



## Biology Seminar (KAP)

Biology 115: Energy in Living Systems 2010 - 2011

Ms. Katoa

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Welcome to Biology Seminar! This year long course is equivalent to a semester of biology 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 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 rapidly.

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.

### Preparation for Class:

- 1 **Reading assignments** should be read **BEFORE** class. This will help you more fully understand the lectures. It is strongly recommended that you study the reading and lecture material everyday to better prepare you for exams. 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. Assignments range from homework to research projects. You will be assigned a monthly scientific news article to read and report on. It is suggested that you read these articles *at least twice*, take notes, and look up any vocabulary that is new to you.
- 3 **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.
- 4 **Labs:** Follow all lab safety procedures. You will complete several lab write-ups throughout the year. 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. After school is the best time for any type of make up.
- 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. Proper citations must also be used in formal writing assignments and as noted. I recommend using APA style.

### Grading:

1. Assignments are weighted as follows:

<i>Types of Work</i>	<i>Weight</i>
Classwork, Homework, Labs	40%
Class Participation	10 %
Quizzes/Tests	50 %

2. **Quizzes, Tests, Finals:**
  - 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.**
  - There will be a Midterm and a Final Exam

# Useful Websites

This list is just a start. If any of these sites do not work try Google searching any of the topics that we are studying in class. "College" level content will be more relevant to this course, but if you are struggling with content looking back at other sites may help. Using multiple resources to study often helps in learning difficult concepts. Remember it is up to YOU to get help when you don't understand something!!

Kenyon Website: For the syllabus, transcript request forms, etc.

<http://www.kaphelp.org/>

<http://www.kenyon.edu/departments.xml> (select Biology and then Introductory Labs or topics found under projects)

APA Citations Owl: Purdue Online Writing Lab

<http://owl.english.purdue.edu/owl/section/2/10/>

Study Skills and Learning:

<http://coun.uvic.ca/learning/index.html> (click on blue headings for detailed info)

<http://www.how-to-study.com/>

<http://www.studyqs.net/texred2.htm>

Scientific Journal Articles

<http://highwire.stanford.edu/> (search topics and select free pdf versions of the article)

<http://www.plos.org/> (search or check under different Journals – also free pdf versions available)

Content & video clips – you may need to download additional software to run applications

Text book: [http://highered.mcgraw-hill.com/sites/0072919345/student\\_view0/index.html](http://highered.mcgraw-hill.com/sites/0072919345/student_view0/index.html)

The Visual Dictionary: <http://www.infovisual.info/>

Genome database: <http://www.ebi.ac.uk/2can/genomes/genomes.html>

(select from 4 categories for species information on Bacteria Kingdoms, Protists, and Viruses + other database information)

Binomial classification: <http://www.bio200.buffalo.edu/labs/nomenclature.html>

General biology: <http://www.biology.arizona.edu/>

Cells: <http://www.cellsalive.com/>

Life History: <http://www.ucmp.berkeley.edu/alllife/eukaryotasy.html>

Video Clips: [http://www.goldiesroom.org/video\\_archive.htm](http://www.goldiesroom.org/video_archive.htm) (some info is basic, but still a good review)

Pearson BioCoach activities: [http://www.phschool.com/science/biology\\_place/biocoach/index.html](http://www.phschool.com/science/biology_place/biocoach/index.html)

**Textbooks that will be used:** Biology (Sylvia Mader)

This is meant to be a **tentative** schedule, we will follow this **sequence** but may not always be on the projected date. You will be given other reading assignments as needed. Other due dates will be posted in the classroom or Website. Plan on reading the assigned chapter by the earliest date indicated. Labs may change. Bold/Highlighted dates indicate a projected **test** date as a unit is completed.

DATES	SUBJECT	CHAPTER	Labs/activities
Aug 24-27	Intro to course , Scientific process	1	Scientific Method/Life lab activity
Aug 30-Sep3	Tree of Life, phylogeny	20	?prep plant symbiosis lab
Sept 7- <b>10</b>	Prokaryote Diversity	21.2 -21.4	Microscope/viewing slides
Sept 13-17	Chemistry of Life, water, Acids/Bases, Buffers	2	pH buffer lab
Sept 20-24	Organic Molecules- Functional Groups, Carbs, Lipids	3	Macromolecule testing
Sept 27- <b>Oct 1</b>	Proteins - structure and functions, Enzymes and Catalysts, Nucleic Acids	3	Enzymes/catalyst lab
Oct 4-8	Cell structure and function	4	Viewing cells
Oct 11-14	Cell Transport	5	Diffusion/Osmosis
Oct 18 -22	Cell Junctions, size and complexity	5	
Oct 25-29	Eukaryote cell diversity, Endosymbiotic hypothesis /cell specialization	22	
Nov 1- <b>5</b>	Protist Diversity	22	Viewing protists (fixed & live)
Nov 8-12	Cell Energetics , Metabolic Reactions & ATP	6	
Nov 15-19 22, <b>23*</b>	Cellular Respiration	8	Respiration lab, modeling/manipulatives
Nov 29- Dec 3	Photosynthesis	7	Photosynthesis lab modeling/manipulatives
Dec 6- <b>10</b>	C3 and C4 Plants, Plant transport	7.5, 26	Transpiration lab
Dec 13-17 20-21*	Evolution of Animals, Multicellularity Diversity	29 30*, 31*	(Possible) invertebrate dissections, live animal observations/experiments
Jan 3-7	Animal Diversity	30*, 31*	
<b>Jan 10-13</b>	Complete topics, Review and Midterm Exam		

### Second Semester

DATES	SUBJECT	CHAPTER	LAB/ACTIVITY
Jan 18-21	Cells to Tissues, Body cavities & Organs	33	Histology Lab/microscope work
Jan 24-28	Hormone action and control	42	
Jan 31- Feb <b>4</b>	Circulation	34	Heart dissection, Mudworm circulation
Feb 7-11	Nerves, Resting/action potential, CNS	39	Impulse manipulatives, Brain Dissection
Feb 14- <b>18</b>	Sensory Systems – transmitting info to the brain	40	Eye Dissection
Feb 22-25	Digestion, Homeostasis, water/salt balance	36,38	Dialysis, kidney function
Feb 28-Mar3	Support & Locomotion, muscle contraction	41	Bones/movement lab
Mar 7-11	Overview – Skeleton & Skeletal Muscles	41	Muscle dissection, muscle id
<b>Mar 14-18</b>	Anatomy misc. **OGT week		
Mar 21-25	Rat Dissection **Lab Practical Exam after lab completion		
Mar 28- Apr 1	Animal Behavior	45	Live animal observations/behavior lab
Apr 4-8	Population Ecology & Conservation	46	Population studies
Apr 11- <b>15</b>	Populations: Demography and Growth (human)	46	Data analysis
Apr 18-21	Communities: species interactions	47	Case studies
May 2 -6	Ecosystems: Energy Flow, Biogeochemical Cycles	48	Design an ecosystem
May 9-13	Conservation & Biodiversity	50	
<b>May 16-20</b>	Complete Content, Post Evaluation-Kenyon, Review, FINAL EXAM		