

Engineering Explorations 1 (8450)

Examining How Technology Affects Our World EE1.1

- 1 Explain the influence of technological systems. EE1.1.1
- 2 Describe the characteristics and scope of technology. EE1.1.2
- 3 Identify the core concepts of technology. EE1.1.3
- 4 Identify historical technology milestones and advancements. EE1.1.4
- 5 Examine technological systems. EE1.1.5

Investigating How Engineering Affects Our World EE1.2

- 1 Define engineering. EE1.2.1
- 2 Summarize the history of engineering. EE1.2.2
- 3 Research an engineering achievement. EE1.2.3
- 4 Present information pertaining to an engineering achievement. EE1.2.4

Examining the Engineering Practice EE1.3

- 1 Describe the principal fields for specialization in engineering. EE1.3.1
- 2 Summarize the traits of successful professional engineers. EE1.3.2
- 3 Describe the education needed for specialty fields in engineering and technology. EE1.3.3
- 4 Explain the importance of communication between engineers and their clients. EE1.3.4
- 5 Explain the relevance of the National Society of Professional Engineers Code of Ethics. EE1.3.5
- 6 Comply with safety rules in laboratory activities. EE1.3.6

Practicing Engineering Fundamentals EE1.4

- 1 Identify the benefits of case study analysis. EE1.4.1
- 2 Analyze a case study analysis. EE1.4.2
- 3 Apply measuring skills using instrumentation. EE1.4.3

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- 4 **Demonstrate conversion techniques for units of measurement.** EE1.4.4

 - 5 **Demonstrate the use of engineering design graphics and descriptive geometry.** EE1.4.5

 - 6 **Apply the techniques and benefits of sketching.** EE1.4.6

 - 7 **Draw orthographic and isometric projections, using basic technical drawing instruments.** EE1.4.7

 - 8 **Explain rapid prototyping to develop models.** EE1.4.8

 - 9 **Demonstrate research techniques/strategies used by engineers.** EE1.4.9

 - 10 **Define risk and safety.** EE1.4.10

 - 11 **Describe the three types of accidents.** EE1.4.11

 - 12 **Identify major precursors of accidents.** EE1.4.12

 - 13 **Evaluate the safety of designs.** EE1.4.13

 - 14 **Demonstrate knowledge of appropriate personal safety procedures.** EE1.4.14
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**Examining the
Engineering Design
Process** EE1.5

- 1 **Define an engineering design process.** EE1.5.1

- 2 **Define an engineering design problem.** EE1.5.2

- 3 **Identify the requirements and constraints of the design problem.** EE1.5.3

- 4 **Research potential solutions to the design problem.** EE1.5.4

- 5 **Generate multiple solutions to the design problem.** EE1.5.5

- 6 **Sketch the solutions to a design problem.** EE1.5.6

- 7 **Evaluate the requirements and constraints of each potential solution to the design problem.** EE1.5.7

- 8 **Justify an optimal solution to the design problem.** EE1.5.8

- 9 **Create a model or prototype for the chosen solution.** EE1.5.9

- 10 **Test the solution to the design problem.** EE1.5.10

- 11 **Evaluate the test results.** EE1.5.11

- 12 **Modify the solution to the design problem, if needed.** EE1.5.12

- 13 **Test the modification/alternate solution, if needed.** EE1.5.13

14 Document the final project report. EE1.5.14

15 Present the final project report. EE1.5.15

Identifying Real-world Problems EE1.6

1 Research local problems that could benefit from engineering solutions. EE1.6.1

2 Design an engineering solution to a local problem, using the engineering design process. EE1.6.2