

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, both paper and on the web, as needed. This year you may also be assigned lectures to watch on either you tube or teacher tube.

How to Do Well in This Class

Preparation

- Reading and other web 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 or go over writing assignments on an individual basis. Students are required to attend these sessions just the same as during the school day. These will typically be conducted after school.
- 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, some assignments may be collected to check on your progress and get feedback from Miss Casey. These assignments will receive a grade.
- 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.
- Since this is a college course formative assignments will rarely be collected but we will discuss them in class

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 18 points
- The second semester will include 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 of unnecessary adjectives and adverbs. Be concise and don't put opinions unless asked for. You only want conclusions that are supported by evidence
- Be sure for any formal writing that you properly document sources and include a bibliography for the sources you are citing for every writing assignment you submit.
- Be sure not to plagiarize any material. I would rather see you over cite than not to cite something that came from another source.
- The rule of thumb is if three or more sources say exactly the same thing, it can be considered common knowledge and doesn't have to be cited.

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 the first semester looking at all the material covered in the first exam. The 2nd semester exam will cover material from the entire year – that is everything from day one to the last day.
- 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 and become part of the minor summative grade.
- Typically students will be permitted to take essay questions home. They are due the next class day. No exceptions will be made other than absence or a sporting event that caused left immediately after school and returned after 9:30 p.m. Students who are absent will be expected to turn in questions immediately on their return. Students in a sporting event will receive a one-date extension.

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 (standard River View Grading Scale)
 - A – 90% - 100%
 - B – 80 % - 89.9%
 - C – 70% - 79.9%
 - D – 60% - 69.6%
 - F – 0% - 59.9%

Deductions will be taken for late work. 10% of total value if < 4 days; 20% if > 4 days late.

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 or lectures to view as needed. Major assignments are indicated. Other assignments will be posted in Progress Book or on the Classroom Calendar.

Date	Subject	Readings
Aug 21	Intro to course, syllabus, Seating, syllabus if needed, Kenyon survey, books assigned	
Aug 22,23, & 26-29	Biology Methods	Section 1.5, Bioskills 1, www.experiment-resources.com
Aug 30 & Sep 3	How to Read & Interpret Primary Scientific Research	Kenyon Tutorial – Go to Links page, Bioskills 2, “How to Write a Research Paper” from Experiment-Resources Website
Sep 6	Latest date to choose question to research	
Sep 4-5	What is Life?	Section 1.1, “Seven Pillars of Life”
Sep 6 & 9	Guiding Theories for Biology	Section 4.4; Read Sections 1.2 & 1.3
Sep 10-12	Tree of Life	Read Section 1.4; Skim Chapters 29-32; Section 28.1-28.3; Phylogenetic structure of the prokaryotic...
Sep 13	Quiz #1 – Life, Guiding Theories, and Tree of Life	
Sep 16-18	Chemistry Review	Section 2.1, Physics 2000 website: Quantum Atom, Elements as Atoms, and Periodic Table
Sep 20	Latest date to make appointment to go over draft of 1 st Article Review	
Sep 19-20	Water and its Importance to Life	Section 2.2
Sep 23-24	Carbon and its Importance to Life	Section 2.4
Sep 25	Quiz #2 Chemistry Review, Carbon, & Water	
Sep 26-27	Energy	Section 9.1
Sep 27	Turn in Final Copy of 1st Article Review	
Sep 27	Latest date to make appointment to go over draft of Scientific Write-up of selected question	
Sep 30 & Oct 1	FAIR BREAK	
Oct 2	Scientific Write up of Selected Question – Introduction & Methods	
Oct 2-3 & 7	Early Origin of Life Experiments and Amino Acids	Section 9.1, Section 2.3
Oct 4	Exam #1: Introduction, Chemistry Review, Water, Carbon, & Energy	
Oct 8-9	Biochemistry Lab – Final Due Oct 14	
Oct 10-11 & Oct 14-16	Proteins	Section 3.3 – 3.5
Oct 11	2nd Article Review Due	
Oct 17 & 18	Introduction to Cemetery Demographics Lab,– Visit Cemetery after school on Oct 18 until 3:00 (Be sure to let parents/coaches know) – other dates will be selected as needed	
Oct 18	3rd Article Review Due	
OCT 21 – END OF NINE WEEKS		
Oct 21-23	Enzyme Catalysis Lab – Final Due Oct 28	
Oct 25	Quiz #2 -- Proteins	

Date	Subject	Readings
Oct 24 & Oct 28-30	Nucleic Acid, DNA & RNA Structure and Function	Section 4.1- 4.3
Oct 31-Nov 1 & 4	Lipids and Plasma Membrane Structure & Functions	Section 6.2 – 6.4
Nov 1	4th Article Review Due	
Nov 5 – Nov 8	Diffusion and Osmosis Lab -- Write Up Due Nov 13	
Nov 11-13	Sugars, Polysaccharides, and Carbohydrates	Section 5.1-5.3
Nov 14	Review any concepts you are unsure of, catch up	
Nov 15	Exam #2 Biochemistry	
Nov 18-21	Bacterial, Archaeal, and Eukaryotic Cell Structures & Basic Functions	Section 7.1-7.3; the Birth of the Nucleus
Nov 21	5th Article Review Due	
Nov 22	Begin inputting Cemetery Data	
Nov 25-26	Cell Exploration Using Microscope – Write Up Due Dec 3	
Nov 27	Quiz #3 –Cell Structures & Functions (Essays will be given the day prior)	
Nov 28-Dec1	Thanksgiving Break	
Dec 2-4	Cell Systems	Section 7.4 – 7.6
Dec 5-6 & 9-11	Cellular Specialization and Protist Diversity	Section 29.1-29.3
Dec 6	Final day to enter cemetery data	
Dec 12	Quiz#4 – Cell Processes & Specialization	
Dec13 & 16-17	Cemetery Demographics Work Day	
Dec 13	6th Article Review	
Dec 18-20	Work on Cemetery Demographics Lab and Exams	
Dec 21 – Jan 5	Christmas Break – Make sure to finish Cemetery Lab	
Jan 6-8	Cell Signaling	Section 8.2 – 8.3, 47.1p. 510-511; 749-50
Jan 7	Cemetery Demographics Lab Write Up Due	
JAN 10 – END OF 2ND NINE WEEKS AND FIRST SEMESTER		
Jan 9-10; 13-17	Photosynthesis	Section 10.1 -10.4; Plant Wannabees
Jan 21-24	Photosynthesis Lab – Write up Due Jan 31	
Jan 27-28	Literature Review Workday – Select topic & find 5-10 articles on topic	
Jan 29	Quiz #5 on Photosynthesis	
Jan 30-31; Feb 3-7	Cell Respiration	Section 9.2 – 9.8
Feb 10-13	Cell Respiration Lab – Write up Due Feb 19	
Feb 18	Review Cell Energetics	
Feb 19	Exam #3 Cell Energetics Exam	
Feb 20-21 & 24	Literature Review Workday – Outline & Begin Writing Literature Review	
Feb 25-26	Introduction to Plants & Green Algae	Section 30.1 & 30.2; Skim 38.1 – 38.3
Feb 27-28 & Mar 3	Plant Diversity	Section 30.3 - 30.4
Mar 4	Quiz #6: Plant Introduction & Diversity	
Mar 5 – 7	Plant Forms & Functions	Section 36.1 & 36.3; Skim 36.2 & 36.4
Mar 10-13	Water & Sugar Transport in Plant	Section 37.1-37.4

Date	Subject	Readings
Mar 14	Exam #4 Plants	
Mar 17	Workday for Literature Review – Complete Draft	
Mar 18	Last day to make appointment to go over draft	
Mar 18-21	Animal Introduction & Catch up	Section 32.1 & 32.3
Mar 21	Literature Review Due	
MAR 15 – END OF NINE WEEKS		
Mar 25-28	Animal Diversity	Section 32.3 & 32.4; Skim Chapter 33 & 34
Apr 1	Quiz #7: Animal Introduction & Diversity	
Mar 31-Apr 4	Animal Form & Function	Section 41.1 – 41.4
Apr 7-11	Fetal Pig Dissection	
Apr 14	Pillbug Lab Background Research; Make appointment to go over design by April 21	
Apr 15-17 & Apr 21-22	Hormones	Section 47.2 – 47.3
Apr 23-25 & Apr 28 & 29	Electrical Signaling and Nervous System	45.1-45.3, What the Synapse Tells the Neuron
Apr 30 – May 1	Sensory Organs	Section 46.1 – 46.4, 51.3
May 2	Exam #5: Animals	
May 5-9	Conduct Pillbug Lab & Work on Write up	
May 12-13	Workday for Pillbug Lab; make appointment to go over draft; Complete Post Course Survey	
May 14-15	Final Exam; Turn in Pill Bug Lab	
May 16 -23	Underclassmen Report to Class – Relax and Study for Other Exams	
CONGRATULATIONS YOU DID IT! – END OF NINE WEEKS/YEAR		