

Biology 115: Energy in Living Systems 2012 -2013

Biology Seminar KAP

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 principles expect 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. Proper citations must also be used in formal writing assignments and as noted. I recommend using APA style. Some written work will be submitted through Turn-it-in.com or similar programs.

Grading:

1. Assignments are weighted as follows:

<i>Types of Work</i>	<i>Weight</i>
Labs, Writing assignments, Projects	40%
Class Participation	10 %
Tests	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 provided 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.

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.
- There will be a Midterm and a Final Exam (no exemptions)

Kenyon College

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** but may not always be on the projected date. Main chapters or sections are listed for reading, but you will be given other reading assignments as needed. Plan on reading the assigned chapter by the earliest date indicated. Other due dates will be posted in the classroom or Website. Labs may change.

DATES	SUBJECT	Mader (ch)	Labs/activities
Aug 28-31	Intro to course, Scientific process , Reading sci. literature/stats overview	1	Scientific Method/Life lab activity
Sept 4-7	What is Life? Classification & Taxonomy	1, 21.1 20	Microscope/viewing slides
Sept 10-14	Prokaryote Diversity	21.2-21.4	Microscope/viewing slides
Test			
Sept 17-21	Chemistry of Life, water, Acids/Bases, Buffers	2	pH buffer lab
Sept 24-28	Organic Molecules- Functional Groups, Carbs, Lipids	3	Macromolecule testing
Oct 1-5	Proteins - Enzymes and Catalysts, Nucleic Acids	3	Enzymes/catalyst lab
Test			
Oct 8-11	Eukaryote cell structure and function (short week) Endosymbiotic hypothesis	4	Microscope/Viewing cells
Oct 10-13	Cell Transport	5.1-5.3	Diffusion/Osmosis
Oct 15-19	Eukaryote cell diversity, Protist Diversity	22	Viewing protists (fixed & live)
Test			
Oct 22-26	Cell Energetics , Metabolic Reactions & ATP	6	
Oct 29- Nov 2	Cellular Respiration	8	Respiration lab, modeling/manipulatives
Nov 5-9	Photosynthesis (short week)	7	Photosynthesis lab
Nov 12-16	Photosynthesis continued, C3 and C4 Plants	7	modeling/manipulatives
Test			
Nov 19,20 & Nov 26-30	Cell Junctions, Multicellularity, cell specialization (Cell to Tissue; Plant vs. Animal tissues)	5.4, 33.1, 25.3	microscope work
Dec 3-7	Cell Communication; signaling and hormones	42.1, 27.1-2 39.2	Cell communication lab (yeast)
Dec 10-14	Cell Communication; signaling and hormones con't; Electrical impulses		Impulse manipulatives
Dec 17-21	Cell Communication continued		
Test			
Jan 3- 15	Evolution of Animals, Animal Diversity	29, 30*, 31*	Possible) invertebrate dissections, live animal observations/experiments
Jan 16-17 Midterm Exams			

Second Semester

DATES	SUBJECT	CHAPTER	LAB/ACTIVITY
Jan 22-25	(Animal) Body cavities & Organs	33	
Jan 28-Feb 1	Nervous systems in Animals	39	Brain dissection
Feb 4-8	Sensory systems	40	Eye dissection
Test			
Feb 11-15	Muscle contraction Overview – Skeleton & Skeletal Muscles	41	Muscle dissection, muscle id
Feb 19-22	Metabolism/Digestion	36	
Feb 25-Mar1	Homeostasis, thermoregulation, water/salt balance	38	Dialysis, kidney function
Mar 4-7	Homeostasis, water/salt balance continued		
Mar 11-15	Test on above (date?) OGT week *begin next topic		
Mar 18-22 & 25-28	Circulation Circulation continued	34	Heart dissection, Mudworm circulation
Apr 8-12	Rat Dissection **Lab Practical Exam after lab completion		
Apr 15-19	Animal Behavior	45	animal observations/behavior lab
April 22-26	Population Ecology & Conservation	46	Population studies, field methods?
Apr 29-May 3	Demography and Growth (human)		
May 6 -10	Communities: species interactions	47	Case studies
May 13-17	Ecosystems: Energy Flow, Biogeochemical Cycles	48	Design an ecosystem
May 20-24	Conservation & Biodiversity (test?)	50	
May 28-31	Post Evaluation-Kenyon, Review, FINAL EXAM		