Virginia CTE

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

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

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