

KAP Biology – Energy in Living Systems

Course Overview: This course is designed to introduce students to the process of scientific thinking as well as the principles of biochemistry, cell biology, physiology, and ecology. Topics cover the study of life from the biochemical to the global levels, concentrating on the flow of energy and materials through organisms. Students will read current research and discuss methods and approaches to unanswered questions.

Keep in mind that college courses are considerably more demanding than “normal” high school classes. Students are expected to be highly self-motivated in order to meet these demanding requirements. You will often be responsible for several assignments at the same time. If you do not stay current in your assignments for this class you will fall behind very quickly!

This course is equivalent to the Biology 115 course taught at Kenyon College in Gambier, Ohio. It will meet both Kenyon College and River View High School requirements.

Major themes:

- Life is dynamic and constantly changing to adapt to new conditions in their environment
- Types of biomolecules and how they interact to produce the flow of energy necessary for life
- The hierarchical organization of structure and function within living things, from molecules to cells to organisms
- Ecological relationships among living things and their physical environments
- Read and interpret primary literature and compare to popular source representations
- Develop critical thinking and problem-solving skills including understanding alternate hypotheses and conflicting data
- Develop scientific writing and computing skills
- Articulate logical support of scientific ideas and questions

Required Text

We will use the same textbook as students use at Kenyon College: *Biological Science* by Scott Freeman, 4th Edition, 2011.

The student websites for the course at wps.prenhall.com/esm_freeman_biosci_2/21/5464/1398909.cw/index.html and www.masteringbiology.com may prove useful as it has self-assessment tools and additional information. These are great places to get extra practice. There may be a few assignments from here later in the year.

Miss Casey also has a lot of information on the school information that you will need for class at www.river-view.k12.oh.us. Once there go to the Schools then RV High School then Classrooms and finally Miss Casey. Select the KAP class on the menu.

You will be given other reading assignments as needed.

How to Do Well in This Class

Preparation

- Reading assignments should be read BEFORE class. This will help you more fully understand the lectures. Readings may not be completed in class, but you are still responsible for the information contained in them
- When you are given the lab procedures before class, you will be expected to know exactly what you are going to do during the lab and/or ask questions about procedures
- Come to class prepared and ready to pay attention

- Take thorough and detailed notes. Lecture material includes material not found in the text. If you are absent, you need to get the information you missed.
- Learn the vocabulary. You cannot understand complex biological concepts if you don't understand the words being used

Class Attendance and Participation

- Any time in class – ask for clarification, pose a question, link disparate ideas together...
- Absences should be rare in this class. When you are absent, use your syllabus as a guide to keep you up to date
- If you are absent the day of the lab, you will be expected to make arrangements with Miss Casey to make up the lab. After school is usually the best time for lab make-up.
- There are few times when we will need an extended period to collect data for a lab. Students are required to attend just the same as during the school day. These will be conducted after school. Students will be given compensation time during the enrichment lab period for the time spent collecting this data. (In other words, they won't have to come to lab during enrichment)
- Review textbook assignments and notes after class to consolidate material. Images from the PowerPoint won't be posted on the website, although their location will be listed when possible. If you want a copy of a particular image see Miss Casey.

Getting Help

- Make good use of your web resources especially Miss Casey's website and website for the textbook. Don't forget to use the blog and useful links
- Your best chance to get help is to make arrangements to see me during or right after school.
- E-mail is the best way to reach me although if you e-mail after school hours I may not see it until morning.
- Do not call me at home unless it's an emergency that can't wait until the next day. I will not answer the phone for anyone but family or friends after 8:00 PM.
- Connect with other people in the class

Homework

- Most homework will not be typically collected for a grade. However, assignments may be collected to check on your progress and get feedback from Miss Casey
- The questions in the textbook have the answers in the back of the book. They make good practice for the tests. Try to answer them first on your own, then check to see if you are correct
- There will be a few graded assignments that aren't in the book. They will be found on Miss Casey's website. Be sure to check Progress Book or the class calendar for when these assignments will be due.

Writing Assignments/Presentations

- The first semester will concentrate on having students read articles assigned by the teacher. Students will do a summary of the main ideas from the article and respond to questions about what they read in the article. Each assignment will be worth 15 points
- The second semester will include presentations and a literature review on an assigned research topic. It is important to properly cite information from the papers.
- Students will also be doing formal lab write ups
- Scientific writing is different from other types of writing. You aren't telling a story. Focus on stating the facts without a lot unnecessary adjectives and adverbs. Be concise
- Be sure for any formal writing that you properly document sources and include a bibliography for the sources you are citing

Labs

- There will be a number of labs during the year. Students will be expected to do write ups on these labs as directed by the teacher.
- There are a few labs/activities that may require some work after school. This allows students to meet the hours requirement needed for a laboratory high school course set by the state of Ohio. All these times will be scheduled ahead of time and try to work around students after school activities as best as can be. If a student can't make an after school lab, he/she must make arrangements to do the lab at another time with Miss Casey to ensure he/she meets the hours requirement for the course.

Tests and Quizzes

- There will be 1-2 exams each nine weeks that will cover multiple lessons in a unit. These exams comprehensive ideas throughout the nine weeks to that point.
- There will also be a comprehensive exam at the end of each semester. These exams will cover all the material from the semester. Because this course is also for college credit, there will be no exemption from the final exam. All students will be required to take the test regardless of their grade.
- Two-three announced long quizzes will be given each nine weeks. These quizzes will cover more detailed information on smaller amounts of information from 1-2 lessons.
- Brief pop quizzes may be given during the nine weeks ranging from 5-20 points as needed

Grading

- To calculate your Kenyon Grade the exams will be combined with the other your (9weeks grades to make a single Kenyon grade. For your River View Grade the grade will be calculated like any other class with four nine week grades and two exam grades. This is a 5-point class.
- **Because this is a college course, you will not be allowed to do retakes on tests and quizzes**
- Students will be graded using scale below with the standard River View Grading Scale
 - A – 90% - 100%
 - B – 80 % - 89.9%
 - C – 70% - 79.9%
 - D – 60% - 69.6%
 - F – 0% - 59.9%

Academic Honesty

- Plagiarism and cheating will not be tolerated. Not only will it have serious consequences here at River View but also at Kenyon College.
- Read over the policies for River View in your student handbook
- Read over the policies for Kenyon College at www.kenyon.edu/x13678.xml . You will need to scroll down the page to find the policy

Sequence of Learning Activities:

This is meant to be a **tentative** schedule. We will follow the basic sequence by may not always be on the projected data. You will be given other reading assignments as needed. Major assignments are indicated. Other assignments will be posted in Progress Book or on the Classroom Calendar.

Date	Subject	Readings
Aug 23	Intro to course and syllabus	
Aug 24	Seating, syllabus if needed, Kenyon survey, books assigned	
Aug 25	Biology Methods	Section 1.5, Bioskills 1
Aug 26	How to Read and Interpret Primary Scientific Research	Kenyon Tutorial – Go to links page, Bioskills 2
Aug 29	Set tentative dates for 1 st offsite labs	
Aug 29-Sep 2	Life and Guiding Theories for Biology	Section 1.1; “Seven Pillars of Life”; Section 4.4; Read Sections 1.2 & 1.3
Sep 6-9	Tree of Life	Read Section 1.4; Skim Chapters 29-32; Section 28.1-28.3; Phylogenetic structure of the prokaryotic...
Sep 9	Turn in Draft of 1st Article Review	
Sep 12	Quiz #1 – Life, Guiding Theories, and Tree of Life	
Sep 13-20	Chemistry Review	Section 2.1, Physics 2000 website: Quantum Atom, Elements as Atoms, and Periodic Table
Sep 21-22	Water and its Importance to Life	Section 2.2
Sep 23	Carbon and its Importance to Life	Section 2.4
Sep 23	Turn in Final Copy of 1st Article Review	
Sep 26-27	Energy	Section 9.1
Sep 28	Exam #1: Introduction and Chemistry Review	
Sep 29-30	Early Origin of Life Experiments and Amino Acids	Section 9.1, Section 2.3
Oct 3-4	FAIR BREAK	
Oct 5	2nd Article Review Due	
Oct 5-7	Early Origin of Life Experiments and Amino Acids	Section 3.1 & 3.2; Life on Earth; Emergence of Cells...
Oct 10-14	Proteins	Section 3.3 – 3.5
Oct 17	Quiz #2 -- Proteins	
Oct 18-20	Enzyme Catalysis Lab	
Oct 21	3rd Article Review Due	
Oct 21	Work day for Lab Write Up	
OCT 21 – END OF NINE WEEKS		
Oct 24	Lab Write for Enzyme Catalysis Due by enrichment – it will be part of your 1st nine weeks grade	

Date	Subject	Readings
Oct 24-27	Nucleic Acid, DNA & RNA Structure and Function	Section 4.1- 4.3
Oct 28	Introduction to Cemetery Demographics Lab	
Oct 24 -28	Lipids and Plasma Membrane Structure & Functions	Section 6.2 – 6.4
Oct 31 – Nov 4	Diffusion and Osmosis Lab	
Nov 4	4th Article Review Due	
Nov 7	Diffusion and Osmosis Lab Write Up Due	
Nov 7 - 11	Bacterial, Archaeal, and Eukaryotic Cell Structures & Basic Functions	Section 7.1-7.3; the Birth of the Nucleus
Nov 14	Quiz #3 –Cell Structures & Functions	
Nov 16-23	Cell Systems	Section 7.4 – 7.6
Nov 23	5th Article Review Due	
Nov 29 – Dec 2	Cellular Specialization and Protist Diversity	Section 29.1-29.3
Dec 5	Exam #2 – Membranes, Cell Structure/Function	
Dec 6-12	Sugars, Polysaccharides, and Carbohydrates	Section 5.1-5.3
Dec 15	Quiz #4 -- Carbohydrates	
Dec 16 - 22	Work on Cemetery Demographics Lab and Exams	
Dec 22	6th Article Review Due	
Jan 3-4	Cemetery Demographics Work Day	
Jan 5	Cemetery Demographics Lab Write Up Due	
JAN 6 – END OF NINE WEEKS/SEMESTER		
Jan 6- 14	Photosynthesis	Section 10.1 -10.4; Plant Wannabees
Jan 17-19	Photosynthesis Lab	
Jan 20	Quiz #5 on Photosynthesis	
Jan 23	Photosynthesis Lab Write Up Due	
Jan 24-25	Review Cell Energetics, Nitrogen Fixation	p. 510-511; 749-50
Jan 26-27	Literature Review Topic Selection and Workday	
Jan 30 – Feb 9	Cell Respiration	Section 9.2 – 9.8
Feb 10	Quiz #6 on Cell Respiration	
Feb 13	Literature Review Workday – Found at least 5 articles on topic	
Feb 14-16	Cell Respiration Lab	
Feb 17	Exam #3 Cell Energetics	
Feb 21-Mar 6	Plants	Section 30.3, 36.1, 36.3, 37.1-37.4
Mar 7	Quiz #7 Plants	
Mar 8-9	Workday for Literature Review – Completed Draft	
Mar 15	Turn in Final Copy for Literature Review	
Mar 12-16	Cell Signaling	Section 8.2 – 8.3, 47.1
MAR 16 – END OF NINE WEEKS		

Date	Subject	Readings
Mar 19 - 22	Animal Introduction	Section 32.2-32.3, 41.1-41.2
Mar 23	Animal Presentation Workday	
Mar 26 - 30	Hormones	Section 47.2 - 47.3
Apr 2-Apr 11	Electrical Signaling and Nervous System	45.1-45.3, What the Synapse Tells the Neuron
Apr 12	Quiz #8 – Cell Signaling	
Apr 16 - 20	Sensory Organs	Section 46.1 - 46.4, 51.3
Apr 23 - 27	Homeostasis, Water and Electrolyte Balance	41.3 - 41.5, 42.2 -42.4
Apr 30 – May 3	Fetal Pig Dissection	
May 4	Exam #3 -- Animals	
May 7-9	Physiology of Circulatory System Lab	
May 11	Physiology of Circulatory System Lab due	
May 10-15	Pillbug Lab	
May 17	Pillbug Lab Write Up Due	
May 16-17?	Final Exam	
CONGRATULATIONS GRADUATE – END OF NINE WEEKS/YEAR		