

# FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT



## Biology of the Living Earth

<b>Board Approval Date: 6/20/24</b>	<b>Course Length: 2 Semesters</b>
<b>Grading: A-F</b>	<b>Credits: 5 Credits per Semester</b>
<b>Proposed Grade Level(s): 9</b>	<b>Subject Area: Life Science Elective Area (if applicable):</b>
<b>Prerequisite(s):</b>	<b>Corequisite(s):</b>
<b>CTE Sector/Pathway:</b>	
<b>Intent to Pursue 'A-G' College Prep Status: Yes</b>	
<b>A-G Course Identifier: (d) Laboratory Science</b>	
<b>Graduation Requirement: Yes</b>	
<b>Course Intent: Site Specific Program (if applicable):</b>	
<b>The Folsom Cordova Unified School District prohibits discrimination, intimidation, harassment (including sexual harassment) or bullying based on a person's actual or perceived ancestry, color, disability, race or ethnicity, religion, gender, gender identity or gender expression, immigration status, national origin, sex, sexual orientation, or association with a person or group with one or more of these actual or perceived characteristics. For concerns/questions or complaints, contact the Title IX Coordinator(s), Equity Compliance Officer(s) and Section 504 Coordinator(s) :</b>	
<b>Donald Ogden, Associate Superintendent – Human Resources, Title IX Coordinator (Employees) &amp; Equity Compliance Officer dogden@fcusd.org 916-294-9000 Ext 104410</b>	
<b>Jim Huber Ed. D., Assistant Superintendent – Educational Services, Title IX Coordinator (Students), Section 504 Coordinator &amp; Equity Compliance Officer jhuber@fcusd.org 916-294-9000 Ext 104625</b>	

## COURSE DESCRIPTION (Online Course at Innovations Academy):

In this comprehensive course, students investigate the chemistry of living things: the cell, genetics, evolution, the structure and function of living things, and ecology. The program consists of in-depth online lessons, including extensive animations, collaborative explorations, virtual laboratories, and hands-on laboratory experiments students can conduct at home.

## DETAILED UNITS OF INSTRUCTION:

Unit Number/Title	Unit Essential Questions	Examples of Formative Assessments	Examples of Summative Assessment
<b>1. Scientific Method</b>	What is the Scientific Method? What are the steps of the scientific method? How can I apply the scientific method to real life? How do I cite evidence? How do I form conclusions? How do I analyze data?	*Online or paper-based worksheets and practice sets *Quizzes *Threaded discussions *Labs and lab reports *Simulations *Exit tickets	*Unit Test *Essays, research papers, and other writing assignments *Presentations *Project
<b>2. Photosynthesis &amp; Respiration</b>	How do living things acquire energy and matter for life? How do organisms store energy? How are photosynthesis and cellular respiration connected? How do organisms use the raw materials they ingest from the environment? How has the cycling of energy and matter changed over Earth's history?	*Online or paper-based worksheets and practice sets *Quizzes *Threaded discussions *Labs and lab reports *Simulations *Exit tickets	*Unit Test *Essays, research papers, and other writing assignments *Presentations *Project
<b>3. Genetics</b>	How are characteristics of one generation passed to the next? What allows traits to be transmitted from parents to offspring? How does variation affect a population under selective pressures?	*Online or paper-based worksheets and practice sets *Quizzes *Threaded discussions *Labs and lab reports *Simulations *Exit tickets	*Unit Test *Essays, research papers, and other writing assignments *Presentations *Project
<b>4. Evolution</b>	How do layers of rock form and how do they contain fossils? Across the world, why do we see similar	*Online or paper-based worksheets and practice sets *Quizzes *Threaded discussions	*Unit Test *Essays, research papers, and other writing assignments

	fossils, but living organisms that are very different from each other? What evidence shows that different species are related?	*Labs and lab reports *Simulations *Exit tickets	*Presentations *Project
<b>5. Ecology &amp; Ecosystems</b>	What factors affect the size of populations within an ecosystem? What are common threats to remaining natural ecosystems and biodiversity?	*Online or paper-based worksheets and practice sets *Quizzes *Threaded discussions *Labs and lab reports *Simulations *Exit tickets	*Unit Test *Essays, research papers, and other writing assignments *Presentations *Project
<b>6. Impacts on Ecosystems</b>	What affects changes in ecosystems that ultimately affect populations? What are the changes that are happening in the climate and what effects are those having on life? How are human activities impacting Earth's systems and how does that affect life on Earth? What can humans do to mitigate their negative impact on the environment?	*Online or paper-based worksheets and practice sets *Quizzes *Threaded discussions *Labs and lab reports *Simulations *Exit tickets	*Unit Test *Essays, research papers, and other writing assignments *Presentations *Project

**ESSENTIAL STANDARDS:**

HS-LS 1-1: 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. (ELA/Literacy CCSS: RST.11-12.1, WHST.9-12.2, WHST.9-12.9)

HS-LS 1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. (ELA/Literacy CCSS: WHST.9-12.7, WHST.9-12.8)

HS-LS 2-5: Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere and geosphere.

HS-LS 4-1: Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence. (ELA/Literacy CCSS: RST.11-12.1, WHST.9-12.2, WHST.9-12.9, SL.11-12.4 and Math CCSS: MP.2)

HS-LS 4-2: Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for 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. (ELA/Literacy CCSS: RST.11-12.1, WHST.9-12.2, WHST.9-12.9, SL.11-12.4 and Math CCSS: MP.2, MP.4)

HS ESS 2-7: Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth. (ELA/Literacy CCSS: WHST.9.12.1)

HS-ESS 3-5: Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems. (ELA/Literacy CCSS: RST.11-12.1, RST.11-12.2, RST.11-12.7 and Math CCSS: MP.2, HSN-Q.A.1, HSNQ.A.2, HSN-Q.A.3)

## **RELEVANT STANDARDS AND FRAMEWORKS, CONTENT/PROGRAM SPECIFIC STANDARDS:**

### **Link to Common Core Standards (if applicable):**

Educational standards describe what students should know and be able to do in each subject in each grade. In California, the State Board of Education decides on the standards for all students, from kindergarten through high school.

<https://www.cde.ca.gov/be/st/ss/documents/sciencestnd.pdfs/wlstandards.pdfstandards.pdf>

### **Link to Framework (if applicable):**

Curriculum frameworks provide guidance for implementing the content standards adopted by the State Board of Education (SBE). Frameworks are developed by the Instructional Quality Commission, formerly known as the Curriculum Development and Supplemental Materials Commission, which also reviews and recommends textbooks and other instructional materials to be adopted by the SBE.

<https://www.cde.ca.gov/ci/sc/cf/cascienceframework2016.aspchapter18.pdf.pdfpter16.pdfdfework.pdf>

### **Link to Subject Area Content Standards (if applicable):**

Content standards were designed to encourage the highest achievement of every student, by defining the knowledge, concepts, and skills that students should acquire at each grade level.

<https://docs.google.com/spreadsheets/d/117fJ7fmpFnoU8NsM8JNuH98yrE603fms/edit?usp=sharing&oid=104956413096596664509&rtpof=true&sd=true>

### **Link to Program Content Area Standards (if applicable):**

Program Content Area Standards apply to programs such as International Baccalaureate, Advanced Placement, Career and Technical Education, etc.

**TEXTBOOKS AND RESOURCE MATERIALS:**

**Textbooks**

<b>Board Approved</b>	<b>Pilot Completion Date (If applicable)</b>	<b>Textbook Title</b>	<b>Author(s)</b>	<b>Publisher</b>	<b>Edition</b>	<b>Date</b>
<i>Yes</i>		<i>Online Curriculum</i>	K12 Stride	K12 Stride		<i>1/1/2021</i>
<i>Yes</i>		<i>Biology: A Reference Guide</i>	K12 Stride	K12 Stride		<i>1/1/2021</i>