KAP Biology
Syllabus 2016-17
Instructor: Justin Seibert
Ridgewood High School

Originally developed by Justin L Seibert - Jun 17 2012 (adapted from Goodman-Brown, Maringer, McCain, Edwards, South, Roth, Gillen) edited 8/19/16

Prerequisites - as set forth by Kenyon College (KEN) and Ridgewood High School/Justin Seibert (RDG)**:**

Completion of Honors Physical Science (9th grade) -RDG
Completion of Honors Biology* (10th grade) –RDG
Completion of Chemistry or taking in tandem – KEN

*Students with C+ or lower in Honors Biology and/or C or lower in math or chemistry will be admitted on a conditional basis (KEN)
^Students with C or lower in several courses or a D in Honors Biology will not be admitted. (KEN)

Entry into the KAP program is based on overall academic performance and work ethic. The ultimate decision on entry into the program lies with professor Dr. Kathryn Edwards, KAP coordinator at Kenyon College.

Special Note: Due to the pace of the course, students MUST be enrolled within the first two weeks of class and MAY NOT enroll during any other time during the year.

Course Description:

KAP Biology is an entry-level college course offered to high school juniors and/or seniors. During the yearlong course, students will earn both high school and college credit. The course is adapted from two semester long courses taught at Kenyon College: BIOL115 and BIOL116. The focus for the course will be 1) energy in living systems and 2) information in living systems. The former will help guide the latter. One of the main focuses throughout the course will be the reading and interpretation of primary literature. A college level text (Biological Science 3rd Edition – Freeman), readings, and study material will accompany the course.

Broad topics such as 'energy' will distilled down to more specific components such as glycolysis and the light reactions present in photosynthesis.

The course will focus on discussion as a format for learning in order in increase articulation and logical support of scientific ideas and questions.

Over the course of the year students will develop critical thinking and problem solving skills along with scientific writing and computing skills that will greater prepare them for a career or further education in the sciences.

KAP Biology is a lab science and students will meet once per week for a 'laboratory' period in which inquiry-based, hands-on experimentation will occur.

Ultimately, acquired knowledge will be used to develop an independent study project near the end of the year.

Text:

Freeman S (2008). ***Biological Science.*** *(3rd Edition). Pearson/Cummings, New York, NY ISBN: 0-13-224950-2*

The most recent, 4th edition is acceptable, although the page numbers and chapter readings may differ slightly, the information will be the same.

Additional primary and secondary literature readings will be provided in class by handout

Goals & Objectives:

1st and 2nd 9 Weeks – Energy in Living Systems

1. Understand how energy flows through biological systems
2. Begin to understand some of the basic principles of biology that provide the foundation for future college-level courses
3. Develop critical thinking skills and be able to apply these skills to scientific discussion
4. Develop an understanding of the scientific method focusing on hypothesis testing, experimental design, statistical analysis, and data interpretation

3rd and 4th 9 Weeks – Information in Living Systems

1. Understand how information is generated, transmitted, stored, and maintained in biological systems
2. Examine the mechanisms of heredity, the replication and expression of genetic information, and the function of genes in the process of evolution
3. Understand the mechanisms of evolution and how it has caused organisms to develop morphological differences to adapt to their environment

Attendance:

You are wholly responsible for the material presented in the class. Although attendance cannot and will not directly impact your grade, excessive absences will end up hurting your grade substantially. The course will be fast paced and lab materials may only be available for a short time.

By enrolling in this course, you have made the decision to invest the time, energy and resources necessary to succeed.

Make a point to be in class. Although I'm more than willing to help with any material, it's unlikely that I'll be able to 'go over' all of the material that has been covered in a class with you in a personal one-on-one setting.

I suggest finding a reliable friend that can provide any notes, readings, etc. that you may miss during an absence.

Materials Needed For Class:

- Binder (you'll probably want dividers too)
- Color pencils/markers
- Calculator
- Ruler
- Sharpie (or other permanent marker)
- Composition book
- *Other materials will be needed later in the year. This will be announced when the time arrives

Lab:

Lab will meet every week, on Monday, during enrichment. Lab is mandatory. Arrangements can be made to make up missed labs due to excused absences either before or after school. Unexcused absences (for instance, 'forgetting about lab') cannot be made up. Labs could require extra writing and reading outside of class to be successful. The lab portion of the course will constitute 25% of your 9-week grade.

Exams:

There will be two exams each nine weeks making up a total of 50% of your final grade. The dates of these exams (subject to change – but only by a day or two) are listed in your lecture schedule.

Quizzes:

Quizzes will be short and generally take place weekly. Quizzes may or may not be announced and will cover information from the previous lecture(s) or information from the reading that was assigned from the night before. The quizzes, totaled, will comprise 25% of your final 9-week grade.

Homework:

Homework will be assigned and will occasionally, but not frequently, be graded. This does not mean it is unimportant. Generally homework will come in the way of reading assignments, review questions or other preparatory work for upcoming sections. Oftentimes there will be no 'direct check' that I do to ensure you even have it completed, as is the case in most college-level science courses, but there

could be quizzes or other assignments based on the homework and you'll likely be lost

Independent Study Project:

Part of the KAP Biology requirement is an independent study project in which you design and conduct your own biological experiment and then create a poster based on your findings. The research you choose to do is up to you, but I am happy to provide some suggestions.

Some of our lab periods will be set aside for this project, but some of the work you will need to complete outside of class.

The ultimate goal of the project is to familiarize you with the research process. You will become more comfortable with primary literature, presenting data, and conducting a meaningful study along the way.

More details will be given concerning this project in an upcoming lab period, but start thinking about possible research ideas until then.

Grade:

KAP Biology will be based off of the 'college' grading scale below. As per Kenyon College's grading practices, grades will be rounded up at '0.50.' For instance: 79.49 = C; and 79.50 = B.

A = 89.50 - 100
B = 79.50 - 89.49
C = 69.50 – 79.49
D = 59.50 – 69.49
F – <59.49

Grade Composition (per 9 Weeks)

2 Exams – 50%
7-9 Quizzes – 25%
Lab – 25%

Please do not get discouraged about yours grades early on. This is a college course and if I am teaching it correctly should challenge you as such.