Course Title: Manufacturing: Product Design and Innovation

State: TX
State Course Title: Manufacturing Engineering Technology 1
State Course Code: 130.355
State Standards: Texas Essential Knowledge & Skills Chapter 30 Subchapter M. Manufacturing
Date of Standards: 2015

TEKS	Unit Name(s)	Lesson(s) Numbers
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:		
(A) describe how teams function;	Unit 3: Success in Manufacturing, Part 2: Teamwork, Unit 4: Success in Manufacturing Part 3: Hard Skills, Unit 5: Success in Manufacturing, Part 4: Engineering Applications (Hard Skills),	Unit 3: L1, L2, L3, L4, Text Questions, Lab Questions, Quiz, Activity, Discussion 1, Discussion 2; Unit 4: L1, L2, L3, L4, L5, Text Questions, Lab Questions, Quiz, Discussion 1, Discussion 2; Unit 5: L1, L3, L4, Text Questions, Quiz, Discussion 1, Discussion 2
(B) explain employers' work expectations; and	Unit 2: Success in Manufacturing, Part 1: Soft Skills	Unit 2: L1, L2, L3, L4, L5, Text Questions, Lab Questions, Quiz, Activity, Discussion 1, Discussion 2
(C) demonstrate knowledge of the concepts and skills related to health and safety in the workplace as specified by appropriate governmental regulations.	Unit 6: Safety in Manufacturing, Unit 7: Careers in Manufacturing	Unit 6: L1, L2, L3, L4, L5, Text Questions, Lab Questions, Quiz, Discussion 1, Discussion 2, Unit 7: Activity
(2) The student applies software skills to manufacturing. The student is expected to:		
(A) use computer-aided design (CAD) software to complete a design;	Unit 5: Success in Manufacturing, Part 4: Engineering Applications (Hard Skills)	Unit 5: Lab Questions
(B) analyze the results of product testing in a simulated modeling environment; and	Unit 5: Success in Manufacturing, Part 4: Engineering Applications (Hard Skills)	Unit 5: Lab Questions
(C) fabricate a prototype design of a mechanical part.	Unit 1: Introduction to Manufacturing, Unit 4: Success in Manufacturing Part 3: Hard Skills, Unit 6: Safety in Manufacturing, Unit 8: Culminating Manufacturing Project	Unit 1: Activity, Unit 4: Activity, Unit 6: Activity, Unit 8: L1, L2, L3, L4, L5, Text Questions, Quiz, Activity, Discussion 1, Discussion 2

(3) The student gains skills in writing programmable logic controls so that a robot can work in coordination with a machine. The student is expected to:		
(A) use computer-integrated manufacturing techniques to simulate a manufacturing process; and		
(B) troubleshoot programmable logic circuit devices		
(4) The student performs functions and solves problems in the electricity and electronics field. The student is expected to:		
(A) research the use of control devices; and		
(B) demonstrate the use of control devices.		
(5) The student learns skills in production and programming of computer numerical control (CNC) operations. The student is expected to:		
(A) design a product using computer-aided manufacturing (CAM) software for production on a CNC lathe;		
(B) produce a product on the CNC lathe or a simulation;		
(C) design a product using CAM software for production on a CNC mill;		
(D) produce a product on the CNC mill or a simulation; and		
(E) complete data sheets for plan, do, check, and act forms and projects.		
(6) The student knows mechanical and fluid systems. The student is expected to:		
(A) identify, describe, and demonstrate the use of mechanical devices; and	Unit 1: Introduction to Manufacturing, Unit 5: Success in Manufacturing, Part 4: Engineering Applications (Hard Skills), Unit 7: Careers in Manufacturing	Unit 1: L3, Quiz, Unit 5: L1, Activity, Unit 7: L1, L2, L3, Text Questions, Quiz
(B) identify, describe, and demonstrate the use of fluid devices.		

(7) The student knows electrical and thermal systems. The student is expected to:		
(A) identify and describe electrical devices;	Unit 7: Careers in Manufacturing	Unit 7: L4
(B) demonstrate the use of electrical devices; and		
(C) research the effects of heat energy and temperature on products.		
(8) The student understands quality-control systems. The student is expected to:		
(A) research and recognize industrial standards such as International Standards Organization and Military Specifications;		
(B) explain attribute and Pareto charts; and		
(C) apply statistical process control.		