



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 *Industrial Electronics*. 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:	



Industrial Electronics

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		
	1	EL	1	Match a list of conductors, semiconductors, and insulators to their properties.					
	1	EL	2	Match a list of Solid State terms to their proper definitions. - Electron flow - Hole flow - P-type material - N-type material - Barrier voltage - Depletion region - Biasing (forward/reverse) - Electron - Proton - Neutron - Valance Shell - Negative Ion - Trivalent Material - Pentavalent Material - Semiconductor Crystal - Impurities - Doping - Passive Component - Covalent Bonding					
	1	EL	3	List the two most common diode ratings that should not be exceeded.					
	1	EL	4	Match the following list of electronic components to their proper description of operation and/or construction and to their correct schematic symbol: - Diode - Zener Diode - Light Emitting Diode (LED) - Bipolar Junction Transistor - Thyristor - UJT - SCR - Diac - Triac - FET - IGBT - Op Amp					
	1	EL	5	Test several semiconductor diodes with an ohmmeter and identify if their condition is shorted, open, or good.					
	1	EL	6	Given the applied voltage, indicate the voltage drops across each component of a series circuit that has a diode and resistor, when forward and reverse biased.					
	1	EL	7	Construct a series circuit that has a Zener diode and resistor, predict and verify in lab the Zener diode current and voltage when the load resistor value and the voltage changes.					
	1	EL	8	Match a list of components of each section of a DC Power supply to its proper operation.					
	1	EL	9	Given the input voltage of a power supply,					
	1	EL	10	For each section of a DC power supply, draw the					
	1	EL	11	Using a sine wave timing diagram, indicate on					
	1	EL	12	Match a list of voltage regulation and filtering					
	1	EL	13	Given the frequency of the applied AC supply					
	1	EL	14	Given the peak voltage of a pulsating DC voltage					
	1	EL	15	Given the peak-to-peak value of an AC voltage					
	1	EL	16	Given various symptoms of a defective filtered					
	1	EL	17	Match a list of the effects of a failed component					

1	EL	18	Given a schematic, construct an AC electrical					
1	EL	19	Given a schematic, construct an AC electrical circuit that uses two diodes and a resistor, and then use an oscilloscope to show how the two diodes can pass current on both alternations of a sine wave.					
1	EL	20	Given a schematic, construct an AC electrical					
1	EL	21	List the three terminals of the bipolar transistor,					
1	EL	22	Test several transistors with an ohmmeter and					
1	EL	23	Given a schematic, construct a DC electrical					
1	EL	24	Given a schematic, construct a DC electrical					
1	EL	25	Construct an electrical circuit that uses a UJT to					
1	EL	26	Construct a circuit containing an SCR and an UJT to control power in a load resistor. A variable RC time constant will adjust the power. Sketch the Output voltage at full and 50% power. Verify the sketch with the scope.					
1	EL	27	Using an oscilloscope, determine the electrical characteristics of a Diac.					
1	EL	28	Construct a circuit that uses a Diac and Triac to control the AC power in a load. A variable RC time constant will vary the power applied to the load.					
1	EL	29	Given a schematic of an inverting amplifier using an OP Amp, predict the voltage gain of the circuit. Construct and verify.					
1	EL	30	Given a schematic of a non-inverting amplifier using an OP Amp, predict the voltage gain of the circuit. Construct and verify.					
1	EL	32	Given a schematic of an Op Amp comparator and the input voltages predict the output voltage. Construct and verify.					
1	EL	33	Given the logic states applied to the inputs of a digital AND gate, list the logic states that will be produced at its output.					
1	EL	34	Generate a truth table for a 2 input "And Gate", "Or Gate "and "Nand Gate". Construct and verify.					
1	EL	35	List advantages of fiber optic cable.					
1	EL	36	List the different types of fiber optic terminating connectors.					
1	EL	37	List safety hazards associated with laser equipment and precautionary measures that should be taken.					
1	EL	38	Construct a circuit to couple an AC source voltage (switched on and off) to a DC signal (switching on and off) using an optical isolator IC.					

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



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[20150626_pbo_review_acad_industrial_electronics](#)

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