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

Topic Bundle: Engineering Design

Target Alternate 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.			
HS-ETS1-1: Use evidence to describe major global challenges for which humans need or want solutions.	**HS-ETS1-H.1:** Use evidence to describe major global challenges for which humans need or want solutions.	**HS-ETS1-H.1:** Given evidence about a common challenge, identify one or more effect(s) to people or the environment if solutions are not developed.	**HS-ETS1-H.1:** Given a common familiar challenge, identify who/what is most impacted (hurt by it).

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Target Alternate Expectation	Michigan Range of Complexity		
	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.			
HS-ETS1-2: During a class investigation of a complex real-world problem, identify a sub-problem and a potential solution that uses engineering.	**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.	**HS-ETS1-H.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.	**HS-ETS1-H.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.

2

Michigan Department of Education (12/26/19)   **DRAFT** Alternant Content Expectations for ETS Engineering Design High School Gr 9-12

Topic Bundle: Engineering Design

Target Alternate Expectation	Michigan Range of Complexity		
	High Range	**Medium Range**	**Low Range**
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.**			
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.**	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.	HS-ETS1-H.3: Given two or more solutions to a common, familiar problem, identify which solution best meets a specific criteria or constraint.	HS-ETS1-H.3: Identify a possible solution to a common, familiar problem.

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	High Range	**Medium Range**	**Low Range**
Michigan K-12 Science Content Standards: HS-ETS1-4. Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.			
Not appropriate	Not appropriate	Not appropriate	Not appropriate