ENGINEERING, TECHNOLOGY, & APPLICATIONS OF SCIENCE ALTERNATE CONTENT EXPECTATIONS – HIGH SCHOOL (GRADES 9-12)

Topic Bundle: Engineering Design

Target Alternate Content Expectation	Michigan Range of Complexity		
	High Range	Medium Range	Low Range
Michigan K-12 Science Content Standard: HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.			
EE.HS-ETS1-1: Use evidence to describe major global challenges for which humans need or want solutions.	**EE.HS-ETS1-H.1:** Use evidence to describe major global challenges for which humans need or want solutions.	**EE.HS-ETS1-M.1:** Given evidence about a common challenge, identify one or more effect(s) to people or the environment if solutions are not developed.	**EE.HS-ETS1-L.1:** Given a common familiar challenge, identify who/what is most impacted (hurt by it).

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	High Range	Medium Range	Low Range
Michigan K-12 Science Content Standard: HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.			
EE.HS-ETS1-2: During a class investigation of a complex real-world problem, identify a sub-problem and a potential solution that uses engineering.	**EE.HS-ETS1-H.2:** During a class investigation of a complex real-world problem, identify a sub-problem and a potential solution that uses engineering.	**EE.HS-ETS1-M.2:** During a class investigation of a common, familiar problem limited to the student's local community or within the state of Michigan, identify a smaller problem that is related to a larger problem.	**EE.HS-ETS1-L.2:** During a class investigation of a common, familiar problem related to the student's direct experience (such as within the classroom, school, family, or community), identify a smaller problem that is related to a larger problem.

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Michigan K-12 Science Content Standards: HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.			
EE.HS-ETS1-3: When participating in a group investigation of solutions to a real-world problem, use two factors or criteria (such as cost, safety, reliability, and/or aesthetics) to recommend which of three solutions is best given the factors/criteria.	**EE.HS-ETS1-H.3:** When participating in a group investigation of solutions to a real-world problem, use two factors or criteria (such as cost, safety, reliability, and/or aesthetics) to recommend which of three solutions is best given the factors/criteria.	**EE.HS-ETS1-M.3:** Given two or more solutions to a common, familiar problem, identify which solution best meets a specific criteria or constraint.	**EE.HS-ETS1-L.3:** Given a possible solution and a non-solution, identify a possible solution to a common, familiar problem.