Aurora Central High School Syllabus 2016-17

Course Name	Instructor	Instructor E-mail & Availability
Dr. Amy T. Parlo	Biology	atparlo@aps.k12.co.us
Course Website	**Class Meeting Times & Location:**	**Prerequisites**
www.centralbiology.weebly.com	Room 384	Physics and Chemistry

Course Description

This course introduces the principles and concepts of biology. Emphasis is focused on basic biological chemistry, cell structure and function, metabolism and energy transformation, genetics, evolution, population, body systems, and may include additional related topics. Upon completion of the course, students should be able to demonstrate understanding of life at the molecular and cellular levels. A significant portion of class time is dedicated to laboratory and inquiry based experiences.

Standards

I. Biochemistry
Obtain, evaluate, and communicate information how carbohydrates, lipids and proteins play a role in the structure and function of living organisms.
Cells
Develop a model to illustrate the flow of energy through autotrophs and heterotrophs that includes the relationship between photosynthesis and cellular respiration.

II. Genetics and Evolution
(a)Use a model to provide accounts of how DNA's structure ultimately determines the functions of proteins and predict possible effects on the organism as a result of mutations. (b) Apply concepts of statistics (correlation) and probability to explain why offspring are genetically different from their parents and the mechanisms that lead to variation. (c) Construct an explanation based on scientific evidence for how natural selection leads to adaptation of populations as a result of (1) the potential for population increase, (2) genetic variation and heritability (3) competition for resources and (4) differential survival and reproduction.

III. Human Body Systems and Homeostasis
Plan and Conduct an investigation regarding feedback mechanisms, and analyze and interpret data about how they maintain homeostasis in interacting body systems.

IV. Ecology
(a) Develop a model to illustrate the cycling of matter within an ecosystem and the flow of energy among organisms within an ecosystem. (b) Develop a model to illustrate the flow of energy through autotrophs and heterotrophs that includes the relationship between photosynthesis and cellular respiration. (c) Compare, integrate and evaluate scientific information (claims) to develop possible solutions to reduce impacts of human activities on ecosystems.

V. Science and Engineering Practices (*these will be imbedded throughout the year*)
(a) Asking questions and defining problems (b) Developing and using models (c) Planning and carrying out investigations (d) Analyzing and interpreting data (e) Using mathematical

and computational thinking (f) Constructing explanations and designing solutions (g) engaging in argument from evidence (h) obtaining, evaluating, and communicating information.

Learning Outcomes by Quarter

Quarter 1

1. I can describe the structure and functions of each of the four groups of macromolecules.
2. I can explain why enzymes are important to living things.
3. I can describe the function of the chloroplasts and mitochondria in the cell.
4. I can describe the function of the cell membrane.
5. I can explain how unicellular and multicellular organisms maintain homeostasis.
6. I can describe the role of ATP in cellular activities.
7. I can explain where plants get the energy they need to produce food.
8. I can explain the role of light and pigments in photosynthesis.
9. I can state the overall equation for photosynthesis.
10. I can explain where organisms get the energy they need for life processes.
11. I can define cellular respiration.
12. I can compare photosynthesis and cellular respiration.
13. I can identify how much ATP cellular respiration generates.
14. I can explain how organisms get energy in the absence of oxygen.

Quarter 2

1. I can identify the role of DNA in heredity.
2. I can identify the chemical components and structure of DNA.
3. I can summarize the events of DNA replication.
4. I can contrast RNA and DNA.
5. I can explain the process of transcription.
6. I can summarize the process of translation.
7. I can define mutations and describe the different types of mutations.
8. I can explain how geneticists use the principles of probability to make Punnett squares.
9. I can describe Lamarck's hypothesis of evolution and contrast it with that of Darwin.
10. I can describe Malthus's view of population growth.
11. I can describe the conditions under which natural selection occurs.
12. I can identify the evidence that supports the theory of evolution (fossil record, homologous structures, comparative embryology, molecular evidence, etc.)
13. I can name the 6 kingdoms of life as they are currently identified.
14. I can explain what information fossils can reveal about ancient life.
15. I can identify the divisions of the geologic time scale.
16. I can identify some of the scientific hypotheses about early Earth and the origin of life.

Quarter 3

1. I can describe how the human body is organized.
2. I can explain homeostasis.
3. I can explain how food provides energy.
4. I can identify the essential nutrients your body needs and tell how each is important to the body.
5. I can explain how to plan a balanced diet.
6. I can describe and apply the steps used in scientific methodology.

7. I can effectively communicate results from scientific research.

Quarter 4

Ecology

1. I can describe how producers and consumers obtain energy and nutrients.
2. I can trace the flow of energy through living systems.
3. I can identify the three types of ecological pyramids.
4. I can describe how matter cycles among the living and nonliving parts of an ecosystem.
5. I can describe how water cycles through the biosphere.
6. I can explain why nutrients are important in living systems.
7. I can describe how the availability of nutrients affects the productivity of ecosystems.
8. I can describe how ecosystems recover from a disturbance.
9. I can compare succession after a natural disturbance with succession after a human-caused disturbance.
10. I can describe human activities that can affect the biosphere.
11. I can describe the relationship between resource use and sustainable development.
12. I can describe how human activities affect soil, land, air and water resources.
13. I can define biodiversity and explain its value, identify threats and describe methods to preserve it.
14. I can explain the concept of ecological footprint and sustainability.

Required Supplies

Required Supplies:

- Writing utensils (pens and pencils)
- 1 inch 3 ring binder specific to science class (cannot be used for other classes)
- Loose leaf, lined paper.

Supplemental supplies: (optional but appreciated)

- Tissues (Puffs, Kleenex, etc.)
- Hand Sanitizer (alcohol based- no triclosan!)
- Glue or glue sticks
- Colored pencils and markers

Grading

Students will be graded on a 4 point scale for all assignments

Point	Letter Grade	Explanation
3.0-4.0	A	In addition to the performance score of 3.0, the student demonstrates in depth inferences and applications that extend beyond what was taught.
2.5-2.99	B	There are no major errors or omissions regarding any of the information and/or processes (simple or complex) that were

		explicitly taught. This level is mastery
2.0-2.49	C	There are no major errors or omissions regarding the simpler details and processes, but there are major errors or omissions regarding the more complex ideas and processes.
1.0-1.99	D	With help, the student demonstrates a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.
Below 1.0 or No Evidence	F	Even with help, the student cannot demonstrate understanding of the simple details.

School Policies

REQUESTS FOR HOMEWORK

Students requiring homework assignments due to extended excused absences (three days or more) should initially contact the attendance office. The attendance office will notify teachers and collect assignments from individual teachers. Assignments should be ready for pick up 24 hours after a request has been made. Please call the attendance office to check homework status.

MAKE-UP WORK DURING ABSENCES

Any time a student misses a class for any reason whatsoever, that student will be expected to contact each teacher and complete the make-up work in order to achieve the learning objective. This includes field trips, school activities, suspensions, group sessions, truancies, and the like. Make-up work is required and students who have been absent from class must request make-up work from the teacher no later than the next class meeting. Teachers will determine a reasonable amount of time for make-up work when students are absent, using a two days for every one day absent guideline.

Teachers may provide an "alternative" learning experience for make-up work to any student who requests it upon returning to class. For example, a student may have been absent from a class at which the daily learning objective was achieved by means of a class discussion. At the teacher's sole discretion, students who were absent during that discussion might be assigned a two or three-page written essay due three or four days after the student's return to class as an 'alternative' learning experience for that objective.

Teachers will give academic credit to all make-up work that complies with the above guidelines. The only exception is that teachers have the choice whether or not to give academic credit to the make-up work from an unexcused absence. If the absence was unexcused, the teacher should provide feedback but is not required to give credit for the work.

TARDY POLICY

After three tardies teachers will conference with the student and contact home. After 5 tardies students can be referred to the Learning Center and additional consequences may be assigned.

PASSES

Students who leave the classroom or are excused from class must have a pass with correct validation by the teacher. School officials may send for a student using an authorized Administrative Pass. Students who are without official passes will be subject to disciplinary action. Passes will not be given in the first 10 minutes or last 10 minutes of class.

NON-ACADEMIC TECHNOLOGICAL DEVICES

Aurora Public Schools believes in providing environments that optimize learning and teaching and are safe, secure, and well maintained. As such, all personal electronic devices* shall not be seen nor heard during the school day in academic areas of the building from 7:30 A.M. to 3:45 P.M. *Cell phones, iPods, headphones, portable speakers, MP3s, tablets, cameras, etc. **Aurora Central High School is not responsible for lost, stolen or damaged electronic devices.** This includes electronic devices that are confiscated by staff. Aurora Central High School reserves the right to not investigate lost, stolen or damaged electronic devices.

Classroom Policies

- Restroom passes and hall passes will not be given out within the first and last 10 minutes of class. Please plan your restroom needs accordingly.
- No electronics will be permitted in class. Phones and other electronics MUST be kept in pockets, purses or backpacks for the duration of class. Any phone seen will be held by the teacher until the end of class and parents will be contacted. Repeat offenders will be referred as appropriate.
- No food or drink will be permitted in the science lab.
- Safety is our highest priority in science lab. Misbehavior or horseplay will result in immediate removal from lab and an office referral as appropriate.
- Our classroom is very large. It is imperative that you talk quietly when collaborating to ensure that the noise level is at an appropriate level for learning and engagement.
- You are expected to be respectful of:
  - Self (be your best self everyday!)
  - Others (do not touch others' belongings; bullying and negative comments will not be tolerated!)
  - School (do not deface books or desks; dispose of trash appropriately)

Tear off and return THIS PAGE only and return to _____(teacher).

I have carefully read the expectations of this course and agree to support the goals and initiatives of the course. I will show up, speak up, stand up and go further than I ever thought possible.

Student name: _____(print)

Grade _____ Period _____

Student Signature: _____

Parent/Guardian Name: _____

Parent/Guardian Signature: _____

Parent/Guardian Phone Number: _____

Parent/Guardian Email: _____