



Engineering Essentials™ Alignment to Next Generation Science Standards

Grade	Unit / (Setting) / Engineering Field	Performance Expectations	Science and Engineering Practices (SEP)	Disciplinary Core Ideas (DCI)	Cross-Cutting Concepts (CCC)
1	<i>Designing Lighting Systems</i> (Egypt) Optical Engineering	1-PS4-2 1-PS4-3 K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3	<ul style="list-style-type: none"> Asking Questions and Defining Problems Planning and Carrying Out Investigations Developing and Using Models Analyzing and Interpreting Data Constructing Explanations and Designing Solutions 	<ul style="list-style-type: none"> PS4.B: Electromagnetic Radiation ETS1.A: Defining Engineering Problems ETS1.B: Developing Possible Solutions ETS1.C: Optimizing the Design Solution 	<ul style="list-style-type: none"> Cause and Effect Structure and Function Influence of Engineering, Technology, and Science, on Society and the Natural World
2	<i>Designing Hand Pollinators</i> (Dominican Republic) Agricultural Engineering	2-LS2-2 2-PS1-1 2-PS1-2 K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3	<ul style="list-style-type: none"> Developing and Using Models Planning and Carrying Out Investigations Analyzing and Interpreting Data Asking Questions and Defining Problems 	<ul style="list-style-type: none"> LS2.A: Interdependent Relationships in Ecosystems PS1.A: Structure and Properties of Matter ETS1.A: Defining Engineering Problems ETS1.B: Developing Possible Solutions ETS1.C: Optimizing the Design Solution 	<ul style="list-style-type: none"> Structure and Function Patterns Cause and Effect Influence of Engineering, Technology, and Science, on Society and the Natural World
3	<i>Designing Maglev Systems</i> (Tokyo) Transportation Engineering	3-PS2-3 3-PS2-4 3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	<ul style="list-style-type: none"> Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Planning and Carrying Out Investigations 	<ul style="list-style-type: none"> PS2.B: Types of Interactions ETS1.A: Defining Engineering Problems ETS1.B: Developing Possible Solutions ETS1.C: Optimizing the Design Solution 	<ul style="list-style-type: none"> Cause and Effect Interdependence of Science, Engineering, and Technology Influence of Engineering, Technology, and Science, on Society and the Natural World
4	<i>Designing Solar Ovens</i> (Botswana) Green Engineering	4-ESS3-1 4-PS3-2 4-PS3-4 3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	<ul style="list-style-type: none"> Obtaining, Evaluating, and Communicating Information Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Planning and Carrying Out Investigations Using Mathematics and Computational Thinking 	<ul style="list-style-type: none"> ESS3.A: Natural Resources PS3.A: Definitions of Energy PS3.B: Conservation of Energy and Energy Transfer ETS1.A: Defining Engineering Problems ETS1.B: Developing Possible Solutions ETS1.C: Optimizing the Design Solution 	<ul style="list-style-type: none"> Energy and Matter Influence of Engineering, Technology, and Science, on Society and the Natural World Science is a Human Endeavor



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5	<i>Cleaning an Oil Spill</i> (Lower Elwha Klallam Tribe, Washington State) Environmental Engineering	5-ESS2-1 5-ESS2-2 5-ESS3-1 5-LS1-1 5-LS2-1 3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	<ul style="list-style-type: none"> Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Planning and Carrying Out Investigations 	<ul style="list-style-type: none"> ESS2.A: Earth Materials and Systems ESS3.C: Human Impacts on Earth Systems LS2.A: Interdependent Relationships in Ecosystems LS2.B: Cycles of Matter and Energy Transfer in Ecosystems ETS1.A: Defining Engineering Problems ETS1.B: Developing Possible Solutions ETS1.C: Optimizing the Design Solution 	<ul style="list-style-type: none"> Systems and System Models Influence of Engineering, Technology, and Science, on Society and the Natural World