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Goodheart-Willcox Publisher Correlation of
***Engineering Fundamentals: Design, Principles, and Careers* ©2018**
to Alabama Course of Study: CTE
Science, Technology, Engineering, and Mathematics (STEM)
Course: Foundations of Engineering and Technology, Grades 9-12

STANDARD	CORRELATING PAGES
Safety	
1. Describe and follow appropriate safety and health procedures for engineering classroom and laboratory situations.	42, 129, 154, 214, 342 - 344, 387
a. Utilize tools and equipment safely.	42, 129, 154, 214, 342 - 344, 387
b. Identify environmental safety requirements for specific applications.	32, 130, 201, 242, 375, 380
Essential	
2. Exhibit essential skills required by business and industry in the engineering field.	
a. Communicate effectively through writing, speaking, listening, and reading.	7-8
b. Show appropriate interpersonal skills, punctuality, work habits, ethical behavior, and work-appropriate attire.	8
c. Create a resume and digital portfolio and participate in a mock interview.	7-8
3. Connect leadership and teamwork skills from CTSO activities with engineering practices.	9-10
a. Use standard technical knowledge and skills during CTSO activities.	9-10
b. Exhibit leadership and teamwork skills.	7-8
c. Demonstrate effective collaboration in a diverse group to define and solve engineering problems.	7-8
Careers	
4. Compare and investigate various aspects of jobs in STEM disciplines and the engineering field, including education requirements, job responsibilities, and potential earnings.	
a. Investigate current and future engineering job opportunities.	9-16, 19
b. Analyze positive and negative impacts of engineering on society.	4-5
c. Critique significant contributions of leaders in engineering fields.	17, 18, 197, 226, 260, 308
d. Differentiate among engineering, technology, and science.	4, 6-7

e. Identify and discuss the various tools utilized by individuals in STEM disciplines, including engineering.	6-7
Standard Practices	
5. Apply standard engineering practices and skills to solve problems.	
a. Use a variety of appropriate tools throughout the engineering design process.	42-55
b. Present a research-based solution to an engineering problem in a professional manner.	42-55
c. Use terminology and vocabulary relevant to the field of engineering.	7-8
6. Cite evidence and document the steps in an engineering design process.	
a. Construct an engineering notebook based upon industry standard best practices.	54-55
b. Display clear standard technical knowledge and skills when categorizing and classifying engineering practices.	7-8
c. Record ideas, sketches, calculations, observations, and summaries of activities.	54-55
d. Compare and contrast the methods of creating written and digital portfolios.	7-8
7. Demonstrate the use of analog and digital precision measuring instruments utilized in engineering.	
a. Compare and convert between customary and metric measurement systems.	6
b. Apply conversion factors of customary and metric measurements.	6
c. Perform measurements using significant digits.	6
8. Create basic engineering drawings, including sketches and computer-aided designs (CAD).	
a. Produce multi-view sketches and drawings.	7, 48, 50, 123, 262-263
b. Create two-dimensional and three-dimensional appropriate sketches.	7, 48, 50, 123, 262-263
9. Differentiate among components of engineering drawings.	99-101, 111
10. Create models and prototypes using CAD techniques and/or appropriate manufacturing tools.	7, 48, 50, 123, 262-263

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Application	
11. Utilize real-world STEM principles to investigate a variety of engineering disciplines.	
a. Research and investigate engineering challenges in today's world.	19, 42-54
b. Apply the systems model of input, process, output, feedback, and impact to the engineering design process.	19, 42-54
c. Analyze an engineering designbrief.	40-54
d. Collaborate with team members to observe, identify, and modify individual solutions to engineering problems.	41
e. Design and/or test a prototype using an engineering design process.	42-50
Generate code to solve challenges using appropriate languages.	261-266