

**School:** Crook County High School  
**Course Title:** Biology A

**Instructor's Name:** Mrs. Mumm  
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**Semester:** 1

**Course Description:** Biology A is designed to instruct students on the basics of life science as a discipline and to introduce the student to various aspects of biology. The course will cover the following topics: biomolecules, living requirements, cells, organelles, cell energy and division, cell transport, DNA, and intro to genetics.

**Learning Standards** (Critical Content Power Standards)

At the end of the course, the student will be able to understand:

- What factors determine if something is living or non-living.
- Explain the four biomolecules.
- Describe the two types of cells.
- Be able to identify the different organelles inside a cell and summarize their functions.
- Describe the functions of photosynthesis and cellular respiration, and explain how they impact human survival.
- Identify the difference between Mitosis and Meiosis.
- Use Mendelian genetics to determine possible outcomes of parental crosses.

### Disciplinary Core Ideas

#### LS1.A: Structure and Function

- Systems of specialized cells within organisms help them perform the essential functions of life. (HS-LS1-1)
- All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins, which carry out most of the work of cells. (HS-LS1-1) (*Note: This Disciplinary Core Idea is also addressed by HS-LS3-1.*)
- Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level. (HS-LS1-2)
- Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system. (HS-LS1-3)

### **LS1.B: Growth and Development of Organisms**

- In multicellular organisms individual cells grow and then divide via a process called mitosis, thereby allowing the organism to grow. The organism begins as a single cell (fertilized egg) that divides successively to produce many cells, with each parent cell passing identical genetic material (two variants of each chromosome pair) to both daughter cells. Cellular division and differentiation produce and maintain a complex organism, composed of systems of tissues and organs that work together to meet the needs of the whole organism. (HS-LS1-4)

### **LS1.C: Organization for Matter and Energy Flow in Organisms**

- The process of photosynthesis converts light energy to stored chemical energy by converting carbon dioxide plus water into sugars plus released oxygen. (HS-LS1-5)
- The sugar molecules thus formed contain carbon, hydrogen, and oxygen: their hydrocarbon backbones are used to make amino acids and other carbon-based molecules that can be assembled into larger molecules (such as proteins or DNA), used for example to form new cells. (HS-LS1-6)
- As matter and energy flow through different organizational levels of living systems, chemical elements are recombined in different ways to form different products. (HS-LS1-6),(HS-LS1-7)
- As a result of these chemical reactions, energy is transferred from one system of interacting molecules to another. Cellular respiration is a chemical process in which the bonds of food molecules and oxygen molecules are broken and new compounds are formed that can transport energy to muscles. Cellular respiration also releases the energy needed to maintain body temperature despite ongoing energy transfer to the surrounding environment. (HS-LS1-7)

### **LS2.B: Cycles of Matter and Energy Transfer in Ecosystems**

- Photosynthesis and cellular respiration (including anaerobic processes) provide most of the energy for life processes. (HS-LS2-3)
- Plants or algae form the lowest level of the food web. At each link upward in a food web, only a small fraction of the matter consumed at the lower level is transferred upward, to produce growth and release energy in cellular respiration at the higher level. Given this inefficiency, there are generally fewer organisms at higher levels of a food web. Some matter reacts to release energy for life functions, some matter is stored in newly made structures, and much is discarded. The chemical elements that make up the molecules of organisms pass through food webs and into and out of the atmosphere and soil, and they are combined and recombined in different ways. At each link in an ecosystem, matter and energy are conserved. (HS-LS2-4)
- Photosynthesis and cellular respiration are important components of the carbon cycle, in which carbon is exchanged among the biosphere, atmosphere, oceans, and geosphere through chemical, physical, geological, and biological processes. (HS-LS2-5)

### **Materials:**

**Texts:** Online Text book: Discover Education. Will be available on the Google Chromes

**Film, Videos/ Other Electronic Media:** Periodic educational films will be shown along with PowerPoint Presentations and video feeds from the internet.

**Student Notebook** - Since taking notes is a required part of this class, all students are required to have a student notebook. And will be using AVID Binders or Interactive Notebooks depending on which teacher you have.

### **Notification of the Right to Object to the Use of Materials**

Any resident of the district may raise objection to instructional materials used in the district's educational program despite the fact that the individuals selecting such materials were duly qualified to make the selection and followed the proper procedure and observed the criteria for selecting such material.

The first step in expressing objection is consultation with the classroom teacher or library staff and providing a brief written complaint. The staff member receiving a complaint regarding instructional materials shall try to resolve the issue informally through the discussion of the original assignment or the opportunity for an alternative assignment.

If not satisfied with the initial explanation or an alternative assignment, the person raising the questions will meet with a building administrator who, if unable to resolve the complaint, will provide a Request for Reconsideration form which will be given to the superintendent for action.

### **Goals:**

By the end of the semester 100% of students will meet or exceed subject level learning standards in science as measured by a score of 70% or better on the final exam.

### **Citizenship (Behavior Expectations)**

**Attendance** - Attendance is crucial to the understanding of the critical content. Those students who do not regularly attend usually struggle with the class content. If absences are unavoidable, please contact the teacher to arrange alternate assignments and learning opportunities.

#### **Participation**

- take part in classroom discussion
- complete all assignments, projects, presentations
- take notes when given
- participate in all openers

#### **Behavior**

- Follow all rules and procedures
- Be in your seat when the bell rings
- Do not interfere with the education of others

- Do not line up at the door before the bell rings
- Do not leave the classroom without a pass
- Do not use a cell phone or similar device in classroom during classroom time.
- Do not disrupt the physical environment of the classroom i.e. throwing objects, writing on furniture, damaging items in the classroom, inappropriate use of the physical environment.
- Be reasonable, respectful and responsible

### **Evaluation (grading)**

Grades may be comprised from scores in any of the following:

- Daily Quizzes
- Daily Assignment/Homework
- Lab Work
- Projects
- Presentations
- Quizzes
- Exams

### **Grading Scale**

The grading scale is weighted with a computer program. Not all grades are weighted the same. **90%** of the grade is assessed from assessments. **10%** of the grade comes from the other methods mentioned above. Retakes will be offered for each assessment taken, giving students the chance to show proficiency or mastery of material covered. Students will need to complete an **Assessment Retake Form** PRIOR to retaking any assessments. If the retake form is not turned in student will NOT be allowed to retake the assessment, until the form is received.

A = 90%-100%  
 B = 80%-89%  
 C = 70%-79%  
 D = 60%-69%  
 F = Below 60%

**Makeup Policy** - Assignments are due, at the beginning of class, on the date for which they were assigned. Assignments turned in after the due dates are docked 10% per day they are late. **NO ASSIGNMENTS WILL BE ACCEPTED AFTER THE UNIT EXAM PERTAINING TO THAT MATERIAL.**

**Extra Credit Policy** - Extra credit is generally discouraged but exceptions can be made if there are extenuating circumstances. See the teacher individually.