Biology 113 will focus on the study of life from the biochemical and physiological levels, and on cellular processes that are vital to life. Biochemistry of animals and plants, cell biology, anatomy and physiology will be included. Reading and interpreting scientific literature and writing in the correct style of a research scientist will be integrated into the topics and lab reports throughout the course.

Textbooks that will be used:
Biology (Sylvia Mader)
Hole's Essentials of Human Anatomy and Physiology (David Shier, Jackie Butler, Ricki Lewis)
This is meant to be a **tentative** schedule for first semester. We will follow this **sequence** but may not always be on the projected date. The major assignments are in this syllabus. You will be given a few other reading assignments as needed.

- Please read the **pages assigned and introductions** to each chapter. If you have the computer capabilities, take advantage of the CD ROM activities. They are very helpful. If you do not have a computer, you are welcome to use my computer during study halls or before school, to work on Seminar topics.
- Tutorials for both courses are found on the Kenyon Website http://biology.kenyon.edu/courses/biol113/biol113.htm

Biochemistry – The Basis of Life		**Reading**
W 8/29	Intro to course, PD article	PD article
Th 8/30	Discuss 14-15 and PD Article	Mader Ch.2
	Reading: "Athlete's Dilemma" – due 9/6	
	Chapter 2 Testing Yourself p. 33: 1-21	due 8/29
F 8/31	Activity – Scientific Method	
M 9/3	**Labor Day No School**	
T 9/4	Review chemical bonds, buffers, water, pH	
W 9/5	Prep for lab, buffer demo, complete Chapter 2	
Th 9/6	Lab: pH of Biologic Substances – report due 9/9	
F 9/7	Chemistry of Carbon, functional groups	Mader Ch.3
	Carbohydrates □ and □ bonds	
M 9/10	Lipids, phospholipids, saturated/unsaturated	
	Amino acids	
T 9/11	Amino acids, proteins - levels of organization	
W 9/12	Review macromolecules	
Th 9/13	Complete Organics	
F 9/14	Test Chapter 2/3	
Structure and Function of Viruses and Cells		
M 9/17	Eukaryote cell and its organelles	Mader Ch.4
T 9/18	Cytoskeleton and cell surface receptors	

W	9/19	Biological membranes; Transport across membranes	Mader Ch.5
Th	9/20	Complete transport – laser video Assign reading: "Evolution of Disease" – Prep for osmosis lab (due 9/27)	
F	9/21	Lab	
M	9/24	Complete Lab; review	
T	9/25	Prokaryote cell and plasmids	Mader Ch.15
W	9/26	Virus	
Th	9/27	Virions and prions	
F	9/28	Review	
M	10/1	Test: Eukaryote cells, prokaryotes, viruses and prions	
Metabolism and Catabolism			
T	10/2	Energy and Enzymes	Mader Ch.6
W	10/3	Special topics – Article from Kenyon Control of cellular metabolism; ATP and NAD	
Th	10/4	Enzyme demo; prep for Catalase Lab	
F	10/5	Catalase Lab (Report due 10/6)	
M	10/8	Complete lab (also pages.110: 108; 111:10)	
T	10/9	Glycolysis	Mader Ch.8
W	10/10	TCA cycle, electron transport phosphorylation	
Th	10/11	ATP formation, energy yields	
F	**10/12**	**No School NEOEA**	
M	10/15	Alternative metabolic pathways Fates of proteins and lipids	
T	10/16	Review	
W	10/17	Metabolism Test	
Th	10/18	Complete test, Review mitosis & DNA	Mader Ch.9
F	10/19	Review and control of cell cycle	
M	10/22	Histology overview	Hole Ch.5
T	10/23	Histology computer activity	
W	10/24	Histology computer activity	
Support			
Th	10/25	Animal Form and Function; Support; Long Bone	Mader 735-738 Hole Ch.7
F	10/26	Homeostasis of bone, vertebrae Lab packets for labeling, due 11/6	
M	10/29	Label parts of skeleton	

T 10/30 Skeleton Lab
W 10/31 Quiz (Long Bone and ossification) Continue Skeleton Lab

Th 11/1 Review skeleton and complete lab
F 11/2 Catch up
M 11/5 Practical/Written
T 11/6 No School – Staff Professional Day
W 11/7 Practical/Written
Th 11/8 Complete lab

Nervous Systems

F 11/9	Nervous systems of animals	Mader 697-701 M
11/12	Film: Brain Transplant	Hole Ch.9
T 11/13	Nerve tissue	
W 11/14	Reflex arc and meninges	
Th 11/15	Spinal cord and Brain	
F 11/16	Brain	
M 11/19	Lab – Brain dissection	
T 11/20	Lab - Brain dissection – report due 11/27	

Happy Thanksgiving ☺

Transport

M 11/26	Transport in animals	Mader 611-616
T 11/27	Layers of the heart, parts of the heart	Hole Ch. 13

W 11/28 Blood supply to the heart, cardiac cycle

Th 11/29 Control of heartbeat; Blood vessels; Complete notes, prep for labs
F 11/30 Sheep Heart

M 12/3 Chapter 7 questions due!!

T 12/4 Blood pressure/pulse lab
W 12/5 Blood pressure/pulse lab (Lab report due: 12/10)
Th 12/6 Review

F 12/7 Test - Transport

M 12/10	Complete Test; Begin respiratory systems	Mader 669-674
T 12/11	Respiratory Systems	Hole Ch.18
W 12/12	Endocrine Systems	
Th 12/13	Endocrine Systems	Hole Ch. 11

Musculature

F 12/14 Review

M 12/17 Test
T 12/18 Structure of muscles, NM junction, Hole Ch. 8
W 12/19 Muscle response, cardiac and smooth
Th 12/20 Origins, insertions, actions – learn **selected** muscles – Make Notecards

F 12/21 Review muscle structure Hole Ch. 8

Happy Holidays! ☺

M 1/7 Muscle contraction, energy sources
T 1/8 Muscle action, fatigue, twitch response
W 1/9 Bookwork; Review muscles
Th 1/10 Muscle test
F 1/11 Complete muscle test

M 11/14 Discuss Plant test: go over multiple choice
T 11/15 Plant Unit Test
W 11/16 Male anatomy – spermatogenesis
Th 11/17 Complete spermatogeneis and crossing over
F 11/18 Complete male anatomy

Biology 114 will focus on the study of development (using the human and chick as examples), mechanisms of inheritance, advanced topics in genetics, biotechnology and bioethics. Reading and interpreting scientific literature, correct writing style, and a bioethical presentation will be integrated into this course.
Textbook: Human Genetics, Ricki Lewis, 6th Edition
There will be more articles than those that are listed.
This is meant to be a **tentative** schedule for second semester. We will follow this **sequence** but may not always be on the projected date. The major assignments are in this syllabus. You will be given a few other reading assignments as needed.

- Please read the **pages assigned and introductions** to each chapter. If you have the computer capabilities, take advantage of the online activities. .
- Tutorials for both courses are found on the Kenyon Website
- Website for your genetics book: http://highered.mcgraw-hill.com/sites/0072846054

Username: **apstudent** Password: **mcgraw**

T 1/22 Male anatomy/spermatogenesis
W 1/23 Complete spermatogenesis and crossing over
Th 1/24 Male hormone cycles
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M 1/28 Review male hormone cycles; begin female anatomy
T 1/29 Spermatogenesis quiz; Oogenesis & crossing over

		Bookwork
W	1/30	Ovarian cycle & hormones of the ovarian cycle
Th	1/31	Complete female; uterine, ovarian and hormone cycles Bookwork
F	2/1	Lactation Article: Breast Milk
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M	2/4	Pass out Genetics book & review of male and female
T	2/5	Test chapter 19: male and female
W	2/6	Go over test; Chapter 20 notes; fertilization and blastocyst formation
Th	2/7	Implantation and membrane formation
F	2/8	Gastrulation and Neurulation
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M	2/11	Prep for quiz 1; complete neurulation
T	2/12	Quiz 1; Mesoderm notes and prep for embryo lab
W	2/13	Complete mesoderm notes
Th	2/14	Complete embryo notes; prep for quiz 2
F	2/15	Quiz 2: Prep for Embryo Lab
T	2/19	Lab
W	2/20	Lab
Th	2/21	Media center – embryo research
F	2/22	Media center
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M	2/25	Media Center
T	2/26	Embryo Test
W	2/27	Chapter 1: Introduction to Genetics
Th	2/28	Inborn errors of metabolism and genetic applications
F	2/29	Complete chapter 1; bookwork
M	3/3	Genetic testing and gene therapy
T	3/4	Chapter 2: Chemical level of inheritance
W	3/5	Cell to cell interaction and faulty ion channels
Th	3/6	Cell cycle and apoptosis
F	3/7	Complete cell cycle; Stem cells
March 10-14		**OGT WEEK**
M	3/10	Review Chapter 1 & 2; bookwork
T	3/11	Test chapters 1 & 2
W	3/12	Test chapters 1 & 2
Th	3/13	Chapter 4 Mendel and probability, terms and monohybrid crosses
F	3/14	Dihybrid crosses and pedigrees
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M	3/17	Pedigrees
T	3/18	Complete pedigrees; class group activity
W	3/19	Chapter 5: Exceptions to Mendel's Laws
Th	3/20	Maternal inheritance and linkage
F	3/21	Complete Chapter 5
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SPRING BREAK MARCH 21-28

M	3/31	Chapter 6: Matters of sex, sexual development and phenotype forms
T	4/1	X-Linkage; Article: "Why the Y"
W	4/2	X-inactivation; sex influenced traits, genomic imprinting

Th	4/3	Complete Chapter 6; bookwork
F	4/5	Review Chapters 4, 5, & 6
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M	4/7	Catch up
T	4/8	Test Chapters 4, 5, & 6
W	4/9	Chapter 9: DNA structure
Th	4/10	DNA continued
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M	3/14	Complete DNA and RNA
T	4/15	Chapter 10: Gene action and transcription
W	4/16	Translation and protein folding
Th	4/17	RNA processing
F	4/18	Importance of Introns Research Article (Oxygen Saturation)
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M	4/21	Chapter 11: Control of gene expression
T	4/22	Control of gene expression
W	4/23	Complete Chapter 11; Discuss group bioethical project
Th	4/24	Library research for group project
F	4/25	Chapter 12 chromosome structure and mutation
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M	4/28	Catch up
T	4/29	Complete mutations
W	4/30	Review 9-12
Th	5/1	Test 9-12
F	5/2	Group project; media center

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5/5 – Until the end of the year:

Population Genetics
Biotechnology
Genetically modified organisms
Gene therapy
Biotech labs and procedures (Transformation and Electrophoresis)

Group Bioethical projects and Final Exam

Farewell to our beloved seniors! Good luck to future seniors! ☺