

Kūlia Academy

Attachment A: Enrollment Plan

# Enrollment Plan

Grade Level	Number of Students											
	Year 1		Year 2		Year 3		Year 4		Year 5		Capacity	
	2024-2025		2025-2026		2026-2027		2027-2028		2028-2029		2030	
Brick & Mortar/ Blended vs. Virtual	B&M/ Blended	Virtual	B&M/ Blended	Virtual	B&M/ Blended	Virtual	B&M/ Blended	Virtual	B&M/ Blended	Virtual	B&M/ Blended	Virtual
K												
1												
2												
3												
4												
5												
6	100		100		100		100		100		100	
7			100		100		100		100		100	
8					100		100		100		100	
9							100		100		100	
10									100		100	
11											100	
12											100	
<b>Subtotals</b>	100		200		300		400		500		700	
<b>Totals</b>	<b>100</b>		<b>200</b>		<b>300</b>		<b>400</b>		<b>500</b>		<b>700</b>	

**ENROLLMENT IN TARGET AREA SCHOOLS  
BASED ON 2019 STRIVE HI - MASTER DATA FILE**

**Elementary Schools in Target Area**

<b>School</b>	<b>Grade Levels</b>	<b>Enrollmentment</b>
Statewide Elementary Schools		
Puuhale Elem.	PK-5	232
Kalihi Kai Elem.	PK-5	551
Fern Elem.	PK-5	438
Kalihi Waena Elem.	PK-5	467
Linapuni Elem.	PK-1	147
Kapalama Elem.	PK-5	566
Kaewai Elem.	PK-5	315
Kalihi Uka Elem.	PK-5	238
Kalihi Elem.	PK-5	226
<b>TOTAL:</b>		<b>3180</b>

### Middle Schools in Target Area

School	Grade Levels	Enrollment
Statewide Middle Schools		
Kalakaua Middle	6-8	1075
Dole Middle	6-8	784
TOTAL:		1859

### High Schools in Target Area

School	Grade Levels	Enrollment
Statewide High Schools		
Farrington High	9-12	2309

**PRIVATE SCHOOLS IN CLOSE PROXIMITY**

School Name	Grade Levels	Enrollment	
Kamehameha Schools Kapalama Campus	K-12	3,192	<a href="https://www.ksbe.edu/education/kapalama/">https://www.ksbe.edu/education/kapalama/</a>
St John The Baptist Catholic School	PK-8	168	<a href="https://www.greatschools.org/hawaii/honolulu/683-St-John-The-Baptist-Catholic-School/">https://www.greatschools.org/hawaii/honolulu/683-St-John-The-Baptist-Catholic-School/</a>
Christian Academy	PK-12	250	<a href="https://www.greatschools.org/hawaii/honolulu/333-Christian-Academy/">https://www.greatschools.org/hawaii/honolulu/333-Christian-Academy/</a>
Damien Memorial School	6-12	695	<a href="https://www.damien.edu/at-a-glance-15-18">https://www.damien.edu/at-a-glance-15-18</a>
St. Theresa School	K-8	200	<a href="https://www.greatschools.org/hawaii/honolulu/273-St.-Theresa-School/">https://www.greatschools.org/hawaii/honolulu/273-St.-Theresa-School/</a>
<b>TOTAL</b>		<b>4,505</b>	

Source for Public School Data:

<http://arch.k12.hi.us/>

## **Kūlia Academy**

**Attachment B. Listing of DOE complex areas and public and private schools**

### Elementary Schools in Target Area

School	Grade Levels	Enrollment	% Proficient			% of Students			% of Students				
			Math	ELA	Science	EL	FRL	Spec. Ed.	Filipino	Native Hawaiian	Micronesians	Samoan	Other
Statewide Elementary Schools			49	54	58								
Puuahale Elem.	PK-5	232	49	48	39	35	77	10	49.3	14.6	17.8	10.5	7.8
Kalihi Kai Elem.	PK-5	551	52	49	61	46	62	6	68.8	8.1	7.9	5.1	10.1
Fern Elem.	PK-5	438	21	24	27	45	90	7	33.4	8.0	35.0	13.8	9.8
Kalihi Waena Elem.	PK-5	467	43	42	67	30	73	5	51.1	4.3	26.2	12.1	6.3
Linapuni Elem.	PK-1	147	NA	NA	NA	66	NA	6	6.9	1.8	63.2	22.7	5.4
Kapalama Elem.	PK-5	566	51	54	47	19	52	5	61.7	10.4	1.6	3.7	22.6
Kaewai Elem.	PK-5	315	35	41	31	37	98	13	23.7	18.2	28.5	21.2	8.4
Kalihi Uka Elem.	PK-5	238	67	67	91	13	68	7	67.9	9.8	5.5	1.2	15.6
Kalihi Elem.	PK-5	226	19	23	27	50	93	9	28.6	8.9	43.0	5.8	13.7
TOTAL:		3180											100
AVERAGE			42.7	43.8	49.4								100

**Middle Schools in Target Area**

School	Grade Levels	Enrollment	% Proficient			% of Students			Algebra-1 completion rate in 8th Grade	% of Students				
			Math	ELA	Science	EL	FRL	Spec. Ed		Filipino	Native Hawaiian	Micronesian	Samoan	Other
Statewide Middle Schools			38	52	41				24					
Kalakaua Middle	6-8	1075	43	52	39	18	63	7	27	66.2	9.7	10.9	6.4	6.8
Dole Middle	6-8	784	14	26	13	25	85	10	19	35.3	10.5	27.9	16.4	9.9
TOTAL:		1859												100
AVERAGE			30.8	41.0	28.0									100



School	Grade Levels	Enrollment	% Proficient			% of Students			% of Students				
			Math	ELA	Science	EL	FRL	Spec. Ed	Filipino	Native Hawaiian	Micronesian	Samoan	Other
Statewide High Schools			31	59	35								
Farrington High	9-12	2309	21	49	29	18	54	9	59.6	9.5	11.8	9.7	9.4

School	ACT College Readiness Rate	Graduates Pursuing College	Graduates pursuing 4-year college or vocational program	AP math course participation	AP science course participation	Other AP course participation
Statewide High Schools	39	55	32	3	4	11
Farrington High	21	46	14	3	1	5

**PRIVATE SCHOOLS IN CLOSE PROXIMITY**

School Name	Grade Levels	Enrollment	
Kamehameha Schools Kapalama Campus	K-12	3,192	<a href="https://www.ksbe.edu/education/kapalama/">https://www.ksbe.edu/education/kapalama/</a>
St John The Baptist Catholic School	PK-8	168	<a href="https://www.greatschools.org/hawaii/honolulu/683-St-John-The-Baptist-Catholic-School/">https://www.greatschools.org/hawaii/honolulu/683-St-John-The-Baptist-Catholic-School/</a>
Christian Academy	PK-12	250	<a href="https://www.greatschools.org/hawaii/honolulu/333-Christian-Academy/">https://www.greatschools.org/hawaii/honolulu/333-Christian-Academy/</a>
Damien Memorial School	6-12	695	<a href="https://www.damien.edu/at-a-glance-15-18">https://www.damien.edu/at-a-glance-15-18</a>
St. Theresa School	K-8	200	<a href="https://www.greatschools.org/hawaii/honolulu/273-St.-Theresa-School/">https://www.greatschools.org/hawaii/honolulu/273-St.-Theresa-School/</a>
TOTAL		4,505	

Source for Public School Data:

<http://arch.k12.hi.us/>

# **Kūlia Academy**

## Attachment C. Curriculum Overview

Kūlia Academy will ensure that all students are provided with a rigorous, relevant, coherent, inquiry and standards-based college-preparatory STEM curriculum that supports the vision and mission, the academic standards, Hawaii graduation requirements, University of Hawai'i admission requirements and goals of the school. While the curriculum concentrates on a hands-on approach to STEM areas, the school will also provide a solid education in humanities and social sciences to educate the whole child.

One of the cornerstones of Kūlia's academic vision is the understanding that science is a central factor in understanding the world. Science has the power to help students discover interesting and exciting facts about the world and also about themselves. Kūlia curriculum immerses students in the scientific method and encourages them to use computers and the Internet to plan and organize projects, hypothesize, analyze data, and draw conclusions from tests they create. In the process, students become self-reliant, independent problem-solvers.

The math curriculum at Kūlia is based on the CCSS. All students at all grade levels will be engaged in challenging, hands-on math activities that include manipulatives, simulation, real world problems, model manipulation & creation. Most math activities will be multi-leveled and provide students with a variety of skill levels for mathematical thinking and problem-solving. The math program will stress not only procedural skill but also conceptual understanding, to make sure students are learning and absorbing the critical information they need to succeed at higher levels. Having built a strong foundation in earlier grades, students can do hands-on learning in geometry, algebra and probability and statistics.

Language Arts curriculum is literature-based with fluency practice in reading and writing. Conventions of writing are emphasized in daily written homework and assignments. Students will progress through a literature-based and CCSS-based reading and curriculum emphasizing balanced literary practices. Writing serves as an important vehicle for learning, and Kūlia students are given writing assignments frequently to reinforce learning and enhancing understanding.

Social science courses will use inquiry-based and topics involve real-world problems, with a focus on local current events, history and culture. Social studies courses aim to prepare students to identify, understand, and work to solve the challenges facing our diverse nation in an increasingly interdependent world. Education for citizenship should help students acquire and learn to use the skills, knowledge, and attitudes that will prepare them to be competent and responsible citizens throughout their lives. Competent and responsible citizens are informed and thoughtful, participate in their communities, are involved politically, and exhibit moral and civic virtues.

Electives will provide avenues to complement our core curricula towards fulfilling our mission and vision and satisfying the requirements of Hawai'i graduation and University of Hawai'i admission requirement

# Kūlia Academy Computer Science Scope and Sequence Grades 6-12

## Courses addressing the Computer Science Teachers Association (CSTA)'s K-12 Computer Science

**6th Grade:** CS Discoveries by Code.org

**7th Grade:** 1st Semester: Bootstrap Data Science, 2nd Semester: Data Science Projects

**8th Grade:** 1st Semester MIT AI+Ethics for MS and Ready AI, 2nd Semester: Python (Codesters)

**High School CS Course 1:** A whole year Data Science Course with UCLA Data Science

**High School CS Course 2:** A whole year Artificial Intelligence Course with AI4All

**High School CS Course 3:** AP Computer Science Principles

**High School CS Course 4:** AP Computer Science A

### Course Title: CS Discoveries (6th Grade)

**Overview:** CS Discoveries is an introductory full-year computer science course that empowers students to create authentic artifacts and engage with computer science as a medium for creativity, communication, problem solving, and fun.

#### Course Content:

In this course, students will complete a series of mini-projects designed to teach the basic syntax, structure, and process of writing programs in Python. These projects will include data-types, variables, conditionals, loops, lists, functions, algorithms, and debugging. Students create a final project at course completion. Units are broken down by the number of weeks spent on content.

#### Assessment Tools

CS Discoveries introduces students to tools and programming languages that are accessible for beginners while offering more advanced students opportunities to create sophisticated projects. All of the tools are integrated directly into the Code.org website, allowing teachers to have visibility into all student work and progress.

## Unit 1 - Problem Solving and Computing (3 weeks)

The Problem Solving and Computing unit is a highly interactive and collaborative introduction to the field of computer science, as framed within the broader pursuit of solving problems. Through a series of puzzles, challenges, and real world scenarios, students are introduced to a problem solving process that they will return to repeatedly throughout the course. Students then learn how computers input, output, store, and process information to help humans solve problems within the context of apps. The unit concludes with students designing an app that helps solve a problem of their choosing.

### Big Questions

#### Chapter 1 - The Problem Solving Process (1 week)

- What strategies and processes can I use to become a more effective problem solver?

#### Chapter 2 - Computers and Problem Solving (2 weeks)

- How do computers help people to solve problems?
- How do people and computers approach problems differently?
- What does a computer need from people in order to solve problems effectively?

### Major Projects

- **Lesson 8: Project - Propose an App**

To conclude their study of the problem solving process and the input/output/store/process model of a computer, students will propose an app designed to solve a problem of their choosing.

### Student Activities: How is learning demonstrated?

By the end of the unit, students should be able to identify the defined characteristics of a computer and how it is used to solve information problems. They should be able to use a structured problem solving process to address problems and design solutions that use computing technology. The unit also serves to build a collaborative classroom environment where students view computer science as relevant, fun, and empowering.

### Standards Addressed:

**1B-AP-08** - Compare and refine multiple algorithms for the same task and determine which is the most appropriate.

**1B-AP-11** - Decompose (break down) problems into smaller, manageable subproblems to facilitate the program development process.

**1B-AP-16** - Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation and review stages of program development.

**1B-CS-01** - Describe how internal and external parts of computing devices function to form a system.

**1B-CS-02** - Model how computer hardware and software work together as a system to accomplish tasks.

**2-AP-10** - Use flowcharts and/or pseudocode to address complex problems as algorithms.

**2-AP-17** - Systematically test and refine programs using a range of test cases.

**2-IC-20** - Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options.

**2-AP-18** - Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts.

**2-CS-02** - Design projects that combine hardware and software components to collect and exchange data.

**2-AP-15** - Seek and incorporate feedback from team members and users to refine a solution that meets user needs.

## Unit 2 - Web Development (7 weeks)

In Web Development, students are empowered to create and share content on their own web pages. They begin by thinking about the role of the web and how it can be used as a medium for creative expression. As students develop their pages and begin to see themselves as programmers, they are encouraged to think critically about the impact of sharing information online and how to be more critical consumers of content. They are also introduced to problem solving as it relates to programming while they learn valuable skills such as debugging, using resources, and teamwork. At the conclusion of the unit, students will have created a personal website they can publish and share.

### Big Questions

#### Chapter 1 - Creating Web Pages (4 weeks)

- Why do people create websites?
- How can text communicate content and structure on a web page?
- How do I safely and appropriately make use of the content published on the internet?
- What strategies can I use when coding to find and fix issues?

#### Chapter 2 - Multi-Page Websites (3 weeks)

- How can websites be used to address problems in the world?
- What strategies can teams use to work better together?
- How do I know what information can be trusted online?

### Major Projects

- **Lesson 13: Project - Personal Web Page**
- **Lesson 20: Project - Website for a Purpose**

Throughout the unit, students use their developing skills to create a multi-page website, and have several opportunities to share out and engage in peer review at the end of each chapter. These projects emphasize many of the core practices of this course as students will need to tap into their creativity, problem solving skills, and persistence to complete their websites.

### Student Activities: How is learning demonstrated?

By the end of the unit, students should be able to create a digital artifact that uses multiple computer languages to control the structure and style of their content, and view computer science as a tool for personal expression. They should understand that different programming languages allow them to solve different problems, and that these solutions can be generalized across similar problems. Lastly, they should understand their role and responsibilities as both creators and consumers of digital media.

### Standards Addressed:

**1B-AP-11** - Decompose (break down) problems into smaller, manageable subproblems to facilitate the program development process.

**2-AP-17** - Systematically test and refine programs using a range of test cases.

**2-IC-20** - Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options.

**2-AP-15** - Seek and incorporate feedback from team members and users to refine a solution that meets user needs.

**2-AP-18** - Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts.

**2-AP-19** - Document programs in order to make them easier to follow, test, and debug.

**2-IC-22** - Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact.

**2-IC-21** - Discuss issues of bias and accessibility in the design of existing technologies.

**2-IC-23** - Describe tradeoffs between allowing information to be public and keeping information private and secure.

**2-AP-16** - Incorporate existing code, media, and libraries into original programs, and give attribution.

**1B-AP-14** - Observe intellectual property rights and give appropriate attribution when creating or remixing programs.

**1B-AP-16** - Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation and review stages of program development.

**2-AP-13** - Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.

**1B-IC-20** - Seek diverse perspectives for the purpose of improving computational artifacts.

**1B-IC-21** - Use public domain or creative commons media and refrain from copying or using material created by others without permission.

**1B-AP-12** - Modify, remix or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features.

### Unit 3 - Interactive Animations and Games (9 weeks)

In the Interactive Animations and Games unit, students build on their coding experience as they create programmatic images, animations, interactive art, and games. Starting off with simple, primitive shapes and building up to more sophisticated sprite-based games, students become familiar with the programming concepts and the design process computer scientists use daily. They then learn how these simpler constructs can be combined to create more complex programs. In the final project, students develop a personalized, interactive program. Along the way, they practice design, testing, and iteration, as they come to see that failure and debugging are an expected and valuable part of the programming process.

#### Big Questions

##### Chapter 1 - Images and Animations (5 weeks)

- What is a computer program?
- What are the core features of most programming languages?
- How does programming enable creativity and individual expression?
- What practices and strategies will help me as I write programs?

##### Chapter 2 - Building Games (4 weeks)

- How do software developers manage complexity and scale?
- How can programs be organized so that common problems only need to be solved once?
- How can I build on previous solutions to create even more complex behavior?

#### Major Projects

- **Lesson 17: Project - Interactive Card**
- **Lesson 27: Project - Design a Game**

There are two major projects in this unit, which are at the end of each chapter. Both offer students an opportunity to demonstrate what they've learned while leveraging creativity and peer feedback.

#### Student Activities: How is learning demonstrated?

By the end of the unit, students should be able to create an interactive animation or game that includes basic programming concepts such as control structures, variables, user input, and randomness. They should manage this task by working with others to break it down using objects (sprites) and functions. Throughout the process, they should give and respond constructively to peer feedback, and work with their teammates to complete a project. Students should leave this unit viewing themselves as computer programmers, and see programming as a fun and creative form of expression.

#### Standards Addressed:

- 2-IC-21** - Discuss issues of bias and accessibility in the design of existing technologies.
- 2-AP-10** - Use flowcharts and/or pseudocode to address complex problems as algorithms.
- 2-AP-11** - Create clearly named variables that represent different data types and perform operations on their values.
- 2-AP-12** - Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.
- 2-AP-13** - Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.
- 2-AP-14** - Create procedures with parameters to organize code and make it easier to reuse.
- 2-AP-15** - Seek and incorporate feedback from team members and users to refine a solution that meets user needs.
- 2-AP-16** - Incorporate existing code, media, and libraries into original programs, and give attribution.
- 2-AP-17** - Systematically test and refine programs using a range of test cases.
- 2-AP-18** - Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts.
- 2-AP-19** - Document programs in order to make them easier to follow, test, and debug.



## Unit 4 - The Design Process (5 weeks)

The Design Process unit transitions students from thinking about computer science as a tool to solve their own problems towards considering the broader social impacts of computing. Through a series of design challenges, students are asked to consider and understand the needs of others while developing a solution to a problem. The second half of the unit consists of an iterative team project, during which students have the opportunity to identify a need that they care about, prototype solutions both on paper and in App Lab, and test their solutions with real users to get feedback and drive further iteration.

### Big Questions

#### Chapter 1: User Centered Design (2 weeks)

- How do computer scientists identify the needs of their users?
- How can we ensure that a user's needs are met by our designs?
- What processes will best allow us to efficiently create, test, and iterate upon our design?

#### Major Projects

- **Lesson 8: Project - Paper Prototype**
- **Lesson 21: Project - App Presentation**

Students are encouraged to focus on the design process in the two major projects in this unit, which are at the end of each chapter.

### Student Activities: How is learning demonstrated?

By the end of the unit, students should see the design process as a form of problem solving that prioritizes the needs of a user. They should be able to identify user needs and assess how well different designs address them. In particular, they know how to develop paper and digital prototypes, gather and respond to feedback about a prototype, and consider ways different user interfaces do or do not affect the usability of their apps. Students should leave the unit with a basic understanding of other roles in software development, such as product management, marketing, design, and testing, and how to use what they have learned about computer science as a tool for social impact.

#### Standards Addressed:

- 2-CS-01** - Recommend improvements to the design of computing devices, based on an analysis of how users interact with the devices.
- 2-CS-02** - Design projects that combine hardware and software components to collect and exchange data.
- 2-IC-20** - Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options.
- 2-IC-21** - Discuss issues of bias and accessibility in the design of existing technologies.
- 2-IC-22** - Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact.
- 2-AP-10** - Use flowcharts and/or pseudocode to address complex problems as algorithms.
- 2-AP-13** - Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.
- 2-AP-15** - Seek and incorporate feedback from team members and users to refine a solution that meets user needs.
- 2-AP-14** - Create procedures with parameters to organize code and make it easier to reuse.
- 2-AP-16** - Incorporate existing code, media, and libraries into original programs, and give attribution.
- 2-AP-17** - Systematically test and refine programs using a range of test cases.
- 2-AP-18** - Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts.
- 2-AP-19** - Document programs in order to make them easier to follow, test, and debug.
- 2-DA-08** - Collect data using computational tools and transform the data to make it more useful and reliable.
- 2-DA-09** - Refine computational models based on the data they have generated.

## Unit 5 - Data and Society (4 weeks)

The Data and Society unit is about the importance of using data to solve problems and it highlights how computers can help in this process. The first chapter explores different systems used to represent information in a computer and the challenges and tradeoffs posed by using them. In the second chapter, students learn how collections of data are used to solve problems, and how computers help to automate the steps of this process. In the final project, students gather their own data and use it to develop an automated solution to a problem.

### Big Questions

#### Chapter 1: Representing Information (2 weeks)

- Why is representation important in problem solving?
- What features does a representation system need to be useful?
- What is necessary to create usable binary representation systems?
- How can we combine systems together to get more complex information?

#### Major Projects

- **Lesson 8: Project - Create a Representation**
- **Lesson 16: Project - Make a Recommendation**

There are two major projects in this unit, which are at the end of each chapter. Each project asks students to take a different approach to looking data — the first focuses on building a system to represent complex data, and the second focuses on processing data to make a recommendation.

#### Chapter 2: Solving Data Problems (2 weeks)

- How does data help us to solve problems?
- How do computers and humans use data differently?
- What parts of the data problem solving process can be automated?
- What kinds of real world problems do computers solve by using data?

### Student Activities: How is learning demonstrated?

By the end of the unit, students should have a broad understanding of the role of data and data representation in solving information problems. They should be able to explain the necessary components of any data representation scheme, as well as the particulars of binary and the common ways that various types of simple and complex data are represented in binary code. Students should also be able to design and implement a data-based solution to a given problem and determine how the different aspects of this problem solving process could be automated.

Standards Addressed:

- 2-DA-07** - Represent data using multiple encoding schemes.
- 2-DA-08** - Collect data using computational tools and transform the data to make it more useful and reliable.
- 2-NI-05** - Explain how physical and digital security measures protect electronic information.
- 2-NI-06** - Apply multiple methods of encryption to model the secure transmission of information.
- 2-AP-10** - Use flowcharts and/or pseudocode to address complex problems as algorithms.
- 2-AP-13** - Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.
- 2-AP-15** - Seek and incorporate feedback from team members and users to refine a solution that meets user needs.
- 2-AP-18** - Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts.
- 2-IC-20** - Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options.
- 2-IC-22** - Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact.
- 2-IC-23** - Describe tradeoffs between allowing information to be public and keeping information private and secure.

## Unit 6 - Physical Computing (6 weeks)

In the Physical Computing unit, students further develop their programming skills, while exploring more deeply the role of hardware platforms in computing. Harkening back to the Input/Storage/Processing/Output model for a computer, students look towards modern “smart” devices to understand the ways in which non-traditional computing platforms take input and provide output in ways that couldn’t be done with the traditional keyboard, mouse, and monitor.

Using App Lab and Adafruit’s Circuit Playground, students develop programs that utilize the same hardware inputs and outputs that we see in many modern smart devices, and they get to see how a simple rough prototype can lead to a finished product. The unit concludes with a design challenge that asks students to use the Circuit Playground as the basis for an innovation of their own design.

### Big Questions

#### Chapter 1: Programming with Hardware (3 weeks)

- How does software interact with hardware?
- How can computers sense and respond to their environment?
- What kind of information can be communicated with hardware outputs?

#### Major Projects

- **Lesson 9: Project - Make a Game**
- **Lesson 16: Project - Prototype an Innovation**

There are two major projects in this unit, which are at the end of each chapter. Each project is cumulative for the chapter completed, and each takes a different approach to hardware — the first focusing on building a game that uses the inputs and outputs of Circuit Playground and the second focusing on developing and testing an physical prototype of an innovative computing device.

### Student Activities: How is learning demonstrated?

By the end of the unit, students should be able to design and build a physical computing device that integrates hardware inputs and outputs with software. This unit builds on the skills and understandings from the Interactive Animations and Games unit with more sophisticated programming constructs, such as arrays, for-loops, and parameters, as well as deepens students’ understanding of the types of input and output that can be used in computing. Students should leave the unit feeling equipped to use physical computing to solve problems in fun and innovative ways.

#### Standards Addressed:

- 2-IC-20** - Compare tradeoffs associated with computing technologies that affect people’s everyday activities and career options.
- 2-IC-21** - Discuss issues of bias and accessibility in the design of existing technologies.
- 2-AP-10** - Use flowcharts and/or pseudocode to address complex problems as algorithms.
- 2-AP-11** - Create clearly named variables that represent different data types and perform operations on their values.
- 2-AP-12** - Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.
- 2-AP-13** - Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.
- 2-AP-14** - Create procedures with parameters to organize code and make it easier to reuse.
- 2-AP-15** - Seek and incorporate feedback from team members and users to refine a solution that meets user needs.
- 2-AP-16** - Incorporate existing code, media, and libraries into original programs, and give attribution.
- 2-AP-17** - Systematically test and refine programs using a range of test cases.
- 2-AP-18** - Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts.
- 2-AP-19** - Document programs in order to make them easier to follow, test, and debug.
- 2-CS-01** - Recommend improvements to the design of computing devices, based on an analysis of how users interact with the devices.
- 2-CS-02** - Design projects that combine hardware and software components to collect and exchange data.
- 2-CS-03** - Systematically identify and fix problems with computing devices and their components.
- 3A-AP-16** - Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions.

## Course Title: Bootstrap Data Science (7th Grade)

**Overview:** Bootstrap:Data Science is a 54-hour long introductory module that teaches students to view programs as questions we ask of data—for example, What factors make some people live longer than others? Are the schools in one part of your neighborhood better than schools in another? Answering questions such as those above involves collecting and manipulating data, from sports statistics to record sales to census data. Students form their own questions about the world around them, and learn how to write small programs to analyze data critically and carefully to find answers.

### Course Content:

In Bootstrap:Data Science, students form their own questions about the world around them, analyze data using multiple methods, and write a research paper about their findings. The module covers functions, looping and iteration, data visualization, linear regression, and more. Participants learn sound programming practices and statistics, and use bar charts, pie charts, histograms, scatter plots, measures of center, and linear regression to create a research paper on a topic of their choice.

The second semester of the course incorporates data science projects built upon the knowledge gained in the first semester of Bootstrap Data Science.

### Assessment Tools

Activities include identifying the data required for a problem, writing short programs to manipulate tables of data (extracting or combining information), distinguishing different kinds of data (categorical, etc.), creating scatter plots and other graphical displays of data, computing basic statistics on data, and general computing-oriented data practices, such as cleaning data and testing computations on small datasets. The curriculum uses Google Sheets as a data source, so students can access data from many sources, or perform data analysis on surveys they conducted through Google Forms.

### Unit 1 (6 hours)

Students are introduced to the Animals Dataset, and learn about Table, Categorical and Quantitative data. They begin to program as well, and learn about Numbers, Strings, Types, Operations, Contracts, and Function Application.

### Standards Addressed:

- 2-DA-07:** Represent data using multiple encoding schemes.
- 2-DA-08:** Collect data using computational tools and transform the data to make it more useful and reliable.
- 2-AP-11:** Create clearly named variables that represent different data types and perform operations on their values.
- 3A-DA-11:** Create interactive data visualizations using software tools to help others better understand real-world phenomena.
- 3A-AP-18:** Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.
- 3B-NI-05:** Use data analysis tools and techniques to identify patterns in data representing complex systems.

### Unit 2 (6 hours)

Students continue to explore the Animals Dataset, and consider the kinds of questions that can be asked about a dataset. They also learn to define values, and to define functions using a structured

### Standards Addressed:

- 2-DA-07:** Represent data using multiple encoding schemes.
- 2-DA-08:** Collect data using computational tools and transform the data to make it more useful and reliable.
- 2-DA-09:** Refine computational models based on the data they have generated.
- 2-AP-11:** Create clearly named variables that represent different data types and perform operations on their values.

<p>approach to problem solving called the "Design Recipe". They then use these functions to filter the animals dataset, using methods.</p>	<p><b>2-AP-13:</b> Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs  <b>2-AP-14:</b> Create procedures with parameters to organize code and make it easier to reuse.  <b>2-AP-17:</b> Systematically test and refine programs using a range of test cases.  <b>2-AP-19:</b> Document programs in order to make them easier to follow, test, and debug.  <b>3A-DA-11:</b> Create interactive data visualizations using software tools to help others better understand real-world phenomena.  <b>3A-AP-17:</b> Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.  <b>3A-AP-18:</b> Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.  <b>3B-NI-05:</b> Use data analysis tools and techniques to identify patterns in data representing complex systems.  <b>3B-NI-07:</b> Evaluate the ability of models and simulations to test and support the refinement of hypotheses.  <b>3B-AP-14:</b> Construct solutions to problems using student-created components, such as procedures, modules and/or objects.  <b>3B-AP-21:</b> Develop and use a series of test cases to verify that a program performs according to its design specifications.  <b>3B-AP-22:</b> Modify an existing program to add additional functionality and discuss intended and unintended implications (e.g., breaking other functionality).</p>
<p><b>Unit 3 (6 hours)</b></p> <p>Students learn to prepare for analyzing a new dataset by considering logical subsets of that data. They begin with the Animals Dataset, and then apply what they've learned to a dataset of their own choosing. In the process, they practice using the Design Recipe to create filter functions, and come up with questions they wish to explore. The focus of this unit is categorical variables, and by the end students will know how to display categorical variables.</p>	<p><b><u>Standards Addressed:</u></b></p> <p><b>2-DA-07:</b> Represent data using multiple encoding schemes.  <b>2-DA-08:</b> Collect data using computational tools and transform the data to make it more useful and reliable.  <b>2-DA-09:</b> Refine computational models based on the data they have generated.  <b>2-AP-11:</b> Create clearly named variables that represent different data types and perform operations on their values.  <b>2-AP-13:</b> Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs  <b>2-AP-14:</b> Create procedures with parameters to organize code and make it easier to reuse.  <b>2-AP-17:</b> Systematically test and refine programs using a range of test cases.  <b>2-AP-19:</b> Document programs in order to make them easier to follow, test, and debug.  <b>3A-DA-11:</b> Create interactive data visualizations using software tools to help others better understand real-world phenomena.  <b>3A-AP-17:</b> Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.  <b>3A-AP-18:</b> Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.  <b>3B-NI-05:</b> Use data analysis tools and techniques to identify patterns in data representing complex systems.  <b>3B-NI-07:</b> Evaluate the ability of models and simulations to test and support the refinement of hypotheses.  <b>3B-AP-14:</b> Construct solutions to problems using student-created components, such as procedures, modules and/or objects.  <b>3B-AP-21:</b> Develop and use a series of test cases to verify that a program performs according to its design specifications.  <b>3B-AP-22:</b> Modify an existing program to add additional functionality and discuss intended and unintended implications (e.g., breaking other functionality).</p>
<p><b>Unit 4 (6 hours)</b></p>	<p><b><u>Standards Addressed:</u></b></p>

<p>Students explore new visualizations in Pyret, this time focusing on the frequency of observations in a quantitative dataset. They learn how to see the shape of a histogram, understand the difference between bar charts and histograms, construct histograms by hand and with Pyret, experiment with these visualizations in a contrived dataset, apply them to their own research, and interpret the results.</p>	<p><b>2-DA-07:</b> Represent data using multiple encoding schemes.  <b>2-DA-08:</b> Collect data using computational tools and transform the data to make it more useful and reliable.  2-DA-09: Refine computational models based on the data they have generated.  <b>2-AP-11:</b> Create clearly named variables that represent different data types and perform operations on their values.  <b>2-AP-14:</b> Create procedures with parameters to organize code and make it easier to reuse.  <b>2-AP-17:</b> Systematically test and refine programs using a range of test cases.  <b>2-AP-19:</b> Document programs in order to make them easier to follow, test, and debug.  <b>3A-DA-11:</b> Create interactive data visualizations using software tools to help others better understand real-world phenomena.  <b>3A-AP-17:</b> Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.  <b>3A-AP-18:</b> Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.  <b>3A-AP-23:</b> Document design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs.  <b>3B-NI-05:</b> Use data analysis tools and techniques to identify patterns in data representing complex systems.  <b>3B-NI-07:</b> Evaluate the ability of models and simulations to test and support the refinement of hypotheses.  <b>3B-AP-14:</b> Construct solutions to problems using student-created components, such as procedures, modules and/or objects.  <b>3B-AP-21:</b> Develop and use a series of test cases to verify that a program performs according to its design specifications.  <b>3B-AP-22:</b> Modify an existing program to add additional functionality and discuss intended and unintended implications (e.g., breaking other functionality).</p>
<p><b>Unit 5 (6 hours)</b></p> <p>Students learn how to evaluate two key aspects of a quantitative data set: its center and spread. They measure central tendency (using mean, median, and mode), as well as spread (visualizing quartiles with box plots). After applying these concepts to a contrived dataset, they apply them to their own datasets and interpret the results.</p>	<p><b><u>Standards Addressed:</u></b></p> <p><b>2-DA-07:</b> Represent data using multiple encoding schemes.  <b>2-DA-08:</b> Collect data using computational tools and transform the data to make it more useful and reliable.  <b>2-DA-09:</b> Refine computational models based on the data they have generated.  <b>2-AP-11:</b> Create clearly named variables that represent different data types and perform operations on their values.  2-AP-14: Create procedures with parameters to organize code and make it easier to reuse.  <b>2-AP-17:</b> Systematically test and refine programs using a range of test cases.  <b>2-AP-19:</b> Document programs in order to make them easier to follow, test, and debug.  <b>3A-DA-11:</b> Create interactive data visualizations using software tools to help others better understand real-world phenomena.  <b>3A-AP-17:</b> Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.  <b>3A-AP-18:</b> Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.  <b>3A-AP-23:</b> Document design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs.  <b>3B-NI-05:</b> Use data analysis tools and techniques to identify patterns in data representing complex systems.  <b>3B-NI-07:</b> Evaluate the ability of models and simulations to test and support the refinement of hypotheses.  <b>3B-AP-14:</b> Construct solutions to problems using student-created components, such as procedures, modules and/or objects.</p>

	<p><b>3B-AP-21:</b> Develop and use a series of test cases to verify that a program performs according to its design specifications.</p> <p><b>3B-AP-22:</b> Modify an existing program to add additional functionality and discuss intended and unintended implications (e.g., breaking other functionality).</p>
<p><b>Unit 6 (6 hours)</b></p> <p>Students continue practicing the Design Recipe, and learn how to build and transform columns in a table. They also learn how to chain methods together, and define more sophisticated subsets. Finally, they consider the concept of trust and testing - how do we know if a particular analysis is trustworthy?</p>	<p><b>Standards Addressed:</b></p> <p><b>2-DA-07:</b> Represent data using multiple encoding schemes.</p> <p><b>2-DA-08:</b> Collect data using computational tools and transform the data to make it more useful and reliable.</p> <p><b>2-DA-09:</b> Refine computational models based on the data they have generated.</p> <p><b>2-AP-11:</b> Create clearly named variables that represent different data types and perform operations on their values.</p> <p><b>2-AP-13:</b> Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs</p> <p><b>2-AP-14:</b> Create procedures with parameters to organize code and make it easier to reuse.</p> <p><b>2-AP-17:</b> Systematically test and refine programs using a range of test cases.</p> <p><b>2-AP-19:</b> Document programs in order to make them easier to follow, test, and debug.</p> <p><b>3A-DA-11:</b> Create interactive data visualizations using software tools to help others better understand real-world phenomena.</p> <p><b>3A-AP-17:</b> Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.</p> <p><b>3A-AP-18:</b> Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.</p> <p><b>3A-AP-23:</b> Document design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs.</p> <p><b>3B-NI-05:</b> Use data analysis tools and techniques to identify patterns in data representing complex systems.</p> <p><b>3B-NI-07:</b> Evaluate the ability of models and simulations to test and support the refinement of hypotheses.</p> <p><b>3B-AP-14:</b> Construct solutions to problems using student-created components, such as procedures, modules and/or objects.</p> <p><b>3B-AP-21:</b> Develop and use a series of test cases to verify that a program performs according to its design specifications.</p> <p><b>3B-AP-22:</b> Modify an existing program to add additional functionality and discuss intended and unintended implications (e.g., breaking other functionality).</p>
<p><b>Unit 7 (6 hours)</b></p> <p>Students investigate scatter plots as a method of visualizing the relationship between two variables, and begin searching for correlations in their dataset.</p>	<p><b>Standards Addressed:</b></p> <p><b>2-DA-07:</b> Represent data using multiple encoding schemes.</p> <p><b>2-DA-08:</b> Collect data using computational tools and transform the data to make it more useful and reliable.</p> <p><b>2-DA-09:</b> Refine computational models based on the data they have generated.</p> <p><b>2-AP-11:</b> Create clearly named variables that represent different data types and perform operations on their values.</p> <p><b>2-AP-13:</b> Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs</p> <p><b>2-AP-14:</b> Create procedures with parameters to organize code and make it easier to reuse.</p> <p><b>2-AP-17:</b> Systematically test and refine programs using a range of test cases.</p> <p><b>2-AP-19:</b> Document programs in order to make them easier to follow, test, and debug.</p> <p><b>3A-DA-11:</b> Create interactive data visualizations using software tools to help others better understand real-world phenomena.</p>

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<p><b>Unit 8 (6 hours)</b></p> <p>Students compute the "line of best fit" using linear regression, and search for correlations in their own datasets.</p>	<p><b><u>Standards Addressed:</u></b></p> <p><b>2-DA-07:</b> Represent data using multiple encoding schemes.</p> <p><b>2-DA-08:</b> Collect data using computational tools and transform the data to make it more useful and reliable.</p> <p><b>2-DA-09:</b> Refine computational models based on the data they have generated.</p> <p><b>2-AP-11:</b> Create clearly named variables that represent different data types and perform operations on their values.</p> <p><b>2-AP-13:</b> Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs</p> <p><b>2-AP-14:</b> Create procedures with parameters to organize code and make it easier to reuse.</p> <p><b>2-AP-17:</b> Systematically test and refine programs using a range of test cases.</p> <p><b>2-AP-19:</b> Document programs in order to make them easier to follow, test, and debug.</p> <p><b>3A-DA-11:</b> Create interactive data visualizations using software tools to help others better understand real-world phenomena.</p> <p><b>3A-AP-17:</b> Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.</p> <p><b>3A-AP-18:</b> Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.</p> <p><b>3A-AP-23:</b> Document design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs.</p> <p><b>3B-NI-05:</b> Use data analysis tools and techniques to identify patterns in data representing complex systems.</p> <p><b>3B-NI-07:</b> Evaluate the ability of models and simulations to test and support the refinement of hypotheses.</p> <p><b>3B-AP-14:</b> Construct solutions to problems using student-created components, such as procedures, modules and/or objects.</p> <p><b>3B-AP-21:</b> Develop and use a series of test cases to verify that a program performs according to its design specifications.</p> <p><b>3B-AP-22:</b> Modify an existing program to add additional functionality and discuss intended and unintended implications (e.g., breaking other functionality).</p>
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<p><b>Unit 9 (6 hours)</b></p> <p>Students consider possible threats to the validity of their analysis.</p>	<p><b><u>Standards Addressed:</u></b></p> <p><b>2-DA-07:</b> Represent data using multiple encoding schemes.</p> <p><b>2-DA-08:</b> Collect data using computational tools and transform the data to make it more useful and reliable.</p>
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**2-DA-09:** Refine computational models based on the data they have generated.

**2-AP-11:** Create clearly named variables that represent different data types and perform operations on their values.

**2-AP-13:** Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs

**2-AP-14:** Create procedures with parameters to organize code and make it easier to reuse.

**2-AP-17:** Systematically test and refine programs using a range of test cases.

**2-AP-19:** Document programs in order to make them easier to follow, test, and debug.

**3A-DA-11:** Create interactive data visualizations using software tools to help others better understand real-world phenomena.

**3A-AP-17:** Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.

**3A-AP-18:** Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.

**3A-AP-23:** Document design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs.

**3B-NI-05:** Use data analysis tools and techniques to identify patterns in data representing complex systems.

**3B-NI-07:** Evaluate the ability of models and simulations to test and support the refinement of hypotheses.

**3B-AP-14:** Construct solutions to problems using student-created components, such as procedures, modules and/or objects.

3B-AP-21: Develop and use a series of test cases to verify that a program performs according to its design specifications.

**3B-AP-22:** Modify an existing program to add additional functionality and discuss intended and unintended implications (e.g., breaking other functionality).

## Course Title: MIT AI+Ethics for MS and Ready AI (8th Grade)

**Overview:** Children today live in the age of artificial intelligence. On average, US children tend to receive their first smartphone at age 10, and by age 12 over half of all children have their own social media account. Additionally, it's estimated that by 2022, there will be 58 million new jobs in the area of artificial intelligence. Thus, it's important that the youth of today are both conscientious consumers and designers of AI. ReadyAI believes that all learners should have access to artificial intelligence, not only learners with computer science backgrounds or those who attend schools with highly developed technology and computer programs.

### Course Content:

This project seeks to develop an open source curriculum for middle school students on the topic of artificial intelligence. Through a series of lessons and activities, students learn technical concepts—such as how to train a simple classifier—and the ethical implications those technical concepts entail, such as algorithmic bias.

“An Ethics of Artificial Intelligence Curriculum for Middle School Students was created by Blakeley H. Payne with support from the MIT Media Lab Personal Robots Group, directed by Cynthia Breazeal.”

### Assessment Tools

Learners should be able to

1. define basic concepts in the field of AI.
2. describe functions of AI as well as current limitations.
3. apply principles of coding to demonstrate understanding of AI concepts
4. evaluate applications of AI technologies.
5. create a project that uses AI to solve real-world problems.

Lesson	MIT AI+ Ethics Description	Standards
AI Bingo (30 min)	Students are given bingo cards with various AI systems. Students find a partner who has also used that AI system and together work to identify what prediction the system is making and the dataset it uses.	1.c, 1.d
Algorithms as Opinions (45 min)	Students learn that algorithms, like recipes, are a set of instructions that modify an input to produce an output. Students are then asked to write an algorithm to make the "best" peanut butter and jelly sandwich. Students then explore what it means to be "best" and see how their opinions are reflected in their algorithms.	1.b 2.a, 2.c
Ethical Matrix (45 min)	Building on the algorithms as opinions lesson, students identify the stakeholders who care about their peanut butter and jelly sandwich algorithm and the values those stakeholders have in the algorithm. They then fill out an ethical matrix to see where those values overlap or conflict.	2.b 3.a, 3.b, 3.c, 3.d 4.a
Intro To Supervised Machine Learning & Algorithmic Bias* (3 hours)	Students are introduced to the concept of classification. By exploring Google's Teachable Machine tool, students learn about supervised machine learning. Then students are asked to build a cat-dog classifier but are unknowingly given a biased dataset. When the classifier works better on cats than dogs, students have the opportunity to retrain their classifiers with their own new datasets.	1.c 2.c
Speculative Fiction** (3 hours)	Students have the opportunity to interact with various technologies, such as emotion detection software or GANs. Students then respond to creative writing prompts about who might be affected by the technology and how the technology might produce harm or benefit in the future. This activity is not unplugged, but instructions for an unplugged version are included in the open source materials.	3.a, 3.b, 3.c 5.a
YouTube Scavenger Hunt (30 min)	Similar to AI Bingo, students in partners are tasked to recognize the various AI systems on the YouTube platform (e.g., advertisement matching algorithm, the recommender algorithm, comment classifier, etc) For each system, students identify what the algorithm is trying to predict and the dataset the algorithm uses.	1.d 2.b
YouTube Redesign (4 hours)	Students apply what they have learned so far by constructing an ethical matrix around the YouTube Recommender Algorithm. Based on this ethical matrix, students determine a goal (or "opinion") for their algorithm. Students then paper prototype what this new version of YouTube would look like and imagine features that meet the values their identified stakeholders have.	2.b 3.a, 3.b, 3.c, 3.d 4.a, 4.b, 4.c

YouTube Socratic Seminar (30 min)	Students read an abridged version of a Wall Street Journal article titled <a href="#"><i>YouTube Weighs Major Changes to Kids Content Amid FTC Probe</i></a> and then participated in a socratic seminar discussing which stakeholders were most important or influential to the proposed changes to the YouTube Kids app and whether or not technologies like autoplay should exist.	2.b 3.a, 3.b, 3.c 4.c 5.a
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Lesson	Ready AI Description	Activities
<b>Unit 1</b> Meet Your AI Friend  <b>Unit 2</b> Scaring Contest & Rebound	Contrast AI vision from robotic vision Program the AI unit to recognize their faces Brainstorming applications for facial recognition identify uses of facial recognition in real life. analyze games programmed into the Cozmo app. create coding that utilizes the unit’s AI facial recognition abilities.	Students may complete the summative mastery quiz.  Students may be evaluated based on participation or speaking. Students may be evaluated using the complete the summative mastery quiz.
<b>Unit 3</b> Peekaboo AI	identify coding necessary to code peekaboo. build a scenario where peekaboo may be applicable. create coding that programs the AI unit to play peekaboo as both the player and the recipient.	Students may be evaluated based on participation or presentation.  Students may be evaluated using the complete the summative mastery quiz.
<b>Unit 4</b> Speech Generation	summarize the steps to program speech. connect facial recognition to speech generation. design a mini-project where the AI unit uses speech generation as well as facial recognition.	Students may be evaluated using a rubric for their project.  Students may be evaluated using the complete the summative mastery quiz.
<b>Unit 5</b> American Idol AI	identify the challenges to program music. connect facial recognition to speech generation. compose a brief tune using the AI unit’s speech functions and link it to previously coded material.	Students may explain how to program a tune as well as the challenges that come with it.  Students may be evaluated using the complete the summative mastery quiz.
<b>Unit 6</b> Object Recognition & Manipulation	describe the challenges in identifying objects. implementing code to make the AI unit engage an object. brainstorm where the AI unit uses an object it can manipulate as a representation of something.	Students may present the scenario they created.  Students may be evaluated using the complete the summative mastery quiz.

<p><b>Unit 7</b> Tick Tock Bot</p>	<p>describe how the Tick Tock Bot software works. deconstruct the coding and AI necessary for this program to work. craft a basic AI function and code to demonstrate understanding of AI object manipulation and awareness.</p>	<p>Students may demonstrate their code of AI object manipulation and awareness.</p> <p>Students may be evaluated using the complete the summative mastery quiz.</p>
<p><b>Unit 8</b> Keep Away &amp; Quick Tap</p>	<p>describe how the Keep Away and Quick Tap games work. implement coding that resembles that of the Keep Away and Quick Tap games. invent a scenario where such AI skills would be useful.</p>	<p>Students may demonstrate their scenario using coding or themselves.</p> <p>Students may be evaluated using the complete the summative mastery quiz.</p>
<p><b>Unit 9</b> Landmark-based Navigation &amp; Cozmo's Freetime</p>	<p>contrast robot movement with AI navigation. show programming of AI navigation. compete with other students in terms of navigation commands.</p>	<p>Students may demonstrate their ability to program their AI units around obstacles.</p> <p>Students may be evaluated using the complete the summative mastery quiz.</p>
<p><b>Unit 10</b> Project Planning</p>	<p>identify applications for AI in a teacher provided example. apply their understanding of AI to a real life project. create a plan for their own project.</p>	<p>Students may create plans for AI applications project.</p> <p>Students may be evaluated using the complete the summative mastery quiz.</p>
<p><b>Unit 11</b> Project Creation</p>	<p>rehearse their project presentations. apply their understanding of AI to project creation. synthesize their technical and creative knowledge. create their projects.</p>	<p>Students may create an AI project.</p> <p>Students may be evaluated using the complete the summative mastery quiz.</p>
<p><b>Unit 12</b> Project Rehearsal</p>	<p>rehearse their project presentations in front of a class. troubleshoot problems in their projects. create projects that demonstrate their learning of AI and their collaboration.</p>	<p>Students may demonstrate their project in front of the class.</p> <p>Students may be evaluated using the complete the summative mastery quiz.</p>

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## Course Title: Python (Codesters) (8th grade)

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**Overview:** 20-lesson (48 hours) Introduction to Programming in Python uses fun and engaging single-lesson projects to teach students foundational concepts in coding and includes 4 capstone projects that are aligned to 8th grade math and science standards.

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### Course Content:

In this course, students will complete a series of mini-projects designed to teach the basic syntax, structure, and process of writing programs in Python. These projects will include data-types, variables, conditionals, loops, lists, functions, algorithms, and debugging. Students create a final project at course completion.

### Assessment Tools

- Auto graded lessons
- Multiple Choice - Formative Assessments
- Project work graded by rubric
- Final Project

**Standards addressed in all lessons:**

Each lesson includes components that address these standards.

**Skill Building:**

- **CSTA 2-AP-11:** Create clearly named variables that represent different data types and perform operations on their values.
- **CSTA 2-AP-13:** Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.

**Debugging:**

- **CSTA 2-AP-17:** Systematically test and refine programs using a range of test cases.

**Create Projects:**

- **CSTA 2-AP-15:** Seek and incorporate feedback from team members and users to refine a solution that meets user needs.

**Student Activities: How is learning demonstrated?**

Lessons are based on a differentiated instruction model with multiple exit points:

**Skill Build** – Learn new concepts to create a project following a step-by-step approach.

**Modify** – Apply learned concepts to modify and add to the existing project.

**Create** – Show mastery by building a real-world relevant project on their own or as part of a team.

**Lesson 1 - Dance Steps (2 days)****Project Description:**

Learn how to add characters to your program and move them around on the stage. [Create a dance step project.](#)

**Standards:**

2-AP-11: Use Variables

**Learning Targets:**

- Distinguish between strings and integers in a program
- Write a program that shows steps performed in order
- Use numbers as arguments for a given function
- Use strings as arguments to call images
- Use an error message to help debug a non-working program

**Lesson 2 - Battleship (2 days)****Project Description:**

Learn how to find, use, and attribute images outside of the Codesters sprite library. [Create a program using customized sprites.](#)

**Standards:**

2-AP-11: Use Variables

2-AP-16: Reuse and Attribute

**Learning Targets:**

- Distinguish between strings and integers in a program
- Use numbers as arguments for a given function
- Use strings as arguments to call images
- Use an error message to help debug a non-working program
- Navigate the coordinate plane on the Codesters stage

<p><b>Lesson 3 - Mouse Maker (2 days)</b></p> <p><b>Project Description:</b> Learn how to collect user input to change the appearance of shapes on the stage. <a href="#">Create a project using shapes and colors to make a piece of art.</a></p>	<p><b>Standards:</b> 2-AP-11: Use Variables  2-AP-19: Comments and Documentation</p>	<p><b>Learning Targets</b></p> <ul style="list-style-type: none"> <li>● Distinguish between comments and lines of code</li> <li>● Use comments as a reference for writing code</li> <li>● Rename sprites</li> <li>● Change arguments</li> <li>● Request and store user input</li> </ul>
<p><b>Lesson 4 - Capstone 1 - Interactive Explainer (4 days)</b></p> <p><b>Project Description:</b> Create a scene with interactive elements that provide explanations on a topic. <a href="#">See project planners here.</a></p>	<p><b>Standards:</b> 2-AP-19: Comments and Documentation  2-AP-15: Feedback and Revision  2-IC-22: Collaboration</p>	<p><b>Learning Targets:</b></p> <ul style="list-style-type: none"> <li>● Use click events or user input to add interactivity</li> <li>● Manage multiple sprites on the stage</li> <li>● Create an interactive explainer connected to curriculum covered in class</li> </ul>
<p><b>Lesson 5 - Chat with your Sprite (2 days)</b></p> <p>Learn how to make your program ask questions, store answers, and respond dynamically. <a href="#">Create a chatbot.</a></p>	<p><b>Standards:</b> 2-AP-11: Use Variables  2-AP-12: Control Structure - Conditionals</p>	<p><b>Learning Targets:</b></p> <ul style="list-style-type: none"> <li>● Request, store, and display user input</li> <li>● Use conditionals to create a branching program structure</li> <li>● Manipulate an unknown string to match case</li> </ul>
<p><b>Lesson 6 - Recycling Loop (2 days)</b></p> <p><b>Project Description:</b> Learn how to use lists and loops to group a set of items and then assign actions to each item in the group. <a href="#">Create an animated logo.</a></p>	<p><b>Standards:</b>  2-AP-12: Control Structure - Loops</p>	<p><b>Learning Targets:</b></p> <ul style="list-style-type: none"> <li>● Use lists to store string values</li> <li>● Use loops to repeat sets of actions</li> </ul>
<p><b>Lesson 7 - Math, Loops, Number Line (2 days)</b></p> <p><b>Project Description:</b> Learn to use loops and perform calculations with Python. <a href="#">Create a function machine that accepts inputs and produces outputs.</a></p>	<p><b>Standards:</b> 2-AP-12: Control Structure - Loops  2-AP-11: Use Variables  2-DA-08: Data Visualization</p>	<p><b>Learning Targets:</b></p> <ul style="list-style-type: none"> <li>● Use lists to store integer data</li> <li>● Perform calculations using the Python math tools</li> <li>● Use a loop to graph lines on the coordinate plane</li> </ul>

<p><b>Lesson 8 - Capstone 2: Interactive Quiz (4 days)</b></p> <p><b>Project Description:</b> Create an interactive quiz that asks the user for answers to questions and checks to see if they are correct. <a href="#">See project planners here.</a></p>	<p><b>Standards:</b> 2-AP-19: Comments and Documentation  2-AP-13: Modularity  2-AP-10: Pseudocode  2-AP-15: Feedback and Revision  2-AP-17: Test and Refine  2-IC-22: Collaboration</p>	<p><b>Learning Targets:</b></p> <ul style="list-style-type: none"> <li>● Request and store user input</li> <li>● Display changing variables</li> <li>● Use conditionals to check whether strings match or not</li> </ul>
<p><b>Lesson 9 - Changing Scenes (2 days)</b></p> <p><b>Project Description:</b> Learn how to make and call functions to write more efficient code. <a href="#">Create functions that display countries and their continent.</a></p>	<p><b>Standards:</b> 2-AP-14: Modularity</p>	<p><b>Learning Targets:</b></p> <ul style="list-style-type: none"> <li>● Create a function, give it a name, add commands</li> <li>● Follow the rules and naming conventions for functions</li> <li>● Use functions to shorten their programs and avoid repetition</li> <li>● Understand how to use functions in their program by calling them</li> <li>● Understand that whitespace/indentation defines what is inside of a function</li> </ul>
<p><b>Lesson 10 - Dance Moves (2 days)</b></p> <p><b>Project Description:</b> Learn more about functions. <a href="#">Create a project to simulate a sports game</a></p>	<p><b>Standards:</b> 2-AP-11: Use Variables  2-AP-14: Modularity</p>	<p><b>Learning Targets:</b></p> <ul style="list-style-type: none"> <li>● Define and call functions</li> <li>● Call functions in any order</li> <li>● Use functions to simplify complex programs</li> </ul>
<p><b>Lesson 11 - Party Invitations (2 days)</b></p> <p><b>Project Description:</b> Learn to use parameters to customize your function output based on input values. <a href="#">Create an e-card project.</a></p>	<p><b>Standards:</b> 2-AP-14: Modularity</p>	<p><b>Learning Targets:</b></p> <ul style="list-style-type: none"> <li>● Write a function that accepts parameters</li> <li>● Use a function to create a format for a display</li> </ul>



<p><b>Lesson 12 - Capstone 3: Scene Changer (4 days)</b></p> <p><b>Project Description:</b> Prompt the user for characteristics of a scene then generate it using functions and the user input. <a href="#">See project planners here.</a></p>	<p><b>Standards:</b></p> <p>2-AP-19: Comments and Documentation</p> <p>2-AP-13: Modularity</p> <p>2-AP-16: Reuse and Attribute</p> <p>2-AP-15: Feedback and Revision</p> <p>2-AP-17: Test and Refine</p> <p>2-IC-22: Collaboration</p>	<p><b>Learning Targets:</b></p> <ul style="list-style-type: none"> <li>● Create functions that take parameters</li> <li>● Collect user input to use in the parameters</li> <li>● Generate a scene with the functions and using the user input</li> </ul>
<p><b>Lesson 13 - Around the Solar System (2 days)</b></p> <p><b>Project Description:</b> Learn to do calculations in functions to return results. <a href="#">Create a project that calculates the percent rate of Billboard Top 100 information.</a></p>	<p><b>Standards:</b></p> <p>2-AP-14: Modularity</p>	<p><b>Learning Targets:</b></p> <ul style="list-style-type: none"> <li>● Define a float as a number with decimal point</li> <li>● Use floats as a data type</li> <li>● Create a function with parameters</li> <li>● Use a variable to pass arguments to a function</li> <li>● Create a function that returns a percentage of a whole</li> <li>● Store the return of a function in a variable</li> <li>● Display the value of a return variable</li> </ul>
<p><b>Lesson 14 - Dance Off (2 days)</b></p> <p><b>Project Description:</b> Learn to program multiple events and assign them to unique key inputs. <a href="#">Create your own Etch-a-Sketch style drawing tool.</a></p>	<p><b>Standards:</b></p> <p>2-AP-14: Modularity</p>	<p><b>Learning Targets:</b></p> <ul style="list-style-type: none"> <li>● Assign events to any key</li> <li>● Use an event handler to assign an event to particular sprite</li> <li>● Assign actions inside events to sprites with unique names</li> </ul>
<p><b>Lesson 15 Save the Moon (2 days)</b></p> <p><b>Project Description:</b> Learn how to create a scored game that uses gravity to create falling-objects. <a href="#">Create a game in which the user has to destroy the evil gatekeeper of the castle.</a></p>	<p><b>Standards:</b></p> <p>2-AP-14: Modularity</p>	<p><b>Learning Targets:</b></p> <ul style="list-style-type: none"> <li>● Generate random numbers using random.int()</li> <li>● Define collision events, with nested conditionals</li> <li>● Use global variables to store information about user progress</li> </ul>

<p><b>Lesson 16 - Capstone 4: Falling Object Game (4 days)</b></p> <p><b>Project Description:</b> Create a game with keyboard controls where you catch some objects and avoid others depending on certain criteria. <a href="#">See project planners here.</a></p>	<p><b>Standards:</b></p> <p>2-AP-19: Comments and Documentation</p> <p>2-AP-13: Modularity</p> <p>2-AP-16: Reuse and Attribute</p> <p>2-AP-15: Feedback and Revision</p> <p>2-AP-17: Test and Refine</p> <p>2-IC-22: Collaboration</p>	<p><b>Learning Targets:</b></p> <ul style="list-style-type: none"> <li>● Generate different objects to fall from the top of the screen from gravity</li> <li>● Create controls for the user to move a character sprite</li> <li>● Set up a collision event to detect the catch sprite touching a falling object</li> <li>● Use conditionals to check whether the object caught is "correct" or "incorrect"</li> <li>● Give the user a point for catching the correct objects</li> </ul>
<p><b>Lesson 17 - Scatterplots (2 days)</b></p> <p><b>Project Description:</b> Import data from a spreadsheet, analyze it, and display results using graphing tools. <a href="#">Create a project importing custom data and analyzing it.</a></p>	<p><b>Standards:</b></p> <p>2-DA-08: Data Visualization</p> <p>2-DA-09: Modeling Data</p>	<p><b>Learning Targets:</b></p> <ul style="list-style-type: none"> <li>● Import data from a Google spreadsheet</li> <li>● Graph scatter plots using the statistics toolkit</li> <li>● Determine a line of best fit</li> </ul>
<p><b>Lesson 18 - Refactoring (1 day)</b></p> <p><b>Project Description:</b> Complete challenges focused on making code more efficient with the use of loops and functions.</p>	<p><b>Standards:</b></p> <p>2-AP-14: Modularity</p>	<p><b>Learning Targets:</b></p> <ul style="list-style-type: none"> <li>● Understand what refactoring means</li> <li>● Create a function to call a set of commands</li> <li>● Create a loop to repeat a commands</li> <li>● Use functions and loops together to create code that is concise and easy to edit</li> </ul>
<p><b>Lesson 19 - Example Project Build (1 day)</b></p> <p><b>Project Description:</b> Make a timed simulation of a knight fighting dragons to prepare for the final project.</p>	<p><b>Standards:</b></p> <p>2-AP-11: Use Variables</p> <p>2-AP-12: Control Structures (For Loops and Conditionals)</p> <p>2-AP-13: Decomposition</p>	<p><b>Learning Targets:</b></p> <ul style="list-style-type: none"> <li>● Store data in lists for future calculations</li> <li>● Use the Interval Block to create simultaneous actions</li> <li>● Generate sprites at random coordinates</li> <li>● Display data using a scatter plot graph</li> </ul>

## Lesson 20 - Timed Simulation (4 days)

### Project Description:

Design a simulated experiment using sprites on the stage, collect the generated data, and present it with graphs. [See project planners here.](#)

### Standards:

2-AP-15: Feedback and Revision

2-AP-17: Test and Refine

2-IC-22: Collaboration

2-AP-18: Collaboration

### Learning Targets:

- Generate a simulation based on user input and random values
- Store data in lists for future calculations
- Use the Interval Block to create simultaneous actions
- Generate sprites at random coordinates
- Display data using a graph

## Course Title: Data Science with UCLA Data Science (High School CS Course 1)

**Overview:** Introduction to Data Science (IDS) is designed to introduce students to the exciting opportunities available at the intersection of data analysis, computing, and mathematics through hands-on activities. Data are everywhere, and this curriculum will help prepare students to live in a world of data.

### Course Content:

The curriculum focuses on practical applications of data analysis to give students concrete and applicable skills. Instead of using small, tailored, curated data sets as in a traditional statistics curriculum, this curriculum engages students with a wider world of data that fall into the "Big Data" paradigm and are relevant to students' lives.

### Assessment Tools

In contrast to the traditional formula-based approach, in IDS, statistical inference is taught algorithmically, using modern randomization and simulation techniques. Students will learn to find and communicate meaning in data, and to think critically about arguments based on data.

## Unit 1 (35 days)

This unit will introduce the idea of “data,” fundamental to the rest of the course. While most people think of data simply as a spreadsheet or a table of numbers, almost anything can be considered data, including images, text, GPS coordinates, and much more. Our world has become increasingly data-centric, and we are constantly generating data, whether we know it or not. From posts on Facebook, to shopping records created when you swipe your credit card, to driving over sensors embedded in highway on-ramps, we leave behind a stream of data wherever we go. These data are used to generate stories about our world, whether it is for political forecasting, marketing, scientific research, or even Netflix recommendations. Traditional statistics courses consist of understanding data from only a small subset of data generation processes, namely those collected through random sampling or random assignment in scientific experiments. This unit exposes students to a wider world of data, and will help students see how to make sense of these ubiquitous data types.

This unit will motivate the idea that data and data products (charts, graphs, statistics) can be analyzed and evaluated just like other arguments, such as those used by journalists. We want to know how the evidence was collected, what the perspective or bias of the creator might be, and look behind the scenes at the process used to create the product. Even the way data are represented embeds within it decisions on the part of the data creator.

### **Focus Statistics CCSS-M**

S-ID 1. Represent data with plots on the real number line (dotplots, histograms, and boxplots).

S-ID 2: Use statistics appropriate to the shape of the data distribution to compare center (median, mean) of two or more different data sets (measures of spread will be studied in Unit 2).

S-ID 3: Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).

S-ID 5. Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.

S-ID 6. Represent data on two quantitative variables on a scatterplot, and describe how the variables are related.

S-IC 6. Evaluate reports based on data. \*\*This standard is woven throughout the course. It is a recurring standard for every unit.

### **Upon completion of Unit 1, students will be able to:**

- Give examples of where they leave data traces.
- Understand that rows and columns are a form of data structure.
- Explain why the relationship between the variables might exist, or, if there is no relationship, why that might be so.
- Construct and interpret a frequency table.
- Critically read reports from media sources to evaluate their claims.
- Read plots (identify the name of the plot, interpret the axes, look for trends, identify confounding factors).
- Calculate conditional and marginal probabilities using frequency tables.
- Provide a real-world explanation for why the conditional or independent probabilities make sense, using critical thinking skills and background knowledge.
- Communicate their evaluations in written or verbal form using different types of media.
- Load data into RStudio.
- Create basic plots in RStudio.
- Create frequency tables in RStudio.

### **Major Projects**

Using the techniques of descriptive statistics, students will begin learning how to construct multiple views of data in an attempt to uncover new insights about the world. This will require the introduction of the computational tool R through the interface of RStudio. Standard graphical displays like histograms and scatter plots will be introduced in RStudio, as well as measures of center and spread.

### **Focus Standards for Mathematical Practices**

SMP-3. Construct viable arguments and critique the reasoning of others.

SMP-5. Use appropriate tools strategically.

## Unit 2 (35 days)

This unit deepens the informal reasoning skills developed in Unit 1 by enriching students' technical vocabulary and developing more precise analytical tools. Most importantly, this unit introduces the formal concept of probability as a tool for understanding that sometimes patterns observed in data are not "real." Traditional courses attempt to develop this understanding through the development of abstract mathematical probability concepts, but IDS creates enduring understanding by teaching students to design and implement simulations using pseudo-random number generators. This activity also develops computational thinking by teaching students about some basic programming structures. Then, the use of models will come to the foreground.

### Major Projects

Students will be introduced to linear models - the most common form of modeling in introductory statistics classes - which will serve as the foundation to learn more complex modeling techniques that use the computer technology available to them later in the course, including smoothing techniques and tree-based models.

### Focus Statistics CCSS-M

S-ID 2: Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.

S-ID 3: Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).

S-ID 4. Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Understand that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.

S-IC 2. Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation.

S-IC 6. Evaluate reports based on data. \* \*This standard is woven throughout the course. It is a recurring standard for every unit.

### Upon completion of Unit 2, students will be able to:

- Create a boxplot by calculating the five-number summary, upper and lower fences, and determining outliers.
- Explain what "standard deviation" means in context.
- Explain why the measures of central tendency and spread may or may not be accurate descriptions of the data from which they came.
- Use permutations of data to solve problems.
- Read/interpret a normal curve/distribution.
- Explain where the normal distribution came from.
- Describe situations where the normal distribution may model the phenomena, and others where it may not.
- Simulate normal distribution.
- Simulate from a model.
- Compare real data to simulation.
- Determine if model and data appear consistent.
- Merge data by columns/rows, and verify that merging is successful.
- Learn for() loops and apply() functions in RStudio.
- Create functions.

### Focus SMPs

SMP-4. Model with mathematics.

SMP-5. Use appropriate tools strategically.

S-CP 2. Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.

### Unit 3 (40 days)

Unit 3 focuses on data collection methods, including traditional methods of designed experiments and observational studies and surveys. It introduces students to sampling error and bias, which cause problems in analysis made from survey data. Participatory Sensing is presented as another method of data collection, and students learn to design Participatory Sensing campaigns that will allow them to address particular statistical questions. Participatory Sensing is a unique data collection method because it uses sensors. Furthermore, this method emphasizes the involvement of citizens and community groups in the process of sensing and documenting where they live, work, and play. Triggers play an important role in the Participatory Sensing data collection process. The response to the triggers may or may not be the same each time. Data takes on a variety of forms online and requires a different style of representation.

#### Major Projects

Students enhance computing skills by learning about modern data structures, and by learning to "scrape" data stored in XML format.

#### Focus Statistics CCSS-M

S-IC 1. Understand statistics as a process for making inferences about population parameters based on a random sample from that population.

S-IC 3. Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.

S-IC 6. Evaluate reports based on data. \* \*This standard is woven throughout the course. It is a recurring standard for every unit.

#### Upon completion of Unit 3, students will be able to:

- Provide a loose definition of "statistics" in their own words.
- Compare and contrast population vs. sample.
- Compare and contrast parameter vs. statistic.
- Explain the difference between special data structures, particularly as they relate to inference.
- Exploit special data structures for re-randomization analysis.
- Explain situations where one measure of central tendency or spread may be more appropriate than others.
- Read/interpret boxplots (In-depth look into samples size and their relationship to the population parameters).
- Identify reports that use special data structures (census, survey, observational study, and randomized experiment).
- Do data scraping.
- Use HTML and XML formats.
- Use RStudio to re-randomize data.
- Compute measures of central tendency and spread in RStudio.

#### Focus SMPs

SMP-1. Make sense of problems and persevere in solving them.

SMP-4. Model with mathematics.

SMP-8. Look for and express regularity in repeated reasoning.

## Unit 4 (40 days)

This unit will develop modeling skills, beginning with learning to fit and interpret least squares regression lines and learning to use regression to make predictions. Students will learn to evaluate the success of these predictions and so compare models for their predictive accuracy. Modern algorithmic approaches to regression are presented, and students will strengthen algorithmic thinking skills by understanding how and why these algorithms help data scientists make accurate predictions from data.

### Major Projects

Students engage in a complete modeling experience in which they apply the skills and concepts learned in the previous units. The modeling experience is designed to make students' thinking visible and audible by encouraging them to be metacognitive about the process of inventing and testing a model, ask questions as they go through the process, and recognize the iterative nature of modeling.

### Focus Statistics Standards

S-IC 2. Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation.

S-ID 6. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.

S-ID 7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

S-ID 8. Compute (using technology) and interpret the correlation coefficient of a linear fit.

S-IC 6. Evaluate reports based on data. \*\*This standard is woven throughout the course. It is a recurring standard for every unit.

### Upon completion of Unit 4, students will be able to:

- Describe how well the linear model fits the data (or does not).
- Provide a real-world explanation of why the model may or may not fit, using critical thinking skills and background knowledge.
- Interpret the slope and intercept on a plot.
- Compute the correlation coefficient using RStudio.
- Interpret linear models in reports, including the correlation coefficient.
- Determine if a trend is “real” or if it could have arisen from randomness.
- Use critical thinking skills to explain why a trend may or may not make sense.
- Fit a regression line.
- Extract the slope, intercept, correlation coefficient, coefficient of determination, and residuals using RStudio.
- Use RStudio to predict  $y$  given an  $x$  value.
- Explore what happens to the line and the response variable if we multiply (divide) or add (subtract) a constant from the predictor.
- Design and execute their own Participatory Sensing Campaigns.
- Use RStudio to compute permutations and combinations.
- Create Classification and Regression Tree (CART) models.
- Understand non-linear models.

### Focus SMPs

SMP-2. Reason abstractly and quantitatively.

SMP-4. Model with mathematics.

SMP-7. Look for and make use of structure.

## Course Title: Artificial Intelligence Course with AI4ALL (High School CS Course 2)

**Overview:** The Open Learning Curriculum exists to give students a broad understanding of what AI is, how it works, how it interacts with their lives, and how they can work with AI in their futures. The whole curriculum is approximately 80-100 hours long. The curriculum was written to be very modular; you do not have to follow exactly this progression or take exactly this amount of time. Even just the hour lesson of AI & Drawing will provide your students with a grasp of some of the important concepts around Machine Learning and AI.

### Knowledge Content:

- AI is a branch of computer science concerned with how computers make predictions and decisions. If the computer can be 100% sure of something (“When I scan this barcode I should display the price for strawberries”) it is not AI. Where there are predictions involved (“What is the best move in this game”) there is AI in use.
- Many predictions about AI are far off of reality, and we are not yet capable of making most of what Sci Fi shows as AI.
- AI is involved in many disciplines, from education to the environment, to dance.
- There are many jobs involved in AI, that people get to from many different pathways. Often, but not always, these paths involve statistics and / or Math.
- Machine learning takes this one step further; computers build models based on data that programmers have fed it. This allows machines to find more patterns in larger amounts of data than humans can easily deal with.
- The data machines learn from comes from humans. Therefore, the models can learn bias from human-biased data.
- AI and humans often collaborate better than either would be on their own
- Ethical AI considers the privacy of people it is collecting data from.
- Explainability of the algorithm (why is it doing what it is doing) and fairness of the algorithm (what is it optimizing for) are also both ethical concerns to consider when building AI.

### Assessment Tools:

#### Projects

- Teach others how AI works and ethical considerations around it
- Imagining how AI will be a part of an area of the students’ choice in the future

#### Programming projects

- Short checks for understanding
- Chatbot without machine learning
- Sentiment Analyzer without machine learning
- Sentiment Analyzer using machine learning
- Sentiment Analysis of lyrics using Genius API
- Sentiment Analysis project of their choice

#### Research Projects on

- How students currently use AI
- Algorithmic Bias
  
- Exit tickets at the end of each lesson
- Brief essays for answers to Essential questions throughout the curriculum
- Student discussions

### Essential Questions

- What is AI? What is Machine Learning?
- How does AI affect me and my community?
- What benefits and drawbacks does AI have?
- How can I affect AI?

### Skills & Strategies

- Building and listening to arguments around topical discussions
- Research
- Iteration
- Creating audience-centered messages
- Basic programming including using libraries and APIs



**Standards**

- **AI4K12 5 Big Ideas** - Perception, Natural Interaction, Representation and reasoning, Learning, Impact
- **ISTE** - 2d, 3a, 3d, 4a 4b, 4c, 4d, 6a, 6b, 6c, 6d
- **Common Core** - CCSS.ELA-LITERACY.RI.11-12.7, CCSS.ELA-LITERACY.RST.11-12.10, CCSS.ELA-LITERACY.RST.11-12.2, CCSS.ELA-LITERACY.RST.11-12.3, CCSS.ELA-LITERACY.RST.11-12.4, CCSS.ELA-LITERACY.RST.9-10.7, CCSS.ELA-LITERACY.SL.11-12.1, CCSS.ELA-LITERACY.SL.11-12.2, CCSS.ELA-LITERACY.SL.11-12.3, CCSS.ELA-LITERACY.SL.11-12.4, CCSS.ELA-LITERACY.WHST.11-12.1, CCSS.ELA-LITERACY.WHST.11-12.2, CCSS.ELA-LITERACY.WHST.11-12.2.A, CCSS.ELA-LITERACY.WHST.11-12.2.B, CCSS.ELA-LITERACY.WHST.11-12.2.C, CCSS.ELA-LITERACY.WHST.11-12.2.D, CCSS.ELA-LITERACY.WHST.11-12.2.E, CCSS.ELA-LITERACY.WHST.9-10.2.F, CCSS.ELA-LITERACY.WHST.11-12.4, CCSS.ELA-LITERACY.WHST.11-12.5, CCSS.ELA-LITERACY.WHST.11-12.7, CCSS.ELA-LITERACY.WHST.11-12.8, CCSS.ELA-LITERACY.WHST.11-12.9
- **CSTA** - 2-IC-21, 3B-IC-2, 3B-AP-15, 2-AP-13, 2-AP-11, 2-AP-12, 3-AP-18, 3A-AP-13, 3A-AP-14, 2-AP-11, 2-AP-12, 3-AP-18, 3A-AP-13, 3B-AP-15
- **NGSS** - HS-ETS1-1, HS-ETS1-2, HS-ETS1-3
- **National Coalition for Core Arts Standards:** All of Creating, Performing, Responding and Connecting standards

Lesson name	Description
<b>What is AI? (16 hours)</b>	
<a href="#">AI &amp; Drawing Byte</a> (1 hour)  (demo video)	Students explore Machine Learning including Privacy and Bias concerns using Google Quick, Draw.
<a href="#">Explore AI 1.01 1.02</a> (worksheet), & <a href="#">1.05</a> (worksheet) (1 hour)	Students come up with their own definition of AI using examples and non-examples. They then go through AI4ALL’s definition. Students hear about the 5 big ideas of AI (according to AI4K12): Perception, Representation & Reasoning, Learning, Natural Interaction, and Impact. ( <a href="#">ExploreAI Unit 1 Teacher Guide</a> )
Explore AI <a href="#">1.03</a> , <a href="#">1.04</a> (1 hour)	Students’ main experience with AI has probably been through Sci Fi. In these lessons, they explore “Strong AI” or “Artificial General Intelligence” which is often what Sci Fi is talking about, versus “Weak AI” which is what we are currently using. They also explore how wildly unrealistic some predictions of AI were, so they can be more skeptical of modern predictions. ( <a href="#">ExploreAI Unit 1 Teacher Guide</a> ) ( <a href="#">ExploreAI PD videos + Slides</a> )
<a href="#">AI &amp; Dance Byte</a> (1-4 hours)	Students explore a human / AI collaboration in the realm of dance, and build their own AI & Dance collaboration as an example of

<a href="#">(demo video 0-30:00)</a>	AI in use and development.
SA + NLP <a href="#">2.01</a> , <a href="#">2.02</a> , <a href="#">2.03</a> , <a href="#">2.05</a> ( <a href="#">worksheets</a> ) (2 hours)	Students explore how humans classify reviews and how AI classifies reviews with sentiment analysis and what that means. They also explore what sentiment analysis is <i>not</i> good at, and why. ( <a href="#">SA +NLP Teacher Guide</a> )
Explore AI <a href="#">1.07</a> ( <a href="#">worksheet</a> ) and SA + NLP <a href="#">1.03</a> (worksheet <a href="#">in schools</a> & <a href="#">in general</a> ), <a href="#">2.04</a> ( <a href="#">worksheet</a> ) (2 hours)	Students look at different examples of AI, focusing on one they are particularly interested in. (teacher guide: <a href="#">Explore AI Unit 1</a> , <a href="#">SA + NLP Unit 1</a> , <a href="#">SA + NLP Unit 2</a> ) ( <a href="#">SA + NLP PD videos + slides</a> )
SA + NLP <a href="#">1.01</a> ( <a href="#">worksheet</a> ), <a href="#">1.02</a> ( <a href="#">worksheet</a> ), <a href="#">1.04</a> ( <a href="#">worksheet</a> ) (3 hours)	Students explore examples of Natural Language Processing in particular, and learn what Natural Language Processing is. They also imagine a way that NLP can be used in the world. ( <a href="#">SA + NLP Unit 1 Teacher Guide</a> ) ( <a href="#">SA + NLP PD videos + slides</a> )
Explore AI <a href="#">1.08</a> ( <a href="#">worksheet</a> ) (1-2 hours)	Students research an example of AI that they use in their lives, and share with the class. ( <a href="#">Explore AI Unit 1 Teacher Guide</a> )
<b>Programming - Creating a Sentiment Analyzer with AI but not Machine Learning (10 hours)</b>	
<a href="#">SA + NLP Unit 3</a> (10 hours)	Students learn the basics of programming - variables, loops, conditionals, input/output, lists - in order to build a sentiment analyzer. The curriculum also briefly discusses Objects, but does not spend much time there. While this lesson does not require past knowledge, it does run through these concepts very quickly, so we recommend supplementing with other introductory Python courses or using this as a review. ( <a href="#">SA + NLP Unit 3 Teacher Guide</a> ) ( <a href="#">SA + NLP PD videos + slides</a> )
<b>Data &amp; Algorithmic Bias (23 hours)</b>	
Explore AI <a href="#">2.01</a> ( <a href="#">worksheet</a> ), <a href="#">2.02</a> ( <a href="#">worksheet</a> ) (2 hours)	Students explore how humans learn by taking in data and updating their understandings with it. They then build a Machine Learning model with their own data using Google Teachable Machine. ( <a href="#">Explore AI Unit 2 Teacher Guide</a> ) ( <a href="#">Explore AI PD videos + Slides</a> )
Explore AI <a href="#">2.10</a> , <a href="#">2.11</a> , <a href="#">2.12</a> , ( <a href="#">worksheet</a> ) SA + NLP <a href="#">1.07</a> ( <a href="#">worksheet</a> ) Explore AI <a href="#">2.13</a> & <a href="#">2.14</a> ( <a href="#">worksheet</a> ) (4-5 hours)	Students explore how algorithms learn bias based on the bias from the datasets the algorithms are taught on. They complete a research project, and then discuss the impact of algorithmic bias, and discuss the impact of algorithmic bias.  (teacher guides: <a href="#">Explore AI Unit 2</a> , <a href="#">SA + NLP Unit 1</a> ) ( <a href="#">SA + NLP PD videos + slides</a> )

Explore AI <a href="#">2.06</a> , <a href="#">2.07</a> ( <a href="#">worksheet</a> ) (1 hour)	Students explore Kaggle datasets, where the data is coming from, and what can be learned from it. ( <a href="#">Explore AI Unit 2 Teacher Guide</a> )
Explore AI <a href="#">2.03</a> , <a href="#">2.04</a> ( <a href="#">worksheet</a> ) (1 hour)	Students learn what an algorithm is, and get a quick introduction to how machine learning works. ( <a href="#">Explore AI Unit 2 Teacher Guide</a> )
<a href="#">SA + NLP Unit 4</a> (3 hours)	Students return to their Sentiment Analysis projects, this time rather than programming what makes a text positive, negative, or neutral by hand, they use a library that has already trained a model to decide the sentiment of a given body of text. Students also explore the accuracy of these predictions. They should see how machine learning tends to make programming on large amounts of data easier. ( <a href="#">SA + NLP Unit 4 Teacher Guide</a> ) ( <a href="#">SA + NLP PD videos + slides</a> )
<a href="#">SA + NLP Unit 5</a> (8 hours)	Students learn about APIs, use an API with their Sentiment Analysis project to look at the toxicity of song lyrics, and consider how they would feel about an AI system getting to decide matters of censorship. They then also create their own project using an API of their choice. ( <a href="#">SA+ NLP Unit 5 Teacher Guide</a> )
<a href="#">AI &amp; the Criminal Legal System</a> (2-3 hours)	Students learn about how the criminal legal system uses AI to make decisions about bail. Students also learn that these decisions are <i>predictions</i> made from previous data. They continue to explore accuracy.
<b>Impact of AI (16 hours)</b>	
Explore AI <a href="#">3.01</a> (.25 hours)	Students consider problems they would like to fix with AI in their classrooms and the world. ( <a href="#">Explore AI Unit 3 Teacher Guide</a> )( <a href="#">Explore AI PD videos + Slides</a> )
Explore AI <a href="#">3.02</a> ( <a href="#">worksheet</a> ) (1 hour)	Students explore how AI is changing existing jobs in any field including medicine and education. ( <a href="#">Explore AI Unit 3 Teacher Guide</a> ) ( <a href="#">Explore AI PD videos + Slides</a> )
Explore AI <a href="#">1.06</a> ( <a href="#">worksheet</a> ) (1 hour)	Students watch videos and discuss the impact AI has on culture, the environment and jobs as a whole. ( <a href="#">Explore AI Unit 1 Teacher Guide</a> ) ( <a href="#">Explore AI PD videos + Slides</a> )
<a href="#">AI &amp; Facial Recognition Byte</a> ( <a href="#">demo video</a> ) (1 hour)	Students quickly deep dive into how facial recognition is used in surveillance and otherwise, and some ways to combat its use.
<a href="#">AI &amp; The Environment Byte</a>	Students explore a little bit about how computer vision can help environmental conservationists figure out where populations of animals are so they can develop better policies to protect them. They also generate their own machine learning models from data.

<a href="#">(demo video)</a> (1-2 hours)	
<a href="#">AI &amp; Deepfakes Byte</a> <a href="#">(demo video)</a> (1 hour)	Students learn that AI is capable of creating realistic images and video, as well as how to think critically about the media they consume and share and its implications.
<a href="#">Explore AI Unit 5 (5.3 worksheet rubric)</a> <a href="#">(intro video)</a> (7 hours)	Students consider how AI might affect an area that they care about, and create a project about it.
SA + NLP <a href="#">1.08 (wksht)</a> Explore AI <a href="#">3.04 (wksht)</a> & <a href="#">3.05 (wksht)</a> (4 hours)	Students learn about some people who work in AI, study and report on a person of their choice who works in AI, and then create their own dream job for AI and a resume for it. (teacher guide: <a href="#">Explore AI Unit 3</a> , <a href="#">SA + NLP Unit 1</a> ) ( <a href="#">SA + NLP PD videos + slides</a> )
<b>How it works (9 hours)</b>	
<a href="#">How Neural Networks Work</a> <a href="#">(demo video)</a> (.5 hours)	Students learn how neural networks work by watching a video that takes you through each layer of a neural network and then act out the jobs of different layers.
<a href="#">How CNNs Work</a> <a href="#">(demo video)</a> (2 hours)	Students learn about a specific neural network type - the Convolutional Neural Network which is often used for object recognition and other computer vision problems
<a href="#">How GANs Work</a> <a href="#">(demo video)</a> (2 hours)	Students learn about a specific neural network type - a GAN - which is used to generate images and video.
SA + NLP <a href="#">1.05 (worksheet)</a> , <a href="#">1.06b (worksheet)</a> , <a href="#">2.07 (worksheet)</a> (2 hours)	Students explore how humans learn words, watch a video discussing how NLP works so they can compare/contrast with humans. They then explore a “bag of words” in the manner a computer might.  (teacher guides: <a href="#">SA + NLP Unit 1</a> , <a href="#">SA + NLP Unit 2</a> ) ( <a href="#">SA + NLP PD videos + slides</a> )
<a href="#">How RNNs &amp; Transformers Work</a> (2 hours)	Where the “bag of words” has no context, and just looks at individual words without context, RNNs and Transformers offer neural networks that keep track of context.
<b>Ethics (21 hours)</b>	

ExploreAI <a href="#">2.08</a> & <a href="#">2.09</a> ( <a href="#">worksheet for 2.07 &amp; 2.08</a> and <a href="#">2.09</a> ) (1 hour)	Students explore what data they share about themselves, and some privacy concerns around this data. ( <a href="#">ExploreAI Unit 2 teacher guide</a> ) ( <a href="#">ExploreAI PD videos + Slides</a> )
<a href="#">AI &amp; COVID-19</a> (10 hours)	Students look at how AI systems have helped combat COVID-19. They then explore misinformation, how AI can spread it and stop it, and what companies and countries are doing to stop it. They discuss the ethics of all of these things.
<a href="#">AI &amp; Ethics</a> (10 hours)	Students imagine being heads of companies that are creating AI-based EdTech. They come up with ethical statements for their companies, then explore Privacy, Explainability, and Fairness and how the program their imaginary companies are designing will exemplify these ideals.
<b>Share what you know (6 hours)</b>	
ExploreAI <a href="#">Unit 4</a> ( <a href="#">worksheet 4.01 -4.05</a> , and <a href="#">4.07</a> , <a href="#">rubric</a> ) (6 hours)	Students consider an audience that they are creating a lesson about AI for, and build that lesson. ( <a href="#">ExploreAI Unit 4 Teacher Guide</a> ) ( <a href="#">ExploreAI PD videos + Slides</a> )

## Course Title: AP Computer Science Principles (High School CS Course 3)

**Overview:** Computer Science Principles introduces students to the foundational concepts of computer science and challenges them to explore how computing and technology can impact the world.

### Course Content:

More than a traditional introduction to programming, it is a rigorous, engaging, and approachable curriculum that explores many of the foundational ideas of computing so all students understand how these concepts are transforming the world we live in.

### Assessment Tools

With a unique focus on creative problem solving and real-world applications, the AP Computer Science Principles course gives students the opportunity to explore several important topics of computing using their own ideas and creativity, use the power of computing to create artifacts of personal value, and develop an interest in computer science that will foster further endeavors in the field.

[Unit 1 - Web Development](#)  
15 hours (3 weeks)

### Standards Addressed:

1.1 Creative development can be an essential process for creating computational artifacts.

<p>This unit introduces HTML, CSS, and the processes involved in viewing web pages on the Internet. Students create several simple web pages using the CodeHS online editor, including their own website about themselves, hosted on their own custom codehs.me URL.</p>	<p>1.2 Computing enables people to use creative development processes to create computational artifacts for creative expression or to solve a problem.  1.3 Computing can extend traditional forms of human expression and experience. 3.2 Computing facilitates exploration and the discovery of connections in information.  5.1 Programs can be developed for creative expression, to satisfy personal curiosity, to create new knowledge, or to solve problems (to help people, organizations, or society).  5.2 People write programs to execute algorithms.  6.1 The Internet is a network of autonomous systems.  7.1 Computing enhances communication, interaction, and cognition.  7.2 Computing enables innovation in nearly every field.</p>
<p><b>Unit 2 - Introduction to Programming</b>  20 hours (4 weeks)</p> <p>This unit teaches what it means to "program" and allows students to focus on solving problems using code, rather than getting bogged down in syntax. Students solve problems by moving an item around the grid.</p>	<p><b><u>Standards Addressed:</u></b></p> <p>1.1 Creative development can be an essential process for creating computational artifacts.  1.2 Computing enables people to use creative development processes to create computational artifacts for creative expression or to solve a problem.  2.2 Multiple levels of abstraction are used to write programs or create other computational artifacts  4.1 Algorithms are precise sequences of instructions for processes that can be executed by a computer and are implemented using programming languages.  4.2 Algorithms can solve many but not all computational problems.  5.1 Programs can be developed for creative expression, to satisfy personal curiosity, to create new knowledge, or to solve problems (to help people, organizations, or society).  5.2 People write programs to execute algorithms.  5.3 Programming is facilitated by appropriate abstractions.  5.4 Programs are developed, maintained, and used by people for different purposes.</p>
<p><b>Unit 3 - Programming with JavaScript</b>  30 hours (6 weeks)</p> <p>This unit introduces students to the basics of JavaScript, and gives students practice writing JavaScript programs to solve general problems. Students will be able to compare and contrast JavaScript with their item from the previous unit and identify the abstractions the item provides over JavaScript.</p>	<p><b><u>Standards Addressed:</u></b></p> <p>1.1 Creative development can be an essential process for creating computational artifacts.  1.2 Computing enables people to use creative development processes to create computational artifacts for creative expression or to solve a problem.  1.3 Computing can extend traditional forms of human expression and experience. 2.1 A variety of abstractions built upon binary sequences can be used to represent all digital data.  2.2 Multiple levels of abstraction are used to write programs or create other computational artifacts  2.3 Models and simulations use abstraction to generate new understanding and knowledge.  3.1 People use computer programs to process information to gain insight and knowledge.  4.1 Algorithms are precise sequences of instructions for processes that can be executed by a computer and are implemented using programming languages.  4.2 Algorithms can solve many but not all computational problems.  5.1 Programs can be developed for creative expression, to satisfy personal curiosity, to create new knowledge, or to solve problems (to help people, organizations, or society).  5.2 People write programs to execute algorithms.  5.3 Programming is facilitated by appropriate abstractions.  5.4 Programs are developed, maintained, and used by people for different purposes. 5.5 Programming uses mathematical and logical concepts.</p>

<p><b>Unit 4 - Digital Information</b> 30 hours (6 weeks)</p> <p>Students will learn about the various ways we represent information digitally. Topics covered include number systems, encoding data, programmatically creating pixel images, comparing data encodings, compressing and encrypting data. Students will work in pairs to develop their own data encryption algorithms, and attempt to crack the encryptions of their peers. Their text encryption tool will be embedded in their portfolio websites.</p>	<p><b><u>Standards Addressed:</u></b></p> <p>1.2 Computing enables people to use creative development processes to create computational artifacts for creative expression or to solve a problem.  1.3 Computing can extend traditional forms of human expression and experience. 2.1 A variety of abstractions built upon binary sequences can be used to represent all digital data.  2.2 Multiple levels of abstraction are used to write programs or create other computational artifacts  3.1 People use computer programs to process information to gain insight and knowledge.  3.2 Computing facilitates exploration and the discovery of connections in information.  3.3 There are trade-offs when representing information as digital data.  4.2 Algorithms can solve many but not all computational problems.  5.3 Programming is facilitated by appropriate abstractions.  5.5 Programming uses mathematical and logical concepts.  6.3 Cybersecurity is an important concern for the Internet and the systems built on it</p>
<p><b>Unit 5 - The Internet</b> 30 hours (6 weeks)</p> <p>This unit explores the structure and design of the internet, and how this design affects the reliability of network communication, the security of data, and personal privacy. Students will learn about the protocols and algorithms used in the internet, and the importance of cybersecurity. Students will choose an innovation that was enabled by the Internet and explore the positive and negative impacts of their innovation on society, economy, and culture. Students will develop a computational artifact that illustrates, represents, or explains the innovation's purpose, its function, or its effect, and embed this artifact in their personal portfolio website.</p>	<p><b><u>Standards Addressed:</u></b></p> <p>1.1 Creative development can be an essential process for creating computational artifacts.  1.2 Computing enables people to use creative development processes to create computational artifacts for creative expression or to solve a problem.  2.1 A variety of abstractions built upon binary sequences can be used to represent all digital data.  3.1 People use computer programs to process information to gain insight and knowledge.  4.2 Algorithms can solve many but not all computational problems.  6.1 The Internet is a network of autonomous systems.  6.2 Characteristics of the Internet influence the systems built on it.  6.3 Cybersecurity is an important concern for the Internet and the systems built on it.  7.1 Computing enhances communication, interaction, and cognition.  7.2 Computing enables innovation in nearly every field.  7.3 Computing has global effects -- both beneficial and harmful -- on people and society.  7.4 Computing innovations influence and are influenced by the economic, social, and cultural contexts in which they are designed and used.  7.5 An investigative process is aided by effective organization and selection of resources. Appropriate technologies and tools facilitate the accessing of information and enable the ability to evaluate the credibility of sources.</p>
<p><b>Unit 6 - Data</b></p>	<p><b><u>Standards Addressed:</u></b></p>

<p><b>25 hours (5 weeks)</b></p> <p>In this unit, students will explore using computational tools to store massive amounts of data, manipulate and visualize data, find patterns in data, and pull conclusions from data. Students will consider how the modern wealth of data collection has impacted society in positive and negative ways. Students will work in teams to investigate a question of personal interest, and use public data to present a data driven insight to their peers. They will develop visualizations to communicate their findings, and embed their visualizations in their portfolio websites.</p>	<ul style="list-style-type: none"> <li>1.1 Creative development can be an essential process for creating computational artifacts.</li> <li>1.2 Computing enables people to use creative development processes to create computational artifacts for creative expression or to solve a problem.</li> <li>3.1 People use computer programs to process information to gain insight and knowledge.</li> <li>3.2 Computing facilitates exploration and the discovery of connections in information.</li> <li>3.3 There are trade-offs when representing information as digital data.</li> <li>4.2 Algorithms can solve many but not all computational problems.</li> <li>5.3 Programming is facilitated by appropriate abstractions.</li> <li>7.1 Computing enhances communication, interaction, and cognition.</li> <li>7.3 Computing has global effects -- both beneficial and harmful -- on people and society.</li> </ul>
<p><b>Unit 7 - Performance Tasks</b> <b>20 hours (4 weeks)</b></p> <p>This time is set aside for students to prepare for and create their AP Performance Tasks. Students will be given the chance to review course content and practice the skills necessary to complete each performance task. The Explore PT will be administered over 8 hours of class time, and the Create PT will be administered over 12 hours of class time</p>	<p><b><u>Standards Addressed:</u></b></p> <ul style="list-style-type: none"> <li>1.1 Creative development can be an essential process for creating computational artifacts.</li> <li>1.2 Computing enables people to use creative development processes to create computational artifacts for creative expression or to solve a problem.</li> <li>3.2 Computing facilitates exploration and the discovery of connections in information.</li> <li>5.1 Programs can be developed for creative expression, to satisfy personal curiosity, to create new knowledge, or to solve problems (to help people, organizations, or society).</li> <li>7.5 An investigative process is aided by effective organization and selection of resources. Appropriate technologies and tools facilitate the accessing of information and enable the ability to evaluate the credibility of sources.</li> </ul>
<p><b>Unit 8 - Review for the AP Exam</b> <b>15 hours (3 weeks)</b></p> <p>This unit gives students a review of the topics covered in the course and provides practice solving AP Exam style multiple</p>	<p><b><u>Standards Addressed:</u></b></p> <p>All standards from previous lessons addressed in preparation for the exam</p>



choice questions.	
<p><b>Unit 9 - Final Project</b> (Remainder of academic year)</p> <p>In this unit students will brainstorm their own final project, discuss their ideas with their peers, scope their project to fit within the time constraints of the class, plan out milestones for incremental development, and create their own final product from scratch. This project allows students to think creatively about the applications of the concepts covered in the course, and create something of personal value.</p>	<p><b>Standards Addressed:</b></p> <p>1.1 Creative development can be an essential process for creating computational artifacts.</p> <p>1.2 Computing enables people to use creative development processes to create computational artifacts for creative expression or to solve a problem.</p> <p>5.1 Programs can be developed for creative expression, to satisfy personal curiosity, to create new knowledge, or to solve problems (to help people, organizations, or society).</p> <p>5.3 Programming is facilitated by appropriate abstractions.</p> <p>5.4 Programs are developed, maintained, and used by people for different purposes.</p>

**Course Title: AP Computer Science A (High School CS Course 4)**

**Overview:** The CodeHS AP Java course is a year-long course designed to help students master the basics of Java and equip them to successfully pass the AP Computer Science A Exam at the end of the school year.

**Course Content:**  
The curriculum has been pre-approved by College Board's AP Course Audit as meeting or exceeding the curricular expectations colleges and universities have for this subject.

**Assessment Tools**  
All learning materials and resources teachers and students need for a successful year-long AP Java course can be found on the CodeHS website.

**Unit 1 - Introduction to Programming**  
15 hours (3 weeks)

In this unit, students learn the basics of Java commands, control structures, and problem solving by solving puzzles.

**Standards Addressed:**

CR1 The course teaches students to design and implement computer-based solutions to problems.

CR6 The course includes a structured lab component comprised of a minimum of 20 hours of hands-on lab experiences.

**Unit 2 - Basic Java**  
45 hours (9 weeks)

In this unit, students learn the basics of the Java programming language. This unit covers printing, variables, types, as well as how to use the basic control structures in the Java language.

**Standards Addressed**

- CR1 The course teaches students to design and implement computer-based solutions to problems.
- CR5 The course teaches students to use elements of the standard Java library from the AP Java subset in Appendix A of the AP Computer Science A Course Description.
- CR6 The course includes a structured lab component comprised of a minimum of 20 hours of hands-on lab experiences.

**Unit 3- Methods**  
15 hours (3 weeks)

In this unit, students explore methods. Methods are segments of code that perform a specific task. This module teaches students how to define methods in their programs and uses the autograder to test if their methods are working correctly.

**Standards Addressed:**

- CR1 The course teaches students to design and implement computer-based solutions to problems.
- CR5 The course teaches students to use elements of the standard Java library from the AP Java subset in Appendix A of the AP Computer Science A Course Description.
- CR6 The course includes a structured lab component comprised of a minimum of 20 hours of hands-on lab experiences.

**Unit 4- Classes and Object-Oriented Programming**

This unit teaches students the basics of Object-Oriented Programming in Java, which is a powerful programming paradigm. Students will learn how objects store data and interact with each other in Java programs. Students will design and implement classes and extend classes using inheritance.

**Standards Addressed:**

- CR1 The course teaches students to design and implement computer-based solutions to problems.
- CR4 The course teaches students to code fluently in an object-oriented paradigm using the programming language Java.
- CR5 The course teaches students to use elements of the standard Java library from the AP Java subset in Appendix A of the AP Computer Science A Course Description.
- CR6 The course includes a structured lab component comprised of a minimum of 20 hours of hands-on lab experiences.

**Unit 5- Data Structures**  
30 hours (6 weeks)

This unit introduces basic data structures in Java including arrays, ArrayLists, 2 dimensional arrays, and HashMaps. Data structures will be used to design larger applications.

**Standards Addressed:**

- CR1 The course teaches students to design and implement computer-based solutions to problems.
- CR2b The course teaches students to use commonly used data structures.
- CR3 The course teaches students to select appropriate algorithms and data structures to solve problems.
- CR4 The course teaches students to code fluently in an object-oriented paradigm using the programming language Java.
- CR5 The course teaches students to use elements of the standard Java library from the AP Java subset in Appendix A of the AP Computer Science A Course Description.
- CR6 The course includes a structured lab component comprised of a minimum of 20 hours of hands-on lab experiences.

**Unit 6- Algorithms and Recursion**

15 hours (3 weeks)

In this module, students will be introduced to fundamental searching and sorting algorithms including sequential search, binary search, insertion sort, selection sort, and mergesort. Recursion is also introduced.

**Standards Addressed:**

- CR1 The course teaches students to design and implement computer-based solutions to problems.
- CR2a The course teaches students to use and implement commonly used algorithms.
- CR3 The course teaches students to select appropriate algorithms and data structures to solve problems.
- CR5 The course teaches students to use elements of the standard Java library from the AP Java subset in Appendix A of the AP Computer Science A Course Description.
- CR6 The course includes a structured lab component comprised of a minimum of 20 hours of hands-on lab experiences.

**Unit 7- AP Test Practice**

15 hours (3 weeks)

This unit provides a practice test in the same format as the AP Computer Science in Java exam.

**Standards Addressed:**

- CR1 The course teaches students to design and implement computer-based solutions to problems.
- CR6 The course includes a structured lab component comprised of a minimum of 20 hours of hands-on lab experiences.

**Unit 8- Final Project**

15 hours (3 weeks)

This final project allows students to combine a variety of topics in a single application, utilizing skills learned throughout the course

**Standards Addressed:**

- CR1 The course teaches students to design and implement computer-based solutions to problems.
- CR4 The course teaches students to code fluently in an object-oriented paradigm using the programming language Java.
- CR6 The course includes a structured lab component comprised of a minimum of 20 hours of hands-on lab experiences.

# **Kūlia Academy**

Attachment D: Curriculum Development Plan

## **Curriculum Development**

We will implement Understanding by Design by Grant Wiggins and Jay McTighe in developing our curriculum. This backward design system provides a framework to efficiently design our inquiry-based lessons.

Understanding by Design:

- Proposes an approach to curriculum designed to engage students in inquiry & “uncovering” ideas.
- Proposes a set of design standards for achieving quality control in curriculum & assessment designs.
- Proposes finding a big idea that has enduring value beyond the classroom.

In practice, that means:

- Turning content standards and outcome statements into question form.
- Designing assignments and assessment that evoke possible answers.

### **big ideas**

In Understanding by Design, a big idea refers to core concepts, principles, theories, processes, etc., that should serve as the focal point of curricula, instruction, and assessment. They can be thought of as the meaningful patterns that enable us to connect the dots of otherwise fragmented knowledge.

### **enduring understandings**

Refers to the specific inferences, based on big ideas that have lasting value beyond the classroom. In Understanding by Design, designers are encouraged to write them as full-sentence statements, describing what, specifically, students should understand about the topic. In thinking about the enduring understandings for a unit or course, teachers are encouraged to ask, What do we want students to understand and be able to use several years from now, after they have forgotten the details?

Enduring understandings are central to a discipline and are transferable to new situations.

### **essential question**

A question is essential, as opposed to either trivial or leading, if it is a question at the heart of a subject or curriculum, and promotes inquiry and uncoverage of a subject. Essential questions, thus, do not yield a single straightforward answer, as a leading question does, but different plausible responses, about which thoughtful and knowledgeable people may disagree. An essential question can be overarching or topical, i.e. unit-specific in scope.

## **Key Individuals in Curriculum Development**

**Curriculum Experts:** An expert in each subject (Math, ELA, Science, Social Science, Coding, Physical Education, Electives) will be hired for a consultancy-based contract to develop plans and documents as described below. Curriculum experts might be university professors, lecturers, researchers, experienced school administrators or curriculum developers.

**School Administrators:** The school principal will be hired in August 2023 on a full-time basis, 1 year before school opening. The assistant principal will be hired in the beginning of June 2024.

IMPORTANT NOTE: Please note that this is a draft plan, will be revised and finalized before implementation.

## I. PHASE ONE: Identify Desired Results

TASKS	ACTION NEEDED	RESPONSIBILITY	TIMELINE
<p><b>1. Identify and place standards, develop big ideas and concepts (Enduring Understandings) at each grade level/course</b></p>	<p>A. Apply <u>big ideas</u> and <u>enduring understandings</u> at each grade level (this may result in grade level adjusting enduring understandings to match developmentally appropriate levels)</p> <p>B. Establish proficiency levels for standards and <u>benchmarks</u> (may happen simultaneously with C and D.)</p> <p>C. Group standards by big ideas/concepts. (may happen simultaneously with B and D.)</p> <p>D. Place grouped standards at grade levels/courses (may happen simultaneous with B and C)</p> <p>E. Evaluate cohesiveness of standards across the discipline (K-12 spiral, redundancy, gaps)</p>	Curriculum Experts	January-February 2023
<p><b>2. Write Essential Questions</b></p>	<p>A. Develop <u>Essential Questions</u> that:</p> <ul style="list-style-type: none"> <li>a. Address student <u>misunderstandings</u></li> <li>b. Are student friendly</li> <li>c. Are age appropriate</li> <li>d. Are open ended</li> <li>e. Encourage student dialogue</li> <li>f. Encourage higher order thinking</li> </ul>	Curriculum Experts	January-February 2023

<b>3. Initiate projection map</b>	A. Record <u>big ideas</u> /concepts ( <u>enduring understandings</u> ) B. Develop skills/knowledge using <u>Bloom's Taxonomy</u> .	Curriculum Experts	January-February 2023
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## II. PHASE TWO: Check Alignment, Select/Develop Assessments

TASKS	ACTION NEEDED	RESPONSIBILITY	TIMELINE
<p><b>1. Evaluate alignment of big ideas (enduring understandings), standards, skills/concepts and essential questions</b></p>	<p>A. Check alignment of the newly developed skills/knowledge to the Common Core/NGSS/HCPS III/CSTA standards</p>	<p>Curriculum Experts</p>	<p>March 2023</p>
<p><b>2. Identify or develop Assessments (Performance Based and others)</b></p>	<p>A. Select skills/knowledge to be assessed            B. Select/Develop <u>assessments</u> of selected skills/knowledge (using Assessment Protocol) that:                a. Check understanding in a variety of ways                b. Align with corresponding <u>Bloom's</u> levels                c. Consider purpose (diagnostic, formative, summative)                d. Include student self-assessment opportunities            C. Develop <u>rubrics</u>/checklists for assessments</p>	<p>Curriculum Experts</p>	<p>March 2023</p>

### III. PHASE THREE: Develop Scope and Sequence, Curriculum Maps

TASKS	ACTION NEEDED	RESPONSIBILITY	TIMELINE
1. <b>Develop scope and sequence</b>	A. Develop Scope and Sequence for each subject of each grade level	Curriculum Experts	April-May 2023
2. <b>Develop curriculum maps</b>	A. Develop a curriculum map for each subject of each grade level B. Select activities/resources from approved textbooks or other available resources using considering the following: <ul style="list-style-type: none"> <li>a. Alignment with skill/concepts/assessments</li> <li>b. Best Practices based on research findings</li> <li>c. Common vocabulary</li> <li>d. Differentiation</li> <li>e. Technology and media integration (including software used for remediation, enrichment and direct instruction)</li> <li>f. Reading in the content area and writing across curricula</li> <li>g. Develop integrated and/or interdisciplinary activities including collaboration with other content area teachers.</li> </ul>	Curriculum Experts	April-May 2023

#### IV. PHASE FOUR: Plan Learning Experiences and Instruction

TASKS	ACTION NEEDED	RESPONSIBILITY	TIMELINE
<p>1. <b>Develop SMART goals and objectives for professional development</b></p>	<p>A. Develop <u>SMART goals</u> and measurable objectives for professional development based on the newly developed curricula</p>	<p>Curriculum Experts</p>	<p>June 2023</p>
<p>2. <b>Identify possible professional development providers.</b></p>	<p>B. Identify possible professional development providers for the newly identified goals.            C. Determine necessary professional development activities related to the goals.            D. Determine duration of each professional activity.            E. Create a professional development action plan for each subject/grade.</p>	<p>Curriculum Experts</p>	<p>June 2023</p>

## V. PHASE FIVE: Implement Plans

TASKS	ACTION NEEDED	RESPONSIBILITY	TIMELINE
1. Implement staff development action plan from Phase IV.	A. Implement action plans B. Modify and adjust professional development activities as needed C. Evaluate effectiveness of professional development activities	Principal	July 2023
2. <b>Implement Units (Diary mapping)</b>	A. Adjust content, enduring understanding, skills, assessments, essential questions, resources based upon what you actually do (enacted curriculum). B. Discuss and plan implementation at beginning of year in-service and bi-weekly same grade and same subject faculty meetings C. Identify implementation issues as they arise; solve if possible or consider as a <u>SMART goal</u> for next phase D. Assess implementation at the end of every semester	Teaching staff – Assistant Principal	A. July 2023-May 2024 B. July 2024 C. Aug. 2024 - May 2025 D. Aug. 2024 - May 2025  <i>(School launches in July/August 2024)</i>

<p><b>3. Evaluate and Revise assessments based upon student work (performance based and others)</b></p>	<p>A. Collect and review student work/assessments at team and/or committee level  B. Re-evaluate and revise assessments of selected skills/knowledge  C. Revise rubrics and checklists for skills assessed.</p>	<p>Teaching staff –  Assistant Principal</p>	<p>July 2024-May 2025</p>
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# **Kūlia Academy**

## Attachment E. Proposed Learning Standards

## 8th Grade Learning Standards

Math

ELA

Science

Social Studies

Computer Science

Physical Education

8<sup>TH</sup> GRADE MATH (NEED TO WRITE STANDARDS, NOT JUST REFERENCE NUMBERS)

**Understand congruence and similarity and use them to construct models and solve real-world and mathematical problems. (CC.8.G.A.1, CC.8.G.A.1a, CC.8.G.A.1b, CC.8.G.A.1c, CC.8.G.A.2, CC.8.G.A.3, CC.8.G.A.5, CC.8.G.A.3, CC.8.G.A.4, CC.8.G.A.5)**

**Know that there are numbers that are not rational and approximate them by rational numbers (CC.8.NS.A.1, CC.8.NS.A.2)**

**Understand and apply the Pythagorean Theorem (CC.8.G.B.6, CC.8.G.B.7, CC.8.G.B.8)**

**Define, evaluate, analyze, graph and compare functions (CC.8.F.A.1, CC.8.F.A.2, CC.8.F.A.3)**

**Use functions to model relationships between quantities. (CC.8.F.B.4, CC.8.F.B.5)**

**Analyze and solve linear equations and systems of equations. (CC.8.EE.C.7, CC.8.EE.C.7a, CC.8.EE.C.7b, CC.8.EE.C.8, CC.8.EE.C.8a, CC.8.EE.C.8b, CC.8.EE.C.8c, CC.8.EE.B.5, CC.8.EE.B.6)**

**Work with radicals, integer exponents, and scientific notation. (CC.8.EE.A.1, CC.8.EE.A.2, CC.8.EE.A.3, CC.8.EE.A.4)**

**Solve real-world and mathematical problems involving volume of cylinders, cones and spheres. (CC.8.G.C.9)**

**Investigate patterns of association in bivariate data. (CC.8.SP.A.1, CC.8.SP.A.2, CC.8.SP.A.30, CC.8.SP.A.4)**

**Analyze, understand, explain, and evaluate reading material or literary works to construct meaning.**

RL.8.4. Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.

RL.8.2. Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; providing an objective summary of the text.

RL.8.5. Compare and contrast the structure of two or more texts and analyze how the differing structure of each text contributes to its meaning and style.

RL.8.3. Analyze how particular lines of dialogue or incidents in a story or drama propel the action, reveal aspects of a character, or provoke a decision.

RI.8.1. Cite the textual evidence that most strongly supports and analysis of what the text says explicitly as well as inferences drawn from the text. RI.8.6 Determine an author's point of view or purpose in a text, including the role of particular sentences in developing and refining a key concept.

RL.8. Analyze how differences in the point of view of the characters and the audience create such effects as suspense or humor. RL.8.7. Analyze the extent to which a filmed or live production of a story or drama stays faithful to or departs from the text or script, evaluating the choices made by the director or actors.

RI.8.5. Analyze in detail the structure of a specific paragraph in a text, including the role of particular sentences in developing and refining a key concept. RI.8.7 Evaluate the advantages and disadvantages of using different mediums to present a particular topic or idea.

L.8.4. Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on grade 8 reading and content flexibly from a range of strategies. L.8.4.b. Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word.

RI.8.2. Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text. RI.8.8. Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.

RL.8.2. Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting and plot; provide an objective summary of the text. RL.8.3. Analyze how particular lines of dialogue or incidents in a story or drama propel the action, reveal aspects of a character, or provoke a decision.

RI.8.3. Analyze how a text makes connections and distinctions between individuals, ideas or events.

RL.8.1. Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text. RL.8.4. Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.

RI.8.7. Evaluate the advantages and disadvantages of using different mediums to present a particular topic or idea. RI.8.9. Analyze a case in which two or more texts provide conflicting information on the same topic and identify where the texts disagree on matters of fact or interpretation.

**Communicate effectively in written and oral forms to describe, explain, persuade, and/or create meaning.**



L.8.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.L.8.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.  
L.8.3. Use knowledge of language and its conventions when writing, speaking, reading or listening.  
S.8.1. Engage effectively in a range of collaborative discussions with diverse partners of grade 8 topics, texts, and issues, building on others’ ideas and expressing their own clearly.  
L.8.1.b. Form and use verbs in the active and passive voice.L.8.1.c. Form and use verbs in the indicative, imperative, interrogative, conditional, and subjunctive mood.  
S.8.4. Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; used appropriate eye contact, adequate volume, and clear pronunciation.  
L.8.3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.L.8.6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.  
S.8.5. Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.

**Build writing around strong central ideas or points of view; support the ideas with sound reasoning and evidence, precise words and phrases, smooth transitions, and different sentence structures.**

W.8.3. Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences  
W.8.3.d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events.  
W.8.3.e. Provide a conclusion that follows from and reflects on the narrated experiences or events.  
W.8.3. Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.W.8.3.a. Engage and orient the reader by establishing a context and point of view and introducing a narrator and/or characters; organize an event sequence that unfolds naturally and logically.W.8.3.b. Use narrative techniques, such as dialogue, pacing, description, and reflection, to develop experiences, events, and/or characters.W.8.2. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.  
W.8.1. Write arguments to support claims with clear reasons and relevant evidence.W.8.2.a Introduce a topic clearly, previewing what is to follow; organizing ideas, concepts, and information into broader categories; include formatting, graphics, and multimedia when used to aiding comprehension  
W.8.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.W.8.5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience has been addressed.  
W.8.3.d. Use precise words and phrases, relevant descriptive details, and sensory language to capture the action and convey experiences and events.  
W.8.5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience has been addressed.

**Engage in basic research activities using a variety of materials from print, non-print, and electronic sources.**

W.8.7. Conduct short research projects to answer a question drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

W.8.8. Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

W.8.9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

**Analyze the purpose of information presented in diverse media (e.g., print, TV, web), and evaluate its social, political, or commercial motives.**

S.8.2. Analyze the purpose of information presented in diverse media and formats and evaluate the motives behind its presentation

8<sup>TH</sup> GRADE SCIENCE

**Describe the major characteristics of living organisms.**

- MS-LS1-1 Conduct an investigation to provide evidence that living things are made of cells, either one cell or many different numbers and types of cells.
- MS-LS1-2 Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.
- MS-LS1-3 Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.

**Identify interactions between matter and energy on Earth and in space.**

- MS-PS1-3 Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.
- MS-PS1-4 Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.
- MS-PS2-1 Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.
- MS-PS2-2 Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.
- MS-PS2-4 Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.
- MS-PS2-5 Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.
- MS-PS3-1 Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.
- MS-PS3-2 Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.

- MS-PS3-3 Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.
- MS-PS3-4 Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.
- MS-PS3-5 Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.

**Describe the structure and properties of atoms and molecules and use this Knowledge to Explain Real-Life Phenomena.**

- MS-PS1-1 Develop models to describe the atomic composition of simple molecules and extended structures.
- MS-PS1-2 Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.
- MS-PS1-5 Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.
- MS-PS1-6 Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.

**Understand and Describe Mechanisms in Growth, Development, and Reproduction of Organisms**

- MS-LS1-4 Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.
- MS-LS1-5 Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.
- MS-LS3-1 Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.
- MS-LS3-2 Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.
- MS-LS4-5 Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.

**Understand and Explain Natural Selection and Adaptations and use this Knowledge to Explain Real-Life Phenomena**

- MS-LS4-1 Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.
- MS-LS4-2 Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.
- MS-LS4-3 Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.
- MS-LS4-4 Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.

- MS-LS4-6 Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.

### **Describe the motions of objects in our solar system and in other space systems**

- MS-ESS1-1 Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.
- MS-ESS1-2 Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.
- MS-ESS1-3 Analyze and interpret data to determine scale properties of objects in the solar system.

### **Describe and Explain the Earth's Systems including Weather and Climate and the History of Earth**

- MS-ESS1-4 Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.
- MS-ESS2-2 Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
- MS-ESS2-3 Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.
- MS-ESS2-1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.
- MS-ESS2-4 Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.
- MS-ESS3-1 Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
- MS-ESS2-5 Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.
- MS-ESS2-6 Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.
- MS-ESS3-5 Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

### **Understand Waves and Electromagnetic Radiation and Use This Knowledge to Explain Real-Life Phenomena**

- MS-PS4-1 Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.
- MS-PS4-2 Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.
- MS-PS4-3 Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.
- MS-PS2-3 Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.

### **Understand Matter and Energy in Organisms and Ecosystems and Use This Knowledge to Explain Real-Life Phenomena**

- MS-LS1-6 Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.
- MS-LS1-7 Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.
- MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- MS-LS2-3 Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
- MS-LS2-4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
- MS-LS2-2 Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
- MS-LS2-5 Evaluate competing design solutions for maintaining biodiversity and ecosystem services.

### **Design and Test Models and Solutions in Engineering and Technology**

- MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
- MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- MS-ETS1-3 Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
- MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

### **Understand Human Impacts on the Earth and Utilize this Knowledge to Contribute to the Earth's Problems.**

- MS-ESS3-2 Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
- MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
- MS-ESS3-4 Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

## **SOCIAL STUDIES CONTENT AND PERFORMANCE STANDARDS GRADE 8**

### **Standard 1: Historical Understanding: CHANGE, CONTINUITY, AND CAUSALITY—Students will understand change and/or continuity and cause and/or effect in history**

No benchmark at this level

**Standard 2: Historical Understanding: INQUIRY, EMPATHY, AND PERSPECTIVE— Students will use the tools and methods of inquiry, perspective, and empathy to explain historical events with multiple interpretations and judge the past on its own terms**

SS.8.2.1 Differentiate between primary and secondary sources, understanding the potential and limitations of each

SS.8.2.2 Describe why different people may have different perspectives of the same historical event and multiple interpretations should be considered in order to avoid historical linearity and inevitability

**Standard 3: History: UNITED STATES HISTORY—Students will understand important historical events in the Post-Revolutionary war through Reconstruction era (including Second Great Awakening and westward expansion)**

SS.8.3.1 Explain the problems of the national government under the Articles of Confederation that led to the Constitutional Convention of 1787

SS.8.3.2 Describe the controversies (including large states versus small states and slavery) and the compromises that resolved them (including the Great Compromise and the Three-Fifths Compromise) at the Constitutional Convention

SS.8.3.3 Describe the ideas and principles (including checks and balances, separation of powers, representative democracy) of the Constitution

SS.8.3.4 Explain the controversies over the ratification of the Constitution

SS.8.3.5 Explain how the Bill of Rights places limitations on the federal government

SS.8.3.6 Describe the emergence of the two party system (including Washington’s farewell address and the election of 1800)

SS.8.3.7 Describe significant events and changes associated with Andrew Jackson’s presidency (including Jackson’s stance on Indian removal issues and Jacksonian democracy)

SS.8.3.8 Examine the impact of the Seneca Falls Convention and major abolitionists, including Frederick Douglass and William Lloyd Garrison

SS.8.3.9 Describe how the development of technology in the first half of the 19th century had an impact on American life

SS.8.3.10 Examine how and why the United States became a continental nation through westward expansion

SS.8.3.11 Explain the sectionalism that emerged in the first half of the 19th century

SS.8.3.12 Explain how the key issues and events after the Mexican War relate to the outbreak of the Civil War

SS.8.3.13 Explain the major factors that determined the outcome of the Civil War (including leaders, resources, and key battles)

SS.8.3.14 Analyze the Reconstruction plan of President Lincoln and that of the congressional Republicans

SS.8.3.15 Explain the impact of the Civil War on African Americans

**Standard 4: Political Science/Civics: GOVERNANCE, DEMOCRACY, AND INTERACTION—Students will understand the purpose and historical impact of political institutions, the principles and values of American constitutional democracy, and the similarities and differences in government across cultural perspectives**

SS.8.4.1 Describe the purpose and structures of the three branches of the federal government

SS.8.4.2 Explain United States foreign policy as reflected in the Monroe Doctrine

SS.8.4.3 Describe the influences of America on other nations and/or organizations and vice versa (including French and Spanish interests at the start of the Lewis and Clark Expedition and the impact of the Indian removals)

**Standard 5: Political Science/Civics: PARTICIPATION AND CITIZENSHIP—Students will understand roles, rights (personal, economic, political), and responsibilities of American citizens and exercise them in civic action**

SS.8.5.1 Explain the responsibilities of citizens in a representative democracy

**Standard 6: Cultural Anthropology: SYSTEMS, DYNAMICS, AND INQUIRY—Students will understand culture as a system of beliefs, knowledge, and practices shared by a group and understand how cultural systems change over time**

No benchmark at this level

**Standard 7: Geography: WORLD IN SPATIAL TERMS—Students will use geographic representations to organize, analyze, and present information on people, places, and environments and understand the nature and interaction of geographic regions and societies around the world**

No benchmark at this level

**Standard 8: Economics: RESOURCES, MARKETS, AND GOVERNMENT—Students will understand economic concepts and the characteristics of various economic systems**

SS.8.8.1 Explain productivity in terms of output per worker, hour, machine, or unit of land, and its effects on standards of living in 18th and/or 19th century America

SS.8.8.2 Describe the factors that influence production and consumption decisions in a market system

## HAWAII CONTENT AND PERFORMANCE STANDARDS COMPUTER SCIENCE GRADES 8

### Level 2: Grades 6-8

**Computing Systems-** The interaction between humans and computing devices presents advantages, disadvantages, and unintended consequences. The study of human-computer interaction can improve the design of devices and extend the abilities of humans. Hardware and software determine a computing system's capability to store and process information. The design or selection of a computing system involves multiple considerations and potential tradeoffs, such as functionality, cost, size,

speed, accessibility, and aesthetics. Comprehensive troubleshooting requires knowledge of how computing devices and components work and interact. A systematic process will identify the source of a problem, whether within a device or in a larger system of connected devices.

2-CS-01 Recommend improvements to the design of computing devices, based on an analysis of how users interact with the devices.

2-CS-02 Design projects that combine hardware and software components to collect and exchange data.

2-CS-03 Systematically identify and fix problems with computing devices and their components.

**Networks and the Internet-** Computers send and receive information based on a set of rules called protocols. Protocols define how messages between computers are structured and sent. Considerations of security, speed, and reliability are used to determine the best path to send and receive data. The information sent and received across networks can be protected from unauthorized access and modification in a variety of ways, such as encryption to maintain its confidentiality and restricted access to maintain its integrity. Security measures to safeguard online information proactively address the threat of breaches to personal and private data.

2-NI-04 Model the role of protocols in transmitting data across networks and the Internet.

2-NI-05 Explain how physical and digital security measures protect electronic information.

2-NI-06 Apply multiple methods of encryption to model the secure transmission of information.

**Data and Analysis-** People design algorithms and tools to automate the collection of data by computers. When data collection is automated, data is sampled and converted into a form that a computer can process. For example, data from an analog sensor must be converted into a digital form. The method used to automate data collection is influenced by the availability of tools and the intended use of the data. Applications store data as a representation. Representations occur at multiple levels, from the arrangement of information into organized formats (such as tables in software) to the physical storage of bits. The software tools used to access information translate the low-level representation of bits into a form understandable by people. Data can be transformed to remove errors, highlight or expose relationships, and/or make it easier for computers to process. Computer models can be used to simulate events, examine theories and inferences, or make predictions with either few or millions of data points. Computer models are abstractions that represent phenomena and use data and algorithms to emphasize key features and relationships within a system. As more data is automatically collected, models can be refined.

2-DA-07 Represent data using multiple encoding schemes.

2-DA-08 Collect data using computational tools and transform the data to make it more useful and reliable.

2-DA-09 Refine computational models based on the data they have generated.

**Algorithms and Programming-** Algorithms affect how people interact with computers and the way computers respond. People design algorithms that are generalizable to many situations. Algorithms that are readable are easier to follow, test, and debug. Programmers create variables to store data values of selected types. A meaningful identifier is assigned to each variable to access and perform operations on the value by name. Variables enable the flexibility to represent different situations, process different sets of data, and produce varying outputs. Programmers select and combine control structures, such as loops, event handlers, and conditionals, to create more complex program behavior. Programs use procedures to organize code, hide implementation details, and make code easier to reuse. Procedures can be repurposed in new programs.



Defining parameters for procedures can generalize behavior and increase reusability. People design meaningful solutions for others by defining a problem's criteria and constraints, carefully considering the diverse needs and wants of the community, and testing whether criteria and constraints were met.

2-AP-10 Use flowcharts and/or pseudocode to address complex problems as algorithms.

2-AP-11 Create clearly named variables that represent different data types and perform operations on their values.

2-AP-12 Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.

2-AP-13 Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.

2-AP-14 Create procedures with parameters to organize code and make it easier to reuse.

2-AP-15 Seek and incorporate feedback from team members and users to refine a solution that meets user needs.

2-AP-16 Incorporate existing code, media, and libraries into original programs, and give attribution.

2-AP-17 Systematically test and refine programs using a range of test cases.

2-AP-18 Distribute tasks and maintain a project timeline when collaboratively developing computational artifacts.

2-AP-19 Document programs in order to make them easier to follow, test, and debug.

**Impacts of Computing-** Advancements in computing technology change people's everyday activities. Society is faced with tradeoffs due to the increasing globalization and automation that computing brings. People can organize and engage around issues and topics of interest through various communication platforms enabled by computing, such as social networks and media outlets. These interactions allow issues to be examined using multiple viewpoints from a diverse audience. There are tradeoffs between allowing information to be public and keeping information private and secure. People can be tricked into revealing personal information when more public information is available about them online.

2-IC-20 Compare tradeoffs associated with computing technologies that affect people's everyday activities and career options.

2-IC-21 Discuss issues of bias and accessibility in the design of existing technologies.

2-IC-22 Collaborate with many contributors through strategies such as crowdsourcing or surveys when creating a computational artifact.

2-IC-23 Describe tradeoffs between allowing information to be public and keeping information private and secure.

## HAWAII CONTENT AND PERFORMANCE STANDARDS PHYSICAL EDUCATION GRADE 8

### Grade 8

#### **Standard 1: MOVEMENT FORMS—Students will use motor skills and movement patterns to perform a variety of physical activities**

PE.6-8.1.1 Use mature (proper) movement forms appropriately in the context of modified games or activities, such as sports, dance, exercise, and gymnastics

PE.6-8.1.2 Use combinations of movement forms in the context of modified games or activities, such as sports, dance, exercise, and gymnastics

**Standard 2: COGNITIVE CONCEPTS—Students will understand movement concepts, principles, strategies, and tactics as they apply to the learning and performance of physical activities**

PE.6-8.2.1 Identify strategies to improve performance of movement skills

PE.6-8.2.2 Describe basic strategies for simple and modified activities

PE.6-8.2.3 Apply rules and etiquette for safe participation in physical activities

**Standard 3: ACTIVE LIFESTYLE—Students will participate regularly in physical activity**

PE.6-8.3.1 Identify opportunities for physical activity outside of the physical education class

PE.6-8.3.2 Participate regularly in moderate to vigorous physical activities to meet personal goals

PE.6-8.3.3 Explain the relationship between a healthy lifestyle and regular participation in physical activities

**Standard 4: PHYSICAL FITNESS—Students will know ways to achieve and maintain a health-enhancing level of physical fitness**

PE.6-8.4.1 Describe the principles of training and conditioning and how they affect the components of health-related fitness

PE.6-8.4.2 Set goals for improving the components of personal health-related physical fitness

## NĀ HOPENA A'Ō STATEMENTS FOR LEADERSHIP TRAINING GRADE 8

### **Outcome Area 1: Strengthened Sense of Belonging:**

I stand firm in my space with a strong foundation of relationships. A sense of Belonging is demonstrated through an understanding of lineage and place and a connection to past, present, and future. I am able to interact respectfully for the betterment of self and others.

Know who I am and where I am from

Know about the place I live and go to school

Build relationships with many diverse people

Care about my relationships with others

Am open to new ideas and different ways of doing things

Communicate with clarity and confidence

Understand how actions affect others

Actively participate in school and communities

### **Outcome Area 2: Strengthened Sense of Responsibility:**

I willingly carry my responsibility for self, family, community and the larger society. A sense of Responsibility is demonstrated by a commitment and concern for others. I am mindful of the values, needs and welfare of others.

Come to school regularly, on-time and ready to learn

See self and others as active participants in the learning process

Question ideas and listens generously

Ask for help and feedback when appropriate

Make good decisions with moral courage and integrity in every action.

Set goals and complete tasks fully

Reflect on the quality and relevancy of the learning

Honor and make family, school and communities proud

### **Outcome Area 3: Strengthened Sense of Excellence:**

I believe I can succeed in school and life and am inspired to care about the quality of my work. A sense of Excellence is demonstrated by a love of learning and the pursuit of skills, knowledge and behaviors to reach my potential. I am able to take intellectual risks and strive beyond what is expected.

Define success in a meaningful way

Know and apply unique gifts and abilities to a purpose  
Prioritize and manage time and energy well  
Take initiative without being asked  
Explore many areas of interests and initiate new ideas  
Utilize creativity and imagination to problem-solve and innovate  
See failure as an opportunity to learn well  
Assess and make improvements to produce quality work

**Outcome Area 4: Strengthened Sense of Aloha:**

I show care and respect for myself, families, and communities. A sense of Aloha is demonstrated through empathy and appreciation for the symbiotic relationship between all. I am able to build trust and lead for the good of the whole.

Give generously of time and knowledge  
Appreciate the gifts and abilities of others  
Make others feel comfortable and welcome  
Communicate effectively to diverse audiences  
Respond mindfully to what is needed  
Give joyfully without expectation of reward  
Share the responsibility for collective work  
Spread happiness

**Outcome Area 5: Strengthened Sense of Total Well-being:**

I learn about and practice a healthy lifestyle. A sense of Total Well-being is demonstrated by making choices that improve the mind, body, heart and spirit. I am able to meet

the demands of school and life while contributing to the well-being of family, ‘āina, community and world.

Feel safe physically and emotionally  
Develop self-discipline to make good choices  
Manage stress and frustration levels appropriately  
Have goals and plans that support healthy habits, fitness and behaviors  
Utilize the resources available for wellness in everything and everywhere

Have enough energy to get things done daily  
Engage in positive, social interactions and has supportive relationships  
Promote wellness in others

**Outcome Area 6: Strengthened Sense of Hawai'i:**

I am enriched by the uniqueness of this prized place. A sense of Hawai'i is demonstrated through an appreciation for its rich history, diversity and indigenous language and culture. I am able to navigate effectively across cultures and communities and be a steward of the homeland.

Pronounce and understand Hawaiian everyday conversational words

Use Hawaiian words appropriate to their task

Learn the names, stories, special characteristics and the importance of places in Hawai'i

Learn and apply Hawaiian traditional world view and knowledge in contemporary settings

Share the histories, stories, cultures and languages of Hawai'i

Compare and contrast different points of views, cultures and their contributions

Treat Hawai'i with pride and respect

Call Hawai'i home

# **Kūlia Academy**

Attachment F. Exit standards for graduating students

# Exit Standards

## A. Requirements for High School Graduation.

The purpose of high school graduation requirements is to establish rigorous standards of learning that will enable all public school students to meet the vision of a Hawaii public school graduate. All Hawaii public school graduates will:

- Realize their individual goals and aspirations;
- Possess the attitudes, knowledge, and skills necessary to contribute positively and compete in a global society in which data and coding will play a bigger role;
- Exercise the rights and responsibilities of citizenship; and
- Pursue post-secondary education and/or careers without need for remediation.

Students who demonstrate proficiency in the Hawaii Content and Performance Standards and General Learner Outcomes in the required courses shall receive a high school diploma.

A. Requirements for Graduation. The minimum requirements for graduation from high school, grades 9-12, are listed in our narrative proposal.

### 2. Demonstrated mastery of essential competencies.

a. Competencies are the basic standards of proficiency required of students who have completed course and credit requirements.

b. Mastery shall be determined in accordance with established Board of Education procedures and applicable content standards such as Hawaii Content and Performance Standards and Nā Hopena A'o Outcomes and The CSTA K–12 Computer Science Standards.

B. Commencement Exercises. Commencement exercises may be scheduled any time after the last day of school for seniors. The last day of school for seniors shall be set by the Kulia Board of Directors. Students shall be permitted to participate in commencement exercises if they meet the requirements for a diploma or a certificate.

## High School Learning Standards

Math

ELA

Science

Social Studies

Computer Science

Physical Education

World Languages

Health

Fine Arts

### MATH

#### COMMON CORE ENGLISH LANGUAGE ARTS GRADES 9-12

##### Grades 9-10

**Strand- Reading Literature-** The Reading standards place equal emphasis on the sophistication of what students read and the skill with which they read. Standard 10 defines a grade-by-grade “staircase” of increasing text complexity that rises from beginning reading to the college and career readiness level. Whatever they are reading, students must also show a steadily growing ability to discern more from and make fuller use of text, including making an increasing number of connections among ideas and between texts, considering a wider range of textual evidence, and becoming more sensitive to inconsistencies, ambiguities, and poor reasoning in texts.

**Key Ideas and Details-** Students will be able to read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text; Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas; Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

9-10.RL.1 Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

9-10.RL.2 Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.

9-10.RL.3 Analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of a text, interact with other characters, and advance the plot or develop the theme.



**Craft and Structure-** Students will be able to interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone; Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole; Assess how point of view or purpose shapes the content and style of a text.

9-10.RL.4 Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone).

9-10.RL.5 Analyze how an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise.

9-10.RL.6 Analyze a particular point of view or cultural experience reflected in a work of literature from outside the United States, drawing on a wide reading of world literature.

**Integration of Knowledge and Ideas-** Students will be able to integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words; Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence; Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

9-10.RL.7 Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (e.g., Auden's "Musée des Beaux Arts" and Breughel's Landscape with the Fall of Icarus).

9-10.RL.9 Analyze how an author draws on and transforms source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare).

**Range of Reading and Level of Text Complexity-** Students will be able to read and comprehend complex literary and informational texts independently and proficiently.

9-10.RL.10 By the end of grade 9, read and comprehend literature, including stories, dramas, and poems, in the grades 9–10 text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 10, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 9–10 text complexity band independently and proficiently.

### **Strand- Reading Informational**

**Key Ideas and Details-** Same as reading literature description above

- 9-10.RI.1 Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
- 9-10.RI.2 Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.
- 9-10.RI.3 Analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.

**Craft and Structure-** Same as reading literature description above

- 9-10.RI.4 Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).
- 9-10.RI.5 Analyze in detail how an author’s ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter).
- 9-10.RI.6 Determine an author’s point of view or purpose in a text and analyze how an author uses rhetoric to advance that point of view or purpose.

**Integration of Knowledge and Ideas-** Same as reading literature description above

- 9-10.RI.7 Analyze various accounts of a subject told in different mediums (e.g., a person’s life story in both print and multimedia), determining which details are emphasized in each account.
- 9-10.RI.8 Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.
- 9-10.RI.9 Analyze seminal U.S. documents of historical and literary significance (e.g., Washington’s Farewell Address, the Gettysburg Address, Roosevelt’s Four Freedoms speech, King’s “Letter From Birmingham Jail”), including how they address related themes and concepts.

**Range of Reading and Level of Text Complexity-** Same as reading literature description above

- 9-10.RI.10 By the end of grade 9, read and comprehend literary nonfiction in the grades 9–10 text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 10, read and comprehend literary nonfiction at the high end of the grades 9–10 text complexity band independently and proficiently.

**Strand- Writing-** The Standards acknowledge the fact that whereas some writing skills, such as the ability to plan, revise, edit, and publish, are applicable to many types of writing, other skills are more properly defined in terms of specific writing types: arguments, informative/explanatory texts, and narratives. Standard 9 stresses the importance of the writing-reading connection by requiring students to draw upon and write about evidence from literary and informational texts. Because of the centrality of writing to most forms of inquiry, research standards are prominently included in this strand, though skills important to research are infused throughout the document.

**Text Types and Purposes-** Students will be able to write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence; Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content; Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

9-10.W.1 Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

- a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence.
- b. Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns.
- c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence. and between claim(s) and counterclaims.
- d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
- e. Provide a concluding statement or section that follows from and supports the argument presented.

9-10.W.2 Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

- a. Introduce a topic; organize complex ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
- b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
- c. Use appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.
- d. Use precise language and domain-specific vocabulary to manage the complexity of the topic.
- e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
- f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).

9-10.W.3 Write narratives to develop real or imagined experiences or events using effective technique. well-chosen details, and well-structured event sequences.

- a. Engage and orient the reader by setting out a problem, situation, or observation, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.
- b. Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.
- c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole.
- d. Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.

e. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.

**Production and Distribution of Writing-** Students will be able to produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. 5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. 6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

9-10.W.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)

9-10.W.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command of Language standards 1–3 on up to and including grades 9-10 page 55.)

9-10.W.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology’s capacity to link to other information and to display information flexibly and dynamically.

**Research to Build and Present Knowledge-** Students will be able to conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation; Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism; Draw evidence from literary and/or informational texts to support analysis, reflection, and research

9-10.W.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

9-10.W.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.

9-10.W.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

a. Apply grades 9–10 Reading standards to literature (e.g., “Analyze how an author draws on and transforms source material in a specific work [e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare]”).

b. Apply grades 9–10 Reading standards to literary nonfiction (e.g., “Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning”).

**Range of Writing-** Students will be able to write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

9-10.W.10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

**Strand- Speaking and Listening-** Including but not limited to skills necessary for formal presentations, the Speaking and Listening standards require students to develop a range of broadly useful oral communication and interpersonal skills. Students must learn to work together, express and listen carefully to ideas, integrate information from oral, visual, quantitative, and media sources, evaluate what they hear, use media and visual displays strategically to help achieve communicative purposes, and adapt speech to context and task.

**Comprehension and Collaboration-** Students will be able to prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively; Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally; Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

9-10.SL.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

- a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.
- b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed.
- c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.
- d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make

9-10.SL.2 Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.

9-10.SL.3 Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.

**Presentation of Knowledge and Ideas-** Students will be able to present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience; Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.; Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

9-10.SL.4 Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.

9-10.SL.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.

9-10.SL.6 Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grades 9-10 Language standards 1 and 3 on pages 54 for specific expectations.)

**Strand- Language-** The Language standards include the essential “rules” of standard written and spoken English, but they also approach language as a matter of craft and informed choice among alternatives. The vocabulary standards focus on understanding words and phrases, their relationships, and their nuances and on acquiring new vocabulary, particularly general academic and domain-specific words and phrases.

**Conventions of Standard English-** Students will be able to demonstrate command of the conventions of standard English grammar and usage when writing or speaking; Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

9-10.L.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

a. Use parallel structure.\*

b. Use various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent; noun, relative, adverbial) to convey specific meanings and add variety and interest to writing or presentations.

9-10.L.2 Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

a. Use a semicolon (and perhaps a conjunctive adverb) to link two or more closely related independent clauses.

b. Use a colon to introduce a list or quotation.

c. Spell correctly.

**Knowledge of Language-** Students will be able to apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

9-10.L.3 Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

**Vocabulary Acquisition and Use-** Students will be able to determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate; Demonstrate understanding of figurative language, word relationships, and nuances in word meanings; Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college- and career-readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

9-10.L.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 9–10 reading and content, choosing flexibly from a range of strategies.

a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word’s position or function in a sentence) as a clue to the meaning of a word or phrase.

- b. Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., analyze. analysis, analytical; advocate. advocacy).
  - c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology.
  - d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).
- 9-10.L.5 Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
- a. Interpret figures of speech (e.g., satire, sarcasm) in context and analyze their role in the text.
  - b. Analyze nuances in the meaning of words with similar denotations.
- 9-10.L.6 Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression

### **Strand-Reading History**

**Key Ideas and Details-** Students will be able to read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text; Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas; Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

- 9-10.RH.1 Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.
- 9-10.RH.2 Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.
- 9-10.RH.3 Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them.

**Craft and Structure-** Students will be able to interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone; Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole; Assess how point of view or purpose shapes the content and style of a text

- 9-10.RH.4 Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social science.
- 9-10.RH.5 Analyze how a text uses structure to emphasize key points or advance an explanation or analysis
- 9-10.RH.6 Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.

**Integration of Knowledge and Ideas-** Students will be able to integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words; Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence; Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

9-10.RH.7 Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.

9-10.RH.8 Assess the extent to which the reasoning and evidence in a text support the author's claims.

9-10.RH.9 Compare and contrast treatments of the same topic in several primary and secondary sources.

**Range of Reading and Level of Text Complexity-** Students will be able to read and comprehend complex literary and informational texts independently and proficiently.

9-10.RH.10 By the end of grade 10, read and comprehend history/social studies texts in the grades 9–10 text complexity band independently and proficiently.

### **Strand- Reading Science and Technical**

**Key Ideas and Details-** Same as reading history above

9-10.RST.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

9-10.RST.2 Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

9-10.RST.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions defined in the text.

**Craft and Structure-** Same as reading history above

9-10.RST.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.

9-10.RST.5 Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).

9-10.RST.6 Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.

**Integration of Knowledge and Ideas-** Same as reading history above

9-10.RST.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.



9-10.RST.8 Assess the extent to which the reasoning and evidence in a text support the author’s claim or a recommendation for solving a scientific or technical problem.

9-10.RST.9 Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.

**Range of Reading and Level of Text Complexity-** Same as reading history above

9-10.RST.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently

### **Strand- Writing History**

**Text Types and Purposes-** Students will be able to write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.; Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content; Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

9-10.WHST.1 Write arguments focused on discipline-specific content.

- a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence.
- b. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience’s knowledge level and concerns.
- c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence. and between claim(s) and counterclaims.
- d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
- e. Provide a concluding statement or section that follows from or supports the argument presented.

9-10.WHST.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

- a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
- b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience’s knowledge of the topic.
- c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts.
- d. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers.

- e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
- f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).

**Production and Distribution of Writing-** Students will be able to produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience; Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach; Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

9-10.WHST.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

9-10.WHST.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

9-10.WHST.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

**Research to Build and Present Knowledge-** Students will be able to conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation; Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism; Draw evidence from literary and/or informational texts to support analysis, reflection, and research.

9-10.WHST.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

9-10.WHST.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.

9-10.WHST.9 Draw evidence from informational texts to support analysis, reflection, and research.

**Range of Writing-** Students will be able to write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

9-10.WHST.10 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

## Grades 11-12

**Strand- Reading Literature-** The Reading standards place equal emphasis on the sophistication of what students read and the skill with which they read. Standard 10 defines a grade-by-grade “staircase” of increasing text complexity that rises from beginning reading to the college and career readiness level. Whatever

they are reading, students must also show a steadily growing ability to discern more from and make fuller use of text, including making an increasing number of connections among ideas and between texts, considering a wider range of textual evidence, and becoming more sensitive to inconsistencies, ambiguities, and poor reasoning in texts.

**Key Ideas and Details-** Students will be able to read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text; Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas; Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

11-12.RL.1 Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.

11-12.RL.2 Determine two or more themes or central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to produce a complex account; provide an objective summary of the text.

11-12.RL.3 Analyze the impact of the author's choices regarding how to develop and relate elements of a story or drama (e.g., where a story is set, how the action is ordered, how the characters are introduced and developed).

**Craft and Structure-** Students will be able to interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone; Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole; Assess how point of view or purpose shapes the content and style of a text.

11-12.RL.4 Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful. (Include Shakespeare as well as other authors.)

11-12.RL.5 Analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.

11-12.RL.6 Analyze a case in which grasping point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement).

**Integration of Knowledge and Ideas-** Students will be able to integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words; Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence; Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

11-12.RL.7 Analyze multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating how each version interprets the source text. (Include at least one play by Shakespeare and one play by an American dramatist.)

11-12.RL.9 Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics.

**Range of Reading and Level of Text Complexity-** Students will be able to read and comprehend complex literary and informational texts independently and proficiently.

11-12.RL.10 By the end of grade 11, read and comprehend literature, including stories, dramas, and poems, in the grades 11–CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 11–CCR text complexity band independently and proficiently.

### **Strand- Reading Informational**

**Key Ideas and Details-** Same as reading literature description above

11-12.RI.1 Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.

11-12.RI.2 Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.

11-12.RI.3 Analyze a complex set of ideas or sequence of events and explain how specific individuals, ideas, or events interact and develop over the course of the text.

**Craft and Structure-** Same as reading literature description above

11-12.RI.4 Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines faction in Federalist No. 10).

11-12.RI.5 Analyze and evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging.

11-12.RI.6 Determine an author's point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness, or beauty of the text.

**Integration of Knowledge and Ideas-** Same as reading literature description above

11-12.RI.7 Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.

11-12.RI.8 Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., *The Federalist*, presidential addresses).

11-12.RI.9 Analyze seventeenth-, eighteenth-, and nineteenth-century foundational U.S. documents of historical and literary significance (including *The Declaration of Independence*, the Preamble to the Constitution, the Bill of Rights, and Lincoln's Second Inaugural Address) for their themes, purposes, and rhetorical features.

**Range of Reading and Level of Text Complexity-** Same as reading literature description above

11-12.RI.10 By the end of grade 11, read and comprehend literary nonfiction in the grades 11–CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literary nonfiction at the high end of the grades 11–CCR text complexity band independently and proficiently.

- 1, Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
- 2, Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
- 3, Analyze how and why individuals, events, and ideas develop and interact over the course of a text.
- 4, Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
- 5, Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
- 6, Assess how point of view or purpose shapes the content and style of a text.
- 7, Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.
- 8, Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
- 9, Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.
- 10, Read and comprehend complex literary and informational texts independently and proficiently.

**Strand- Writing-** The Standards acknowledge the fact that whereas some writing skills, such as the ability to plan, revise, edit, and publish, are applicable to many types of writing, other skills are more properly defined in terms of specific writing types: arguments, informative/explanatory texts, and narratives. Standard 9 stresses the importance of the writing-reading connection by requiring students to draw upon and write about evidence from literary and informational texts.

Because of the centrality of writing to most forms of inquiry, research standards are prominently included in this strand, though skills important to research are infused throughout the document.

**Text Types and Purposes-** Students will be able to write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence; Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content; Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

11-12.W.1 Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

- a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence.
- b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases.
- c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
- d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
- e. Provide a concluding statement or section that follows from and supports the argument presented.

11-12.W.2 Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

- a. Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
- b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
- c. Use appropriate and varied transitions and syntax to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.
- d. Use precise language, domain-specific vocabulary, and techniques such as metaphor, simile, and analogy to manage the complexity of the topic.
- e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

11-12.W.3 Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

- a. Engage and orient the reader by setting out a problem, situation, or observation and its significance, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.

- b. Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.
- c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole and build toward a particular tone and outcome (e.g., a sense of mystery, suspense, growth, or resolution).
- d. Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.
- e. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.

**Production and Distribution of Writing-** Students will be able to produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. 5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. 6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

11-12.W.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

(Grade-specific expectations for writing types are defined in standards 1–3 above.)

11-12.W.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grades 11-12 on page 55.)

11-12.W.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

**Research to Build and Present Knowledge-** Students will be able to conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation; Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism; Draw evidence from literary and/or informational texts to support analysis, reflection, and research

11-12.W.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

11-12.W.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

11-12.W.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

a. Apply grades 11–12 Reading standards to literature (e.g., “Demonstrate knowledge of eighteenth-, nineteenth- and early-twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics”).

b. Apply grades 11–12 Reading standards to literary nonfiction (e.g., “Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning [e.g., in U.S. Supreme Court Case majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., The Federalist, presidential addresses]”).

**Range of Writing-** Students will be able to write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

11-12.W.10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

- 1, Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
- 2, Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
- 3, Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.
- 4, Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- 5, Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
- 6, Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.
- 7, Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
- 8, Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
- 9, Draw evidence from literary or informational texts to support analysis, reflection, and research.
- 10, Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

**Strand- Speaking and Listening-** Including but not limited to skills necessary for formal presentations, the Speaking and Listening standards require students to develop a range of broadly useful oral communication and interpersonal skills. Students must learn to work together, express and listen carefully to ideas, integrate information from oral, visual, quantitative, and media sources, evaluate what they hear, use media and visual displays strategically to help achieve communicative purposes, and adapt speech to context and task.

**Comprehension and Collaboration-** Students will be able to prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others’ ideas and expressing their own clearly and persuasively; Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally; Evaluate a speaker’s point of view, reasoning, and use of evidence and rhetoric.



- 11-12.SL.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others’ ideas and expressing their own clearly and persuasively.
- Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.
  - Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.
  - Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.
  - Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
- 11-12.SL.2 Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.
- 11-12.SL.3 Evaluate a speaker’s point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.

**Presentation of Knowledge and Ideas-** Students will be able to present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience; Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.; Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

- 11-12.SL.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
- 11-12.SL.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
- 11-12.SL.6 Adapt speech to a variety of contexts and tasks, demonstrating a command of formal English when indicated or appropriate. (See grades 11-12 Language standards 1 and 3 on page 54 for specific expectations.)
- Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others’ ideas and expressing their own clearly and persuasively.
  - Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.
  - Evaluate a speaker’s point of view, reasoning, and use of evidence and rhetoric.

- 4, Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.
- 5, Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
- 6, Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

**Strand- Language-** The Language standards include the essential “rules” of standard written and spoken English, but they also approach language as a matter of craft and informed choice among alternatives. The vocabulary standards focus on understanding words and phrases, their relationships, and their nuances and on acquiring new vocabulary, particularly general academic and domain-specific words and phrases.

**Conventions of Standard English-** Students will be able to demonstrate command of the conventions of standard English grammar and usage when writing or speaking; Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

11-12.L.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

- a. Apply the understanding that usage is a matter of convention, can change over time, and is sometimes contested.
- b. Resolve issues of complex or contested usage, consulting references (e.g., Merriam-Webster’s Dictionary of English Usage, Garner’s Modern American English) as needed.

11-12.L.2 Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

- a. Observe hyphenation conventions.
- b. Spell correctly.

**Knowledge of Language-** Students will be able to apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

11-12.L.3 Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

- a. Vary syntax for effect, consulting references (e.g., Tufte’s Artful Sentences) for guidance as needed; apply an understanding of syntax to the study of complex texts when reading.

**Vocabulary Acquisition and Use-** Students will be able to determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate; Demonstrate understanding of figurative language, word relationships, and nuances in word meanings; Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing,

speaking, and listening at the college- and career-readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

11-12.L.4 Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 11–12 reading and content, choosing flexibly from a range of strategies.

- a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.
- b. Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., conceive, conception, conceivable).
- c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, its etymology, or its standard usage.
- d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary).

11-12.L.5 Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.

- a. Interpret figures of speech (e.g., hyperbole, paradox) in context and analyze their role in the text.
- b. Analyze nuances in the meaning of words with similar denotations.

11-12.L.6 Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

- 1, Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- 2, Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- 3, Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.
- 4, Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.
- 5, Demonstrate understanding of word relationships and nuances in word meanings.
- 6, Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

## **Strand- Reading History**

**Key Ideas and Details-** Students will be able to read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text; Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas; Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

11-12.RH.1 Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.

11-12.RH.2 Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.

11-12.RH.3 Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.

**Craft and Structure-** Students will be able to interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone; Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole; Assess how point of view or purpose shapes the content and style of a text.

11-12.RH.4 Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines faction in Federalist No. 10).

11-12.RH.5 Analyze in detail how a complex primary source is structured, including how key sentences, paragraphs, and larger portions of the text contribute to the whole.

11-12.RH.6 Evaluate authors' differing points of view on the same historical event or issue by assessing the authors' claims, reasoning, and evidence.

**Integration of Knowledge and Ideas-** Students will be able to integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words; Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence; Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

9-10.RH.7 Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.

11-12.RH.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.

11-12.RH.8 Evaluate an author's premises, claims, and evidence by corroborating or challenging them with other information.

11-12.RH.9 Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.

**Range of Reading and Level of Text Complexity** Students will be able to read and comprehend complex literary and informational texts independently and proficiently.

11-12.RH.10 By the end of grade 12, read and comprehend history/social studies texts in the grades 11–12 text complexity band independently and proficiently.

### **Reading Science and Technical**

**Key Ideas and Details-** Same as reading history above

11-12.RST.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

11-12.RST.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

11-12.RST.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

**Craft and Structure-** Same as reading history above

11-12.RST.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.

11-12.RST.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.

11-12.RST.6 Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.

**Integration of Knowledge and Ideas-** Same as reading history above

11-12.RST.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

11-12.RST.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

11-12.RST.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

**Range of Reading and Level of Text Complexity-** Same as reading history above

11-12.RST.10 By the end of grade 12, read and comprehend science/technical texts in the grades 11–12 text complexity band independently and proficiently

### **Strand- Writing History**

**Text Types and Purposes-** Students will be able to write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.; Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content; Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

11-12.WHST.1 Write arguments focused on discipline-specific content.

- a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.
- b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases.
- c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
- d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
- e. Provide a concluding statement or section that follows from or supports the argument presented.

11-12.WHST.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

- a. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
- b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
- c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.
- d. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers.
- e. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).

**Production and Distribution of Writing-** Students will be able to produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience; Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach; Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

11-12.WHST.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

11-12.WHST.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

11-12.WHST.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

**Research to Build and Present Knowledge-**Students will be able to conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation; Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism; Draw evidence from literary and/or informational texts to support analysis, reflection, and research.

11-12.WHST.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

11-12.WHST.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

11-12.WHST.9 Draw evidence from informational texts to support analysis, reflection, and research.

**Range of Writing-** Students will be able to write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

11-12.WHST.10 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

## HAWAII NGSS SCIENCE STANDARDS GRADES 9-12

### Life Science

#### Disciplinary Core Idea

**HS-LS1 From Molecules to Organisms: Structures and Processes- Students will understand how organisms live, grow, respond to their environment, and reproduce**

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-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.

HS-LS1-4. Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms. HS-LS1-5. Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.

HS-LS1-6. Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.

HS-LS1-7. Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.

**HS-LS2 Ecosystems: Interactions, Energy, and Dynamics- Students will understand how and why organisms interact with their environment, and what are the effects of these interactions**

HS-LS2-1. Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.

HS-LS2-2. Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.

HS-LS2-3. Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.

HS-LS2-4. Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.

HS-LS2-5. 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-LS2-6. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity

HS-LS2-8. Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.

**HS-LS3 Heredity: Inheritance and Variation of Traits- Students will understand how characteristics of one generation passed to the next and how individuals of the same species and even siblings can have different characteristics**



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 Biological Evolution: Unity and Diversity- Students will understand how there can be so many similarities among organisms yet so many different kinds of plants, animals, and microorganisms, as well as how does biodiversity affects humans**

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 results 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 or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity

## Physical Science

### Disciplinary Core Idea

**HS-PS1 Matter and Its Interactions- Students will understand how one can explain the structure, properties, and interactions of matter**

HS-PS1-1. Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.

HS-PS1-2. Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.

HS-PS1-3. Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles.

HS-PS1-4. Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy.

HS-PS1-5. Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs

HS-PS1-6. Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.

HS-PS1-7. Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction

HS-PS1-8. Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay.

**HS-PS2 Motion and Stability: Forces and Interactions- Students will understand how one can explain and predict interactions between objects and within systems**

HS-PS2-6. Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.

**HS-PS3 Energy- Students will understand how energy is transferred and conserved**

HS-PS3-1. Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.

HS-PS3-2. Develop and use models to illustrate that energy at the macroscopic scale can be accounted

HS-PS3-4. Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).

**HS-PS4 Waves and Their Applications in Technologies for Information Transfer- Students will understand how waves are used to transfer energy and information**

HS-PS4-1. Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.

HS-PS4-3. Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other.

HS-PS4-4. Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.

**HS-ETS1 Engineering Design- Students will understand how engineers solve problems and how engineering, technology, science, and society are interconnected**

HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants

HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering

HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

HS-ETS1-4. Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

**Earth and Space Science**

**Disciplinary Core Idea**

**HS-ESS1 Earth's Place in the Universe- Students will understand what is the universe, and what is Earth's place in it**

HS-ESS1-1. Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches Earth in the form of radiation.

HS-ESS1-2. Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe.

HS-ESS1-3. Communicate scientific ideas about the way stars, over their life cycle, produce elements.

HS-ESS1-4. Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.

HS-ESS1-5. Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.

HS-ESS1-6. Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history.

**HS-ESS2 Earth's Systems- Students will understand how and why the earth is constantly changing**

HS-ESS2-1. Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean floor features.

HS-ESS2-2. Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth's systems.

HS-ESS2-3. Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection.

HS-ESS2-4. Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate.

HS-ESS2-5. Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.

HS-ESS2-6. Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.

HS-ESS2-7. Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth.

### **HS-ESS3 Earth and Human Activity- Students will understand how the Earth's surface processes and human activities affect each other**

HS-ESS3-1. Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.

HS-ESS3-2. Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.

HS-ESS3-3. Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.

HS-ESS3-4. Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.

HS-ESS3-5. 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

HS-ESS3-6. Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity

## **Engineering Design**

### **Disciplinary Core Idea**

### **HS Engineering Design-Students will understand how engineers solve problems and how engineering, technology, science, and society are interconnected**

HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

HS-ETS1-4. Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

## SOCIAL STUDIES CONTENT AND PERFORMANCE STANDARDS GRADES 9-11

### Grade 9 Modern Hawaiian History

**Standard 1: Historical Understanding: CHANGE, CONTINUITY, AND CAUSALITY—Students will understand change and/or continuity and cause and/or effect in history**

SS.9MHH.1.1 Describe the multiple social, political, and economic causes and effects of change in modern Hawaii

**Standard 2: Historical Understanding: INQUIRY, EMPATHY, AND PERSPECTIVE— Students will use the tools and methods of inquiry, perspective, and empathy to explain historical events with multiple interpretations and judge the past on its own terms**

No benchmark at this level

**Standard 3: History: MODERN HAWAIIAN HISTORY—Students will understand important historical events in Modern Hawaiian History**

SS.9MHH.3.1 Explain the political, social, and economic causes of the Overthrow, including the Mahele, Reciprocity Treaty, and the Bayonet Constitution

SS.9MHH.3.2 Describe the role of the United States government in the Overthrow, including the various United States administrations and Minister John Stevens

SS.9MHH.3.3 Explain the events and turning points of the Overthrow, beginning with the foreign movement against Kalakaua, Liliuokalani's attempts to change the Bayonet Constitution, and her abdication from the throne

SS.9MHH.3.4 Explain the political, social, and economic effects of the Overthrow, including U.S. military presence, the Organic Act, the Territorial government, and Statehood

SS.9MHH.3.5 Describe the political, social and economic effects of the plantation system on life in Hawaii, including ethnic tension, the evolution of Hawaii pidgin English, the school system, and the establishment of labor unions

SS.9MHH.3.6 Examine and explain features of plantation life in Hawaii in the 20th century, including contract labor and the perquisite system

SS.9MHH.3.7 Identify events leading to the bombing of Pearl Harbor and describe its effects in Hawaii, such as the role of the U.S. military and anti-Japanese sentiments (including the internment camps and 442nd)

SS.9MHH.3.8 Trace the development of the platforms of political parties after World War II to the present

SS.9MHH.3.9 Analyze significant contemporary issues that influence present day Hawaii, such as the Hawaiian Renaissance, the sovereignty movement, current land issues, and the influx of new immigrant groups

**Standard 4: Political Science/Civics: GOVERNANCE, DEMOCRACY, AND INTERACTION—Students will understand the purpose and historical impact of political institutions, the principles and values of American constitutional democracy, and the similarities and differences in government across cultural perspectives**

SS.9MHH.4.1 Explain how governments acquire, use, and justify power, including how limited governments differ from unlimited ones

**Standard 5: Political Science/Civics: PARTICIPATION AND CITIZENSHIP—Students will understand roles, rights (personal, economic, political), and responsibilities of American citizens and exercise them in civic action**

No benchmark at this level

**Standard 6: Cultural Anthropology: SYSTEMS, DYNAMICS, AND INQUIRY—Students will understand culture as a system of beliefs, knowledge, and practices shared by a group and understand how cultural systems change over time**

No benchmark at this level

**Standard 7: Geography: WORLD IN SPATIAL TERMS—Students will use geographic representations to organize, analyze, and present information on people, places, and environments and understand the nature and interaction of geographic regions and societies around the world**

No benchmark at this level

**Standard 8: Economics: RESOURCES, MARKETS, AND GOVERNMENT—Students will understand economic concepts and the characteristics of various economic systems**

No benchmark at this level

## Grade 9 Participation in a Democracy

**Standard 1: Historical Understanding: CHANGE, CONTINUITY, AND CAUSALITY—Students will understand change and/or continuity and cause and/or effect in history**

No benchmark at this level

**Standard 2: Historical Understanding: INQUIRY, EMPATHY, AND PERSPECTIVE— Students will use the tools and methods of inquiry, perspective, and empathy to explain historical events with multiple interpretations and judge the past on its own terms**

No benchmark at this level

**Standard 3: History: PARTICIPATION IN A DEMOCRACY—Students will understand important historical events and ideas related to the development of civics and political science**

SS.9PD.3.1 Describe how ideas of the Enlightenment influenced the American political system

SS.9PD.3.2 Describe how historical events and ideas have influenced American constitutional democracy

SS.9PD.3.3 Describe how historical challenges to the Constitution over time have resulted in new interpretations of free speech, free press, privacy, civil rights, and voting rights

SS.9PD.4.1 Explain how governments derive authority

SS.9PD.4.2 Describe how the American Constitution embodies the principles of rule of law, popular sovereignty, separation of powers, checks and balances, and limited government

**Standard 4: Political Science/Civics: GOVERNANCE, DEMOCRACY, AND INTERACTION—Students will understand the purpose and historical impact of political institutions, the principles and values of American constitutional democracy, and the similarities and differences in government across cultural perspectives**

SS.9PD.4.3 Assess the extent to which the American values of common good, equality of opportunity, and individual rights have been realized

SS.9PD.5.1 Explain the rights, duties, and responsibilities of citizens in a democracy and the relationship between them

SS.9PD.5.2 Investigate how citizens can monitor and advocate for a local, state, or national issue

SS.9PD.5.3 Compare the characteristics of major political parties based upon the philosophy, platform, and support base

SS.9PD.5.4 Explain the role of a citizen in the electoral process

SS.9PD.5.5 Demonstrate the role of a citizen in civic action by selecting a problem, gathering information, proposing a solution, creating an action plan, and showing evidence of implementation

**Standard 6: Cultural Anthropology: SYSTEMS, DYNAMICS, AND INQUIRY—Students will understand culture as a system of beliefs, knowledge, and practices shared by a group and understand how cultural systems change over time**

No benchmark at this level

**Standard 7: Geography: WORLD IN SPATIAL TERMS—Students will use geographic representations to organize, analyze, and present information on people, places, and environments and understand the nature and interaction of geographic regions and societies around the world**

No benchmark at this level

**Standard 8: Economics: RESOURCES, MARKETS, AND GOVERNMENT—Students will understand economic concepts and the characteristics of various economic systems**

SS.9PD.8.1 Describe the economic functions of government, including providing public goods and services, maintaining competition, redistributing income, correcting for externalities, and stabilizing the economy

SS.9PD.8.2 Explain how people, individually and collectively, participate in the U.S. economy

SS.9PD.8.3 Evaluate the degree to which the United States affects and is affected by international economic policies

## **Grade 10**

**Standard 1: Historical Understanding: CHANGE, CONTINUITY, AND CAUSALITY—Students will understand change and/or continuity and cause and/or effect in history**

No benchmark at this level

**Standard 2: Historical Understanding: INQUIRY, EMPATHY, AND PERSPECTIVE— Students will use the tools and methods of inquiry, perspective, and empathy to explain historical events with multiple interpretations and judge the past on its own terms**

SS.10.2.1 Use knowledge of historical periods to assess contemporary issues and decisions

SS.10.2.2 Determine the relevance of sources and assess their credibility

SS.10.2.3 Formulate and defend an opinion on a major contemporary social issue using the tools and methods of inquiry and perspective

SS.10.2.4 Evaluate the quality of historical accounts based on the arguments they advance and the evidence they use

**Standard 3: History: UNITED STATES HISTORY—Students will understand important historical events during the 20th century**



- SS.10.3.1 Describe the “push” factors (e.g., escaping persecution and poverty) and “pull” factors (e.g., seeking freedom and economic opportunity) that brought immigrants to the United States in the late 19th century
- SS.10.3.2 Describe social, political, economic, and technological factors (e.g., governance, corruption, fiscal policies, wages, sanitation, class differences, health problems, transportation) of growth in 19th and 20th century American cities (e.g., New York, Chicago, St. Louis)
- SS.10.3.3 Describe how business magnates (i.e., Rockefeller, Morgan, Carnegie and Vanderbilt) dominated politics of the Gilded Age
- SS.10.3.4 Describe reform issues of the Progressive Era (including political reform, labor reform, and business regulation)
- SS.10.3.5 Describe the causes of and major events associated with the United States becoming an imperial power in the late 19th
- SS.10.3.6 Analyze the scope and evolution of various United States foreign policies in the early part of the 20th century
- SS.10.3.7 Describe the events that led the United States into World War I
- SS.10.3.8 Describe how domestic policies were affected by American involvement in World War I
- SS.10.3.9 Explain why the United States did not sign the Treaty of Versailles
- SS.10.3.10 Describe changes in society and culture that led to conflicts in values in the 1920s
- SS.10.3.11 Describe the significance of the literature, arts, and feminism of the 1920s, including the “Lost Generation,” the Harlem Renaissance, and flappers
- SS.10.3.12 Describe the innovations in transportation and communication and the impact they had on American society
- SS.10.3.13 Analyze the causes of the Great Depression
- SS.10.3.14 Describe the effects of the Great Depression
- SS.10.3.15 Explain how programs in FDR’s New Deal, including the FDIC, AAA, WPA, and Social Security, attempted to resolve problems brought on by the Great Depression
- SS.10.3.16 Analyze the causes of the bombing of Pearl Harbor
- SS.10.3.17 Analyze the effects of the bombing of Pearl Harbor, including the internment of Japanese Americans
- SS.10.3.18 Explain the turning points in the European and Pacific theaters of World War II
- SS.10.3.19 Describe how domestic policies were affected by United States involvement in World War II
- SS.10.3.20 Explain the origins of the Cold War
- SS.10.3.21 Explain how America’s foreign policy during the Cold War led to conflicts in Asia and Latin America
- SS.10.3.22 Explain how the events of the Cold War led to the McCarthy era
- SS.10.3.23 Explain how the United States foreign policy has attempted to respond to global and economic challenges of the post Cold War world
- SS.10.3.24 Analyze the key factors, including legislation and acts of civil disobedience, that brought on the African American Civil Rights movement after World War II
- SS.10.3.25 Describe the significant events, individuals, and groups associated with the Civil Rights Era
- SS.10.3.26 Describe the expansion of the Civil Rights movement to other groups, including Native Americans and women

SS.10.3.27 Assess John F. Kennedy's handling of the Cuban Missile Crisis

SS.10.3.28 Explain the emergence and impact of the student movements and the counterculture of the 1960s

SS.10.3.29 Evaluate Lyndon Johnson's vision of the Great Society

SS.10.3.30 Explain how the Watergate affair led to a crisis of confidence in the government

SS.10.3.31 Explain how the election of Ronald Reagan marked a The student: new era of conservatism in American politics

SS.10.3.32 Explain how the administrations from Reagan to the current president dealt with major domestic issues

**Standard 4: Political Science/Civics: GOVERNANCE, DEMOCRACY, AND INTERACTION—Students will understand the purpose and historical impact of political institutions, the principles and values of American constitutional democracy, and the similarities and differences in government across cultural perspectives**

No benchmark at this level

**Standard 5: Political Science/Civics: PARTICIPATION AND CITIZENSHIP—Students will understand roles, rights (personal, economic, political), and responsibilities of American citizens and exercise them in civic action**

No benchmark at this level

**Standard 6: Cultural Anthropology: SYSTEMS, DYNAMICS, AND INQUIRY—Students will understand culture as a system of beliefs, knowledge, and practices shared by a group and understand how cultural systems change over time**

No benchmark at this level

**Standard 7: Geography: WORLD IN SPATIAL TERMS—Students will use geographic representations to organize, analyze, and present information on people, places, and environments and understand the nature and interaction of geographic regions and societies around the world**

SS.10.7.1 Explain the causes of urbanization (i.e., job opportunities, immigration patterns, technological innovations)

SS.10.7.2 Explain the consequences of urbanization

**Standard 8: Economics: RESOURCES, MARKETS, AND GOVERNMENT—Students will understand economic concepts and the characteristics of various economic systems**

SS.10.8.1 Explain the characteristics of the different market structures (i.e. monopoly, oligopoly, monopolistic competition, and pure competition) and their influence on product differentiation, price, barriers for entry, and market efficiency in a competitive marketplace

SS.10.8.2 Describe the function and responsibilities of the Federal Reserve System in setting and carrying out the nation's monetary policy

SS.10.8.3 Explain the purpose and/or role of government programs and policies, including unemployment, minimum wage, and Social Security, and their effect on the nation's economy

## Grade 11

**Standard 1: Historical Understanding: CHANGE, CONTINUITY, AND CAUSALITY—Students will understand change and/or continuity and cause and/or effect in history**

No benchmark at this level

**Standard 2: Historical Understanding: INQUIRY, EMPATHY, AND PERSPECTIVE— Students will use the tools and methods of inquiry, perspective, and empathy to explain historical events with multiple interpretations and judge the past on its own terms**

No benchmark at this level

**Standard 3: History: WORLD HISTORY—Students will understand important historical events from classical civilization through the present**

SS.11.3.1 Examine the relationship between cultural traditions and the larger societies in the cases of Confucianism in China, Buddhism in Asia, Christianity in Europe, Hinduism in India, and Islam in the Muslim world

SS.11.3.2 Examine the effects of global interactions in pre-modern times, including the Mongol conquests, the Crusades, and technological, biological, and commercial exchanges

SS.11.3.3 Explain the impact of the exploratory and commercial expeditions in the 15th and 16th century, including the voyages of Zheng He, Vasco da Gama, Christopher Columbus, Ferdinand Magellan, James Cook, and European voyages to North America

SS.11.3.4 Explain the effects of global exchanges in the Americas, Europe, Asia, and Africa, including the spread of food crops and diseases, the exchange of trade goods, and migrations of peoples (forced and voluntary)

SS.11.3.5 Examine the political structure in major world regions, including Qing China at the time of the Kangxi emperor, Japan at the time of Tokugawa Ieyasu, the Ottoman Empire at the time of Suleyman the Magnificent, and the Hapsburg Empire at the time of Charles V

SS.11.3.6 Examine the major developments in European cultural and intellectual history, including the Renaissance, Reformation, Enlightenment, and Scientific Revolution

SS.11.3.7 Compare the causes and effects of the early modern democratic revolutions, including the American Revolution, French Revolution, Haitian Revolution, and South American revolutions

SS.11.3.8 Describe the socio-economic impact of the industrial revolution

SS.11.3.9 Explain the ideological and economic interests that drove European, American, and Japanese imperialism in Africa, Asia, and the Pacific

SS.11.3.10 Describe the role of secret alliances and nationalism in triggering the outbreak of World War I and the effort to prevent future wars by the establishment of the League of Nations

SS.11.3.11 Explain the rise of fascist governments, emergence of communism, and the global effects of the Great Depression

SS.11.3.12 Examine the significant events, technological developments, and turning points of World War II, including the German invasion of Poland, Japanese bombing of Pearl Harbor, DDay, the American bombing of Japan, the Rape of Nanjing, and the Holocaust

SS.11.3.13 Describe post-World War II nationalist and independence movements in India, Pakistan, Nigeria, and Kenya

SS.11.3.14 Explain major political developments of the post-war era, including the establishment of the United Nations, the creation of Israel, and the Cold War

SS.11.3.15 Describe revolutionary movements from 1945-1989, including the Chinese communist revolution, the Algerian revolution, and the Cuban revolution

SS.11.3.16 Examine the significant effects of technological developments and biological exchanges in the contemporary world

SS.11.3.17 Examine critical human rights issues in the contemporary world

**Standard 4: Political Science/Civics: GOVERNANCE, DEMOCRACY, AND INTERACTION—Students will understand the purpose and historical impact of political institutions, the principles and values of American constitutional democracy, and the similarities and differences in government across cultural perspectives**

SS.11.4.1 Compare the features of republican and absolutist governments that emerged in 17th century Europe

**Standard 5: Political Science/Civics: PARTICIPATION AND CITIZENSHIP—Students will understand roles, rights (personal, economic, political), and responsibilities of American citizens and exercise them in civic action**

No benchmark at this level

**Standard 6: Cultural Anthropology: SYSTEMS, DYNAMICS, AND INQUIRY—Students will understand culture as a system of beliefs, knowledge, and practices shared by a group and understand how cultural systems change over time**

No benchmark at this level

**Standard 7: Geography: WORLD IN SPATIAL TERMS—Students will use geographic representations to organize, analyze, and present information on people, places, and environments and understand the nature and interaction of geographic regions and societies around the world**

SS.11.7.1 Trace changing political boundaries under the influence of European imperialism

SS.11.7.2 Use tools and methods of geographers to understand changing views of world regions

**Standard 8: Economics: RESOURCES, MARKETS, AND GOVERNMENT—Students will understand economic concepts and the characteristics of various economic systems**

SS.11.8.1 Explain how the exchange rate affects trade, imports, exports, and the economy of a nation

SS.11.8.2 Describe the distribution of the world’s resources as it affects international economic relationships

SS.11.8.3 Describe how the determinants of demand (i.e., income, substitutes, complements, number of buyers, tastes, expectations) affect the price and availability of goods and services

SS.11.8.4 Describe how the determinants of supply (i.e., price and availability of inputs, technology, government regulation, number of sellers) affect the price and availability of goods and services

**HAWAII CONTENT AND PERFORMANCE STANDARDS COMPUTER SCIENCE GRADES 9-12**

**Level 3A: Grades 9-10**

**Computing Systems-** Computing devices are often integrated with other systems, including biological, mechanical, and social systems. These devices can share data with one another. The usability, dependability, security, and accessibility of these devices, and the systems they are integrated with, are important considerations in their design as they evolve. Levels of interaction exist between the hardware, software, and user of a computing system. The most common levels of software that a user interacts with include system software and applications. System software controls the flow of information between hardware components used for input, output, storage, and processing. Troubleshooting complex problems involves the use of multiple sources when researching, evaluating, and implementing potential solutions. Troubleshooting also relies on experience, such as when people recognize that a problem is similar to one they have seen before or adapt solutions that have worked in the past.

3A-CS-01 Explain how abstractions hide the underlying implementation details of computing systems embedded in everyday objects.

3A-CS-02 Compare levels of abstraction and interactions between application software, system software, and hardware layers.

3A-CS-03 Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors.

**Networks and the Internet-** Network topology is determined, in part, by how many devices can be supported. Each device is assigned an address that uniquely identifies it on the network. The scalability and reliability of the Internet are enabled by the hierarchy and redundancy in networks. Network security depends on a combination of hardware, software, and practices that control access to data and systems. The needs of users and the sensitivity of data determine the level of security implemented.

3A-NI-04 Evaluate the scalability and reliability of networks, by describing the relationship between routers, switches, servers, topology, and addressing.

3A-NI-05 Give examples to illustrate how sensitive data can be affected by malware and other attacks.

3A-NI-06 Recommend security measures to address various scenarios based on factors such as efficiency, feasibility, and ethical impacts.

3A-NI-07 Compare various security measures, considering tradeoffs between the usability and security of a computing system.

3A-NI-08 Explain tradeoffs when selecting and implementing cybersecurity recommendations.

**Data and Analysis-** Data is constantly collected or generated through automated processes that are not always evident, raising privacy concerns. The different collection methods and tools that are used influence the amount and quality of the data that is observed and recorded. Data can be composed of multiple data elements that relate to one another. For example, population data may contain information about age, gender, and height. People make choices about how data elements are organized and where data is stored. These choices affect cost, speed, reliability, accessibility, privacy, and integrity. People transform, generalize, simplify, and present large data sets in different ways to influence how other people interpret and understand the underlying information. Examples include visualization, aggregation, rearrangement, and application of mathematical operations.

3A-DA-09 Translate between different bit representations of real-world phenomena, such as characters, numbers, and images.

3A-DA-10 Evaluate the tradeoffs in how data elements are organized and where data is stored.

3A-DA-11 Create interactive data visualizations using software tools to help others better understand real-world phenomena.

3A-DA-12 Create computational models that represent the relationships among different elements of data collected from a phenomenon or process.

**Algorithms and Programming-** People evaluate and select algorithms based on performance, reusability, and ease of implementation. Knowledge of common algorithms improves how people develop software, secure data, and store information. Data structures are used to manage program complexity. Programmers choose data structures based on functionality, storage, and performance tradeoffs. Programmers consider tradeoffs related to implementation, readability, and program performance when selecting and combining control structures. Complex programs are designed as systems of interacting modules, each with a specific role, coordinating for a common overall purpose. These modules can be procedures within a program; combinations of data and procedures; or independent, but interrelated, programs. Modules allow for better management of complex tasks. Diverse teams can develop programs with a broad impact through careful review and by drawing on the strengths of members in different roles. Design decisions often involve tradeoffs. The development of complex programs is aided by resources such as libraries and tools to edit and manage parts of the program. Systematic analysis is critical for identifying the effects of lingering bugs.

3A-AP-13 Create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests.

3A-AP-14 Use lists to simplify solutions, generalizing computational problems instead of repeatedly using simple variables.

3A-AP-15 Justify the selection of specific control structures when tradeoffs involve implementation, readability, and program performance, and explain the benefits and drawbacks of choices made

3A-AP-16 Design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions.

3A-AP-17 Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.

3A-AP-18 Create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs.

3A-AP-19 Systematically design and develop programs for broad audiences by incorporating feedback from users.

3A-AP-20 Evaluate licenses that limit or restrict use of computational artifacts when using resources such as libraries.

3A-AP-21 Evaluate and refine computational artifacts to make them more usable and accessible

3A-AP-22 Design and develop computational artifacts working in team roles using collaborative tools.

3A-AP-23 Document design decisions using text, graphics, presentations, and/or demonstrations in the development of complex programs.

**Impacts of Computing-** The design and use of computing technologies and artifacts can improve, worsen, or maintain inequitable access to information and opportunities. Many aspects of society, especially careers, have been affected by the degree of communication afforded by computing. The increased connectivity between people in different cultures and in different career fields has changed the nature and content of many careers. Laws govern many aspects of computing, such as privacy, data, property, information, and identity. These laws can have beneficial and harmful effects, such as expediting or delaying advancements in computing and protecting or infringing upon people’s rights. International differences in laws and ethics have implications for computing.

3A-IC-24 Evaluate the ways computing impacts personal, ethical, social, economic, and cultural practices.

3A-IC-25 Test and refine computational artifacts to reduce bias and equity deficits.

3A-IC-26 Demonstrate ways a given algorithm applies to problems across disciplines.

3A-IC-27 Use tools and methods for collaboration on a project to increase connectivity of people in different cultures and career fields.

3A-IC-28 Explain the beneficial and harmful effects that intellectual property laws can have on innovation.

3A-IC-29 Explain the privacy concerns related to the collection and generation of data through automated processes that may not be evident to users.

3A-IC-30 Evaluate the social and economic implications of privacy in the context of safety, law, or ethics.

### Level 3B: Grades 11-12

**Computing Systems-** Computing devices are often integrated with other systems, including biological, mechanical, and social systems. These devices can share data with one another. The usability, dependability, security, and accessibility of these devices, and the systems they are integrated with, are important considerations in their design as they evolve. Levels of interaction exist between the hardware, software, and user of a computing system. The most common levels of software that a user interacts with include system software and applications. System software controls the flow of information between hardware components used for input, output, storage, and processing. Troubleshooting complex problems involves the use of multiple sources when researching, evaluating, and implementing potential solutions. Troubleshooting also relies on experience, such as when people recognize that a problem is similar to one they have seen before or adapt solutions that have worked in the past.

3B-CS-01 Categorize the roles of operating system software.

3B-CS-02 Illustrate ways computing systems implement logic, input, and output through hardware components

**Networks and the Internet-** Network topology is determined, in part, by how many devices can be supported. Each device is assigned an address that uniquely identifies it on the network. The scalability and reliability of the Internet are enabled by the hierarchy and redundancy in networks. Network security depends on a combination of hardware, software, and practices that control access to data and systems. The needs of users and the sensitivity of data determine the level of security implemented.

3B-NI-03 Describe the issues that impact network functionality (e.g., bandwidth, load, delay, topology).

3B-NI-04 Compare ways software developers protect devices and information from unauthorized access

**Data and Analysis-** Data is constantly collected or generated through automated processes that are not always evident, raising privacy concerns. The different collection methods and tools that are used influence the amount and quality of the data that is observed and recorded. Data can be composed of multiple data elements that relate to one another. For example, population data may contain information about age, gender, and height. People make choices about how data elements are organized and where data is stored. These choices affect cost, speed, reliability, accessibility, privacy, and integrity. People transform, generalize, simplify, and present large data sets in different ways to influence how other people interpret and understand the underlying information. Examples include visualization, aggregation, rearrangement, and application of mathematical operations.

3B-DA-05 Use data analysis tools and techniques to identify patterns in data representing complex systems

3B-DA-06 Select data collection tools and techniques to generate data sets that support a claim or communicate information.

3B-DA-07 Evaluate the ability of models and simulations to test and support the refinement of hypotheses.

**Algorithms and Programming-** People evaluate and select algorithms based on performance, reusability, and ease of implementation. Knowledge of common algorithms improves how people develop software, secure data, and store information. Data structures are used to manage program complexity. Programmers choose data structures based on functionality, storage, and performance tradeoffs. Programmers consider tradeoffs related to implementation, readability, and program performance when selecting and combining control structures. Complex programs are designed as systems of interacting modules, each with a specific role, coordinating for a common overall purpose. These modules can be procedures within a program; combinations of data and procedures; or independent, but interrelated, programs. Modules allow for better management of complex tasks. Diverse teams can develop programs with a broad impact through careful review and by drawing on the strengths of members in different roles. Design decisions often involve tradeoffs. The development of complex programs is aided by resources such as libraries and tools to edit and manage parts of the program. Systematic analysis is critical for identifying the effects of lingering bugs.

3B-AP-08 Describe how artificial intelligence drives many software and physical systems.

3B-AP-09 Implement an artificial intelligence algorithm to play a game against a human opponent or solve a problem.

3B-AP-10 Use and adapt classic algorithms to solve computational problems.

3B-AP-11 Evaluate algorithms in terms of their efficiency, correctness, and clarity

3B-AP-12 Compare and contrast fundamental data structures and their uses.

3B-AP-13 Illustrate the flow of execution of a recursive algorithm.

3B-AP-14 Construct solutions to problems using student-created components, such as procedures, modules and/or objects.

3B-AP-15 Analyze a large-scale computational problem and identify generalizable patterns that can be applied to a solution.

3B-AP-16 Demonstrate code reuse by creating programming solutions using libraries and APIs

3B-AP-17 Plan and develop programs for broad audiences using a software life cycle process.

3B-AP-18 Explain security issues that might lead to compromised computer programs.

3B-AP-19 Develop programs for multiple computing platforms.

3B-AP-20 Use version control systems, integrated development environments (IDEs), and collaborative tools and practices (code documentation) in a group software project.



- 3B-AP-21 Develop and use a series of test cases to verify that a program performs according to its design specifications.
- 3B-AP-22 Modify an existing program to add additional functionality and discuss intended and unintended implications (e.g., breaking other functionality).
- 3B-AP-23 Evaluate key qualities of a program through a process such as a code review.
- 3B-AP-24 Compare multiple programming languages and discuss how their features make them suitable for solving different types of problems.

**Impacts of Computing-** The design and use of computing technologies and artifacts can improve, worsen, or maintain inequitable access to information and opportunities. Many aspects of society, especially careers, have been affected by the degree of communication afforded by computing. The increased connectivity between people in different cultures and in different career fields has changed the nature and content of many careers. Laws govern many aspects of computing, such as privacy, data, property, information, and identity. These laws can have beneficial and harmful effects, such as expediting or delaying advancements in computing and protecting or infringing upon people’s rights. International differences in laws and ethics have implications for computing.

- 3B-IC-25 Evaluate computational artifacts to maximize their beneficial effects and minimize harmful effects on society.
- 3B-IC-26 Evaluate the impact of equity, access, and influence on the distribution of computing resources in a global society.
- 3B-IC-27 Predict how computational innovations that have revolutionized aspects of our culture might evolve.
- 3B-IC-28 Debate laws and regulations that impact the development and use of software.

## HAWAII CONTENT AND PERFORMANCE STANDARDS PHYSICAL EDUCATION GRADES 9-12

### Grade 9-12

**Standard 1: MOVEMENT FORMS—Students will use motor skills and movement patterns to perform a variety of physical activities**

PE.9-12.1.1 Use combinations of specialized movement forms in a variety of activities, such as net and invasion games, field and target games, aquatics, dance, exercise, and gymnastics

**Standard 2: COGNITIVE CONCEPTS—Students will understand movement concepts, principles, strategies, and tactics as they apply to the learning and performance of physical activities**

- PE.9-12.2.1 Apply concepts, principles, tactics, and strategies to acquire, assess, and improve movement skills
- PE.9-12.2.2 Evaluate tactics and strategies for modified and traditional activities
- PE.9-12.2.3 Assess the importance of rules and procedures for safe and fair play during physical activities

**Standard 3: ACTIVE LIFESTYLE—Students will participate regularly in physical activity**

- PE.9-12.3.1 Participate in a variety of physical a
- PE.9-12.3.2 Describe reasons for, and healthful benefits of, continuing involvement in personally selected physical activities and identify strategies to do so

**Standard 4: PHYSICAL FITNESS—Students will know ways to achieve and maintain a health-enhancing level of physical fitness**

PE.9-12.4.1 Set goals to improve personal fitness level based on various sources of information

PE.9-12.4.2 Assess the benefits of participation in selected physical activities on the components of health-related physical fitness

**HAWAII CONTENT AND PERFORMANCE STANDARDS WORLD LANGUAGES GRADES 9-12**

**Stage I: Year 1**

**Standard 1: INTERPERSONAL\_Students will use target language to engage in conversations, provide and obtain information, express feelings and emotions, and exchange opinions**

WL.IS.Y1.1.1 Ask and answer social questions to get information or to maintain a conversation

WL.IS.Y1.1.2 Ask and answer transactional questions to provide and obtain goods, services or information

WL.IS.Y1.1.3 Exchange opinions and feelings about familiar experiences and events.

**Standard 2: INTERPRETIVE\_Students will understand and interpret written and spoken language on diverse topics from diverse media**

WL.IS.Y1.2.1 Identify the main ideas and significant details of oral and written materials with visual cues

**Standard 3: PRESENTATIONAL\_Students will present information, concepts, and ideas to an audience of listeners or readers on a variety of topics**

WL.IS.Y1.3.1 Use oral language skills to make simple presentations

WL.IS.Y1.3.2 Prepare written communication on a given theme

**Standard 4: CULTURES\_Students will understand relationships among perspectives, products, and practices of target culture**

WL.IS.Y1.4.1 Identify tangible and intangible products and practices of the target culture and compare them to other cultures

WL.IS.Y1.4.2 Give examples of how significant cultural ideas are reflected in the practices and products of the culture being studied

**Standard 5: COMPARISONS\_Students will understand that different languages use different patterns to communicate and apply this knowledge to the target and native languages**

WL.IS.Y1.5.1 Apply tenses appropriately to express actions and state of being in the present

WL.IS.Y1.5.2 Compare basic grammatical and linguistic structures of target language with own language

WL.IS.Y1.5.3 Explain cultural phrases and idiomatic expressions related to familiar topics

## **Stage I: Year 2**

**Standard 1: INTERPERSONAL\_Students will use target language to engage in conversations, provide and obtain information, express feelings and emotions, and exchange opinions**

WL.IS.Y2.1.1 Ask and answer questions to get information and clarify something that has been not been clearly understood

WL.IS.Y2.1.2 Provide details to elaborate on familiar topics and ask clarifying questions

**Standard 2: INTERPRETIVE\_Students will understand and interpret written and spoken language on diverse topics from diverse media**

WL.IS.Y2.2.1 Identify the main idea and significant details of oral or written material with limited visual cues

**Standard 3: PRESENTATIONAL\_Students will present information, concepts, and ideas to an audience of listeners or readers on a variety of topics**

WL.IS.Y2.3.1 Use oral language skills to present a narrative, descriptive, or factual report relating to personal or familiar experiences and events

WL.IS.Y2.3.2 Write about a familiar event, experience, or topic

**Standard 4: CULTURES\_Students will understand relationships among perspectives, products, and practices of target culture**

WL.IS.Y2.4.1 Describe the impact of own culture and target culture on each other

WL.IS.Y2.4.2 Use appropriate language and gestures to interact in a wide range of social contexts

**Standard 5: COMPARISONS\_Students will understand that different languages use different patterns to communicate and apply this knowledge to the target and native languages**

WL.IS.Y2.5.1 Describe similarities and differences in structural patterns of the language being learned and other languages

## **Stage II: Year 3**

**Standard 1: INTERPERSONAL\_Students will use target language to engage in conversations, provide and obtain information, express feelings and emotions, and exchange opinions**

WL.IIS.Y3.1.1 Use appropriate vocabulary to exchange opinions and personal perspectives

**Standard 2: INTERPRETIVE\_Students will understand and interpret written and spoken language on diverse topics from diverse media**

WL.IIS.Y3.2.1 Describe the main ideas and significant details of a variety of oral and written materials

WL.IIS.Y3.2.2 Recall information from announcements and messages intended for a wide audience

**Standard 3: PRESENTATIONAL\_Students will present information, concepts, and ideas to an audience of listeners or readers on a variety of topics**

WL.IIS.Y3.3.1 Use appropriate language to present creative and informative pieces

WL.IIS.Y3.3.2 Write paraphrases, summaries, and descriptions

WL.IIS.Y3.3.3 Write creative and informative texts

**Standard 4: CULTURES\_Students will understand relationships among perspectives, products, and practices of target culture**

WL.IIS.Y3.4.1 Analyze the expressive products of the culture being studied through comparison to native culture

WL.IIS.Y3.4.2 Explain patterns of behavior and expressive products typical of the target culture

**Standard 5: COMPARISONS\_Students will understand that different languages use different patterns to communicate and apply this knowledge to the target and native languages**

WL.IIS.Y3.5.1 Use past and future tenses correctly when speaking and writing for a variety of purposes

## **Stage II: Year 4**

**Standard 1: INTERPERSONAL\_Students will use target language to engage in conversations, provide and obtain information, express feelings and emotions, and exchange opinions**

WL.IIS.Y4.1.1 Use appropriate vocabulary to exchange ideas about current or past events that are of significance to the culture being studied

**Standard 2: INTERPRETIVE\_Students will understand and interpret written and spoken language on diverse topics from diverse media**

WL.IIS.Y4.2.1 Identify significant ideas and details in materials by making inferences or predictions supported by evidence in the text

**Standard 3: PRESENTATIONAL\_Students will present information, concepts, and ideas to an audience of listeners or readers on a variety of topics**

WL.IIS.Y4.3.1 Use strategies appropriate to speaking for various purposes

WL.IIS.Y4.3.2 Use strategies appropriate to writing for various purposes

**Standard 4: CULTURES\_Students will understand relationships among perspectives, products, and practices of target culture**

WL.IIS.Y4.4.1 Analyze the history, politics, and art of the culture being studied by making comparisons to native culture

WL.IIS.Y4.4.2 Explain themes, ideas, and perspectives related to products and practices of the target culture

**Standard 5: COMPARISONS\_Students will understand that different languages use different patterns to communicate and apply this knowledge to the target and native languages**

WL.IIS.Y4.5.1 Use various structural patterns in narration and description

**Advanced**

**Standard 1: INTERPERSONAL\_Students will use target language to engage in conversations, provide and obtain information, express feelings and emotions, and exchange opinions**

WL.IIIS.Y5.1.1 Exchange ideas about issues or problems and their possible solutions

**Standard 2: INTERPRETIVE\_Students will understand and interpret written and spoken language on diverse topics from diverse media**

WL.IIIS.Y5.2.1 Assess main ideas and most supporting details of broadcast or published materials on a wide variety of subjects

**Standard 3: PRESENTATIONAL\_Students will present information, concepts, and ideas to an audience of listeners or readers on a variety of topics**

WL.IIIS.Y5.3.1 Use interpretation, persuasion, or critical analysis to make an oral presentation

WL.IIIS.Y5.3.2 Write for personal purposes in varied situations and contexts

**Standard 4: CULTURES\_Students will understand relationships among perspectives, products, and practices of target culture**

WL.IIIS.Y5.4.1 Investigate how basic cultural ideas affect behavior and language through comparison of culture being studied and native culture

WL.IIIS.Y5.4.2 Analyze connections among products, practices, and perspectives of the target culture

**Standard 5: COMPARISONS\_ Students will understand that different languages use different patterns to communicate and apply this knowledge to the target and native languages**

WL.IIIS.Y5.5.1 Assess the impact on communication of words and phrases that do not translate directly from one language to another

**HAWAII HEALTH EDUCATION GRADES 9-12**

**Grade 9-12**

**Standard 1: Comprehending Concepts- Students will comprehend concepts related to health promotion and disease prevention to enhance health.**

NHES.1.12.1 Predict how healthy behaviors can affect health status.

NHES.1.12.2 Describe the interrelationships of emotional, intellectual, physical, and social health.

NHES.1.12.3 Analyze how environment and personal health are interrelated.

NHES.1.12.4 Analyze how genetics and family history can affect personal health.

NHES.1.12.5 Propose ways to reduce or prevent injuries and health problems.

NHES.1.12.6 Analyze the relationship between access to health care and health status.

NHES.1.12.7 Compare and contrast the benefits of and barriers to practicing a variety of healthy behaviors.

NHES.1.12.8 Analyze personal susceptibility to injury, illness, or death if engaging in unhealthy behaviors.

NHES.1.12.9 Analyze the potential severity of injury or illness if engaging in unhealthy behaviors.

**Standard 2: Analyzing Influences- Students will analyze the influence of family, peers, culture, media, technology, and other factors on health behaviors.**

NHES.2.12.1 Analyze how the family influences the health of individuals.

NHES.2.12.2 Analyze how the culture supports and challenges health beliefs, practices, and behaviors.

NHES.2.12.3 Analyze how peers influence healthy and unhealthy behaviors.

NHES.2.12.4 Evaluate how the school and community can affect personal health practice and behaviors.

NHES.2.12.5 Evaluate the effect of media on personal and family health.

NHES.2.12.6 Evaluate the impact of technology on personal, family, and community health.

NHES.2.12.7 Analyze how the perceptions of norms influence healthy and unhealthy behaviors.

NHES.2.12.8 Analyze the influence of personal values and beliefs on individual health practices and behaviors.

NHES.2.12.9 Analyze how some health risk behaviors can influence the likelihood of engaging in unhealthy behaviors.

NHES.2.12.10 Analyze how public health policies and government regulations can influence health promotion and disease prevention.

**Standard 3: Accessing Resources-Students will demonstrate the ability to access valid information, products, and services to enhance health.**

NHES.3.12.1 Evaluate the validity of health information, products, and services.

NHES.3.12.2 Use resources from home, school, and community that provide valid health information.

NHES.3.12.3 Determine the accessibility of products and services that enhance health.

NHES.3.12.4 Determine when professional health services may be required.

NHES.3.12.5 Access valid and reliable health products and services.

**Standard 4: Interpersonal Communication-Students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.**

NHES.4.12.1 Use skills for communicating effectively with family, peers, and others to enhance health.

NHES.4.12.2 Demonstrate refusal, negotiation, and collaboration skills to enhance health and avoid or reduce health risks.

NHES.4.12.3 Demonstrate strategies to prevent, manage, or resolve interpersonal conflicts without harming self or others.

NHES.4.12.4 Demonstrate how to ask for and offer assistance to enhance the health of self and others.

**Standard 5: Decision-Making -Students will demonstrate the ability to use decision-making skills to enhance health.**

NHES.5.12.1 Examine barriers that can hinder healthy decision-making.

NHES.5.12.2 Determine the value of applying a thoughtful decision-making process in health-related situations.

NHES.5.12.3 Justify when individual or collaborative decision making is appropriate.

NHES.5.12.4 Generate alternatives to health-related issues or problems.

NHES.5.12.5 Predict the potential short-term and long-term impact of each alternative on self and others.

NHES.5.12.6 Defend the healthy choice when making decisions.

NHES.5.12.7 Evaluate the effectiveness of health-related decisions.

**Standard 6: Goal-Setting- Students will demonstrate the ability to use goal-setting skills to enhance health.**

NHES.6.12.1 Assess personal health practices and overall health status.

NHES.6.12.2 Develop a plan to attain a personal health goal that addresses strengths, needs, and risks.

NHES.6.12.3 Implement strategies and monitor progress in achieving a personal health goal.

NHES.6.12.4 Formulate an effective long-term personal health plan.

**Standard 7: Self-Management - Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks**

NHES.7.12.1 Analyze the role of individual responsibility in enhancing health.

NHES.7.12.2 Demonstrate a variety of healthy practices and behaviors that will maintain or improve the health of self and others.

NHES.7.12.3 Demonstrate a variety of behaviors that avoid or reduce health risks to self and others.

**Standard 8: Advocacy - Students will demonstrate the ability to advocate for personal, family, and community health.**

NHES.8.12.1 Utilize accurate peer and societal norms to formulate a health-enhancing message.

NHES.8.12.2 Demonstrate how to influence and support others to make positive health choices.

NHES.8.12.3 Work cooperatively as an advocate for improving personal, family, and community health.

NHES.8.12.4 Adapt health messages and communication techniques to a specific target audience.

**HAWAII CONTENT AND PERFORMANCE STANDARDS FINE ARTS EDUCATION Grade 9– Grade 12**

**Standard 1: VISUAL ARTS—Students will understand and apply art materials, techniques, and processes in the creation of works of art and understand how the visual arts communicate a variety of ideas, feelings, and experiences**

FA.9-12.1.1 Create original works of art using a variety of visual arts materials, techniques, and processes

FA.9-12.1.2 Demonstrate how the composition of a work of art is affected by the use of elements or principles of art and design

FA.9-12.1.3 Analyze, using evidence, the relationship between themes explored in the visual arts and those explored in other content areas

FA.9-12.1.4 Evaluate the effectiveness of the use of elements and principles of art and design in works of art

FA.9-12.1.5 Create works of art that contain one or more symbols, themes, and metaphors

FA.9-12.1.6 Evaluate the function of artwork in different cultures, careers, and historical periods

FA.9-12.1.7 Analyze common characteristics of works of art and artifacts across time periods and among cultural groups to identify influences

**Standard 2: MUSIC—Students will understand and apply elements of music and understand how music communicates ideas, feelings, and experiences across cultures**

FA.9-12.2.1 Perform a variety of musical elements with appropriate understanding, expression and style individually and in a group

FA.9-12.2.2 Improvise short melodies based on a chord pattern

FA.9-12.2.3 Apply knowledge of music theory to compose and arrange music within specified guidelines

FA.9-12.2.4 Analyze compositional devices and techniques

FA.9-12.2.5 Critique music using specific criteria



- FA.9-12.2.6 Describe how various elements and roles of music integrate with other content areas
- FA.9-12.2.7 Analyze the significance of music and composers in various cultures and time periods

**Standard 3: DRAMA AND THEATRE—Students will understand and apply the skills of acting, design, and technical theatre and understand the role of drama in various cultures throughout history**

- FA.9-12.3.1 Create a script or scene incorporating characters, dialogue, scenery, props, costumes, lighting, and sound
- FA.9-12.3.2 Use collaboration and revision to develop and produce a play or scene
- FA.9-12.3.3 Analyze the physical, emotional, and social dimensions of characters in texts and performances
- FA.9-12.3.4 Implement artistic choices for informal and formal productions
- FA.9-12.3.5 Develop and apply criteria to critique all aspects of a live theatrical production
- FA.9-12.3.6 Assess the role of the audience in relation to the overall live theatrical experience
- FA.9-12.3.7 Apply period style to dramatic forms, production practices, and theatrical traditions from various cultures and historical periods

**Standard 4: DANCE—Students will understand and apply elements of dance, appreciate how dance communicates meaning, and recognize its role across cultures and throughout history**

- FA.9-12.4.1 Use all of the dance elements in creating dance sequences
- FA.9-12.4.2 Demonstrate choreographic principles, processes, and structures
- FA.9-12.4.3 Analyze the effect of lifestyle choices on a dancer
- FA.9-12.4.4 Synthesize dance with other disciplines
- FA.9-12.4.5 Use movement choices to communicate abstract ideas in dance
- FA.9-12.4.6 Apply complex steps and patterns of dances from a number of styles, genres, and cultures

**NĀ HOPENA A’O STATEMENTS FOR LEADERSHIP TRAINING Grade 9– Grade 12**

**Outcome Area 1: Strengthened Sense of Belonging:**

I stand firm in my space with a strong foundation of relationships. A sense of Belonging is demonstrated through an understanding of lineage and place and a connection to past, present, and future. I am able to interact respectfully for the betterment of self and others.

Know who I am and where I am from

Know about the place I live and go to school

Build relationships with many diverse people  
Care about my relationships with others  
Am open to new ideas and different ways of doing things  
Communicate with clarity and confidence  
Understand how actions affect others  
Actively participate in school and communities

**Outcome Area 2: Strengthened Sense of Responsibility:**

I willingly carry my responsibility for self, family, community and the larger society. A sense of Responsibility is demonstrated by a commitment and concern for others. I am mindful of the values, needs and welfare of others.

Come to school regularly, on-time and ready to learn  
See self and others as active participants in the learning process  
Question ideas and listens generously  
Ask for help and feedback when appropriate  
Make good decisions with moral courage and integrity in every action.  
Set goals and complete tasks fully  
Reflect on the quality and relevancy of the learning  
Honor and make family, school and communities proud

**Outcome Area 3: Strengthened Sense of Excellence:**

I believe I can succeed in school and life and am inspired to care about the quality of my work. A sense of Excellence is demonstrated by a love of learning and the pursuit of skills, knowledge and behaviors to reach my potential. I am able to take intellectual risks and strive beyond what is expected.

Define success in a meaningful way  
Know and apply unique gifts and abilities to a purpose  
Prioritize and manage time and energy well  
Take initiative without being asked  
Explore many areas of interests and initiate new ideas  
Utilize creativity and imagination to problem-solve and innovate  
See failure as an opportunity to learn well  
Assess and make improvements to produce quality work

**Outcome Area 4: Strengthened Sense of Aloha:**

I show care and respect for myself, families, and communities. A sense of Aloha is demonstrated through empathy and appreciation for the symbiotic relationship between all. I am able to build trust and lead for the good of the whole.

Give generously of time and knowledge

Appreciate the gifts and abilities of others

Make others feel comfortable and welcome

Communicate effectively to diverse audiences

Respond mindfully to what is needed

Give joyfully without expectation of reward

Share the responsibility for collective work

Spread happiness

**Outcome Area 5: Strengthened Sense of Total Well-being:**

I learn about and practice a healthy lifestyle. A sense of Total Well-being is demonstrated by making choices that improve the mind, body, heart and spirit. I am able to meet

the demands of school and life while contributing to the well-being of family, 'āina, community and world.

Feel safe physically and emotionally

Develop self-discipline to make good choices

Manage stress and frustration levels appropriately

Have goals and plans that support healthy habits, fitness and behaviors

Utilize the resources available for wellness in everything and everywhere

Have enough energy to get things done daily

Engage in positive, social interactions and has supportive relationships

Promote wellness in others

**Outcome Area 6: Strengthened Sense of Hawai'i:**

I am enriched by the uniqueness of this prized place. A sense of Hawai'i is demonstrated through an appreciation for its rich history, diversity and indigenous language and culture. I am able to navigate effectively across cultures and communities and be a steward of the homeland.

Pronounce and understand Hawaiian everyday conversational words

Use Hawaiian words appropriate to their task

Learn the names, stories, special characteristics and the importance of places in Hawai'i

Learn and apply Hawaiian traditional world view and knowledge in contemporary settings

Share the histories, stories, cultures and languages of Hawai'i

Compare and contrast different points of views, cultures and their contributions

Treat Hawai'i with pride and respect

Call Hawai'i home

# **Kūlia Academy**

## **Attachment G. First Year Calendar**

# Attachment G - Kūlia Academy - First Year Calendar

2024						2025						
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
1 Mo	1 Th	1 Su	1 Tu	1 Fr	1 Su	1 We <small>New Year's Day</small>	1 Sa	1 Sa	1 Tu	1 Th	1 Su	
2 Tu	2 Fr	2 Mo <small>Labor Day</small>	2 We	2 Sa	2 Mo	2 Th	2 Su	2 Su	2 We	2 Fr	2 Mo	
3 We	3 Sa	3 Tu	3 Th	3 Su	3 Tu	3 Fr	3 Mo	3 Mo	3 Th	3 Sa	3 Tu	
4 Th <small>Independence Day</small>	4 Su	4 We	4 Fr	4 Mo	4 We	4 Sa	4 Tu	4 Tu	4 Fr	4 Su	4 We	
5 Fr	5 Mo	5 Th	5 Sa	5 Tu	5 Th	5 Su	5 We	5 We	5 Sa	5 Mo	5 Th	
6 Sa	6 Tu	6 Fr	6 Su	6 We	6 Fr	6 Mo	6 Th	6 Th	6 Su	6 Tu	6 Fr	
7 Su	7 We	7 Sa	7 Mo	Fall Break	7 Th	7 Sa	7 Tu	7 Fr	7 Fr	7 Mo	7 We	7 Sa
8 Mo	8 Th	8 Su	8 Tu		8 Fr	8 Su	8 We	8 Sa	8 Sa	8 Tu	8 Th	8 Su
9 Tu	9 Fr	9 Mo	9 We		9 Sa	9 Mo	9 Th	9 Su	9 Su	9 We	9 Fr	9 Mo
10 We	10 Sa	10 Tu	10 Th		10 Su	10 Tu	10 Fr	10 Mo <small>Teacher Institute Day</small>	10 Mo	10 Th	10 Sa	10 Tu
11 Th	11 Su	11 We	11 Fr	11 Mo <small>Veterans Day</small>	11 We	11 Sa	11 Tu	11 Tu	11 Fr	11 Su	11 We	
12 Fr	12 Mo	12 Th	12 Sa	12 Tu	12 Th	12 Su	12 We	12 We	12 Sa	12 Mo	12 Th	
13 Sa	13 Tu	13 Fr	13 Su	13 We	13 Fr	13 Mo	13 Th	13 Th	13 Su	13 Tu	13 Fr	
14 Su	14 We	14 Sa	14 Mo <small>Columbus Day</small>	14 Th	14 Sa	14 Tu	14 Fr	14 Fr	14 Mo	14 We	14 Sa	
15 Mo	15 Th	15 Su	15 Tu	15 Fr	15 Su	15 We	15 Sa	15 Sa	15 Tu	15 Th	15 Su	
16 Tu	16 Fr	16 Mo	16 We	16 Sa	16 Mo	16 Th	16 Su	16 Su	16 We	16 Fr	16 Mo	
17 We	17 Sa	17 Tu	17 Th	17 Su	17 Tu	17 Fr	17 Mo <small>Presidents' Day</small>	17 Mo	Spring Break	17 Th	17 Sa	17 Tu
18 Th	18 Su	18 We	18 Fr	18 Mo	18 We	18 Sa	18 Tu	18 Tu		18 Fr	18 Su	18 We
19 Fr	19 Mo	19 Th	19 Sa	19 Tu	19 Th	19 Su	19 We	19 We		19 Sa	19 Mo	19 Th
20 Sa	20 Tu	20 Fr	20 Su	20 We	20 Fr	20 Mo <small>Martin L. King Day</small>	20 Th	20 Th	20 Su	20 Tu	20 Fr	
21 Su	21 We	21 Sa	21 Mo	21 Th	21 Sa	21 Tu	21 Fr	21 Fr	21 Mo	21 We	21 Sa	
22 Mo	22 Th	22 Su	22 Tu	22 Fr	22 Su	22 We	22 Sa	22 Sa	22 Tu	22 Th	22 Su	
23 Tu	23 Fr	23 Mo	23 We	23 Sa	23 Mo	Winter Break	23 Th	23 Su	23 We	23 Fr	23 Mo	
24 We	24 Sa	24 Tu	24 Th	24 Su	24 Tu		24 Fr	24 Mo	24 Mo	24 Th	24 Sa	24 Tu
25 Th	25 Su	25 We	25 Fr	25 Mo	25 We		25 Sa	25 Tu	25 Tu	25 Fr	25 Su	25 We
26 Fr	26 Mo	26 Th	26 Sa	26 Tu	26 Th		26 Su	26 We	26 We <small>Kuhio Day</small>	26 Sa	26 Mo <small>Memorial Day</small>	26 Th
27 Sa	27 Tu	27 Fr	27 Su	27 We	27 Fr	27 Mo	27 Th	27 Th	27 Su	27 Tu	27 Fr	
28 Su	28 We	28 Sa	28 Mo	28 Th <small>Thanksgiving Day</small>	28 Sa	28 Tu	28 Fr	28 Fr	28 Mo	28 We	28 Sa	
29 Mo	29 Th	29 Su	29 Tu	29 Fr <small>School Holiday</small>	29 Su	29 We		29 Sa	29 Tu	29 Th	29 Su	
30 Tu	30 Fr	30 Mo	30 We	30 Sa	30 Mo	30 Th		30 Su	30 We	30 Fr	30 Mo	
31 We	31 Sa		31 Th		31 Tu	31 Fr		31 Mo		31 Sa		

Q1: 44 Days, Ends on Oct. 4    Q2: 44 Days, Ends on Dec. 20    Q3: 46 Days, Ends on Mar. 14    Q4: 47 Days, Ends on May.29

  No School   
   Teacher Work Day / No School for Students   
   Instructional (Student) Days

# **Kūlia Academy**

Attachment H. Daily and Weekly Schedule for Each Division

## DAILY SCHEDULE FOR BOTH MIDDLE AND HIGH SCHOOL

Each school day will be either an odd or an even day.

### **Odd Day Schedule**

Homeroom/Study Hall: 8:30-9:15

Period 1: 9:20 - 10:45

Period 3: 10:50- 12:15

Lunch: 12:15-12:45

Period 5: 12:45 - 2:10

Teacher Prep/Meeting: 2:10 - 3:25

### **Even Day Schedule**

Homeroom/Study Hall: 8:30-9:15

Period 2: 9:20 - 10:45

Period 4: 10:50- 12:15

Lunch: 12:15-12:45

Period 6: 12:45 - 2:10

Teacher Prep/Meeting: 2:10 - 3:25

**Teacher Prep/Meeting:** 3 times a week: teacher prep time, twice a week: Faculty meetings, Same-subject and same-grade level meetings, IEP meetings, to be scheduled by the Assistant Principal.



## Weekly Breakdown of Teacher Time

Weekly Teacher Instruction Time: 1275 minutes

Weekly Teacher Prep Time: 225 minutes

Time in meetings, passing, homeroom/study hall: 425

Lunch: 30 minutes per day

Sample weekly schedule for grades 6, 7, and 8

### ALTERNATE WEEK 1

<b>Period</b>	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
<b>1st Period</b>	English	-	English	-	English
<b>2nd Period</b>	-	Leadership Training	-	Leadership Training	-
<b>3rd Period</b>	Math	-	Math	-	Math
<b>LUNCH</b>	-		-		-
<b>4th Period</b>	Science	-	Science	-	Science
<b>5th Period</b>	-	Social Science	-	Social Science	-
<b>6th Period</b>	Computer Science	-	Computer Science	-	Computer Science

ALTERNATE WEEK 2

<b>Period</b>	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
<b>1st Period</b>	-	English	-	English	-
<b>2nd Period</b>	Leadership Training	-	Leadership Training	-	Leadership Training
<b>3rd Period</b>	-	Math	-	Math	-
<b>LUNCH</b>		-		-	
<b>4th Period</b>	-	Science	-	Science	-
<b>5th Period</b>	Social Science	-	Social Science	-	Social Science
<b>6th Period</b>	-	Computer Science	-	Computer Science	-

Sample weekly schedule for grades 9,10,11, and 12

ALTERNATE WEEK 1

<b>Period</b>	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
<b>1st Period</b>	English	-	English	-	English
<b>2nd Period</b>	-	Foreign Language, P.E. or Elective	-	Foreign Language, P.E. or Elective	-
<b>3rd Period</b>	Math	-	Math	-	Math
<b>LUNCH</b>	-		-		-
<b>4th Period</b>	Science	-	Science	-	Science
<b>5th Period</b>	-	Social Science	-	Social Science	-
<b>6th Period</b>	Computer Science	-	Computer Science	-	Computer Science

ALTERNATE WEEK 2

<b>Period</b>	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
<b>1st Period</b>	-	English	-	English	-
<b>2nd Period</b>	Foreign Language, P.E. or Elective	-	Foreign Language, P.E. or Elective	-	Foreign Language, P.E. or Elective
<b>3rd Period</b>	-	Math	-	Math	-
<b>LUNCH</b>		-		-	
<b>4th Period</b>	-	Science	-	Science	-
<b>5th Period</b>	Social Science	-	Social Science	-	Social Science
<b>6th Period</b>	-	Computer Science	-	Computer Science	-

# **Kūlia Academy**

Attachment I - A School Day From the Perspective of a Student

## **A School Day From the Perspective of a Student**

I am a 6th grader at Kulia Academy. I go to school at around 8:00 am in the morning. I usually work on an assignment, sometimes with the help of an older student until the classes start. As it nears time for class to begin, 8:30 a.m., I head toward my classroom.

Our classes are different from other schools. In science class, the topic was boiling, expansion of liquids. We made our own thermometers using different liquids in different glass tubes and then placed them in hot liquids and measured how much each of them expanded under the same conditions. The question was why there was a difference? We discussed that as a whole class, a lot of ideas and explanations were made but eventually we agreed on one: the difference was at the particle, or more precisely molecule level.

In Computer Science, we continued working on analyzing a data set we acquired from our weather stations that we set up for our Science class over a 30-day period. It requires a lot of thinking but it's so much fun.

Then we had lunch. I brought a delicious sandwich that my mother prepared for me.

In the afternoon, we had a Leadership Training class. We discussed Empathy in Leadership Training class. I realized during the discussion in Character Education class that everyone suffers from a general lack of empathy in today's society. We discussed how to improve it. The first state, we agreed, would be to realize that we all lack empathy.

Then the bell rang at 2:10. Now I will join the Pacific Voices Club. In Pacific Voices, I receive tutoring twice a week and participate in fun activities other times such as cultural chants, dance, stories, traditional arts and crafts. It was a fast day, filled with discussions and a lot of brain-stretching.

# **Kūlia Academy**

Attachment J - A School Day From the Perspective of a Teacher

## A School Day From the Perspective of a Teacher

Aloha,

My name is Kalei. I am a science teacher at Kūlia Academy. I teach 6th and 7th grade science, a total of 3 periods of teaching today.

At Kūlia, we use a system called Foundational Approaches in Science Teaching (FAST), developed by the CRDG Group at University of Hawaii. In this wonderful system, students perform experiments and investigations 80% of the class time. Students absolutely love it. After they finish the experiment or investigation, we discuss possible explanations as the entire class.

Today in my 7th grade classes, students connected two syringes through a rubber tube. In the first part of the experiment, they just connected the syringes through the tube while they were filled with air.

Then, they tried to squeeze the syringes and they observed that they would squeeze them almost all the way down. Next, they filled them with water and tried the same thing but they were able to squeeze just a little bit. After they were done with their experiment, we discussed why there was a difference between air and water and how it could be explained. They had science books on their desks so they could search them for an explanation. FAST requires an extremely democratic classroom environment.

As required, I asked my students for explanations, I only wrote whatever they said on the board and then we voted. In all my three 6th grade classes students were able to come up with the right scientific explanation for what they have observed.

In my 6th grade science classes, students started building their weather stations today. They love the idea that they design and make their weather stations from scratch and that they will install them around the campus and observe the weather, record and report it on our website. They carefully designed their little gadgets including the reservoir to collect rain and carefully mark the levels on it.

In my prep period, I prepare the materials (mostly everyday items) for our next day investigations.

My students and I went home after a day of fun filled science.

# **Kūlia Academy**

Attachment K - Admission and Enrollment Policy



## **Admission Procedure and Preferences**

An open application period will be publicly announced each year. The school will include specific information in its outreach materials, on the school website, at community meetings and open forums notifying parents of the Charter School's open application period and lottery dates. Kūlia Academy will ensure that all application materials will reference the application deadline and proposed lottery dates as well as provide complete information regarding application procedures, key dates, and enrollment preferences (in the case of a lottery) and requirements consistent with approved charter. Parents/guardians will be encouraged, but not required, to either attend Kūlia Academy workshops or meet with a designated Kūlia Academy staff or faculty member before admission to learn about the school mission, teaching philosophy, and how parents can contribute to the school. In these meetings and workshops, our staff will explain the expectations from the parents at home to enable their students to comply with the school schedule and homework requirements, as well as how parents will participate in the activities of subcommittees that help operate the school.

Kūlia Academy is committed to serving all students, including academically low-achieving, economically disadvantaged students. Specific activities that will be employed by Kūlia Academy include: use of English, Native Hawaiian and Samoan collateral; extensive grassroots marketing; simple, easy to use and easy to understand forms and brochures; removal of any language/messaging that may traditionally deter underserved student populations. The school will work to accommodate students with special needs throughout the enrollment process to ensure all students have an equal opportunity to apply for admission.

### **Kūlia Academy does not have any enrollment preferences and is open to all students.**

However, we do allow enrollment priorities (as allowed by Hawai'i State Law) to ensure staff with children and families with multiple children are able to attend the same school. The enrollment priorities are highlighted below.

- Current students
- Children of Kūlia Academy's staff;
- Siblings of currently enrolled students;
- Siblings of newly admitted students;
- All other Hawai'i students.

### **Lottery Procedures and Preferences**

#### **Informing Parents about the Enrollment Lottery**

Kūlia Academy shall admit all pupils who wish to attend the school. However, if the number of pupils who wish to attend the school exceeds the school's capacity, except for existing pupils of the school, shall be determined by a public random drawing. The school will choose a date and

time (preferably on the weekend or on a weekday evening) so that most interested parties will be able to attend. The school's office manager will inform parents of all applicants and all interested parties of the rules to be followed during the lottery process, location, date and time of the lottery through mail, e-mail, school website, phone, and other available outlets prior to the lottery date. The lottery will be held at the school site if the school facility can accommodate all interested parties. Otherwise, the school will secure a meeting room that is large enough to accommodate all parties and to allow them to observe the lottery.

### **Lottery Procedure**

In the lottery, all names are drawn and listed in order, separately, for each grade level. Once the school capacity is met, the remaining students' names will continue to be drawn randomly and placed in the order they are drawn on the waiting list.

The students who do not apply in the open enrollment period will be added to the end of the waiting list in the order they applied. Kūlia Academy will maintain auditable records of the above activities. Kūlia Academy will invite SPCSC representatives as official observers of the lottery to verify the lottery procedures are fairly executed. The lottery will be video-recorded and the school will keep documents in record including a written statement signed by the principal that identifies the procedures used, details of the event, lists of all applicants and applicants who secured a spot at the school through the lottery.

### **Notifications of Admission Status**

Notifications of admission status will be mailed to all applicants. Enrollment packets will be sent to admitted students; students not admitted will be informed of their waiting list priority number as determined by the admissions lottery or application order. If the enrollment packets are not returned within 10 business days from the date of postage, then admission for that student is forfeited, and an admission notice will be mailed to the next student on the waiting list. In addition, the School shall attempt on at least two separate occasions to contact the parents/guardians of promoted students by telephone. Those families not returning the enrollment packets within the 10-day period forfeit their right to enroll their student in the School for that school year, and an admission notice will be mailed to the next student on the waiting list.

**All procedures will align with HRS 302-34, Enrollment.**

# **Kūlia Academy**

Attachment L. Student Discipline Policy

## Student Discipline.

- a. A clear description of the proposed school's philosophy on cultivating positive student behavior and a student discipline policy that provides for appropriate, effective strategies to support a safe, orderly school climate and fulfillment of academic goals, promoting a strong school culture while respecting student rights.

### **Progressive Discipline**

All students need clear guidelines and principles that will help guide their behavior, their relationships and their ambitions. Kūlia Academy will implement a progressive discipline plan in place at each of its schools. This plan will be published at the beginning of each school year in the Parent/Student handbook. The handbook will also include a school parent-student compact that outlines how parents, the entire school staff, and students will share the responsibility for improved student academic achievement and the means by which the school and parents will develop a partnership to help children achieve high academic and behavior standards. The discipline plan includes information about student expectations and progression of disciplinary procedures from day-to-day discipline to suspension and expulsion.

### **Progressive Positive Discipline**

We will employ 3 major strategies and tools to encourage positive behavior:

1. **Gamified Positive Behavioral Interventions and Support System:** Positive Behavioral Interventions and Supports (PBIS) is a preventative approach that, on a school-wide level (SWPBIS), focuses more on identifying, acknowledging, and encouraging desired student behaviors than strictly punishing misbehaviors.

Punishments, when handled inconsistently and in the absence of positive reinforcement of good behaviors, are largely ineffective. With PBIS, rather than waiting for misbehavior to occur and then responding, teachers and staff will proactively model and reward prosocial behaviors. This helps set clear expectations for students and decreases the likelihood that negative behavior will happen at all.

We will be relentlessly focused on the intellectual, social and emotional learning (SEL) and development of each one of our students. PBIS fosters Social Emotional Learning (SEL). SEL is teaching students to develop the positive attitudes, behaviors, and skills that will aid them in their social relationships and interactions, emotional well-being, and ultimately their academic learning. According to a 2017 research study, students exposed to SEL programs scored an average 13 percentile points higher academically than their non-SEL peers. Behavior problems, emotional issues, and drug use were also significantly lower.

To implement Positive Behavioral Interventions and Supports, we will

employ an online system called ClassCraft. ClassCraft is a gamification tool that changes the dynamics in the classroom. As an online tool, it acts as a layer over a teacher's existing curriculum, gamifying lesson plans, and rewiring the social dynamics and culture of the classroom. Students and teachers participate in this "role-playing game" together throughout the school year. Students play on a team and become Warriors, Mages, and Healers, each with distinct roles and responsibilities. As teachers go about their lessons, students gain Experience Points (XP) for any positive behavior the teacher wants to encourage. By accumulating XP, students "level up" and unlock "powers," or privileges that help them personally or academically or that benefit their team.

When students demonstrate negative behaviors that the teachers wants to discourage, teachers remove their Health Points (HP). When a student loses all their HP, they "fall in battle" and receive a "sentence," or task they must complete, and their teammates lose a little HP as well. This teaches students accountability to one another rather than the teacher. Thus, supporting their teammates becomes the key to their own success.

**2. Announcement and Appreciation of Positive Behaviors:** Kūlia Academy staff will encourage and support the attainment of academic skills as well as social skills, such as listening, friendship-making, problem solving, and alternatives to aggression. Positive student behavior and improvements will be acknowledged and encouraged by the Kūlia staff. Teachers will not only report discipline issues on the school information system but also positive behaviors and accomplishments using a system called ClassCraft as described before. Parents will also be informed of positive behavior and improvements via phone, email, and home visits. Students will receive certificates and/or rewards for outstanding performance and behaviors. To inspire and encourage students to develop their potential in all of these areas, the following reinforcements will be used for positive behavior:

- Individual awards/recognition
- Classroom awards/recognition
- Certificates
- Displays
- Positive contact with parent/guardian
- Special activities (field trips, movie nights, picnics, etc.)
- Publications
- Assemblies
- Positive ClassCraft points

**3. Alternatives to Suspension:** Kūlia Academy believes that

alternatives to suspension align with our school-wide positive behavior support plan. Following are a list of alternatives to be considered before suspending a student: warning, phone call home, parent conference, teacher/administrative detention, written assignment/research/presentation, loss of privileges, behavior contract, parent shadowing, mentorship (peer/teacher), referral (counseling, SST, Deans/Principal), assigning volunteer work/ community service and in-school suspension.

For discipline incidents, the school's administrators will involve Special Education, ELL and Title I Intervention teachers in the decision-making process before taking any action if a high-need student is involved.

- b. Legally sound policies for student discipline, suspension, dismissal, and crisis removal, including the proposed school's code of conduct and procedural due process for all students, including students afforded additional due process measures under IDEA.

Aligned to BOE and DOE policy (primarily Hawai'i Administrative Rules Title 8, DOE, Education, Public Schools, Chapter 19), we will follow our internal policies to the best of our abilities.

- c. Appropriate plan for including teachers, students, and parents or guardians in the development and/or modification of the proposed school's policies for discipline, suspension, dismissal, and crisis removal.

The school's policies will be reviewed and discussed during summer professional development sessions and at PCAG meetings at least once a year to provide feedback for revisions and recommendations to the school board. Teachers, students and parents will provide input through these meetings.

- d. Legally sound list and definitions of offenses for which students in the school must (where non-discretionary) or may (where discretionary) be suspended or dismissed.

Please refer to Hawai'i Administrative Rules Title 8, DOE, Education, Public Schools, Chapter 19 for a full list of definitions of offenses.

# **Kūlia Academy**

Attachment M. Evidence of support from community partners



## The Senate

STATE CAPITOL  
HONOLULU HAWAII 96813

January 30, 2022

Hawaii State Public Charter School Commission  
1111 Bishop St #516,  
Honolulu, HI 96813

Dear Chairperson Kim and Commissioners,

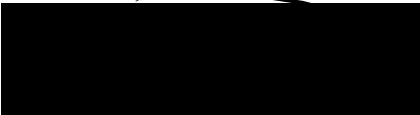
I have great hopes for Kalihi. As the area Senator I have plans to put a Hawaiian Cultural Center where OCCC sits today, and create a tech cluster around Amazon's fulfillment center in Sand Island. In addition, Kamehameha Schools is embarking on a master plan for Kalihi which will create more affordable housing, modern offices, and green spaces. Gone will be the rundown warehouses that mar Kalihi.

Schools such as Kulia Academy have a leading role to play in achieving this bright future for the area, as Kulia specializes in the teaching of computer science topics including artificial intelligence and data science. Those students will be the workforce that can live and work within Kalihi.

As Chair of the Senate's Committee on Energy, Economic Development, and Tourism, my focus is to set the stage for a diversified and vibrant business climate in Hawaii. I am one of the sponsors of Senate Bill 242, to amend the Charter School Law requiring that all public charter schools offer computer science courses to their students. Kulia not only meets this new requirement but exceeds it. It's establishment will be a unique public education option in an area lacking in such alternatives.

I am a believer in preparing our children for a world of innovation. Kulia Academy will create the critical and creative thinkers Hawaii needs. I enthusiastically support the approval of their charter proposal.

Aloha,

  
Glenn Wakai  
Hawaii State Senator

*Senator Glenn Wakai*  
*Kalihi · Salt Lake · Foster Village*  
*State Capitol, Room 216, 415 S. Beretania St., Honolulu, Hawaii 96813*  
*Phone: (808) 586-8585 Fax: (808) 586-8588 Email: senwakai@capitol.hawaii.gov*



CLEMENT BAUTISTA

January 23, 2022

Hawaii State Public Charter School Commission  
1111 Bishop Street, Suite 516  
Honolulu, HI 96813

Dear Commissioners:

As president of the Filipino-American Historical Society of Hawaii, board member of the Filipino Community Center and Hawaii's Plantation Village and retired director of the University of Hawaii at Manoa Office of Multicultural Student Services and, I would like to express my support for Kulia Academy's charter school proposal. The Kalihi district remains one of Honolulu's densest populations with high concentrations of immigrant as well as Native Hawaiian students. In spite of their best efforts and many successes, district schools continue to be challenged in addressing the educational and social needs of the community, much of which chronically suffers from low incomes and inadequate educational resources. Responding to COVID has, of course, only exacerbated the challenge. Kulia Academy's proposal is to provide an alternative educational venue for students primarily in the Kalihi district of Honolulu.

The alternative Kulia Academy intends to provide a focused educational experience making available to students a challenging academic and extracurricular environment. Although Kulia Academy is STEM focused, I am more excited about other features of their proposed curriculum, for example, the inclusion of the UHM Philosophy for Children Hawaii curriculum. While STEM is an unavoidable component of any K-12 curriculum, expanding students' social and philosophical horizons is equally important for today's and tomorrow's citizens and leaders.

I am also encouraged by Kulia Academy's efforts to develop effective parent and community involvement with the school. In my many years of providing outreach activities with schools – in addition to my own experience as a parent – I know parental and community engagement with their schools are essential not only for families but also for the school's evolution. I hope there will be an emphasis in developing an effective two-way dialog between Kulia Academy and its students' families.

In carrying out their proposal, Kulia Academy can serve as a laboratory for educational and operational practices that neighboring schools can adopt or model. It is in this possibility that I am most supportive and excited, for then all Kalihi students can benefit from the example of practices that have been tested and refined on their own students. As a potential Kulia Academy advisor, I look forward to assisting Kulia Academy in shaping students' educational experiences.

If you have any questions concerning this letter of support, do not hesitate to email me at [clement.bautista@gmail.com](mailto:clement.bautista@gmail.com). Thank you.

Sincerely,



Clement Bautista, M.P.P.  
UHM Educational Specialist (retired)  
Board Member, Filipino Community Center  
Board Member, Hawaii's Plantation Village



January 13, 2022

Hawaii State Public Charter School Commission  
1111 Bishop St #516  
Honolulu, HI 96813

***Re: Kūlia Academy***

Honorable Chairperson Kim and Commissioners:

The Charter Schools Development Corporation (CSDC) is a 501(c)(3) tax-exempt, nonprofit corporation and Community Development Financial Institution (CDFI) whose mission is to support quality public school choice for underserved students by developing and financing affordable charter school facilities nationally. CSDC has received significant funding under the Department of Education's Credit Enhancement for Charter School Facilities Grant Program and uses those funds to help schools acquire, lease, or build buildings.

CSDC's facility programs help remove barriers to access for start-up schools by providing lease guarantees, collateral for leasehold improvement loans, or debt service payment reserves, which induce lenders and landlords to enter into agreements with otherwise risky credits.

CSDC has funded over \$62 million in credit enhancements on behalf of 183 school transactions leveraging over \$540 million in total private capital and lease commitments. Further, 60% of CSDC's client schools served through its credit enhancement grants have had less than three years of operating experience. CSDC is responsible for financing, credit enhancing, or developing over 70,000 student seats and over 6.2 million square feet of safe and affordable educational facilities on behalf of almost 200 charter schools in 26 states plus the District of Columbia, including charter schools in Wahiawa and Kapolei.

CSDC has been asked to assist Kūlia Academy with their facility needs and, subject to the school receiving its charter, we look forward to working with them to launch a charter school in Honolulu-Kalihi.

For more information on CSDC, the schools we've served, our leadership and experience, etc., please visit our website at [www.csdc.org](http://www.csdc.org) or reach out to me directly at [lfiemann@csdc.org](mailto:lfiemann@csdc.org) or 480-270-8594.

Sincerely,

A large black rectangular redaction box covers the signature area. A blue line, likely a pen stroke, is visible on the right side of the box.

Laura Fiemann, Chief Development Officer

23150 N. Pima Rd., Suite 2B | Scottsdale, AZ 85255  
Phone: 480-270-8594 Fax: 443-561-1281 | [www.csdc.org](http://www.csdc.org)



July 31, 2019

State Public Charter School Commission  
1111 Bishop Street  
Honolulu, HI. 96813

Re: Support for Kulia Academy

Dear Mr. Thompson:

I am the director of Director of UH Uehiro Academy for Philosophy and Ethics in Education at University of Hawai'i at Mānoa. Our Academy is the home of philosophy for children Hawai'i (p4c Hawai'i). p4c Hawai'i is an innovative approach to education that, since 1984, has been working to transform the schooling experience locally and internationally by engaging people in the activity of philosophy. The p4c Hawai'i approach aids students and teachers in converting traditional classrooms into intellectually safe communities of inquiry. Together, they develop their ability to think for themselves in responsible ways by exploring topics and questions that arise from their interests, experiences, and learning contexts. The Academy is dedicated to preparing, supporting and sustaining educators, researchers and students who engage or are interested in engaging in Philosophy For Children ("p4c").

I am inspired that Professor Bley-Vroma and his colleagues are submitting this application as Founders of the Kulia Academy. I have known and worked with Prof Bley-Vroman for many years and have participated with him in informed, animated discussions regarding the range of challenges in the creation of meaningful contexts for schooling and education and the crucial role of charter schools as laboratories of much needed innovation in public education.

We share the recognition that an inquiry-based learning focus set in a context of emotionally and intellectually safe classroom and school communities where inquiries are grounded in the authentic wonder and questions of the students themselves is really a "make or break" condition for success. In this context, various tools of inquiry then take on crucial importance and relevance.



This is especially the case when the location of the school will serve a student population found in the high need area. This is precisely the case in the area west of downtown Honolulu the site chosen for the Kulia Academy.

The work of our UH Uehiro Academy over the past 18 years in the K-12 Kailua High School Complex and more recently with the inmates in the Halawa and Women's Correctional Facilities are powerful examples of how effective this approach can be.

My meeting with Prof Bley-Vroman, Andy Gokce and Murat Arabaci of Kulia Academy back in February of this year to discuss this initiative in detail made clear the depth of thought and planning that has gone into this application.

It is my strongest hope that you will approve this application for the Kulia Academy so that they can begin this important work to provide a quality public education option for the families and children in a much needed area of our community!

Sincerely yours,

[Redacted signature]

Thomas E. Jackson, Director  
UH Uehiro Academy



2100 N. Nimitz Highway, Honolulu, HI 96819  
Ph: (808) 536-7234 Fax: (808) 536-7237  
Website: HelpingHandsHawaii.org

2022 Board of Directors  
Taylor Kirihara, Chair  
Joseph Sam, Vice Chair  
Paul Iijima, Treasurer  
Summer Kaiawe, Secretary  
Amy Hennessey  
Daniel Hughes  
Travis Kikuchi  
Drew Nagai  
Shawn Nakamoto

January 20, 2022

Mr. Andy Gokce  
Board Member  
Kulia Academy



Dear Andy:

Thank you for your recent visit and interest to partner and serve the Kalihi community!

Since incorporating in 1974, Helping Hands Hawaii (HHH) has worked with people to overcome poverty, houselessness, food insecurity, household instability and other challenges. Its long history of serving the community began in 1941, when it operated as the Volunteer Placement Bureau coordinating volunteer efforts after Pearl Harbor was attacked. Currently, it is a part of Hawaii VOAD, or Voluntary Organizations Active in Disasters, and it offers a one-stop shop of resources for struggling families.

Our home base for over 22 years is located in Kalihi and we focus on:

- emergency financial assistance and basic household necessities, including school supplies and holiday support;
- SNAP outreach to educate communities about nutrition benefit resources and help them apply for assistance;
- representative payee services to help manage the social security and disability benefits of adults with mental illness who cannot oversee their finances alone; and
- interpretation and translation services for Hawaii's large community of individuals with limited English proficiency.

We look forward to working with your staff and supporting the families of Kulia Academy.

Thank you for your hard work in the community!

Sincerely,  
Helping Hands Hawaii



Susan Furuta  
President & CEO



**Board of Trustees**

January 14, 2022

Maile McLaughlin  
*President*

Hawaii State Public Charter School Commission  
Regarding the proposed Kulia Academy

Katie Pickman  
*Vice President*

Dear Commission:

Suzanne M. Sato  
*Secretary*

The possibility of an O’ahu-based charter school that seeks to partner with a professional theatre company to ensure that the students have access to the arts through collaborative, integrated learning experiences is not only an exciting idea, but one that would be, I believe, very welcomed. I truly hope Kulia Academy blooms. Honolulu Theatre for Youth (HTY) supports the endeavor, dedicated as we are to engaging young people in, through and about theatre. As a potential partner in the endeavor, HTY could offer the new school field trips to the theatre, providing Kulia Academy students the opportunity for regular interaction with professional theatre performances. More than simply visits, however, we would embrace a more collaborative partnership through which HTY staff might provide arts-based and arts-integrated learning experiences for the students, collaborative teaching experience with Kulia teachers, and professional development workshops and training for teachers.

Jan M. Sam  
*Treasurer*

Eric Chen  
Michael A. Coates  
Yunji de Nies  
Peter Dooher  
Walter S. Eccles II  
Kim Moffitt Hehir  
David Hoftiezer  
Kanani Imai  
Pamela Joe  
Kristi Maynard  
Cara Nakamura  
Alia Yap Pan  
Gary Slovin  
Jamie Simpson Steele  
James Kellett Tam  
Michael Taylor  
Steve Trecker  
Ji Mi Tsang  
Linda Woo

HTY has a rich history of collaborating with fellow arts organizations, schools and other organizations that recognize the power of arts learning experiences for children. We know that having additional institutions dedicated to such a mission will only better our community and HTY as well.

Nancy Corbett  
*Founder*

Rebecca Dunning  
*Managing Director*

We look forward to engaging in further conversation with the proposed school and their planners and advocates about future possibilities. Please feel free to contact me for further information about HTY and our support, if desired.

Eric Johnson  
*Artistic Director*

Daniel A. Kelin, II  
*Director of Drama Education*

Aloha,  
[Redacted]

Daniel A. Kelin, II  
Director of Drama Education



January 14, 2022

Hawaii State Public Charter School Commission  
1111 Bishop St #516,  
Honolulu, HI 96813

Dear Chairperson Kim and Commissioners,

I am writing this letter to express our support and interest in partnering with Kūlia Academy.

Kokua Kalihi Valley's mission is "Together we work to advance health, to inspire healing, to foster reconciliation, and to celebrate abundance in the ahupua'a of Kalihi through strong relationships that honor culture and place." As such KKV pioneers holistic approaches to addressing the needs and aspirations of its economically marginalized yet culturally rich community. KKV's 240 staff are fluent in over 26 languages and dialects and care for more than 15,000 Kalihi residents annually from nine locations through-out Kalihi,

We will be exploring opportunities of partnering with Kūlia Academy in developing and providing youth with programs that are culturally appropriate and responsive. This approach aims to honor their gifts and strength which is critical in their development as leaders and healers in the community. This will be integral part in Kūlia's program in and outside of the classroom.

Thank you for your time and consideration and please do not hesitate to contact me if you have any questions or need additional information.

Mahalo



Dr. David Derauf  
Chief Executive Officer



SONNY GANADEN  
REPRESENTATIVE - DISTRICT 30  
State Capitol, Room 330



HOUSE OF REPRESENTATIVES

STATE OF HAWAII  
STATE CAPITOL  
HONOLULU, HAWAII 96813

TO: Hawaii State Public Charter School Commission

FROM: Representative Sonny Ganaden  
District 30 – Kalihi Kai, Sand Island, Hickam, Pearl Harbor, Ford Island, Halawa Valley Estate

DATE: February 04, 2022

---

Dear Chairperson Kim and Commissioners,

I am writing to express my support for Kūlia Academy's charter application. The site of Kūlia Academy's campus on the grounds of Saint Anthony's Church is in the heart of the community I represent. It is important that this site remains an active place for learning and community engagement.

Prior to being elected to office, I have worked with youth throughout my career, including the management of a youth program at Kokua Kalihi Valley community healthcare center. The proposed academy represents an opportunity to provide future generations with the aptitudes and perspectives they need to make a sustainable difference in society.

Kūlia's educational model based on coding, data science, artificial intelligence, and inquiry-based learning will equip our children with the essential skills they need to fulfill the future needs of society. More importantly, educational institutions that serve our community in the contemporary era need to provide a holistic education that extends beyond academics alone. The schoolwide culture should provide a safe, productive, inclusive, culturally responsive learning environment supported by practical learning experiences in collaboration with external agencies. With support from organizations such as Kokua Kalihi Valley, and local experts, such as Dr. Jeffrey Acido and Dr. Clement Bautista, Kūlia's founders have established a college prep program that features a 100:1 counselor-to-student ratio and cultural competency programs that include leadership training, Pacific Island Culture Studies, Participation in a Democracy course, and Ilocano and Samoan as language options, among many other opportunities.

The local community has supported Kūlia and helped shape the school model. Several prominent community members serve on Kūlia's board of directors. The development of a charter school in Kalihi is both timely and necessary for two reasons: first, our community members have highlighted the need for more public-school choices, specifically those that adopt an academic model such as that on offer within Kūlia; and second, the significant population increase that has been observed in recent years, new public housing developments, and upcoming rail project have

OFFICE: (808) 586-6010 | FAX: (808) 586-6011 | EMAIL: [repganaden@capitol.hawaii.gov](mailto:repganaden@capitol.hawaii.gov)

**SONNY GANADEN**  
REPRESENTATIVE - DISTRICT 30  
State Capitol, Room 330

increased the need for investment in educational opportunities that level the playing field and improve the life chances of all youths throughout society.

Over the next decade, Kalihi is set to develop significantly, and educational choices and opportunities will play an integral role in achieving that vision. I highly encourage you to approve Kūlia Academy's charter application and am available for any questions.

Please contact me at 808-586-6010 or [repganaden@capitol.hawaii.gov](mailto:repganaden@capitol.hawaii.gov) for further comment.

Mahalo nui,



Representative Ganaden



## HOUSE OF REPRESENTATIVES

STATE OF HAWAII  
STATE CAPITOL  
HONOLULU, HAWAII 96813

January 21, 2022

Hawaii State Public Charter School Commission  
1111 Bishop Street, Suite 516  
Honolulu, Hawaii 96813


Dear Commission Members,

I am writing in support of Kūlia Academy, a newly proposed public charter school in Hawaii. If approved, Kūlia Academy will serve our communities with an educational program which features inquiry-based instruction, coding classes with a focus on data science and artificial intelligence, and a college prep program.

I am a proud sponsor of Act 51 (HB 2607) which was signed by our governor and went into effect on July 1, 2018. It emphasizes the importance of computer science for our state and calls for action. As Act 51 states, the legislature finds that the importance of computer science cannot be overstated and promoting computer science education is a matter of statewide concern as recent survey and research results show a disparity between the demand for computer science education and its availability. An action item is to instruct teachers how to effectively teach students in computer science, including students from demographic groups that are historically underrepresented in computer science careers. Kūlia's program serves this purpose perfectly in an underserved area.

I believe Kūlia Academy's college preparatory education model will be a great addition to the community by offering another option for students and families living in Kalihi. I strongly urge you to consider and approve Kūlia Academy's charter proposal.

Aloha

  
Mark J. Hashem  
State Representative

**Representative Mark Jun Hashem**  
District 18: East Honolulu – Kahala to Hawaii Kai  
State Capitol, Room 424 – Honolulu, Hawaii 96813  
Phone: 586-6510  
E-Mail: rephashem@capitol.hawaii.gov

22012101



**FOR YOUTH DEVELOPMENT<sup>®</sup>  
FOR HEALTHY LIVING  
FOR SOCIAL RESPONSIBILITY**

February 2, 2022

State Public Charter School Commission  
1111 Bishop St. Suite 516  
Honolulu, HI 96813

Dear Chairperson Kim and Commissioners,

I am writing this letter to support Kūlia Academy Charter School and provide details on our potential partnership.

The Kalihi YMCA partners with local public schools and provides a wide range of programs to our local youth. Through a partnership with the Department of Education, the YMCA of Honolulu provides after school care for nearly 7,000 children through A+ programs at public schools across Oahu. The State Department of Human Services (DHS) provides funding for subsidies to cover the cost of the monthly Afterschool A+ program fee to assist families in need. We will be working with Kūlia Academy to have Kūlia students included in the DHS funding.

We will be happy to work with Kūlia Academy through our following programs:

- A+ After School Program (Elementary grade levels)
- Before School Program (Elementary grade levels)
- After School Program (all grade levels)
- Out of School Time Programs (Intersessions, Summer)
- Substance Abuse Treatment Counseling Program

Sincerely,

Kyle Ishizaka  
Executive Director

# **Kūlia Academy**

Attachment N - School Director Information

*The school director has not been finalized at the time of this submission (Feb 4, 2022).*

# **Kūlia Academy**

Attachment O - Job Description for the School Principal

Kūlia Academy has developed a management plan with timelines for this project, which is driven by our goal to open our high school in August 2023 and remain on target to meet our project's performance measures.

The Board will discharge its power and responsibility by functioning primarily as a policymaking body and delegating day-to-day administration to the Principal.

The Board of Directors is scheduled to meet six times a year during the planning years and will meet at least quarterly to engage in the activities of the governance and oversight of the school once operational.

### **Staff and Faculty Hiring**

- In order to recruit new teachers, the Principal will start advertising on frequently visited websites such as LinkedIn, Handshake (used by University of Hawai'i), and the SPCSC's website by the beginning of January 2024.

- The Principal and when available the Dean of Academics/Dean of Culture (identified in our Charter Proposal, will join in these interviews on an unpaid voluntary basis) will conduct interviews during the months of February through June to hire the teachers. The hiring committee will consider the school's mission and the target student population in selecting the most qualified teachers for the positions available.

**Background Checks:** Before employment, Kūlia will process background checks through LiveScan, administered by the Department of Justice. All employees must furnish or be able to provide:

- Medical clearance including proof of medical exam and tuberculosis (TB) testing
- Fingerprinting and the service fee to the Department of Justice for criminal record check. Applicants will be required to provide a full disclosure statement regarding prior criminal record. No employee may begin work prior to the Department of Justice check.
- Documents establishing legal citizenship and work status, current copies of all teacher certificates

For professional development and summer PD sessions, please see our Charter Proposal.



## **Job Description for the School Principal**

The Principal is the senior authority at Kūlia Academy, and is responsible for the day-to-day operation of the school. The Principal is the educational and instructional and operational leader of the school. The principal will orchestrate program and service delivery to students through teaching and auxiliary staff. Assistant Principals/deans will assist the principal in instructional program administration and student activities and services. The Board ensures that the principal is evaluated formally at least once annually.

### **Skills and Qualifications for the Principal:**

- Bachelor's degree required (preferably in Education, Engineering, or Natural Sciences)
- Experience in teaching science and/or technology and administrative duties preferred
- Up-to-date computer and technology knowledge
- Knowledge of school law, finance, and curriculum
- Ability to manage personnel
- Ability to interpret policy, procedures, and data
- Exceptional organizational, communication, public relations, and interpersonal skills.

### **Principal's Responsibilities and Duties:**

- Provide the leadership, vision, and strategic direction for the school;
- Structure the school to achieve the vision, philosophy and mission;
- Oversee all operations of the school and report to the Board of Directors on its progress;
- Assist the Board in the development of governance policies for review and approval; and
- Negotiate, on behalf of the Board when duly authorized to do so, all vendor and service contracts, orders, licenses, or other agreements of a special nature unless the signing is expressly limited by the Board;
- Oversee all aspects of the school including personnel, financial matters, the academic program, facilities, and operations;
- Work with the President of the Board of Directors to draw up the agenda for all Board meetings;

- Recommend an annual budget including federally funded programs to the Board as required by state guidelines;
- Perform or oversee hiring, supervision, professional development, evaluation and dismissal of all personnel at the school;
- Build a high performing, consistent data-driven culture at the school at all levels of its operations;
- Drive increased performance and further definition of the academic model;
- Serve as primary contact for the HPCSC; Communicate with the chartering agency and attend necessary meetings; Report to the chartering agency when required.
- Follow all legal mandates from the U. S. Department of Education, the State of Hawaii and the HPCSC in all aspects related to funding, reporting and regulations associated with charter schools;
- Manage any required facility acquisition, maintenance and renovation efforts;
- Monitor instructional and administrative processes to ensure that program activities are related to program outcomes and use findings to take corrective actions.
- Compile, maintain, and file all physical and computerized reports, records, and other documents required by law and Kūlia policy, including accurate and timely reports of maximum attendance to requisition textbook.
- Manage use of school facilities. Supervise maintenance of facilities to ensure a clean, orderly and safe campus.
- Work with faculty and students to implement a student discipline management system that encourages positive student behavior and enhances the school climate.
- Ensure that school rules are uniformly observed and that student discipline is appropriate and equitable in accordance with the student handbook.
- Use appropriate and effective techniques to encourage community and parent involvement.
- Perform other duties and responsibilities as necessary

# **Kūlia Academy**

Attachment P - School Leadership and Management Team's Job  
Descriptions or Qualifications

# Job Description for School Administrators

## Assistant Principal

### Skills and Qualifications:

- Bachelor's degree required (preferably in Education, or a STEM-related field) - Administrative and/or teaching credential preferred
- Experience in teaching science and/or technology and administrative duties preferred
- Up-to-date computer and technology knowledge
- Knowledge of school law, finance, and curriculum
- Ability to manage personnel
- Ability to interpret policy, procedures, and data
- Commitment to the values, mission and vision of Kulia Academy
- Exceptional organizational, communication, public relations, and interpersonal skills.

### Responsibilities and Duties:

#### *Academic Program*

- Assist with curriculum development and improvement
- Supervise textbook review and textbook ordering
- Oversee the development of lesson plans and instruction in the classroom
- Evaluate course credits for all incoming high school students
- Coordinate academic activities with the teachers
- Oversee field trip planning
- Prepare standardized testing schedules, and inventory for standardized testing

#### *Staff Development*

- Conduct formal and informal teacher observations
- Hold teacher evaluation conferences based on records of performance evaluation
- Hold teacher orientation and in-service training throughout the year

- Regularly prepare items for staff development for weekly faculty meetings and attend weekly administrative meetings
- Conference with teachers on academic issues in the classroom

### ***Student Management***

- Provide for uniform enforcement of school rules and oversee appropriate and reasonable student discipline
- Help students develop positive behavior through a student discipline management system
- Oversee student attendance records and assist the office manager on truancy issues
- Hold parent/teacher/student conferences in regard to student and school issues
- Disseminate information which may pertain to educational opportunities; health and safety; student code of conduct; Parent and Community Advisory Group (PCAG) activities; corporate community volunteer opportunities; student performances; and events of a special nature

## **SPED / Student Services Coordinator**

### **Skills and Qualifications:**

- Bachelor's degree required (preferably in Education, Special Education, ELL or a STEM-related field)
- Experience in SPED or ELL
- Up-to-date computer and technology knowledge
- Ability to manage personnel
- Ability to interpret policy, procedures, and data
- Commitment to the values, mission and vision of Kulia Academy
- Exceptional organizational, communication, public relations, and interpersonal skills.

### **Responsibilities and Duties:**

- Identify and assess special populations students.
- Ensure that special populations students are provided equal access to recruitment, enrollment, retention, completion, placement activities, and preparatory and support service.
- Guide parents and teachers through the process of obtaining accommodations

- Assist parents in a timely manner with determining and providing appropriate special education services for students who are eligible for special education services.
- Support special populations students with services such as (a) curriculum, classroom, and equipment modifications; (b) supportive personnel; (c) instructional aids and devices; (d) academic assistance; and (e) equal access to nontraditional education and training programs, pre-employment services.
- Provide transitional information and services for all special populations students.
- Assist special populations students in the achievement and mastery of necessary skills and explanations required for them to be successful in their vocational programs.
- Provide services to prepare special populations students for nontraditional education, training, and employment in high-skill, high-wage, high-demand occupations.
- Maintain records and documentation detailing services and activities provided to special populations students.
- Provide information about community services, either State or private, that families may qualify for.
- Contact previous schools for additional information and records with parent consent on a case by case basis.
- Provide additional copy of confidential records for parents for transferring students

## **Business and Operations Manager**

### **Skills and Qualifications:**

- Bachelor's degree required (preferably in Finance, Accounting or Business Administration)
- Experience in business/financial management. Prior charter school background preferred.
- Up-to-date computer and technology knowledge
- Knowledge of business accounting policies, procedures, practices and software programs
- Ability to interpret policy, procedures, and data
- Exceptional organizational, communication, public relations, and interpersonal skills.

### **Responsibilities and Duties:**

- Manage daily financial activities, including budget preparation and control, accounting, payroll, purchasing, and business planning and management.
- Manage cash, cash-related receipts, accounts receivable and credit and collection functions, ensuring a timely processing of billings, payments and collections.
- Ensure that the accounting procedures within the school system meet all federal, state, and local requirements.
- Develop and manage contracts with vendors and contractors.
- Maintain all required (non-benefit) insurance policies; keep school in compliance with all (non-benefit) insurance policy requirements; procure certificates of insurance as needed.

## **Registrar**

### **Skills and Qualifications for the Registrar:**

- AA or Bachelor's degree
- Up-to-date computer and technology knowledge
- Ability to interpret policy, procedures, and data
- Organizational, communication, public relations, and interpersonal skills.
- Minimum one-year experience, preferably in an educational setting
- Strong organizational and coordination skills
- Strong self-starter; able to work with limited direction
- Excellent interpersonal skills, conflict management skills, problem solving skills and demonstrated leadership abilities
- Excellent verbal and written communication skills are required
- Resourceful in generating creative solutions to problems

### **Responsibilities and Duties:**

- Maintain student files and mailings; generate reports as requested
- Maintain Student Information System data for new/current/withdrawn students, open enrollment, address changes, etc.

- Update course description books for secondary
- Request records for new students from the schools they are transferring from
- Forward cumulative and health records for students who transfer from Kulia Academy to another school
- Support student recruitment in conjunction with the office staff and administrators
- Support teachers in entering and posting student grades in Student Information System
- Produce and post report cards for all students
- Produce and post progress reports for all students
- Conduct schedule changes for all students and teachers under the guidance of school principal and administrators
- Produce student transcripts
- Prepare cumulative records, grades, credits, GPA, Cum Laude information etc.
- Prepare end of year and annual student count reports for the state reporting
- Prepare class rosters for each teacher and course
- Circulate student withdrawal forms and follow up with teachers for final grades
- Assist in development of master schedule
- Attend administrative meetings as requested
- Track, verify and report students' progress towards graduation
- Assign and train all student aides each semester
- Other duties as assigned

## **Counselor**

### **Skills and Qualifications for the Registrar:**

- Hold a Hawaii license in school counseling .
- Demonstrate the ability to design, implement, analyze, and document outcomes of a comprehensive school counseling program based on national and state standards.



- Demonstrate the ability to support student achievement, social/emotional development, and college/career readiness.
- Abide by the American School Counselor Association's Ethical Standards for School Counselors.
- Demonstrate the ability to work with diverse groups.
- Demonstrate the ability to effectively communicate, both orally and in writing.
- Demonstrate knowledge of technology and software applications appropriate to job responsibilities.

**Responsibilities and Duties:**

- Design and implement a data-driven, comprehensive school counseling program for all students to address barriers to student learning and to close the achievement/opportunity gap.
- Provide school counseling core curriculum, individual counseling and student planning, classroom lessons, small group counseling, and preventative and responsive services.
- Provide referrals for additional assistance and consultation/collaboration with parents, teachers, administrators, and other stakeholders to create a learning environment promoting educational equity, access, and success for every student.
- Deliver programs that promote students' development of essential mindsets and behavior standards including, but not limited to, learning skills, social skills, self-management skills, and college/career readiness skills.
- Collaborate with the assistant principals to review and disaggregate student achievement, attendance, and behavior data to identify and implement interventions with current knowledge of promotion, retention, and graduation requirements.
- Use school data to identify and assist individual students who do not perform at grade level and do not have opportunities and resources to be successful in school.
- Create yearly, data-driven goals that advance student outcomes in areas of academic, social/emotional, and college/career development.
- Use the skills of leadership, advocacy and collaboration to create systemic change to improve the academic, social/emotional, and post-graduate success of all students.
- Act as a systems change agent in collaboration with the school leadership team to ensure a safe, supportive, and respectful school climate that promotes the social/emotional and academic development and success of all students.
- Foster family and community partnerships to support the social/emotional and academic development of all students.

- Infuse cultural competence, ethical and professional competencies in planning, organizing, implementing and evaluating the comprehensive school counseling program.
- Provide preventative education and skill building along with counseling for students during times of transition, separation, heightened stress and critical change.
- Use appropriate responses and a variety of intervention strategies to meet the needs of the individual, group or school community before, during and after crisis response.
- Support the continuum of mental health services, including prevention and tiered intervention strategies, and collaborates with both school-based and community mental health providers to enhance student success.
- Use student data to demonstrate a need for systemic change in areas such as course enrollment patterns; equity and access; and achievement, opportunity and/or information gaps.
- Advocate for student equity and access to a world-class education that leads to high school graduation and fosters post-graduate success.
- Analyze and reports outcomes of the school counseling program and goals, which are presented in the context of the overall school and district performance.
- Utilize technology effectively and efficiently to plan, organize, implement and evaluate the comprehensive school counseling program.
- Use legal and ethical decision-making based on standards and principles of the school counseling profession and educational systems, including district and building policies.
- Collaborate with school staff in the analysis of student performance data, rigorous goal-setting, and development of effective action plans for improving academic, social/emotional, and post-graduate outcomes for all students.
- Prepare students for the transition to the next level: high school and post high school activities/options.
- Plan and coordinates programs such as career and high school fairs, test skills preparation, improved/perfect attendance celebrations and other extensions of the counseling program to support students' knowledge of post-secondary options.
- Assist students in navigating their academic, workplace and community experiences, through the use of individual student planning which includes individual graduation portfolios (IGP), student interviews and other planning tools.
- Collaborate with parents/guardians and educators to assist students with educational and career planning. Participates in school management teams in order to advocate for students needs and provide guidance for school staff.

- Follow adopted policies and procedures in accordance with School Board priorities.
- Perform other duties as specified in local, state and federal rules, laws and statutes.

Sources used:

<https://www.mdek12.org/sites/default/files/documents/OEE/student-services/student-services-coordinator-handbook.pdf>

<https://www.fla-schoolcounselor.org/counselors/certified-school-counselor-job-description/>

<https://dcps.dc.gov/page/school-counselor-middle-school-position-description>

# **Kūlia Academy**

## **Attachment Q - School Governance, Management, and Staffing Organizational Charts**

## Organizational Chart

