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| Grade | **STEL Benchmark** |
|  | **STEL 1 Nature and Characteristics of Technology and Engineering** |
| 9-12 | **1 N.** Explain how the world around them guides technological development and engineering design. |
| 9-12 | **1 O**. Assess how similarities and differences among scientific, mathematics, engineering, and technological knowledge and skills contributed to the design of a product or system. |
| 9-12 | **1P.** Analyze the rate of technological development and predict future diffusion and adoption of new technologies. |
| 9-12 | **1 Q**. Conduct research to inform intentional inventions and innovations that address specific needs and wants. |
| 9-12 | **1 R.** Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. |
|  | **STEL 2 Core Concepts of Technology and Engineering** |
| 9-12 | **2T**. Demonstrate the use of conceptual, graphical, virtual, mathematical, and physical modeling to identify conﬂicting considerations before the entire system is developed and to aid in design decision making. |
| 9-12 | **2U.**  Diagnose a flawed system embedded within a larger technological, social, or environmental system. |
| 9-12 | **2V.** Analyze the stability of a technological system and how it is inﬂuenced by all of the components in the system, especially those in the feedback loop. |
| 9-12 | **2W**. Select resources that involve tradeoffs between competing values, such as availability, cost, desirability, and waste while solving problems. |
| 9-12 | **2X**. Cite examples of the criteria and constraints of a product or system and how they affect ﬁnal design. |
| 9-12 | **2Y.** Implement quality control as a planned process to ensure that a product, service, or system meets established criteria. |
| 9-12 | **2Z.** Use management processes in planning, organizing, and controlling work. |
|  | **STEL 3 Integration of Knowledge, Technologies, and Practices** |
| 9-12 | **3H.** Analyze how technology transfer occurs when a user applies an existing innovation developed for one function for a different purpose. |
| 9-12 | **3I.** Evaluate how technology enhances opportunities for new products and services through globalization. |
| 9-12 | **3J.** Connect technological progress to the advancement of other areas of knowledge and vice versa. |
|  | **STEL 4 Impacts of Technology** |
| 9-12 | **4P.** Evaluate ways that technology can impact individuals, society, and the environment. |
| 9-12 | **4Q.** Critique whether existing or proposed technologies use resources sustainably. |
| 9-12 | **4R.** Assess a technology that minimizes resource use and resulting waste to achieve a goal. |
| 9-12 | **4S.** Develop a solution to a technological problem that has the least negative environmental and social impact. |
| 9-12 | **4T.** Evaluate how technologies alter human health and capabilities. |
|  | **STEL 5 Influence of Society on Technological Development** |
| 9-12 | **5H**. Evaluate a technological innovation that arose from a specific society’s unique need or want. |
| 9-12 | **5I.** Evaluate a technological innovation that was met with societal resistance impacting its development. |
| 9-12 | **5J**. Design an appropriate technology for use in a different culture. |
|  | **STEL 6 History of Technology** |
| 9-12 | **6F.** Relate how technological development has been evolutionary, often the result of a series of reﬁnements to basic inventions or technological knowledge. |
| 9-12 | **6G.** Verify that the evolution of civilization has been directly affected by, and has in turn affected, the development and use of tools, materials and processes. |
| 9-12 | **6H**. Evaluate how technology has been a powerful force in reshaping the social, cultural, political, and economic landscapes throughout history. |
| 9-12 | **6I**. Analyze how the Industrial Revolution resulted in the development of mass production, sophisticated transportation and communication systems, advanced construction practices, and improved education and leisure time. |
| 9-12 | **6J**. Investigate the widespread changes that have resulted from the Information Age, which has placed emphasis on the processing and exchange of information. |
|  | **STEL 7 Design in Technology and Engineering Education** |
| 9-12 | **7W.** Determine the best approach by evaluating the purpose of the design. |
| 9-12 | **7X.** Document trade-offs in the technology and engineering design process to produce the optimal design. |
| 9-12 | **7Y**. Optimize a design by addressing desired qualities within criteria and constraints. |
| 9-12 | **7Z.** Apply principles of human-centered design. |
| 9-12 | **7AA**. Illustrate principles, elements and factors of design. |
| 9-12 | **7BB**. Implement the best possible solution to a design. |
| 9-12 | **7CC.** Apply a broad range of design skills to their design process. |
| 9-12 | **7DD.** Apply a broad range of making skills to their design process. |
|  | **STEL 8 Applying, Maintaining, and Assessing Technological Products and Systems** |
| 9-12 | **8N.** Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems. |
| 9-12 | **8O.** Develop a device or system for the marketplace. |
| 9-12 | **8P.** Apply appropriate methods to diagnose, adjust and repair systems to ensure precise, safe and proper functionality. |
| 9-12 | **8Q.** Synthesize data and analyze trends to make decisions about technological products, systems, or processes. |
| 9-12 | **8R.** Interpret the results of technology assessment to guide policy development. |