

ENGINEERING, TECHNOLOGY, AND APPLICATIONS OF SCIENCE

GRADE	TOPICS	STANDARDS (NGSS ALIGNMENT)		BY DESIGN CHAPTER CORRELATION	INQUIRY ACTIVITIES
Essential Question: How has God equipped humans to apply knowledge of science to solve problems for the benefit of His Creation?		Big Idea: God designed humans to wonder, question, and develop an attitude of inquiry as scientific principles are applied to the materials and forces of nature for the benefit of His Creation.		Bold = included content <i>Italic</i> = related content	TE =TEACHER EDITION SE = STUDENT EDITION SJ = STUDENT JOURNAL TT = TRY THIS LA = LESSON ACTIVITY EAL = EXPLORE-A-LAB MS = MATH IN SCIENCE ATBD = ACTIVITY TO BE DEVELOPED
K-2	Engineering Design	S.K-2.ET.1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)		These performance standards are found in multiple places throughout the By Design program.	Level 1 - ATBD Level 2 - ATBD
		S.K-2.ET.2 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object functions to solve a given problem. (K-2-ETS1-2)			
		S.K-2.ET.3 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs. (K-2-ETS1-3)			
3-5	Engineering Design	S.3-5.ET.1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. (3-5-ETS1-1)		These performance standards are found in multiple places throughout the By Design program.	Level 3 - ATBD Level 4 - ATBD Level 5 - ATBD
		S.3-5.ET.2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. (3-5-ETS1-2)			
		S.3-5.ET.3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved. (3-5-ETS1-3)			
6-8	Engineering Design	S.6-8.ET.1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. (MS-ETS1-1)		These performance standards are found in multiple places throughout the By Design program.	Level 6 - ATBD Level 7 - ATBD Level 8 - ATBD
		S.6-8.ET.2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. (MS-ETS1-2)			
		S.6-8.ET.3 Analyze data from tests to determine similarities and difference among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. (MS-ETS1-3)			
		S.6-8.ET.4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved. (MS-ETS1-4)			