




Legend:

X The standard is clearly addressed by program activities.

- This standard potentially could be addressed as part the program either by actions that the coach or teacher takes when working with the students or by conditions established by the program.

		Introduction to Manufacturing DOE Code: 4784 Recommended Grade Level: 10 Recommended Prerequisites: None			
Domain 1		Manufacturing: History and Relevance			
Core Standard 1	Students analyze the evolution of manufacturing to determine the effect it has had and will have on society.				
	ITM-1.1	Describe the history and relevance of manufacturing	-	-	-
	ITM-1.2	Students will explain the societal impact of manufacturing	-	-	-
	ITM-1.3	Describe the impact manufacturing has had on the environment, the economy, and society	-	X	-
	ITM-1.4	Identify and describe the development of the manufacturing enterprise	-	-	-
Domain 2		Product Design			
Core Standard 2	Students adapt and apply knowledge and skills of the product design process to develop products.				
	ITM-2.1	Utilize the basics of product design	X	X	X
	ITM-2.2	Explain the concepts of engineering and its importance within manufacturing	X	X	X
	ITM-2.3	Relate the systems, components, and processes of a technological system to manufactured products	X	X	X
	ITM-2.4	Communicate the lifecycle of a product	-	X	-
	ITM-2.5	Demonstrate the design process for developing a product for production	X	X	X
	ITM-2.6	Differentiate between different manufacturing systems	-	-	X
Domain 3		Product Manufacturing			
Core Standard 3	Evaluate manufacturing processes to determine how a product is or will be made.				
	ITM-3.1	Differentiate between the various types of materials and their applications	-	-	X
	ITM-3.2	Determine the appropriate product processes and equipment used to create a product	-	-	X
	ITM-3.3	Explain and identify the significance of quality control within product manufacturing	-	-	X
	ITM-3.4	Examine the steps and process of product assembly	X	X	X

ITM-3.5	Investigate the different types of manufacturing processes	-	-	-
ITM-3.6	Differentiate between the different tools of manufacturing and the different tools used in production	-		X
ITM-3.7	Discuss the impact of manufacturing processes on the environment	-	-	-
ITM-3.8	Describe the procedures used in selecting and sequencing operations			-
ITM-3.9	Define and describe destructive and nondestructive testing			-
ITM-3.10	Examine quality control and quality assurance as an important part of the entire manufacturing company	-	-	X

Domain 4 Safety

Students assess the impact of safety practices in a manufacturing environment.

Core Standard 4

ITM-4.1	Identify hazards and apply safety methods for working in manufacturing jobs	X	X	X
ITM-4.2	Recognize the importance of safety, products, and people	X	X	X
ITM-4.3	Recognize and properly use safety equipment	X	X	X
ITM-4.4	Communicate prevention strategies in a workplace or lab to make it safer by reducing the possibility of injuries and illnesses	X	X	X
ITM-4.5	Operate equipment and tools using the appropriate safety rules	-	X	-
ITM-4.6	Demonstrate proper maintenance and storage of equipment and tools	-	X	-
ITM-4.7	Choose the right equipment or tool for the project/job	-	-	-
ITM-4.8	Identify the use and safe operation of tools used in manufacturing	X	X	X

Domain 5 Materials and Resources

Students analyze manufacturing materials and resources used to produce products for consumer safety, production, durability, and usability.

Core Standard 5

ITM-5.1	Identify and describe the resources associated with manufacturing	-	-	-
ITM-5.2	Explain how production is affected by of the availability, quality and quantity of resources	-	-	-
ITM-5.3	Demonstrate managing of resources	X	X	X
ITM-5.4	Research ways materials can be changed to meet product requirements	X	X	X
ITM-5.5	Identify and explain the properties and characteristics of engineering materials	-	-	-

	ITM-5.6	Differentiate among a raw material standard stock and finished products	-	x	x
	ITM-5.7	Explain relationships between function, materials characteristics and properties, material selection and material processing	-	-	x
	ITM-5.8	Formulate an understanding of material handling and its significance	-	-	-
Domain 6	Technical Drawing				
Core Standard 6	Students incorporate technical drawing and sketching to produce a product.				
	ITM-6.1	Identify and describe how precision and consistency are essential to the process of manufacturing	x	-	x
	ITM-6.2	Interpret basic drawings and symbols of technical sketching	x	x	x
	ITM-6.3	Create prototypes in solid modeling software	x	x	x
	ITM-6.4	Identify, develop, and communicate the specifications for a product	x	x	x
Domain 7	Manufacturing Careers				
Core Standard 7	Students evaluate the education, training, and certification needed for careers in manufacturing.				
	ITM-7.1	Communicate employment and career opportunities in manufacturing	-	x	-
	ITM-7.2	Identify and describe variety of skill levels and educational requirements involved for careers in manufacturing	-	x	-
	ITM-7.3	Examine major work activities, average income, educational requirements, and helpful courses for the careers related to manufacturing	-	x	-
Domain 8	Automation				
Core Standard 8	Students will adapt and apply the safe use of automation in manufacturing systems with emphasis on the role of robotics in the process.				
	ITM-8.1	Define and describe automation systems	-	-	x
	ITM-8.2	Program and use automated and robotic systems	-	-	x
	ITM-8.3	Identify reasons for implementing automation	-	x	x
	ITM-8.4	Identify the impact of automation in individuals, society and the environment	-	x	-
	ITM-8.5	Create a manufacturing cell for use	-	-	-
	ITM-8.6	Describe the history and relevance of logistics	-	-	-