Iowa CTE

Engineering and Design

Students recognize historical and current events related to engineering design and their effects on society. EGD1	1 **Know historical and current events that have relevance to engineering and design.** EGD1.1
	2 **Understand the development of graphical language in relation to engineering design.** EGD1.2
Students understand the effective use of engineering design equipment. EGD2	1 **Use the appropriate methods and techniques for employing all engineering design equipment.** EGD2.1
	2 **Apply conventional engineering design processes and procedures accurately appropriately and safely.** EGD2.2
	3 **Apply the concepts of engineering design to the tools, equipment, projects, and procedures of engineering and design projects.** EGD2.3
Students understand measurement systems as they apply to engineering design. EGD3	1 **Know how the various measurement systems are used in engineering drawings.** EGD3.1
	2 **Understand the degree of accuracy necessary for engineering design.** EGD3.2
Students understand how the principles of force, work, rate, power, energy and resistance relate to mechanical, electrical, fluid and thermal engineering systems. EGD4	1 **Know the six simple machines and their applications.** EGD4.1
	2 **Know how energy is transferred; know the effects of resistance in mechanical, electrical, fluid and thermal systems.** EGD4.2
	3 **Solve problems by using the appropriate units applied in mechanical, electrical, fluid and thermal engineering systems.** EGD4.3
Students understand the effective use of engineering design equipment. EGD5	1 **Understand the steps in the design process.** EGD5.1
	2 **Determine what information and principles are relevant to a problem and its analysis.** EGD5.2
	3 **Choose between alternate solutions in solving a problem and be able to justify the `hoices made in determining a solution.** EGD5.3

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	4 Understand the process of developing multiple details into a single solution. EGD5.4
	5 Build a prototype from plans and test it. EGD5.5
	6 Evaluate and redesign a prototype on the basis of collected test data. EGD5.6
Students understand industrial engineering processes, including the use of tools and equipment, methods of measurement and quality assurance. EGD6	1 Know the common structure and processes of a quality assurance cycle. EGD6.1
	2 Understand the major manufacturing processes. EGD6.2
	3 Use tools, fasteners and joining systems employed in selected engineering processes. EGD6.3
	4 Estimate and measure the size of objects in both Standard International and United States units. EGD6.4
	5 Calibrate and measure objects by using precision measurement tools and instruments. EGD6.5
Students understand the concepts of physics that are fundamental to engineering technology. EGD7	1 Understand Newton's laws and how they affect and define the movement of objects. EGD7.1
	2 Understand how the laws of conservation of energy and momentum provide a way to predict and describe the movement of objects. EGD7.2
Students understand the fundamentals of systems and products as they are developed and released to production and marketing. EGD8	1 Understand the process of product development. EGD8.1
	2 Understand charting and the use of graphic tools in illustrating the development of a product and the processes involved. EGD8.2
Students understand the effective use of engineering technology equipment. EGD9	1 Use methods and techniques for employing all engineering technology equipment appropriately. EGD9.1
	2 Apply conventional engineering technology processes and procedures accurately, appropriately and safely. EGD9.2
	3 Apply the concepts of engineering technology to the tools, equipment, projects and procedures of the program. EGD9.3