

Manufacturing Technology Assessment Plan
Rev. 11/19/2020

| Manufacturing Technology | 16-17 | 17-18 | 18-19 | 19-20 | 20-21 | 21-22 |
|--|-------|-------|-------|-------|-------|-------|
| MFGTB1AB - Machine Tool Processes | | | | | | |
| • Upon completion of the course, the student will be able to set up a lathe for safe operation. | | | C | | P | P |
| • Upon completion the student will be able to: Measure and assess if part sizes are within specified dimensional tolerances by using the part drawing and a micrometer caliper. | | | C | C | P | P |
| • Upon completion the student will be able to: Calculate spindle speeds in revolutions per minute (RPM) based on workpiece material, cutting tool material, and machining operation to be performed. | | | C | | P | P |
| • Upon completion the student will be able to: Calculate thread specification based on an industry-standard call-out listed on a drawing. | | | C | | P | P |
| • Upon completion the student will be able to: Produce a rectangular block using the milling machine with corners squared within 0.001". | | | C | | P | P |
| MFGTB2 - CNC Lathe Programming & Operation | | | | | | |
| • 1. Upon successful completion of the course, the student will be able to describe the most important cutting operations performed on the CNC lathe | | | C | C | P | P |
| • 2. Upon successful completion of the course, the student will be able to calculate cartesian coordinates for the CNC lathe. | | | | | P | P |
| • 3. Upon successful completion of the course, the student will be able to explain and utilize the most commonly used preparatory codes ,(G codes) and miscellaneous codes ,(M codes) used in programming lathe operations. | | | | | P | P |
| • 4. Upon successful completion of the course, the student will be able to program using the rough running cycle ,(G71), rough facing cycle ,(G72), and finish cycle ,(G70). | | | | | P | P |
| • 6. Upon successful completion of the course, the student will be able to determine cutting speeds and tool feed rates for various part materials. | | | | | P | P |
| • 5. Upon successful completion of the course, the student will be able to set up and operate a CNC for a production run of a program written in class | | | | | P | P |
| MFGTB3 - CNC Mill Programming & Operation | | | | | | |
| • 1. Upon successful completion of the course, the student will be able to write a G & M code program for a blueprint holding required specifications. | | | | | P | P |
| • 2. Upon successful completion of the course, the student will be able to simulate G & M code programs on control simulator to check for errors | | | | | P | P |
| • 3. Upon successful completion of the course, the student will be able run G & M code programs produced on vertical CNC machining center, manufacturing a physical part. | | | C | C | P | P |
| • 4. Upon successful completion of the course, the student will be able Inspect physical parts produced with precision measuring instruments. | | | | | P | P |
| MFGTB48WE - Occupational Work Experience Education/Internship | | | | | | |
| • Upon completion the student will be able to:Articulate the specific work experience objectives in manufacturing as described by employer and identify the various skills, knowledge and attitudes necessary to the accomplishment of those objectives. | | | | | P | P |
| • Upon completion the student will be able to:Demonstrate the acquisition of the various skills, knowledge and attitudes necessary to the completion of the work experience objectives in Manufacturing and the ability to effectively meet employer's job expectations. | | | | | P | P |
| • Upon completion the student will be able to:Identify and analyze the application of acquired skills, knowledge and attitudes to career opportunities in Manufacturing. | | | | | P | P |
| MFGTB51 - Advanced Metal Fabrication and Layout Skills | | | | | | |
| • 1. Upon successful completion of the course, the student will be able to:Recognize, analyze, and apply the standard of safety rules and practices given in this course pertaining to sheet metal fabrication equipment, work habits, and industrial environments. | | | | | P | P |
| • 2. Upon successful completion of the course, the student will be able to:Identify and distinguish between the types, gauges, and properties of the common sheet metal materials. | | | | | P | P |
| • 3. Upon successful completion of the course, the student will be able to:Demonstrate the ability to layout and fabricate a simple flat pattern sheet metal project. | | | | | P | P |

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| MFGTB54 - Power Metalworking Operations | | | | | | |
| • 1. Upon successful completion of the course, the student will be able to recognize, analyze, and apply the safety rules and practices taught in this course pertaining to sheet metal fabrication equipment, work habits, and industrial environment. | | | | | P | P |
| • 2. Upon successful completion of the course, the student will be able to identify the major parts and tooling for the press brake, the roll-former, the tube bender, turret punch, rotary machine, pipe notcher, welders, and the ironworker. | | | | | P | P |
| • 3. Upon successful completion of the course, the student will be able to design and fabricate an advanced sheet metal project involving 4 multiple major pieces of power machinery equipment introduced in this course. | | | | | P | P |
| MFGTB55 - Intermediate Machine Tool Processes | | | | | | |
| • 1. Upon successful completion of the course, the student will identify, select and apply high-speed tool bits to advanced machining operations. | | | | | P | P |
| • 2. Upon successful completion of the course, the student will be able to design advanced setups and operation of engine lathes for turning/facing and threading operations. | | | | | P | P |
| • 3. Upon successful completion of the course, the student will be able to design advanced setups and operation of vertical milling machines to drill holes, index, bore holes to specified diameter and depth, mill surfaces/ edges, and use indicators to reference work. | | | | | P | P |
| • 4. Upon successful completion of the course, the student will be able to use dividing heads/rotary tables, their accessories and additional components to perform advanced milling operations. | | | | C | P | P |
| • 5. Upon successful completion of the course, the student will be able to use of advance work holding devices and accessories to perform advance turning and facing operations. | | | | | P | P |
| MFGTB56 - CNC Metal Fabrication Systems | | | | | | |
| • 1. Upon successful completion of the course, the student will be able to recognize, analyze, and apply the safety rules and practices taught in this course pertaining to sheet metal fabrication equipment, work habits, and an industrial environment | | | | | P | P |
| • 2. Upon successful completion of the course, the student will be able to analyze and apply software to design a sheet metal part and export it to the CNC plasma table in the proper vector format. | | | | | P | P |
| • 3. Upon successful completion of the course, the student will be able to design and fabricate an advanced sheet metal project involving two different pieces of CNC fabrication equipment. | | | | | P | P |