

Computer Integrated Manufacturing

	Measurable Learner Objectives (MLOs)	Show-Me Content	Show-Me Goals	National Standards
A.	Apply computer integrated manufacturing fundamentals (e.g., identify and define terminology, precision measurement, calculate coordinates; store, retrieve and output files).	CA1, CA3, CA4, MA1, MA2, SS4	1.4, 1.8, 1.10, 3.8	2:9-12DD, 3:6-8F, 11:6-8J, 11:9-12N, 12:9-12O, 12:9-12P, 17:9-12L, 17:9-12M, 17:9-12Q
B.	Produce accurate 2D computer sketches to generate a solid model (e.g., constraints, inquiry functions, edit, and modify placed features).	MA2	1.7, 2.1, 2.5	11:6-8J, 11:9-12P
C.	Demonstrate proper applications to develop and update multi-view drawings.	FA1	2.1, 2.5	11:6-8J, 11:9-12O, 17:9-12Q
D.	Generate assembly drawings and models.	CA4	2.5	11:6-8J
E.	Identify and select an appropriate method to prepare a prototype model.	CA1, SS4	2.5	9:9-12K, 11:9-12O
F.	Explain major historical CNC developments that have impacted the evolution of machine tools, controllers, and software in manufacturing and private industry.	CA1, CA4, SC8, SS2, SS4	1.8	7:9-12G, 7:9-12H, 7:9-12N, 7:9-12O
G.	Identify CNC machine characteristics (e.g., control and drive systems, axes, feed rates, holding devices, and cutting tools) including advantages and disadvantages.	CA1, MA1, MA2	1.10, 4.7	2:6-8O, 2:9-12AA, 4:6-8D, 19:9-12M, 19:9-12O
H.	Apply CNC machine movements to the computer integrated manufacturing process (e.g., axes, reference points, line categories, and geometric shapes).	MA2, MA5		11:6-8J
I.	Employ CAD/CAM/CNC programming to create a part to specifications.	CA1, CA4, MA2	1.10, 2.5, 3.1, 3.2, 3.3, 3.7, 3.8	11:6-8J, 11:9-12O, 17:6-8K
J.	Demonstrate the ability to safely setup, maintain, select speed/feed rates, fixture parts, and operate a CNC machine center.	CA3, MA1, MA2, H/PE6	1.10, 2.5, 3.1, 3.2, 3.3, 3.7, 4.7	2:9-12AA, 4:6-8D, 9:9-12L, 11:6-8J, 11:9-12O, 11:9-12P, 12:9-12N, 12:9-12O
K.	Apply fundamental and advanced CAM software procedures to generate and edit tool paths in the machining process.	CA1	1.10	11:6-8J, 12:9-12O
L.	Evaluate the influences (e.g., social, political, and economic) and chronological developments of automation leading to robotics and their impact on manufacturing.	CA1, CA2, SC8, SS2, SS4, SS6, H/PE6	3.8, 4.1, 4.7	1:6-8F, 1:9-12K, 3:6-8F, 6:6-8E, 6:9-12H, 6:9-12I, 7:9-12G, 7:9-12M
M.	Demonstrate the ability to design and build a working robot (e.g., robot characteristics, mechanical components, control systems, programming methods, and applications).	CA1, CA4, FA1, MA2, SC1, SC2	1.4, 1.8, 1.10, 2.1, 2.5, 3.1, 3.2, 3.3, 3.8	8:9-12H, 9:9-12K, 11:6-8J, 11:9-12P, 11:9-12R, 12:3-5E, 12:9-12N, 19:6-8H
N.	Identify the rationale, characteristics, categories, components, and sub-systems associated with CIM technology and the manufacturing process.	CA1, SS4	1.6, 1.10, 3.1, 3.2, 3.3, 3.6, 3.7, 3.8	2:9-12Y, 2:9-12DD, 2:9-12FF, 17:9-12M, 19:6-8H, 19:9-12O, 19:9-12P

O.	Design and assemble a complete miniature FMS built from the Fischertechnik model (e.g., system types, system components, and system applications).		2.5	2:9-12Y, 2:9-12FF, 12:9-12O
P.	Demonstrate appropriate teamwork and communication skills for computer integrated manufacturing.		2.6, 4.6	11:6-8L
Q.	Explore career opportunities and educational requirements within the field of computer integrated manufacturing.		1.4, 4.8	19:6-8H