



Design consideration 1: Clarity in Goals and Learning Outcomes for STEM Severe Weather and Climate Change Unit.

Stage 1–Desired Results		
Big Ideas	Transfer	
- Human activities such as burning fossil fuels influence the Earth’s climate and contribute to extreme weather events. - Advancements in technology and engineering help scientists track, predict, and mitigate the effects of severe weather. - Mathematical models allow scientists to analyze climate data and predict future weather	<i>Students will be able to independently use their learning to....</i> - Analyze real-time weather data to make predictions about upcoming storm systems. - Evaluate how different climate policies impact severe weather trends. - Use engineering design principles to develop solutions for reducing the impact of climate change.	
	Meaning	
	Understandings <i>Students will understand that...</i> Science: The release of greenhouse gases contributes to climate change, leading to more frequent and intense weather events (NGSS, 2013). Technology: Advanced radar and satellite technology allow meteorologists to track storms and improve disaster preparedness (ISTE, 2000). Engineering: Engineers develop solutions to mitigate severe weather impacts, such as flood barriers and heat-resistant building materials (NGSS, 2013). Mathematics: Climate models use statistical analysis and data trends to predict future weather patterns (CCSS, 2010).	Essential Questions <i>Students will keep considering....</i> Science: How does climate change influence the frequency and intensity of severe weather events? Technology: How do technological advancements improve our ability to predict and respond to severe weather? Engineering: What role do engineers play in designing infrastructure that can withstand extreme weather? Mathematics: How do scientists use mathematical models to predict future climate trends?
	Acquisition	
	<i>Students will learn about...</i> Science: Greenhouse gases and explain their role in the Earth’s climate system. Technology: Identify types of meteorological technology (e.g., Doppler radar, weather satellites, computer models). Engineering: Identify and describe engineering solutions designed to reduce severe weather impacts (e.g., seawalls, green infrastructure, permeable pavement). Mathematics: Analyze historical climate data using basic statistical measures (mean, median, mode, variability).	<i>Students will be skilled at...</i> - Using patterns and causal relationships to identify trends in data that serve as evidence for STEM claims. - Conduct investigations that produce data. - Communicate understandings using data that serves as evidence.