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

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

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	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