
Pennsylvania College of Technology
One College Avenue
Williamsport PA, 17701

Name: _____ Student ID #: _____

Date: _____ School: _____

COMPETENCY ASSESSMENT
FOR
ELECTRICAL TECHNOLOGY (EL) AAS
ELECTRICAL OCCUPATIONS (EO) CERTIFICATE

The following validated competencies represent those included in the first year of the programs. Please assess each applicable competency by circling the appropriate code letter, then sign, date, and return the form to the College's Admissions Office.

- H - Highly skilled, able to work independently
M - Moderately skilled-requires minimum supervision
L - Limited skills-requires full supervision
N - Not covered in instruction or work experience

PART I COMPETENCY ASSESSMENT

1. DIRECT CURRENT FUNDAMENTALS (EL & EO) ELT 111, ELT 117

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| H M L N | a. | Identify electrical components and their symbols |
| H M L N | b. | "Breadboard" a circuit from a schematic diagram |
| H M L N | c. | Identify the operating controls of a multimeter (VOM, DMM) |
| H M L N | d. | Measure color coded resistors with an ohmmeter |
| H M L N | e. | Measure DC voltages with a multimeter |
| H M L N | f. | Identify the controls of a DC power supply |
| H M L N | g. | Measure the resistance of various conductors and insulators |
| H M L N | h. | Measure current in a DC circuit |
| H M L N | i. | Calculate and measure the value of current for various values of resistance and voltage |
| H M L N | j. | Calculate and measure the total resistance of series connected resistors |
| H M L N | k. | Design and construct a simple series circuit for a given voltage and current |
| H M L N | l. | Calculate and measure voltage in an unloaded voltage divider |
| H M L N | m. | Connect a parallel circuit and calculate and measure total current and the current in the branches |
| H M L N | n. | Calculate and measure the total resistance of parallel connected resistors |
| H M L N | o. | Design and construct a simple parallel circuit |
| H M L N | p. | Calculate and measure voltage, current, and resistance in a series parallel circuit |
| H M L N | q. | Calculate and measure voltage in a series circuit to confirm Kirchhoff's voltage law |
| H M L N | r. | Calculate and measure current in a parallel circuit to confirm Kirchhoff's current law |
| H M L N | s. | Trouble shoot a defective series, parallel and series parallel circuit |
| H M L N | t. | Construct a circuit to determine at what resistance values there is maximum power transfer (EL ONLY) |

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|---------|----|---|
| H M L N | u. | Construct a bridge circuit and measure an unknown resistance (EL ONLY) |
| H M L N | v. | Determine the field pattern around a bar and a horseshoe magnet |
| H M L N | w. | Determine the magnetic field about a coil and the effect of soft iron on the fields |
| H M L N | x. | Investigate induced voltage in a coil |

2. RESIDENTIAL CONSTRUCTION LAB I (EL & EO) ELT 116

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|---------|-----|---|
| H M L N | a. | Identify/draw commonly used ANSI electrical symbols |
| H M L N | b. | Identify commonly used building symbols |
| H M L N | c. | Identify circuits on the plans |
| H M L N | d. | Layout, according to the N.E.C., typical lighting/receptacle circuits used in a modern residence |
| H M L N | e. | Layout, according to the N.E.C., typical special purpose circuits used in modern residence |
| H M L N | f. | Understand typical specifications and be able to apply them to the residence |
| H M L N | g. | Properly identify and use basic electricians hand tools |
| H M L N | h. | Demonstrate the safety precautions needed to work with tools on the job |
| H M L N | i. | Wire light(s)/receptacles controlled by single pole switches (power feed can be at any location) |
| H M L N | j. | Wire light(s)/receptacles controlled from two locations (three way switches, power feed can be at any location) |
| H M L N | k. | Wire light(s)/receptacles controlled from three or more locations (three ways and four way switches, power feed can be at any location) |
| H M L N | l. | Wire split circuit receptacles |
| H M L N | m. | Wire two circuit split control receptacles |
| H M L N | n. | Wire the above (i-m) using romex |
| H M L N | o. | Wire the above (i-l.) using armored cable |
| H M L N | p. | Wire the above (i-l.) using Wiremold |
| H M L N | q. | Install two tone chimes |
| H M L N | r. | Install ground fault circuit interrupter type receptacles |
| H M L N | s. | Draw typical circuit wiring diagrams |
| H M L N | t. | Draw typical circuit cable layouts |
| H M L N | u. | List material to be used in the installation of typical circuits |
| H M L N | v. | Install, according to N.E.C., multi-wire circuits |
| H M L N | w. | Calculate box size using tables 314.16 A & B for both plastic and metal boxes |
| H M L N | x. | Calculate circuit ampacity sizes |
| H M L N | z. | Calculate the number of lighting circuits for a modern residence |
| H M L N | aa. | Determine proper wire size and type for typical residential circuits |
| H M L N | bb. | Determine the proper number of receptacle circuits for a residence |
| H M L N | cc. | Determine the number of outlets allowed on a branch circuit |
| H M L N | dd. | Outline code requirements for installation of ground fault circuit interrupters |
| H M L N | ee. | Demonstrate the proper use of terms used in the electrical trade |
| H M L N | ff. | Calculate proper spacing of receptacles per requirements of the N.E.C. dwelling units |
| H M L N | gg. | N.E.C. requirements for installation of arc fault circuit interuptons |
| H M L N | hh. | Demonstrate proper lighting requirements of the N.E.C. for dwelling units |
| H M L N | ii. | Demonstrate ability to use the N.E.C. quickly and accurately |
| H M L N | jj. | Demonstrate the ability to interpret the N.E.C. (particularly chapters 1-4) |
| H M L N | kk. | Install interchangeable type devices |

H M L N	ll.	Interpret residential blueprints
H M L N	mm.	Interpret residential specifications
H M L N	nn.	Identify commonly used electrical equipment
H M L N	oo.	Estimate the material needed to wire a residence
H M L N	pp.	Explain N.E.C. rules on paddle fan installation
H M L N	qq.	Explain N.E.C. rules on the installation of non-metallic sheath cable
H M L N	rr.	Explain N.E.C. rules on the installation of armored cable
H M L N	ss.	Explain N.E.C. rules on the installation of surface raceways
H M L N	tt.	Explain N.E.C. rules on the installation of recessed lighting for dwelling units
H M L N	uu.	Explain N.E.C. rules on the installation of closet lighting for dwelling units
H M L N	vv.	Explain N.E.C. rules on the installation of underground feeder cable
H M L N	ww.	Determine proper locations of switches and receptacles per the N.E.C.
H M L N	xx.	Install dimmer controls for incandescent lights
H M L N	yy.	Install drywall ears

3. MOTOR MAINTENANCE AND REPAIR (EO) ELT 127

H M L N	a.	Understand the importance of name plate data
H M L N	b.	Understand the uses for single phase motor
H M L N	c.	Understand the operating principle of a single phase motor
H M L N	d.	Know the basic parts of a single phase motor
H M L N	e.	Analyze single phase motor problems
H M L N	f.	Check for grounds and shorts in a motor
H M L N	g.	Use the American wire gauge
H M L N	h.	Make connections on a terminal block
H M L N	i.	Solder and insulate wires in a motor
H M L N	j.	Remove and install sleeve bearings
H M L N	k.	Remove and install ball bearings
H M L N	l.	Lubricate sleeve bearings
H M L N	m.	Lubricate ball bearings
H M L N	n.	Replace brushes in a motor
H M L N	o.	Install and adjust a centrifugal switch
H M L N	p.	Identify circuits in a motor
H M L N	q.	Connect windings in a single phase motor
H M L N	r.	Understand the procedure for rewinding a single phase motor

PART II HIGH SCHOOL PROGRAM INFORMATION

Name of Program: _____

Length of Program: _____ (years)

Total Instructional Hours: _____

This student completed _____ hours or _____ years.

PART III RELATED WORK EXPERIENCE (IF APPLICABLE)

1. The student has participated in a planned and approved program of: (Community Exploration, Cooperative Education, Work Experience).
2. The student was evaluated by the employer as being: (Above Average, Average, Below Average).

Employer: _____
(Name)

(Job Supervisor)

(Title)

PART IV COMMENTS AND/OR CLARIFICATIONS

(Include any pertinent information or qualifications regarding skills, attitudes, etc.)

PART V CERTIFICATION AND RECOMMENDATION

I have reviewed the above competencies and believe, to the best of my knowledge; my assessment is fair and accurate. I recommend ____, recommend with qualifications ____, and do not recommend ____ this student for advanced placement.

(Name) please print

(Title)

(Phone number)