

**Mr. Steven Wilkie**  
[stevenjw@leeschools.net](mailto:stevenjw@leeschools.net)  
239-561-0060 ext. 332

**Wilkie's AP Bio Sharepoint Site**

**Course Overview:** The reengineered AP Biology curriculum increases the depth of knowledge students need to know about four big ideas: **1-The process of evolution drives the diversity and unity of life. 2-Biological systems utilize free energy and molecular building blocks to grow, to reproduce and to maintain dynamic homeostasis. 3-Living systems store, retrieve, transmit and respond to information essential to life processes. 4-Biological systems interact, and these systems and their interactions possess complex properties.** These concepts require the students to build on prior knowledge obtained in earlier coursework (9<sup>th</sup> grade biology and chemistry) and focuses the learning environment around inquiry based science. It is the goal that by the end of the course the students understand the independence of these big ideas and how they are applicable to society today. This course is **an entry level college biology course** and my expectations reflect that. Students will be expected to be working at home on a daily basis in order to build up their background knowledge or reflect on their learning prior to formal assessments.

**Supplies:** All students will need to have the following supplies by the second week of class:

- Binder with 4 tab dividers and a healthy supply of notebook paper**
- Pencils, colored pencils, ruler, calculator, 3x5 index cards.**

**Textbook/Reading:** Students will be provided with a copy of Campbell/Reece's Biology 9<sup>th</sup> Edition. This book is the most commonly assigned book in **an entry level college biology course** around the country. As an aide to your comprehension while reading this book I have created a book of directed reading notes that will be provided to you in the second week of class. Although I do not grade these notes, and I cannot make you read the textbook, doing both will greatly increase your chances of attaining the goals you set forth for yourself.

In addition to the textbook articles will be periodically assigned that relate to the big ideas and can illustrate real world applications of biological principles. Excerpts from books will be provided on occasion, most notably "The Beak of the Finch" By Jonathan Weiner. These books, once again, show applications of biological concepts being discussed in class. **This class is designed as a "flipped classroom" which means much of the reading will be done at home while inquiry and lab experiences will be conducted and analyzed in the classroom. Your success is based on your work ethic at home. If you struggle with the reading after-school tutoring sessions are available and are encouraged.**

**Assessments:** You will be assessed regularly in this course. This will include weekly quizzes, short and free response questions (obtained from previously released AP Exam questions and graded according to AP rubrics), unit multiple choice tests, and sample AP Exams. The official AP Biology exam is scheduled for **Monday May 11<sup>th</sup> 2015 at 8 a.m.** The format of the exam is as follows: Section 1-63 multiple choice questions and 6 grid in (these are mathematical computation questions) taken over 90 minutes. Section 2-2 free response questions and 6 short response question taken over 90 minutes. The AP exam has been redesigned to test critical thinking and data analysis skills. Common verbiage in the questions include: **analyze, justify, predict, calculate, extrapolate, discuss, explain, graph.** The goal of this course is to prepare all students to take and succeed on this exam, however, by preparing for and sitting this exam you will be better prepared for future college science classes even if you do not obtain a passing score of 3 or higher.

**A final exam that will mirror the expectations of the exam will be given on a Saturday in late April or Early May. This exam is your final grade for the year and will provide important data about your areas of strength and weakness that will help you hone your knowledge as the exam approaches.**

**Grading Scale:** The following grading scale will be applied on a quarter by quarter basis:

- 30% Multiple Choice Quizzes and Tests**
- 30% Written (short response, free response, research projects)**
- 30% Labs (Pre lab quizzes, lab reports/design, data analysis/presentation etc.)**
- 10% Participation**

Parents are able to check the student's grade through ParentLink, at <http://parentlink.leeschools.net/>. If you need assistance accessing ParentLink, please contact the school. While checking your child's success, a few tips:

- Z = A missing assignment (never turned in)
- X = An assignment that does not have to be made up or is waiting to be graded
- 0 = An assignment with a score of zero

**Late Work:** Late work is detrimental to any student's grade and is not encouraged. Late work will not be accepted unless prior arrangements have been made with me. This may require additional work.

**Academic Integrity:** Any student who is caught copying another student's work or plagiarizing other authors' works (this includes cutting and pasting from the internet) will receive an automatic zero on the assignment in question and will result in a discipline referral and parental contact.

**Labs:** This class is a lab intensive subject, and you are expected to be present during all class periods. Labs are both teacher facilitated (here is the lab follow the directions) and student designed (inquiry based). These labs involve data collection opportunities, and require students to stay organized as we collect data from several different experiments in one class period over long periods of time. Students will be responsible for experimental analysis in both a group setting and independently. All labs are due on the day determined by the course schedule (see technology below). These represent a large percentage of the student's grade and should be taken seriously.

**Technology:** I have a school website that is routinely updated. If you are absent and wish to find out what you have missed or if you lose an assignment, this is the best place to go and look for it. A unit calendar will be posted that outlines the due dates for homework and assignments **pay attention to these dates** (see late work policy above).  
<http://schoolsites.leeschools.net/sfm/stevenjw/SitePages/Home.aspx>

**Final Words:** I teach AP Biology because of my love of science, I bring passion to the classroom and attempt to instill a firm understanding and a sense of importance as to why understanding good science is important. The AP Biology curriculum has been extensively rewritten and rebuilt to reflect the changing challenges and demands of a college course. This is the first year of implementation of this new program, and I have attended extensive training on the new changes, however, anytime you implement a course of this scope for the first time, there will be hiccups and hurdles as we learn what works and what does not. I have an open door policy in my classroom, if you find that something is causing you distress or is not working for you and the majority of your classmates we can make changes. This year will be a learning process for both of us (for you content, for me the best way to implement the new requirements) that will require patience on both our parts. In no way will my expectations change. If you are struggling with any aspect of the course come and see me prior to dropping the class. Often we can work out a tutoring schedule or make arrangements to increase your comprehension and understanding of the course.

### AP Biology Quarter 1 Schedule

#### Summer Assignments-A Review of the four themes of AP Biology

Refer to the AP Biology sharepoint site for a complete description of the summer assignment.

#### Mini Unit-Emergent Properties

*4 class periods*

**Background Readings:** Campbell Chapter 1.1, Chapter 2.3, Chapter 3

**Crash Course Video:**

**Vocabulary:** Emergent properties, Valance electrons, electronegativity, Nonpolar covalent bond, Polar covalent bond, Ionic bond, Cation, Anion, Hydrogen bond, Van der Waals interactions, Polar molecule, Cohesion, Adhesion, Surface tension, Specific heat, Evaporative cooling, Solute, Solvent, Aqueous solution, Hydration Shell, Hydrophilic, Hydrophobic,

**Ungraded practice-**AP Biology Diagnostic Test, Free Response-Themes of AP Biology

**Participation-**Emergent properties of ionic, covalent and hydrogen bonds data collection, transpiration lab data collection, Free response grading

**Graded-MC Test-**Emergent properties of the water molecule

**Graded-Short Response/Free Response-**Transpiration, Properties of Water, Themes of AP Biology

**Graded-Data Analysis-**Rate of Transpiration

**Graded-Lab Conclusion-**Abiotic Factors influencing transpiration

**Lab Investigation and Presentation-**Emergent properties of ionic, covalent and hydrogen bonds

#### Unit #1-Biochemistry

*5 class periods*

**Background Reading-**Did Life Begin in Ice (article), Campbell Chapter 4-5.

**Crash Course Video-**Carbon is a tramp, Biological molecules: You are what you eat

**Vocabulary:** Organic chemistry, hydrocarbons, Isomers, Functional groups, Polymer, Monomer, Enzymes, Dehydration reaction, Hydrolysis, Carbohydrate, Monosaccharide, disaccharide, polysaccharide, glycosidic linkage, Starch, Glycogen, Cellulose, Lipids, Saturated fatty acid, unsaturated fatty acid, phospholipids, Steroids, Cholesterol, Catalysts, Polypeptides, Protein, Amino Acid, Peptide Bond, Primary structure, Secondary structure, Tertiary structure, Quaternary structure, Nucleic Acid, DNA, Nucleotides, Deoxyribose, Ribose

**Ungraded practice**-The Carbon Atom, Functional Groups, Dehydration Reactions and Hydrolysis, Carbohydrates, Lipids, Proteins, nucleic acids, Biogeochemical Cycles.

**Participation**-Article Discussion, Functional group /macromolecule/biogeochemical cycle poster, Free response grading

**Graded-MC Test**-Biochemistry and Biogeochemical Cycles

**Graded-Short Response/Free Response**-Properties of the carbon atom, structure and function of macromolecules, four levels of protein structure, nitrogen cycle, Themes of AP Biology

### **Unit #3-Cells and Cell Transport**

#### **6 class periods**

**Background Reading**-Campbell Chapter 6, Chapter 7, Chapter 42 (pages 884-886), Chapter 44 (pages 934-936).

**Crash Course Video**-Eukaryopolis, Plant cells, In da club

**Vocabulary:** Organelles, Cell fractionation, Cytosol/Cytoplasm, Eukaryotic cell, Prokaryotic cell, Plasma membrane, Nucleus, Ribosomes, Endomembrane system, Rough ER, Smooth ER, Transport vesicles, glycoproteins, Golgi apparatus, Lysosome, Cell wall, Fluid mosaic model, Integral proteins, glycolipid, Transport proteins, Diffusion, Concentration gradient, Passive transport, Active transport, Osmosis, Isotonic, Hypertonic, Hypotonic, Osmoregulation, Facilitated diffusion, Active transport, Sodium potassium pump, Membrane potential, Electrochemical gradient, Proton pump, Cotransport, Endocytosis, Exocytosis.

**Ungraded practice**-Prokaryote, eukaryote cells and endosymbiosis, plant and animal cells, cell membrane and cell wall structure and function, passive and active transport, Diffusion and osmosis in organisms (counter current exchange, human kidney)

**Participation**-Why are cells so small data collection, Diffusion and osmosis data collection, Free Response Grading

**Graded-MC Test**-Parts of the Cell, Cell Transport and the Human Osmoregulatory System

**Graded-Short Response/Free Response**-Organelle structure and function (endomembrane system), Limitations on cell size, Phospholipids/proteins and cell membrane function, Experimental observations to determine internal cellular molarity, Cell Transport counter current exchange and the human kidney, Themes of AP Biology

**Graded-Data Analysis/conclusion**-% change in mass/potato osmosis

**Graded-Lab Design and Presentation**-Determining the molarity of an unknown solution.

### **Unit #4-Metabolism, Food Chains and Energy Transfer**

#### **6 class periods**

**Background Reading**-Campbell Chapter 5.4, Chapter 8, Chapter 54.3

**Crash Course Video**-ATP and Respiration, Ecology

**Vocabulary:** Catalyst, Protein, Primary structure, secondary structure, tertiary structure, quaternary structure, Denaturation, Metabolism, Anabolic pathway, Catabolic pathway, Free energy, Exergonic reaction, Endergonic reaction, Energy coupling, ATP Activation Energy, Substrate, Enzyme substrate complex, Active site, Induced fit, Cofactors, Coenzyme, Competitive inhibition, Noncompetitive inhibition, Allosteric regulation, Feedback Inhibition.

**Ungraded practice**-Protein structure, Metabolic pathways, Delta G/Exergonic and Endergonic reactions, ATP structure and function, Enzyme Function/inhibition/rate of reaction, Ecological energy transfer.

**Participation**-Paperase activity, Environmental impacts on enzyme (catalase) function, Free response Grading

**Graded-MC Test**-Metabolism, Food Chains and Energy Transfer

**Graded-Short Response/Free Response**-Enzyme structure/function/environmental factors, ATP structure and function, Enzyme Reactions Rates, Food Chain Energy Transfer, Themes of AP Biology

**Graded-Data Analysis**-Catalase rate of reaction

**Graded-Lab Design and Presentation**-Peroxidase activity lab

**END OF 1<sup>ST</sup> QUARTER**