



Multi-State Advanced Manufacturing Consortium

US DOL SPONSORED TAACCCT GRANT: TC23767

MSAMC Master Performance Based Objectives (PBO) Review Template

Instructions

The following tab lists PBOs for the topic areas *Machine Tool*. Please review each of the PBOs, and rate each PBO with one of the following ratings:

- 1 = Skill or understanding is required for students.
- 2 = Skill is useful, but is not crucial for students to know.
- 3 = Skill is not useful for students, or isn't relevant for typical work assignments.
- 0 = PBO is unclear.

Additionally, for each PBO please

- * Note any comments or recommendations that you may have about how to improve the PBO.
- * Indicate whether each PBO is covered in your college's aligned courses, and how (written, lab demo, exercise).

If any PBOs or skill sets seem to be missing from the list, please add them in the space at the bottom of the list.

Please enter your information below

Name:	
Institution:	
Date:	
Email:	
Phone:	

20150626_pbo_review_acad_machine_tool

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Machine Tool

M-S AMC Academic Partner PBO Review

Please enter your information below

Name:	
Institution:	
Date:	
Email:	
Phone:	

Please indicate which course or courses delivered at your institution align with, or cover, the listed objective

Aligned Course(s)	1	Enter course code here
	2	Enter course code here
	3	Enter course code here

*** Note:** For each covered PBO, indicate in which of the aligned courses, documented at left, the PBO would be most extensively covered. If there is only one course listed to the left, then you do not have to complete the "Aligned Course" column.

Sub-Topic	Level	Topic	PBO ID	Performance Based Objective (PBO)	Importance, 1 = Need 2 = Nice to have 3 = N/A 0 = Don't understand	Covered - Written Assignment / Reading?	Covered - Exercise or Assessment?	Aligned Course *	Comments <i>Notes to improve the PBO, PBO is unclear, lacking equipment to cover, etc.</i>
						Y/N	Y/N		
Safety	1	MT	1	Identify, explain, and demonstrate safe working practices while in any machining environment, including the following: - Metal cutting safety - Lathe safety - Milling machine safety - Drill press safety - Sawing safety - Manual and power tool safety - Measurement and layout safety					
Measurement Systems	1	MT	2	Explain dimensional measurement and its importance.					
	1	MT	3	Review two systems of dimensional measurements: Define and explain the difference between U.S. Customary and Scientific International.					
	1	MT	4	Define and explain the purpose and function of a machinist's rule.					
	1	MT	5	Recognize and explain the difference between measurement accuracy and measurement precision.					
	1	MT	6	Perform basic and precision measurement using - A decimal-inch machinist's rule. - A common fraction-inch rule. - A zero to one inch micrometer. - A zero to 25 millimeter micrometer. - A six inch dial caliper. - A 150 mm dial caliper.					
	1	MT	7	Demonstrate common conversions between U.S. customary system and the S.I. Metric system.					
Manual and Power Machine Tool Use	1	MT	8	Demonstrate knowledge of standard machine tool movements.					
	1	MT	9	Describe metal cutting processes and the					
	1	MT	10	Describe the operation of a horizontal lathe.					
	1	MT	11	Set up and operate an engine lathe.					
	1	MT	12	Describe the operation of a vertical milling					
	1	MT	13	Set up and operate vertical milling machine.					
	1	MT	14	Describe the operation of a drill press.					
	1	MT	15	Set up and operate drill press.					
	1	MT	16	Describe the operation of metal cutting saws.					
	1	MT	17	Set up and operate horizontal and vertical band					
	1	MT	18	Use hand and bench tools properly.					
	1	MT	19	Use power tools properly.					
	1	MT	20	Explain the function and operation of a bench					
	1	MT	21	Describe the function and operation of a					
Precision Layout	1	MT	22	Describe the function and operation of a file.					
	1	MT	23	Define the purpose and use of a surface plate.					
	1	MT	24	Perform basic and precision layout.					
	1	MT	25	Identify and explain safe use and care of a					
	1	MT	26	Explain the purpose of gauge blocks.					
	1	MT	27	Explain how to build a gauge block stack, and the process of wringing gauge blocks.					
	1	MT	28	Recognize bore gauges and explain their purpose.					
	1	MT	29	Explain how to use a bore gauge.					
	1	MT	30	Discuss an adjustable size bore gauge.					
	1	MT	31	Measure lengths, widths, diameters, of various gauge block builds, gauge pins, and also convert inch measurement to metric.					

	1	MT	32	Layout and install per blue print specifications, power drill and hand tap holes then install chamfers using the belt sander and pencil grinder.					
	1	MT	33	Given a component drawing, describe the process from rough cut to finished part (machine tools used, order of use, etc.).					
Band Saw Operations	1	MT	34	Describe the operation of a horizontal band saw.					
	1	MT	35	Describe the operation of a vertical band saw.					
	1	MT	36	Set up and operate horizontal band saw, deburr safely and proficiently sawing various size mild steel to blue print specifications.					
Drill Press Operations	1	MT	37	Explain the operation of a floor drill press.					
	1	MT	38	Describe the form and cutting action of twist drills.					
	1	MT	39	Identify and explain the purpose of various of cutting fluids.					
	1	MT	40	Describe the process of reaming, countersinking, counter boring, tapping, and chamfering.					
	1	MT	41	Set up and operate drill press safely and proficiently, layout, drill, ream, chamfer, and assemble completed details per blue print specifications.					
Lathe Operations	1	MT	42	Explain the operation of a manual lathe.					
	1	MT	43	Identify six safety rules to follow before starting a lathe.					
	1	MT	44	Identify ten safety rules to follow during operation of the lathe.					
	1	MT	45	Describe the function and operation of a universal three-jaw and independent four-jaw lathe chucks.					
	1	MT	46	Describe the function of three hand wheels used to feed the cutting tool.					
	1	MT	47	Explain the operation of the two types of micrometer collars on the cross feed.					
	1	MT	48	Recognize the function of two types of cuts performed on the lathe.					
	1	MT	49	Explain the operation of automatic feed and describe the advantage.					
	1	MT	50	Identify the two types of chamfer that can be created on the lathe.					
	1	MT	51	Describe groove tools, threading tools, combination drill and countersink bit.					
	1	MT	52	Tell how to drill a hole on a lathe.					
	1	MT	53	Set up and operate the lathe safely and proficiently, layout, face ends of journals to size, turn journals and chamfers to blue print specifications, drill, tap, and ream using the tailstock.					
	Mill Operations	1	MT	54	Describe the operation of a vertical mill.				
1		MT	55	Discuss six safety rules to be followed before starting a milling operation.					
1		MT	56	Describe the function and operation of the micrometer collars for the two movements of the knee.					
1		MT	57	Explain how backlash affects the accuracy of a mill, and describe the difference between climb and down milling.					
1		MT	58	Identify a step and explain the two methods used to locate the tool position when milling a step.					
1		MT	59	Explain the difference between a slot and a pocket.					
1		MT	60	Set up and operate milling machine safely and proficiently, layout using variety of measuring and layout tools, mill all sides parallel and perpendicular, mill keyways, slots, and pockets, drill, ream, tap, and counter sink per blueprint specifications.					

Additions: Please add any additional objectives that we may have overlooked.



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