

Mechanical Systems in Agriculture Next Generation Science Standards Alignment

	Unit 1 Agricultural Engineering	Unit 2 Structures	Unit 3 Engines	Unit 4 Machines	Unit 5 Engineering Solutions
Disciplinary Core Ideas					
Physical Science					
PS1: Matter and Its Interactions					
• PS1.A: Structure and Properties of Matter					
• PS1.B: Chemical Reactions					
• PS1.C: Nuclear Processes					
PS2: Motion and Stability: Forces and Interactions					
• PS2.A: Forces and Motion					
• PS2.B: Types of Interactions					
PS3: Energy					
• PS3.A: Definitions of Energy					
• PS3.B: Conservation of Energy and Energy Transfer			X		
• PS3.C: Relationship Between Energy and Forces					
• PS3.D: Energy in Chemical Processes and Everyday Life					
PS4: Waves and Their Applications in Technologies for Information Transfer					
• PS4.A: Wave Properties					
• PS4.B: Electromagnetic Radiation					
• PS4.C: Information Technologies and Instrumentation					
Engineering, Technology, and the Application of Science					
ETS1: Engineering Design					
• ETS1.A: Defining and Delimiting Engineering Problems	X	X	X	X	X
• ETS1.B: Developing Possible Solutions	X	X	X	X	X
• ETS1.C: Optimizing the Design Solution	X	X		X	X
Science and Engineering Practices					
• Asking Questions and Defining Problems	X	X	X	X	X
• Developing and Using Models	X	X	X	X	X
• Planning and Carrying Out Investigations	X	X	X	X	X
• Analyzing and Interpreting Data	X	X	X	X	X
• Using Mathematics and Computational Thinking		X	X	X	
• Constructing Explanations and Designing Solutions	X	X		X	X
• Engaging in Argument from Evidence					
• Obtaining, Evaluating, and Communicating Information	X	X		X	X

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Crosscutting Concepts					
• Patterns		X	X	X	
• Cause and Effect: Mechanism and Prediction		X	X	X	
• Scale, Proportion, and Quantity		X			
• Systems and System Models	X	X	X	X	
• Energy and Matter: Flows, Cycles, and Conservation		X	X		
• Structure and Function	X	X	X		
• Stability and Change	X	X		X	
Understandings about the Nature of Science					
• Scientific Investigations Use a Variety of Methods	X	X			
• Scientific Knowledge is Based on Empirical Evidence		X			
• Scientific Knowledge is Open to Revision in Light of New Evidence		X			
• Science Models, Laws, Mechanisms, & Theories Explain Natural Phenomena		X			
• Science is a Way of Knowing					
• Scientific Knowledge Assumes Order & Consistency in Natural Systems					
• Science is a Human Endeavor	X				
• Science Addresses Questions About the Natural and Material World.	X				