

# 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

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

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

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

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

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

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  - 10 Define risk and safety. EE1.4.10

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

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  - 12 Identify major precursors of accidents. EE1.4.12

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  - 13 Evaluate the safety of designs. EE1.4.13

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  - 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

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- 2 Define an engineering design problem. EE1.5.2

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

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

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

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

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

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

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

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

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- 11 Evaluate the test results. EE1.5.11

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

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

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**14 Document the final project report.** EE1.5.14

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**15 Present the final project report.** EE1.5.15

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**Identifying Real-world Problems** EE1.6

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

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