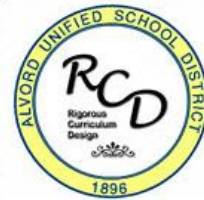




# Rigorous Curriculum Design

## Unit Planning Organizer



<b>Subject:</b>	Biology	<b>Grade:</b>	9-12
<b>Unit Number:</b>	4	<b>Unit Name:</b>	Inheritance and Variation of Traits
<b>Unit Length</b>	Days: 20	Mins / Day:	55
<b>Unit Synopsis</b>	<p>The performance expectations in the topic <b>Inheritance and Variation of Traits</b> help students in pursuing an answer to the question: "How are the characteristics from one generation related to the previous generation?" High school students demonstrate understanding of the relationship of DNA and chromosomes in the processes of cellular division that pass traits from one generation to the next. Students can determine why individuals of the same species vary in how they look, function, and behave. Students can develop conceptual models for the role of DNA in the unity of life on Earth and use statistical models to explain the importance of variation within populations for the survival and evolution of species. Ethical issues related to genetic modification of organisms and the nature of science can be described. Students can explain the mechanisms of genetic inheritance and describe the environmental and genetic causes of gene mutation and the alteration of gene expression. Crosscutting concepts of structure and function, patterns, and cause and effect developed in this topic help students to generalize understanding of inheritance of traits to other applications in science.</p>		

	NGSS	Science and Engineering Practice(s)		
Priority Performance Expectations	<a href="#">NGSS: Inheritance and Variation of Traits</a>	<ul style="list-style-type: none"> <li>○ Ask Questions/Define Problems</li> <li>○ Plan and Carry Out Investigations</li> <li>○ Analyze and Interpret Data</li> <li>○ Develop and Use Models</li> <li>○ Construct Explanations and Design Solutions</li> <li>○ Engage in Argument from Evidence</li> <li>○ Use Mathematics and Computational Thinking</li> <li>○ Obtain, Evaluate, and Communicate Information</li> </ul>		
		<b>Crosscutting Concept(s)</b>		
		<ul style="list-style-type: none"> <li>○ Patterns</li> <li>○ Cause and Effect: Mechanism and Explanation</li> <li>○ Scale, Proportion, and Quantity</li> <li>○ Systems and System Models</li> <li>○ Energy and Matter: Flows, Cycles, and Conservation</li> <li>○ Structure and Function</li> <li>○ Stability and Change</li> </ul>		
or	NGSS	Math CCSS	ELA CCSS	NG ELD Standards

Interdisciplinary Connections				

**Unwrapped Priority Performance Expectations**

PE HS LS1-4	Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.		
Skills	Concepts	Bloom's	DOK* <a href="#">Hess's Matrix</a>
Use	A model	2 (Understand)	2 (Skills & Concepts)
To illustrate	The role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.		

PE 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.		
Skills	Concepts	Bloom's	DOK
Ask	Questions	4 (Analyze)	3 (Strategic Thinking/Reasoning)
To Clarify	Relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.		

PE 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.		
Skills	Concepts	Bloom's	DOK
Make	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.	6 (Create)	4 (Extended Thinking)
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.		


<b>PE HS LS3-3</b>	Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.		
<b>Skills</b>	<b>Concepts</b>	<b>Bloom's</b>	<b>DOK</b>
Apply	Concepts of statistics and probability	3 (Apply)	3 (Strategic Thinking/Reasoning)
Explain	The variation and distribution of expressed traits in a population.		

<b>PE _____</b>			
<b>Skills</b>	<b>Concepts</b>	<b>Bloom's</b>	<b>DOK</b>

<b>PE _____</b>			
<b>Skills</b>	<b>Concepts</b>	<b>Bloom's</b>	<b>DOK</b>

**Learning Progressions**

<b>PE _____</b>					
<b>Previous Course</b>		<b>Current Course</b>		<b>Next Course</b>	
Skills	Concepts	Skills	Concepts	Skills	Concepts

<b>PE _____</b>					
<b>Previous Course</b>		<b>Current Course</b>		<b>Next Course</b>	
Skills	Concepts	Skills	Concepts	Skills	Concepts

<b>PE _____</b>					
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Previous Course		Current Course		Next Course	
Skills	Concepts	Skills	Concepts	Skills	Concepts

PE _____					
Previous Course		Current Course		Next Course	
Skills	Concepts	Skills	Concepts	Skills	Concepts

PE _____					
Previous Course		Current Course		Next Course	
Skills	Concepts	Skills	Concepts	Skills	Concepts

PE _____					
Previous Course		Current Course		Next Course	
Skills	Concepts	Skills	Concepts	Skills	Concepts

Big Idea(s)			Corresponding Essential Question(s)		

Unit Vocabulary Words	
Academic Cross-Curricular Vocabulary (Tier 2)	Content/Domain Specific Vocabulary (Tier 3)

Resources for Vocabulary Development (Strategies, Routines and Activities)
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21 <sup>st</sup> Century Skills	
<input type="checkbox"/> Creativity and Innovation <input type="checkbox"/> Critical Thinking and Problem Solving <input type="checkbox"/> Communication and Collaboration <input type="checkbox"/> Flexibility and Adaptability	<input type="checkbox"/> Initiative and Self-Direction <input type="checkbox"/> Social and Cross-Cultural Skills <input type="checkbox"/> Productivity and Accountability <input type="checkbox"/> Leadership and Responsibility

*Costa & Kallick, 2008*

Unit Assessments	
Pre-Assessment	Post-Assessment
Please see <a href="http://www.alvordschools.org/cfa">www.alvordschools.org/cfa</a> for the most current EADMS CFA ID numbers.	Please see <a href="http://www.alvordschools.org/cfa">www.alvordschools.org/cfa</a> for the most current EADMS CFA ID numbers.

Scoring Guides and Answer Keys	

Engaging Scenario Overview (Situation, challenge, role, audience, product or performance)	
Description:	Suggested Length of Time Days:  Mins/Day:

Engaging Learning Experiences Synopsis of Authentic Performance Tasks		
Authentic Performance Tasks	Description	Suggested Length of Time
Task 1:	Problem Solving:   SEP:	Days:   Mins/Day:

Task 2:	Problem Solving:  SEP:	Days:  Mins/Day:
Task 3:	Problem Solving:  SEP:	Days:  Mins/Day:
Task 4:	Problem Solving:  SEP:	Days:  Mins/Day:

**Authentic Performance Task 1**

Name:				Suggested Length	Days: Mins/Day:
Performance Expectations / Standards Addressed	Priority Standards				
	NGSS			Science and Engineering Practice(s)	
				Crosscutting Concept(s)	
	Supporting Standards				
	NGSS	CCSS Math	CCSS ELA	NG ELD	

Teaching and Learning Progression	Problem Solving:			Bloom's	DOK
	SEP:			Scoring Rubric	
Instructional Strategies					
All Students		SWD	ELs	Enrichment	

**Authentic Performance Task 2**

Name:			Suggested Length	Days: Mins/Day:
Performance Expectations / Standards Addressed	Priority Standards			
	NGSS		Science and Engineering Practice(s)	
			Crosscutting Concept(s)	
Supporting Standards				

	NGSS	CCSS Math	CCSS ELA	NG ELD	
Teaching and Learning Progression	Problem Solving:			Bloom's	DOK
	SEP:			Scoring Rubric	
Instructional Strategies					
All Students		SWD	ELs	Enrichment	

**Authentic Performance Task 3**

Name:			Suggested Length	Days: Mins/Day:
Performance Expectations / Standards Addressed	Priority Standards			
	NGSS	Science and Engineering Practice(s)		
	Crosscutting Concept(s)			



	Supporting Standards			
	NGSS	CCSS Math	CCSS ELA	NG ELD
Teaching and Learning Progression	Problem Solving:		Bloom's	DOK
	SEP:		Scoring Rubric	
Instructional Strategies				
All Students	SWD	ELs	Enrichment	

**Authentic Performance Task 4**

Name:			Suggested Length	Days: Mins/Day:
Performance Expectations / Standards Addressed	Priority Standards			
	NGSS	Science and Engineering Practice(s)		
	Crosscutting Concept(s)			

	Supporting Standards				
	NGSS	CCSS Math	CCSS ELA	NG ELD	
Teaching and Learning Progression	Problem Solving:			Bloom's	DOK
	SEP:			Scoring Rubric	
Instructional Strategies					
All Students	SWD	ELs		Enrichment	

**Engaging Scenario**

Detailed Description (situation, challenge, role, audience, product or performance)

Instructional Strategies			
All Students	SWD	ELs	Enrichment

Feedback to Curriculum Team		
Reflect on the teaching and learning process within this unit of study. What were some successes and challenges that might be helpful when refining this unit of study?		
	Successes	Challenges
Student Perspective		
Teacher Perspective		