

#### Wee Engineer® and EiE® for Kindergarten Alignment to Virginia Science Standards of Learning

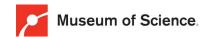








Wee Engineer – One Unit, Four Challenges						
Engineering Challenge	Science Concept Connections	Science Standards of Learning Kindergarten				
Noisemakers	<ul><li>forces</li><li>sound</li><li>properties of materials</li></ul>	K.1a-f K.3a-d K.5b				
Fans	<ul><li>forces</li><li>properties of materials</li></ul>	K.1a-f K.2a, c K.3a-d K.5b				
Wrecking Balls	<ul><li>weight</li><li>force and motion</li><li>action and reaction</li></ul>	K.1a-f K.2a-c K.3a-d				
Rafts	sinking and floating	K.1a-f K.3a-d K.4a				



#### Wee Engineer® and EiE® for Kindergarten Alignment to Virginia Science Standards of Learning









EiE for Kindergarten – Three Units						
Unit	Science Concept Connections	Science Standards of Learning  Kindergarten				
Raise the Roof: Designing Shelters	<ul><li>light and shadow</li><li>the warming effect of the Sun</li><li>animals and animal needs</li></ul>	K.1a-f K.3a-d K.5b K.7a	K.8a-c K.9a K.11c			
Here's the Scoop: Designing Trash Collectors	<ul> <li>the basic needs of living things</li> <li>animal habitats and ecosystems</li> <li>human impact on the environment</li> <li>recycling and environmental stewardship</li> </ul>	K.1a-f K.2a-c K.3a-d K.4a-b	K.7a K.10a-d K.11c			
Sort It Out: Programming Robots to Recycle	<ul> <li>the basic needs of living things</li> <li>animal habitats and ecosystems</li> <li>human impact on the environment</li> <li>recycling and environmental stewardship</li> </ul>	K.1a-f K.7a K.11a-c				



### EiE<sup>®</sup> Engineering is Elementary 2<sup>nd</sup> Edition Alignment to Virginia Science Standards of Learning, 2018



# **Units with Life Science Topics**

Unit	Engineering and		Sc	ience Standa	rds of Learni	ing	
Offic	Science Fields	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
The Best of Bugs: Designing Hand Pollinators	Agricultural Engineering Insects and Plants	K.1a-f K.3a-d K.6b K.7a-b	1.1a-f 1.3a-b 1.4a-b 1.5a-c	2.1a-f 2.4a-b 2.5a-c 2.8b	3.1a-f 3.4a-b 3.5b 3.8a	4.1a-f 4.2b-c 4.3a, d	5.1a-f
Just Passing Through: Designing Model Membranes	Bioengineering Needs of Organisms	K.1a-f K.3b-d K.4a K.6a-b K.7a K.9b	1.1a-f 1.3a-b 1.5a-b 1.7a-c	2.1a-f 2.5a-c 2.7a	3.1a-f 3.8b	4.1a-f 4.3a, c 4.4b-c	5.1a-f
No Bones About It: Designing Knee Braces	Biomedical Engineering  Skeletal and Muscular  Systems	K.1a-f K.3b-c	1.1a-f 1.2a 1.3a	2.1a-f	3.1a-f 3.2a-d	4.1a-f	5.1a-f
A Slick Solution: Cleaning an Oil Spill Also listed with Earth Science	Environmental Engineering Ecosystems	K.1a-f K.3b-d K.4a-b K.6a-b K.7a K10.a-d K.11c	1.1a-f 1.3a-b 1.4a 1.5a 1.8a-b	2.1a-f 2.5a-c 2.8a, b	3.1a-f 3.3a 3.4a-b 3.5a-b 3.6a-b 3.7a 3.8a-c	4.1a-f 4.3a-c	5.1a-f 5.9a
Thinking Inside the Box: Designing Plant Packages	Package Engineering Plants	K.1a-f K.3a-c K.4a K.6b K.7a K.11a-b	1.1a-f 1.3a-c 1.4a-b	2.1a-f 2.5a-b	3.1a-f 3.6a-b	4.1a-f	5.1a-f



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# **Units with Earth Science Topics**

Unit	Engineering and		Sc	ience Standa	rds of Learni	ng	
Unit	Science Fields	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Catching the Wind: Designing Windmills Also listed with Physical Science	Mechanical Engineering Weather	K.1a-f K.2a K.3c-d K.9a	1.1a-f 1.2a 1.3a-b 1.8a-c	2.1a-f 2.2a, c 2.6a-c	3.1a-f 3.2a-d	4.1a-f 4.4a	5.1a-f 5.2a-c 5.9a-c
Now You're Cooking: Designing Solar Ovens Also listed with Physical Science	Green Engineering Energy and Energy Resources	K.1a-f K.3a-d K.8a-c K.11a-c	1.1a-f 1.3a-c 1.6a-b 1.8a-c	2.1a-f 2.5a, c	3.1a-f 3.5a-b 3.8a	4.1a-f 4.3a	5.1a-f 5.2a-c 5.6d 5.9a-c
A Slick Solution: Cleaning an Oil Spill Also listed with Life Science	Environmental Engineering Ecosystems	K.1a-f K.3b-d K.4a-b K.6a-b K.7a K10.a-d K.11c	1.1a-f 1.3a-b 1.4a 1.5a 1.8a-b	2.1a-f 2.5a-c 2.8a, b	3.1a-f 3.3a 3.4a-b 3.5a-b 3.6a-b 3.7a 3.8a-c	4.1a-f 4.3a-c	5.1a-f 5.9a
Solid as a Rock: Replicating an Artifact Available as a digital unit. Materials Kit not available for purchase.	Materials Engineering Rocks and Minerals	K.1a-f K.3b-d K.10a-d	1.1a-f 1.3a-b	2.1a-f	3.1a-f 3.4c	4.1a-f	5.1a-f 5.8c-e
A Stick in the Mud: Evaluating a Landscape	Geotechnical Engineering  Landforms and Maps	K.1a-f K.3b-d K.4a, b, d K.9b K.10a-d	1.1a-f 1.3a 1.7a-c	2.1a-f 2.2a, c 2.5c 2.6a 2.7b-c	3.1a-f 3.2a-b 3.7a 3.8c-d	4.1a-f 4.4b	5.1a-f 5.8a-d

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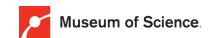


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#### Units with Earth Science Topics, continued

Unit	Engineering and		Sc	ience Standa	rds of Learni	ing	
Offic	Science Fields	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Taking the Plunge: Designing Submersibles  Also listed with Physical Science	Ocean Engineering Sinking and Floating	K.1a-f K.3b, d K.4a, b	1.1a-f 1.2a 1.3a	2.1a-f 2.2a, c 2.3a	3.1a-f 3.2a-b 3.7a	4.1a-f 4.7a, c	5.1a-f 5.2a-b
Water, Water Everywhere: Designing Water Filters	Environmental Engineering Water	K.1a-f K.3a-c K.4a-c K.6b K.7a K.9b K.10a-d K.11c	1.1a-f 1.3a-b 1.5a 1.7a-c 1.8a-b	2.1a-f 2.3b-c 2.5a-c 2.6a 2.7a	3.1a-f 3.3a 3.5a-b 3.7a-c 3.8a-b	4.1a-f 4.3a	5.1a-f 5.7b-c



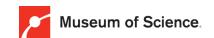
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# **Units with Physical Science Topics**

Unit	Engineering and		Sc	ience Standa	rds of Learni	ng	
Onit	Science Fields	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
An Alarming Idea:	Electrical Engineering	K.1a-f	1.1a-f	2.1a-f	3.1a-f	4.1a-f	5.1a-f 5.2a-c
Designing Alarm Circuits	Electricity	K.3d	1.3a				5.4a-b, d
The Attraction Is Obvious:	Transportation Engineering	K.1a-f	1.1a-f	2.1a-f	3.1a-f	4.1a-f	5.1a-f
Designing Maglev Systems	Magnets	K.3b, d	1.3a-b	2.2a-c	3.2a-b		5.2a-c
Catching the Wind: Designing Windmills	Mechanical Engineering	K.1a-f K.2a, c	1.1a-f 1.2a	2.1a-f 2.2a, c	3.1a-f	4.1a-f 4.4a	5.1a-f 5.2a-c
Also listed with Earth Science	Weather	K.3a-d K.9a	1.3a-b 1.8a-c	2.6a-c	3.2a-d		5.9a-c
To Get to the Other Side:	Civil Engineering	K.1a-f	1.1a-f	2.1a-f	3.1a-f	4.1a-f	5.1a-f
Designing Bridges	Forces	K.3b, d	1.3a-b	2.2c	c 3.2a-b		0.141
Lighten Up: Designing	Optical Engineering	K.1a-f K.5b	1.1a-f	2.1a-f	3.1a-f	4.1a-f	5.1a-f
Lighting Systems	Light	K.8b K.9c	1.3a-c	2.1a-i	3. Ia-I	4. Id-I	5.6a-c
A Long Way Down:	Aerospace Engineering	K.1a-f K.3b-d	1.1a-f 1.2a	2.1a-f	3.1a-f	4.1a-f	5.1a-f
Designing Parachutes	Solar System	K.9c	1.3a-b	2.2a-c	3.2a-b	4.5a-c	<b>0.1</b> α-1
Marvelous Machines:	Industrial Engineering	K.1a-f	1.1a-f	2.1a-f	3.1a-f	4.4- 5	5.1a-f 5.2a-d
Making Work Easier	Simple Machines	K.2a-c K.3d	1.2a 1.3a-b	2.2a, c	3.2a-d	4.1a-f	5.3c 5.9b-c

Physical Science continues on next page.



### EiE® Engineering is Elementary 2<sup>nd</sup> Edition Alignment to Virginia Science Standards of Learning, 2018



# Units with Physical Science Topics, continued

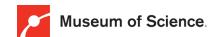
Unit	Engineering and		Sc	cience Standa	rds of Learni	ng	
Offit	Science Fields	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Now You're Cooking: Designing Solar Ovens  Also listed with Earth Science	Green Engineering Energy and Energy Resources	K.1a-f K.3a-d K.8a-c K.11a-c	1.1a-f 1.3a-c 1.6a-b 1.8a-c	2.1a-f 2.5a-c	3.1a-f 3.5a-b 3.8a	4.1a-f 4.3a	5.1a-f 5.2a-c 5.6d 5.9a-c
Sounds Like Fun: Seeing Animal Sounds	Acoustical Engineering Sound	K.1a-f K.3a, b, d K.5a-b	1.1a-f 1.2b	2.1a-f	3.1a-f	4.1a-f	5.1a-f 5.5a-d
A Sticky Situation: Designing Walls	Materials Engineering  Earth Materials	K.1a-f K.3a-c K.4a	1.1a-f 1.3a-b 1.4a	2.1a-f 2.3a-b	3.1a-f 3.2a-b 3.3a	4.1a-f	5.1a-f 5.7b
Taking the Plunge: Designing Submersibles  Also listed with Earth Science	Ocean Engineering Sinking and Floating	K.1a-f K.3b, d K.4a, b	1.1a-f 1.2a 1.3a	2.1a-f 2.2a, c 2.3a	3.1a-f 3.2a-b 3.7a	4.1a-f 4.7a, c	5.1a-f 5.2a-b
A Work in Process: Improving a Play Dough Process	Chemical Engineering Process Engineering Solids and Liquids	K.1a-f K.3b-c K.4a, c	1.1a-f 1.3a-b	2.1a-f 2.3a-b	3.1a-f 3.3a	4.1a-f	5.1a-f 5.7a-b



# EiE® Engineering Essentials™ Alignment to Virginia Science Standards of Learning, 2018



Unit / Engineering Field	Suggested		Sc	ience Standa	rds of Learn	of Learning		
Ome/ Engineering Fleid	Grades	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	
Designing Lighting Systems Optical Engineering	K, 1	K.1a-f K.5a-b K.8b K.9c	1.1a-f 1.3a-c					
Designing Hand Pollinators Agricultural Engineering	1, 2, 3		1.1a-f 1.3a-b 1.4a-b 1.5a-c	2.1a-f 2.4a-b 2.5a-c 2.8b	3.1a-f 3.4a-b 3.5b 3.8a			
Designing Maglev Systems  Transportation Engineering	1, 2, 3		1.1a-f 1.3a-b	2.1a-f 2.2a-c	3.1a-f 3.2a-b			
Cleaning an Oil Spill Environmental Engineering	2, 3, 4			2.1a-f 2.5a-c 2.8b	3.1a-f 3.3a 3.4a-b 3.5a-b 3.6a-b 3.7a 3.8a-b	4.1a-f 4.3a-c		
Designing Solar Ovens Green Engineering	4, 5					4.1a-f 4.3a	5.1a-f 5.2a-d 5.6d 5.9a-c	

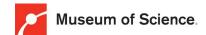


#### EiE<sup>®</sup> Computer Science Essentials™ Alignment to Virginia Computer Science Standards of Learning, 2017



Unit Title	Suggested		Comp	outer Science	Standards of L	earning.	
Concept / Tool Type	Grades	Grade K	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Sort It Out: Programming Robots to Recycle* Algorithms & Programming / Robotics	K <b>EiE</b> for Kindergarten	K.1 K.2 K.4 K.9	1.1 1.2 1.3 1.5	2.1a-b 2.2a-b 2.3 2.5 2.7			
Programming Robots Computing Systems / Robotics	K, 1, 2	K.1 K.2 K.4	1.1a 1.2a 1.3 1.5 1.9	2.1a, c 2.2a, c 2.3 2.5 2.12			
Creating Animations Algorithms & Programming / Visual Programming	1, 2, 3		1.1a-b 1.2a-b 1.3 1.4 1.5 1.7	2.1a-c 2.2a-c 2.3 2.4 2.5 2.12	3.1a-c 3.2a-c 3.3 3.4 3.6 3.13		
Building Automated Systems  Computing Systems /  Visual Computing	2, 3, 4			2.1a-c 2.2a-c 2.3 2.4 2.5 2.7 2.8 2.9 2.4 2.12	3.1a-c 3.6 3.2a-c 3.8 3.3 3.9 3.4 3.13	4.1a-c 4.6 4.2a-c 4.8 4.3 4.9 4.4 4.13 4.5 4.14	
Designing Computer Games Impacts of Computing / Visual Programming	3, 4, 5				3.1a- c 3.5 3.2a- 3.6 c 3.8 3.3 3.13 3.4	4.1a-d 4.2a-d 4.8 4.3 4.4 4.12 4.5 4.13	5.1a-e 5.5 5.2a-e 5.7 5.3 5.11 5.4 5.12
Analyzing Digital Images  Data & Analysis /  Visual Programming	4, 5					4.1a-d 4.6 4.2a-d 4.8 4.3 4.12 4.4 4.13 4.5 4.14	5.1a-e 5.2a-e 5.3 5.4 5.5 5.13

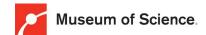
<sup>\*</sup>This EiE for Kindergarten unit can be used with Computer Science Essentials units to create K-5 coverage for computer science.



# EiE® Engineering Adventures Alignment to Virginia Science Standards of Learning, 2018



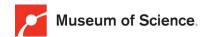
Unit	Engineering Fields and	Sci	ience Standards of Lea	rning
Offit	Science Connections	Grade 3	Grade 4	Grade 5
Bubble Bonanza: Engineering Bubble Wands	Materials Engineering Matter and Its Interactions	3.1a-f	4.1a-f	5.1a-f
Go Green: Engineering Recycled Racers	Green Engineering Energy, Forces	3.1a-f 3.2a-d	4.1a-f	5.1a-f 5.9b
In Good Hands: Engineering Space Gloves	Materials Engineering Properties of Materials, Energy Transfer	3.1a-f	4.1a-f	5.1a-f
Liftoff: Engineering Rockets and Rovers	Aerospace Engineering Forces and Interactions	3.1a-f 3.2a-d	4.1a-f	5.1a-f 5.3a-c
Light Up the Night: An Electrical Engineering Challenge	Electrical Engineering Electric Circuits, Light	3.1a-f	4.1a-f	5.1a-f 5.2a-c 5.4a-b, d
Music to My Ears: An Acoustical Engineering Challenge	Acoustical Engineering Sound	3.1a-f	4.1a-f	5.1a-f 5.2a-c 5.5a-d
The Sky's the Limit: Engineering Flying Technologies	Aeronautical Engineering Forces and Interactions	3.1a-f 3.2a-b	4.1a-f	5.1a-f 5.3a-c, e



# EiE® Engineering Adventures Alignment to Virginia Science Standards of Learning, 2018



Unit	Engineering Fields and	Sci	ence Standards of Lear	rning
Offit	Science Connections	Grade 3	Grade 4	Grade 5
Shake Things Up: Engineering Earthquake-Resistant Buildings	Earthquake Engineering Earthquakes	3.1a-f 3.2a-b	4.1a-f	5.1a-f 5.2a 5.8b
A Slippery Slope: Engineering an Avalanche Protection System	Avalanche Engineering Forces and Interactions	3.1a-f 3.2a-d 3.8c	4.1a-f 4.4b	5.1a-f 5.2a-b 5.3a-e
Hop to It: Safe Removal of Invasive Species	Mechanical Engineering Environmental Science	3.1a-f 3.2d 3.5b 3.8a	4.1a-f 4.3a	5.1a-f
To the Rescue: Engineering Aid Drop Packages	Package Engineering Energy, Forces	3.1a-f 3.2a-b	4.1a-f	5.1a-f 5.3c, e



# EiE® Engineering Everywhere Alignment to Virginia Science Standards of Learning, 2018



			Science Standa	irds of Learning
Unit	Engineering Field	Science Topics	Grade 6	Grades 7/8 Sciences
Don't Runoff: Engineering an Urban Landscape	Environmental Engineering	Natural Resources Earth and Human Activity	6.1a-f 6.6f 6.8a 6.9a-c, e- f	LS.1a-f LS.5a LS.9a-c ES.1a-f ES.6a-b ES.8a-c
Food for Thought: Engineering Ice Cream	Process Engineering	Matter Energy Transfer	6.1a-f	PS.1a-f PS.5b
Go Fish: Engineering Prosthetic Tails	Biomechanical Engineering	Structures and Function in Animals	6.1a-f	LS.1a-f LS.3b LS.7b
Growing Up: Engineering Vertical Farms	Agricultural Engineering	Light Photosynthesis Natural Resources	6.1a-f 6.4a 6.6f	LS.1a-f LS.4a-b
It's in the Bag: Engineering Bioinspired Gear	Materials Engineering Bioinspired Engineering	Structures and Function in Animals	6.1a-f	LS.1a-f LS.3b LS.7b
Outbreak Alert!: Engineering a Pandemic Response	Biomedical Engineering	Cells, Viruses, Public Health	6.1a-f	
Testing the Waters: Engineering a Water Reuse Process	Process Engineering Water Resource Engineering	Natural Resources	6.1a-f 6.6f 6.9a-c	ES.1a-f ES.6a-b ES.8a, c



# EiE® Engineering Everywhere Alignment to Virginia Science Standards of Learning, 2018



Unit	Engineering Field	Science Topics	Science Standards of Learning	
			Grade 6	Grades 7/8 Sciences
Worlds Apart: Engineering Remote Sensing Devices	Remote Sensing Engineering	Light Solar System	6.1a-f	PS.1a-f PS.6a, d PS.7a-b ES.1a-f ES.2d
Plants to Plastics: Engineering Bioplastics	Chemical Engineering	Properties of Matter Chemical Reactions	6.1a-f 6.5c-e 6.6a, c 6.9e	PS.1a-f PS.3a-b
It's About Time: Engineering Timers	Mechanical Engineering	Physical Science	6.1a-f	PS.1a-f PS.8a
Put a Lid on It: Engineering Safety Helmets	Biomechanical Engineering	Forces and Motion Nervous System	6.1a-f	
Here Comes the Sun: Engineering Insulated Homes	Green Engineering	Thermal Energy Transfer Properties of Matter Natural Resources Earth and Human Activity	6.1a-f 6.4a, c, d	PS.1a-f PS.5b