



Architects in Schools Standards Curriculum Guide Alignment with Common Core and NGSS

Topic/Lesson (In order of guide)	Subject	Practices	Performance Expectation, Disciplinary Core or type of standard	Crosscutting Concepts
How do you feel about this environment?				
How to design a functional folder?	Science	Practices: Constructing Explanations and Designing Solutions, Developing and using models	K-2 Engineering Design; 3-5 Engineering Design	Structure and Function
What makes it fit?				
Let's think out loud	Science	Engaging in Argument from Evidence (practice use of talk moves)		
Do you see when you look?				
Let's face it the eyes are in the middle!	Science	Developing and Using Models		
Now Let's Try it on a Building	Science	Developing and Using Models; Using Mathematics and Computational Thinking		
How to Draw Straight Lines and Letter				
What do I see through my telescope?				

The Architecture Foundation of Oregon provides this information to benefit Architects in Schools participants with planning residencies that can address certain required education standards. AFO does not claim that the lessons listed will automatically meet standards, but will provide an aid for teachers to introduce and reinforce the concepts listed.

*Art standards addressed are listed within the curriculum guide after each lesson.

*Please go to AFO's website (www.af-oregon.org/architects-in-schools) to download a digital version of this document.

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Architectural Periods and Styles	Science	Engage in Argument from evidence; Ask questions based on observations to find more information about the designed world; Develop and Use Models	<p>NGSS.ESS3.C things that people do to live comfortably can affect the world around them.</p> <p>ESS3.A Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do ETS1.B: Developing Possible Solutions Designs can be conveyed through sketches, drawings, and physical models. These representations are useful in communicating ideas for a problem's solutions to other people</p>	<p>NGSS.K-ESS2-2 Systems in the natural and designed world have parts that work together Patterns: Patterns in the natural and human world designed world can be observed and used as evidence (K-LS1-1) Structure and Function: the shape and stability of structures of natural and designed objects are related to their function</p>
	Language Arts: Speaking and Listening		<p>CCSS.ELA-LITERACY.SL.3, 4,5.1.A Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.</p> <p>CCSS.ELA-LITERACY.SL.3,4,5.1.C Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others. CCSS.ELA-LITERACY.SL.3,4,5.1.D Explain their own ideas and understanding in light of the discussion.</p>	

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<p>So you thought Designing a Mask Would be Simple?</p>	<p>Science</p>	<p>Asking Questions and Defining Problems: ask questions based on observations to find more information about the natural and or designed world; Developing and Using Models: include using and developing models that represent concrete events or design solutions</p>	<p>NGSS.ETSi.A Defining and Delimiting Engineering Problems asking questions, making observations, and gathering information are helpful in thinking about problems ETSi.B Develop Possible Solutions ETS1.C Optimize the Design Solution-because there is always more than one possible solution to a problem, it is usefu to compare and test designs.</p>	
	<p>Language Arts: Speaking and Listening</p>		<p>CCSS.ELA-LITERACY.SL.3, 4,5.1.A Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion. CCSS.ELA-LITERACY.SL.3,4,5.1.C Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others. CCSS.ELA-LITERACY.SL.3,4,5.1.D Explain their own ideas and understanding in light of the discussion.</p>	

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<p>What is Green Building and Sustainable Design?</p>	<p>Science</p>	<p>Asking Questions and Defining Problems: ask questions based on observations to find more information about the natural and or designed world; Obtain, Evaluate, and Communicate Information; Constructing explanations and Designing Solutions</p>	<p>NGSS.PS3.B Conservation of Energy and Energy Transfer (sunlight warms Earth's surface) K-Ps3-1 Make observations to determine the effect of sunlight on Earth's surface k-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive K-Ess2-2 Construct and arugment supported by evidence for how plans and animals (including humans) can change the environment to meet their needs ESS3.A Natural Resource Ess3. C: Human Impacts on Earth Systems ETS1.B Developing Possible Solutions ETSI.A Defining and Delimiting and Engineering Problem 4-ESS3-1 obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment 4-ESS3-2 Generate and compare multipce solutions to reduce the impacts of natural Earth processes on humans 5-ESS3-1 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.</p>	<p>Cause and Effect- Events have causes that generate observable patterns Systems and Systems Models- Systems in the natural and designed world have parts that work together</p>
<p>How Green is My School?</p>	<p>Science</p>	<p>Obtain, Evaluate, and Communicate Information</p>		
<p>Let's Get Out and See the World</p>	<p>Science</p>	<p>Models</p>		

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Let's Get Out and See the World	Math		CCSS.MATH.CONTENT.5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	
Drawing A Floor Plan of Things that Don't Move	Science	Models; Using Mathematical and Computational Thinking		
	Math		CCSS.MATH.CONTENT.5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	
Drawing a Floor Plan of Things that Move	Science	Models; Using Mathematical and Computational Thinking		
	Math		CCSS.MATH.CONTENT.5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	

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Lighting with Natural Light/Making a Sundial	Science	Planning and Carrying out Investigations; Constructing Explanations and Designing Solutions; Analyze and Interpret Data	NGSS.K-PS3-1 Make observations to determine the effect of sunlight on Earth's surface K-PS3-2 Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area K-ESS3-3 Communicate Solutions that will reduce the impact of humans on land, water, air, and or other living things in the local environment 1-PS4-4 Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light 1-ESS1-1 Use observations of the sun, moon, and stars to describe patterns than can be predicted 1-ESS1-2 Make observations at different times of the year to relate the amount of daylight to the time of year 4-PS3-2 Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents 5-ESS1 Represent Data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky; 5-ESS3-1 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment	Cause and Effect : events have causes that generate observable patterns Energy and Matter -energy can be transferred in various ways and between objects

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Lighting with Natural Light/Making a Sundial	Math		CCSS.MATH.CONTENT.5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	
How it feels to be a structure	Science		NGSS.PS2.A Forces and Motion-pushes and pulls can have different strengths and directions	Structure and Function the shape and stability of structures of natural and designed objects are related to their function Cause and Effect -simple tests can be designed to gather evidence to support or refute student ideas about causes
Building a Geodesic Dome	Science	Asking Questions and Defining Problems; Constructing Explanations and Designing Solutions	NGSS.3-5 ETSI-1Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. 3-5-ETSi-1 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problems 3-5 ETS1-2 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or protoype that can be improved.	

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What makes a structure stand up?	Science	Developing and Using Models;Using mathematics and computational thinking	NGSS.PS2.A Forces and Motion-pushes and pulls can have different strengths and directions	Structure and Function the shape and stability of structures of natural and designed objects are related to their function
All About Bridges	Science	Asking Questions and Defining Problems; Constructing Explanations and Designing Solutions	NGSS.3-5 ETSI-1Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. 3-5-ETSi-1 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problems 3-5 ETS1-2 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or protoype that can be improved. 3-5-ETS1-3. Plan and carry out fair test in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	
	Math		CCSS.MATH.CONTENT.5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. All grades, not specifically stated, graphing of number of pennies used for each bridge.	

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Building a Skyscraper	Science	Asking Questions and Defining Problems; Constructing Explanations and Designing Solutions; Developing and using models	NGSS.3-5 ETSI-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. 3-5-ETSi-1 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problems 3-5 ETS1-2 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	Scale, Proportion, Quantity; Cause and Effect; Patterns
	Math	Make sense of a problem and persevere in solving; Attend to precision; Construct viable arguments and critique the reasoning of others		Scale, Proportion, Quantity; Cause and Effect; Patterns
	Language Arts: Speaking and Listening		CCSS.ELA-LITERACY.SL.3, 4,5.1.A Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion. CCSS.ELA-LITERACY.SL.3,4,5.1.C Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others. CCSS.ELA-LITERACY.SL.3,4,5.1.D Explain their own ideas and understanding in light of the discussion.	

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What will cities look like 25 years from now?	Science	Developing and Using Models; Using mathematics and computational thinking	NGSS.3-5 ETSI-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. 3-5-ETSi-1 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problems 3-5 ETS1-2 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved. CCSS.ELA-LITERACY.SL.3,4,5.1.C Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.	
A Special Structure for a Special Client	Science	Asking Questions and Defining Problems; Constructing Explanations and Designing Solutions	NGSS.3-5 ETSI-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. 3-5-ETSi-1 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problems 3-5 ETS1-2 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	Influence of Engineering, Technology, and Science on Society and the Natural World People's needs and wants change over time, as do their demands for new and improved technologies; engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.

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