

Biology Seminar KAP: North Ridgeville High School 2014-15

Biology 115: Energy in Living Systems, Kenyon College

Ms. Katoa

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Welcome to Biology Seminar KAP! This year long course is equivalent to a semester of biology lecture taught at Kenyon College in Gambier, Ohio. 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 are responsible for learning the content and using multiple resources to study often helps in learning difficult concepts.

Biology 115 covers the study of life from the basic biochemical levels to the complex global levels following the theme of energy flow through materials and organisms. During First Semester we will focus on the chemical basis of life, cell structure and function, and cellular energetics. Second Semester will include cellular organization, homeostasis, and biodiversity at the ecological levels. This course is designed to further develop your abilities in understanding biological concepts through reading, writing, and scientific thinking.

In agreement with Kenyon College, KAP Biology expects you to;

- (1) Use a college level text and study materials.
- (2) Read and interpret primary literature.
- (3) Develop critical thinking skills and problem solving skills.
- (4) Develop scientific writing and computing skills.
- (5) Invest time and effort comparable to that of Kenyon College students.
- (6) Discuss scientific ideas and questions in articulate and logical ways.

Textbooks: Biology (S. Mader) & Biological Science (S. Freeman- shared copies)

Preparation for Class:

- 1 **Reading assignments** should be read **BEFORE** class. This will help you more fully understand the lectures. It is recommended that you study the reading and lecture material *everyday* to better prepare you for exams. Re-reading is also strongly advised! You will be given supplemental readings from various sources in addition to the text.
- 2 **Writing Assignments:** The goal for these assignments is that you learn something new and enhance your writing skills. You will gain experience reading scientific articles and reporting on them. You will be writing lab reports and analyzing data.
- 3 **Labs:** There will be a variety of labs completed throughout the year including dissections. Participation is expected in all lab activities. Follow all lab safety procedures.
- 4 **Absences** should be rare in this class. When you are absent use your syllabus as a guide to keep you up to date until you return to school. You are expected to make up work. If an assignment is due the day of your absence it is expected to be turned in the day you return. If you are absent the day of a lab, you will be expected to make it up within a timely manner. There may be times where an alternative lab is given, but you are still responsible for ALL material covered.
- 5 **Class Participation and Discussions:** Come prepared for class, ask questions, and contribute in a positive and meaningful way!
- 6 **Academic Honesty:** I believe in the honor system and I will assume that the work that you turn in will be exclusively yours. Some written work will be submitted through Turn-it-in.com or similar programs. Proper citations, using APA format, must also be used in formal writing assignments and as noted.

Grading:

1. Assignments are **weighted** as follows:

<i>Types of Work</i>	<i>Weight</i>
Labs, Articles, Projects	35%
Classwork/Participation & Discussions	15 %
Tests & Quizzes	50 %

- Expect to have more than one assignment to work on at any given time. In general you will have “larger,” but fewer assignments to turn in for points in a college course. Expect less daily worksheet types of assignments. Some handouts/review guides will be posted on my website but not collected for points. These are designed to help you learn the material and prepare for labs and tests. It is to your advantage to complete these assignments.
- **NO** late work is accepted.
- Some labs will require a lab report. Guidelines will be provided in a separate document.
- Articles include a monthly reading of primary literature with write-up. Guidelines will be provided in a separate document.
- **Tests:**
 - Tests will be over unit topics (sometimes several chapters at a time). **Anyone achieving less than a "C" on a test should meet with me to discuss strategies to improve test scores.** Tests will usually contain a variety of questions commonly formatted as either multiple choice or written response.
 - Quizzes can occur and can be unannounced.
 - There will be a Midterm and a Final Exam (no exemptions)

Kenyon Academic Partnership

Kenyon College liaison: Dr. Kathryn Edwards

For forms and information about KAP see <http://kaphelp.org/>

You will be issued a grade and college credit from Kenyon College. It is your responsibility to request a transcript for this course to be sent to the college/university that you attend. Transcripts cost \$5.00 each.

This is meant to be a **tentative** schedule, we will generally follow this **sequence** of topics and readings. Main chapters or sections are listed for reading, but you will be given other reading assignments as needed. More specific dates will be posted in the classroom or on my website as needed. Labs may change.

First Semester

DATES	SUBJECT	Mader (ch)	Labs/activities
Aug 21-29	<ul style="list-style-type: none"> Introduction to course, scientific process review , reading scientific literature introduction What is Life? & Classification 	1 20	Scientific Method Phylogenetic trees
September	Chemistry of Life, Water, Acids/Bases, Buffers	2	pH buffer lab
	Organic Molecules- Functional Groups, Proteins (including enzymes)	3	Macromolecule testing
	Carbs, Lipids		Enzymes/catalyst lab
Test			
October	History of Cells/Life & membrane structure	19.1 5.1 -5.1	
	Prokaryote Diversity	21.2-21.4	Microscope/viewing slides
	Eukaryote cell structure and function	4	
	Eukaryote cell diversity, Protista Diversity	22	Viewing protists (fixed & live)
Test			
November	Cellular Energy	6	
	Cellular Respiration	8	Respiration lab, modeling
	Photosynthesis	7	Photosynthesis lab modeling
Test			
December & January	Transport across the membrane	5.3-5.4	Diffusion/Osmosis
	Cell Communication Chemical signaling and hormones (plant and animal)	42.1, 27.1-27.2	Cell communication lab
Midterm Exam			

Second Semester

DATES	SUBJECT	CHAPTER	LAB/ACTIVITY
January	Plant Diversity & Cell Specialization	25	Microscope work
	Nutrition & Transport in plants	26	
Test			
February	Cell specialization in animals	33.1	microscope work
	Neurons & Impulses	39.1 – 39.2	Modeling/manipulation
	Nervous systems in Animals	39.3 -39.4	Brain dissection
	Sensory systems	40	Eye dissection
Test			
March	Muscle contraction	41	Muscle dissection
	Metabolism/Digestion	36	
	Circulation	34	Heart dissection, circulation lab
Test			
April	Homeostasis; water/salt balance in animals	38	Dialysis, kidney function
	Rat Dissection		
Test with Practical Exam day after lab completion			
May	Animal Behavior	45	animal observations/behavior lab
	Population & Community Ecology	46 & 47	Population studies, field methods?
	Conservation & Biodiversity	50	
FINAL EXAM			