population dynamics–growth & its regulations</p> <p>Communities & Ecosystems energy levels & flows, cycles, symbiosis & impact on evolution</p> <p>Human influences positive & negative</p>	Text chapters 50-55	<p>Eduweblabs: Prelab Animal Behavior</p> <p>Investigative LAB #12: Fruit fly behavior [CR6] (SP 3, 4)</p> <p>Animal Behavior: Taxis, Kinesis, and Agonistic Behavior [CR6] (SP 3, 4, 6)</p> <p>LAB: Termite Behavior (WARD'S) Wolbachia Project- PCR In conjunction with the Marine Biology Institute in Boston, students will conduct research looking at the presence of symbiotic relationship in insects with Wolbachia (EU 4.A connects to BI 1) [CR3d] & [CR4d] (SP 3, 4, 5)</p> <p>Eduweblabs–Primary Productivity</p> <p>LAB: Dissolved Oxygen & Aquatic Primary Productivity (EU 4.A connects to BI 1) [CR3d], [CR5] & [CR6] (SP 2, 3, 4, 5, 6, 7)</p> <p>LAB: Local Burpee museum field trip where students perform water quality surveys including benthic macroinvertebrate survey (EU 4.C connects to BI 1) [CR3d] & [CR6]</p> <p>Activity – “My footprint” (EU 4.A connects to BI 1) [CR3d] & [CR4d]</p>	<p>Student generated concept maps</p> <p>Reading quizzes</p> <p>Unit test with Free Response practice</p> <p>Eduweblab reports</p> <p>Investigative Lab #11 report [CR8]</p> <p>Termite lab questions, analysis and presentation [CR8]</p> <p>Eduweblab report on primary productivity</p> <p>Presentation: Students present lab results to class with ways to improve water quality of their local river [CR5]</p> <p>Personal Project: Students complete “My Footprint” online and write a paper discussing their individual impact on Earth [CR5]</p>

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Additional Websites:

Websites for student use for review/homework/lab-prep are an irreplaceable tool for instructional purposes and student understanding. The following is a partial list of some of the sites I use on a daily/weekly basis.

- The Biology Project - University of Arizona
- Online Campbell Biology Book
- Campbell Log in site for students with password
- Prentice Hall - The Biology Place
- Lab Bench
- Biocoach PBS.ORG
- Sunamasinc.com
- DNAFTB.ORG
- TALKORIGINS.ORG
- LEARN.GENETICS.UTAH.EDU
- Cells Alive