Introduction to Construction, Design and Manufacturing

Course Description

This course provides the skills and technical knowledge for a beginning student in areas of industry, safety, material, equipment and process understanding. The student will develop awareness Construction, Design, and Manufacturing areas. This course serves as an introductory course to material processing and drafting.

Course Code:

Program(s) of Study to which This Course Applies

- Manufacturing process development
- Manufacturing production
- Construction
- Design/Pre-construction

Course Framework	Reference Standards	Academic Crosswalk
Standard 1. Students will understand and model safe lab procedures and techniques.	KS - MNC06	
Benchmark 1.1 The student will successfully pass safety requirements. <u>Sample performance indicators:</u> • Complete a safety test with 100% accuracy. • Sign a safety contract.	KS - MNC06.03.01	LA12.3.2.a (2) LA12.3.2.b (2)
Benchmark 1.2 The student will practice industry required safety. <u>Sample performance indicators:</u> • Demonstrate safe tool operation. • Demonstrate proper use of safe personal protection equipment. • Operate and maintain a safe working environment. • Demonstrate proper storage and handling of materials.	KS - MNC06.04	

Standard 2. Students will understand and accurately apply measurement.		
Benchmark 2.1 The student will understand fraction, decimal and conversions. <u>Sample performance indicators:</u> • Read a ruler to an accuracy of 1/16". • Convert a fraction to a decimal and vice versa. • Convert inches to mm and vice versa. • Manipulate fractions accurately.	KS - MNC10.01.01	SC12.1.1.l (1) MA 12.1.3 (2) MA12.2.5 (2) MA 12.2.2 (1) CCSS:MA(N-CN)
Benchmark 2.2 The student will use basic visual communication skills to sketch an object. <u>Sample performance indicators:</u> • Complete orthographic sketch(s). • Complete isometric sketch(s).	KS – MNC10.01.01	MA 12.2.4 (2) CCSS: MA G-CO: 12
Benchmark 2.3 The student will interpret basic prints. <u>Sample performance indicators:</u> • Identify different types (alphabet) of lines, dimensions, symbols, and views. • Interpret needed information from a drawing.	KS - MNC10.01.01	LA12.1.5.b (1) MA 12.2.4 (2)
Standard 3. Students will select the appropriate fasteners/adhesives.	KS - MNC10.01.03	[
Benchmark 3.1 The student will distinguish different types of fasteners and adhesives. <u>Sample performance indicators:</u> • Classify fasteners for different applications. • Classify adhesives for different materials.	KS - MNC10.01.03	LA12.5.1.b (1)
Benchmark 3.2 The student will choose different types of fastener and adhesive based on application. <u>Sample performance indicators:</u> • Select fasteners for different applications. • Select adhesives for different applications.	KS - MNC10.01.03	LA12.5.1.b (1) SC12.1.1.d (1)

Standard 4. Students will understand material types and properties.		
Benchmark 4.1 The student will identify different types of materials. <u>Sample performance indicators:</u> • Identify materials. • Identify properties. • Identify material applications.	KS - MNC10.01.02	LA12.5.1.b (1)
Standard 5. Students will process material.		]
Benchmark 5.1 The student will separate material. <u>Sample performance indicators:</u> • Demonstrate cutting processes. • Demonstrate drilling/boring. • Demonstrate sanding/grinding.	KS - MNC10.01.02	MA 12.2.5 (2)
Benchmark 5.2 The student will form material. <u>Sample performance indicators:</u> • Demonstrate forming processes.	KS - MNC10.01.02	MA 12.2.5 (2)
Benchmark 5.3 The student will join material. <u>Sample performance indicators:</u> • Demonstrate joining processes.	KS - MNC10.01.02	MA 12.2.5 (2)
Standard 6. Students will select tools for the correct operation.		[
Benchmark 6.1 The student will identify tools. <u>Sample performance indicators:</u> • Identify the tools. • Inspect and report tool conditions.	KS - MNC10.01.02 KS - MNC10.01.03	LA12.5.1.b (1)
Benchmark 6.2 The student will choose tools based upon the correct application. <u>Sample performance indicators:</u>	KS - MNC10.01.02 KS - MNC10.01.03	LA12.3.1.a (2) MA 12.2.5 (2)

• Select and apply the appropriate tool.		
Standard 7. Students will produce a product.		
Benchmark 7.1. The student will follow a plan to create a product. <u>Sample performance indicators:</u> • Interpret the drawing. • Prepare a plan of procedure. • Create a Bill of Materials. • Prepare a flowchart.	KS - MNC10.01.02 KS - MNC10.01.03	LA12.2.2.a (2) LA12.2.2.c (2) MA 12.2.4 (2) MA 12.1.3 (2)
Benchmark 7.2. The student will process the product components. <u>Sample performance indicators:</u> • Follow the plan of procedure.	KS - MNC10.01.04	LA12.1.6.d (2) LA12.1.6.f (2) MA 12.2.5 (2)
Benchmark 7.3. The student will assemble the product. <u>Sample performance indicators:</u> • Perform a rough assembly. • Modify and complete final assembly.	KS - MNC10.01.05	
Benchmark 7.4. The student will finish the product. <u>Sample performance indicators:</u> • Prepare for the finish surface. • Select and apply the appropriate finishing procedures.	KS - MNC10.01.04	
Benchmark 7.5. The student will evaluate the product. <u>Sample performance indicators:</u> • Compare the product to the plan. • Assess quality of the product.	KS - MNC10.01.05	LA12.3.1.a (1) MA 12.2.5 (2)

Reference Standards Sources

- MNC = Career Clusters Knowledge and Skills Statements. Revised 2008. National Career and Technical Education Foundation, Silver Spring, MD. www.careerclusters.org.

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Revision date *(if changes made after final draft)*:

Other Information

Suggestions for innovative teaching and learning strategies:	•
Related assessments:	•
Extended learning opportunities:	•