

Project Lead the Way: Engineering Design and Development, (EDD)		Grades 9-12	
Standards	Benchmarks	Activities/Examples	
2. Students will develop an understanding of the core concepts of technology.	W	Systems thinking applies logic and creativity with appropriate compromises in complex real-life problems.	Course Introduction and Justification.
	X	Systems, which are the building blocks of technology, are embedded within larger technological, social, and environmental systems.	Course Introduction and Justification.
	BB	Optimization is an ongoing process or methodology of designing or making a product and is dependent on criteria and constraints	Course Introduction and Justification.
	EE	Management is the process of planning, organizing, and controlling work.	Course Introduction and Justification.
3. Students will develop an understanding of the relationships among technologies and the connections between technology and other fields of study.	I	Technological ideas are sometimes protected through the process of patenting.	Course Introduction and Justification. Research Students will learn research techniques to develop and market a product.
	J	Technological progress promotes the advancement of science and mathematics.	Research Students will learn research techniques to develop and market a product.
5. Students will develop an understanding of the effects of technology on the environment.	G	Humans can devise technologies to conserve water, soil, and energy through such techniques as reusing, reducing, and recycling.	Research Students will learn research techniques to develop and market a product.
	H	When new technologies are developed to reduce the use of resources, considerations of trade-offs are important.	Research Students will learn research techniques to develop and market a product.
8. Students will develop an understanding of the attributes of design.	H	The design process includes defining a problem, brainstorming, researching and generating ideas, identifying criteria and specifying constraints, exploring possibilities, selecting an approach, developing a design proposal, making a model or prototype, testing and evaluating the design using specifications, refining the design, creating or making it, and communicating processes and results.	Presentation Student will present their new invented product in a tradeshow format.

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9. Students will develop an understanding of engineering design.	I Established design principles are used to evaluate existing designs, to collect data, and to guide the design process.	Course Introduction and Justification.	
		Research Students will learn research techniques to develop and market a product.	
		Build Students will build a prototype of their product.	
	J Engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.	Design The students will use symbols and drawings to promote clear communication to a design solution.	
		Build Students will build a prototype of their product.	
	K A prototype is a working model used to test a design concept by making actual observations and necessary adjustments.	Design The students will use symbols and drawings to promote clear communication to a design solution.	
		Build Students will build a prototype of their product.	
	L The process of engineering design takes into account a number of factors.	Research Students will learn research techniques to develop and market a product.	
		Design The students will use symbols and drawings to promote clear communication to a design solution.	
		Build Students will build a prototype of their product.	
	10. Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.	J Technological problems must be researched before they can be solved.	Research Students will learn research techniques to develop and market a product.

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11. Students will develop the abilities to apply the design process.	M Identify the design problem to solve and decide whether or not to address it.	Course Introduction and Justification.
		Problem Identification Students will learn effective techniques used to generate problem statements.
		Research Students will learn research techniques to develop and market a product.
	N Identify criteria and constraints and determine how these will affect the design process.	Course Introduction and Justification.
		Problem Identification Students will learn effective techniques used to generate problem statements.
		Research Students will learn research techniques to develop and market a product.
	P Evaluate the design solution using conceptual, physical, and mathematical models at various intervals of the design process in order to check for proper design and to note areas where improvements are needed.	Research Students will learn research techniques to develop and market a product.
		Test Student will test the prototype for success or failure.
	Q Develop and produce a product or system using a design process.	Test Student will test the prototype for success or failure.
	R Evaluate final solutions and communicate observation, processes, and results of the entire design process, using verbal, graphic, quantitative, virtual, and written means, in addition to three-dimensional models.	Design The students will use symbols and drawings to promote clear communication to a design solution.
Test Student will test the prototype for success or failure.		
Presentation Student will present their new invented product in a tradeshow format.		
20. Students will develop and understanding of and be able to select and use construction technologies.	K Structures are constructed using a variety of processes and procedures.	Build Students will build a prototype of their product.