

**Project-Based Machining: Hands on Orientation to Manufacturing Process**

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:00 AM	Blueprint reading (424)	KPI Identification and Process Planning continued (cutting tools, fixtures, feeds and speeds, CNC programming)	Hole Punch Rod 3 Ops on Manual Mill: saw cut stock mill flat mill cutting edge	Hole Punch Body KPI Identification and Process Planning continued (cutting tools, fixtures, feeds and speeds, CNC programming)	Hole Punch Body CNC Mill Op 3 (including in-process inspection)
9:00 AM	GD&T Intro/Review (424)	Intro to CNC concepts using conversational control (prototrak)			
10:00 AM	Manufacturing processes intro (424)	Hole Punch Base - Machining Op 1 (prototrak) Grinding	Hole Punch Base - process optimization/improvement; lesson learned	Hole Punch Body CNC Mill Op 1 (including in-process inspection)	Hole Punch Body Inspection CMM
11:00 AM	Intro to fixtures (KPI identification)		Hole Punch Knob KPI Identification and Process Planning Cutting tools, fixtures, feeds and speeds Introduce CNC programming and MasterCam Demo		
12:00 PM	Lunch	Lunch	Lunch	Lunch	Lunch
1:00 PM	Shop safety and tour	Manual Machining & Hole Punch Base - Machining Op 2 Manual Machining	Intro to CNC Programming using G-Code;	Hole Punch Body CNC Mill Op 2 (including in-process inspection)	Assembly, testing Hole Punch
2:00 PM	Intro to Mill and Turn		Hole Punch Knob Op 1 CNC Lathe (including in-process inspection)		Hole Punch Project: process optimization/improvement; lesson learned
3:00 PM	Intro to Project 1: Hole Punch Overview Machines Traveler		Hole Punch Knob Op2 CNC Mill (including in-process inspection)		
4:00 PM	Hole Punch Project1: KPI Identification and Process and Inspection Planning		Hole Punch Knob - process optimization/improvement; lesson learned		Wrapup and Certificate Award
5:00 PM	Class End	Class End	Class End	Class End	Class End

	Manual Machining
	Intro to Manufacturing Documentation
	NC programming and Laser Marking
	CNC Programming and Machining
	CMM Inspection and CNC Machining
	CMM and Layout Inspection; Quality Control