

# Wyoming Department of Education Required Virtual Education Course Syllabus

## Lincoln County School District # 2

<b>Program Name:</b>	Star Valley Virtual Schoo	<b>Content Area:</b>	SC
<b>Course ID:</b>	SCBIO2050B	<b>Grade Level:</b>	9th - 12th
<b>Course Name:</b>	Biology B	<b># of Credits:</b>	0.5
<b>SCED Code:</b>	03051G0.5011	<b>Curriculum Type:</b>	District Developed

### COURSE DESCRIPTION

*Biology is a course that will provide students with an understanding of the structure, function and classification of unicellular and multicellular organisms and their interrelationships with their environment. The students will enhance their understanding of various concepts by participating in science laboratory activities. Since scientific events have had significant impacts on our cultural heritage, what students learn will enrich their lives and better prepare them to be contributing and thinking citizens.*

### WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD#	<a href="#">BENCHMARK (Standard/Indicator) Use the Standards and Benchmarks as Spreadsheets</a>
HS-LS1-1	Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.
HS-LS3-1	Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.
HS-LS3-2	Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and /or (3) mutations caused by environmental factors.
HS-LS3-3	Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.
HS-LS4-1	Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.
HS-LS4-2	Construct an explanation based on evidence that the process of evolution primarily result s from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.
HS-LS4-3	Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.
HS-LS4-4	Construct an explanation based on evidence for how natural selection leads to adaptation of populations.

HS-LS4-5	Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.
HS-LS4-6	Create and/or use a simulation to evaluate the impacts of human activity on biodiversity.

**SCOPE AND SEQUENCE**

UNIT OUTLINE	STANDARD#	OUTCOMES OBJECTIVES/STUDENT CENTERED GOALS
<b>UNIT 1: DNA and Protein Synthesis</b>	HS-LS1-1 HS-LS3-1 HS-LS3-2	<b>TSWBAT:</b> make a model showing how DNA copies itself during DNA replication. <b>TSWBAT:</b> describe how DNA codes for amino acids and proteins. <b>TSWBAT:</b> make connections between meiosis and protein synthesis and how both processes lead to genetic variation. <b>TSWBAT:</b> build a model showing how the process of transcription leads to the process of translation and ultimately makes up the Central Dogma of Biology.
<b>UNIT 2: Genetics</b>	HS-LS1-1 HS-LS3-1 HS-LS3-2 HS-LS3-3	<b>TSWBAT:</b> explain the correlation between the Central Dogma of Biology and how mutations lead to population changes. <b>TSWBAT:</b> complete and predict the possible outcomes of different genetic crosses. <b>TSWBAT:</b> compare Mendelian Genetics to other types of inheritance. <b>TSWBAT:</b> compare and contrast different genetic mutations and the consequences of those mutations by studying genetic disorders.
<b>UNIT 3: Evolution By Means Of Natural Selection</b>	HS-LS-3-3 HS-LS4-1 HS-LS4-2 HS-LS4-3 HS-LS4-4	<b>TSWBAT:</b> look at gene frequencies in different populations and explain the evolutionary pressures leading to those frequencies. <b>TSWBAT:</b> use the fossil record, anatomical homologies, embryology and molecular homologies to link current species to a common ancestor. <b>TSWBAT:</b> apply Darwin's ideas about Genetic Variation, Overpopulation and Competition and Limited Resources to explain how certain genes show fitness and certain genes become less favorable in a population.

<b>UNIT 4: Evolution, Ecology and Human Impact</b>	HS-LS4-2 HS-LS4-5 HS-LS4-6	<b>TSWBAT:</b> model how genetic variation among organism affect survival and reproduction or fitness. <b>TSBWAT:</b> describe how humans will be able to impact genetic diversity and the impacts of specific actions to specific species.
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