



ELECTRICAL & ELECTROMECHANICAL TECHNOLOGY

Associate of Applied Science Degree
Diploma

MILFORD CAMPUS

www.southeast.edu/ElectricalElectromechanical



Electrical and electromechanical technicians are in high demand, and we can provide you with the tools to get your career on high voltage today! Electricians install, connect, test, and maintain electrical systems for residential, commercial, industrial systems and many other purposes, including climate control, security and communications. Electromechanical technicians visualize, design, create and repair the many devices that are used throughout the industrial-manufacturing world by combining their electrical and mechanical background. Skills, such as welding, hydraulics, machining, along with their electrical capabilities, are used every day to keep industry running. Robotics and automated control systems are a very large part of industry, and our graduates receive many hours of training in these areas. Electricians may install and maintain the electronic controls for machines in business and industry.



ELECTRICAL FOCUS

Types of jobs available:

- Residential, commercial and industrial construction environments
- Designing, installing, maintaining, and upgrading advanced electrical control circuits

ELECTROMECHANICAL FOCUS

Types of jobs available:

- Designing, installing, maintaining, and upgrading industrial automated systems
- Designs in the machining, welding, fabrication, wiring, and installation of new and existing production equipment

Graduate Earnings

Recent graduates report an average starting wage of \$19.05 per hour.

For more information contact:

Ken Reinsch, Program Chair/Milford
402-761-8258, 800-933-7223 ext. 8258
kreinsch@southeast.edu

or the College Admissions Office
Milford 402-761-8243, 800-933-7223 ext. 8243

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What Employers Say About SCC Graduates

"Working closely with the EM & EL instructors has always been a positive and rewarding experience. SCC uses the same methodology and is in 'sync' with our own in-house training department. Creating an environment where a student/employee can learn is one thing, but to build an atmosphere where they are tested, challenged and encouraged to think on their own creates a higher level of proficiency and troubleshooting ability. These attributes are not only key to the technical trade, but valuable tools that can be used in all aspects of life. 3M has had great success with SCC students; being able to hit the ground running, demonstrating disciplined expertise, arriving to work on time, and providing a can-do attitude day-in and day-out. All of this is a reflection of the dedication and efforts that go into the Milford Campus."

Marvin Wiese, Plant Engineering GS, Valley, Neb.

Construction Electrician Diploma Required Courses:

Course #	Course title	Credit hrs
ELEC1132	DC Principles I	5.0
ELEC1133	DC Principles II	5.0
ELEC1217	AC Principles	10.0
ELEC1336	CAD & Electrical Estimating	3.0
ELEC1344	Motor Controls	3.0
ELEC1366	Residential & Commercial Wiring I	9.0
ELEC1367	Residential & Commercial Wiring II	9.0
ELEC1464	Transformer Three Phase Systems	7.0
ELEC1474	Predictive Maintenance Principles	4.0
ELEC1495	Industrial Wiring	13.0

Computer Course Requirements

A minimum of 2 credit hours in word processing and spreadsheets.

Suggested courses:

BSAD1010	Microsoft Applications I	4.5
	or	
INFO1121	Microsoft Word & PowerPoint and	1.5
INFO1131	Microsoft Excel	1.5
	Or if considering transfer to another institution:	
INFO1010	Computer Literacy	4.5

General Education Requirements: Diploma

Contact your program advisor to select general education courses from each category which will meet your program's graduation requirements. See the General Education pages online for a complete list.

Mathematics	4.5
MATH1050	Thinking Mathematically
	(Plus one class from the following areas).
Oral Communications, Written Communications, Science, Social Science, and/or Humanities	4.5
	9.0 hours

Electrical Focus:

(Diploma required courses credits plus the following courses and general education hours)

Course #	Course title	Credit hrs
ELEC2534	Programmable Logic Controllers I	5.5
ELEC2546	Electrical Machine Controls	3.0
ELEC2555	Industrial Communications & Alarm Systems	3.0
ELEC2564	Industrial Electronic Controls	9.0
ELEC2614	Robotics and Integrated Automation	10.0
ELEC2624	Programmable Logic Controllers II	13.0
BSAD2155	Career Transition and Management Strategies	4.5
		48.0 hours

Electromechanical Focus:

Course #	Course title	Credit hrs
ELEC1132	DC Principles I	5.0
ELEC1133	DC Principles II	5.0
ELEC1217	AC Principles	10.0
ELEC1337	Sketching & CAD	3.0
ELEC1344	Motor Controls	3.0
ELEC1356	Fluid Power	7.0
ELEC1436	Power Transmission & Lubricants	5.0
ELEC1446	Industrial Machines & Mechanical Systems	6.0
ELEC1464	Transformer Three Phase Systems	7.0
ELEC1474	Predictive Maintenance Principles	4.0
ELEC2534	Programmable Logic Controllers I	5.5
ELEC2546	Electrical Machine Controls	3.0
ELEC2555	Industrial Communications & Alarm Systems	3.0
ELEC2564	Industrial Electronic Controls	9.0
ELEC2614	Robotics and Integrated Automation	10.0
ELEC2624	Programmable Logic Controllers II	13.0
BSAD2155	Career Transition and Management Strategies	4.5
MACH1121	Manufacturing Processes	5.0
MACH1131	Manufacturing Processes II for Electromechanical	4.5
WELD1184	Welding for Electrical & Electromechanical	3.0

Computer Course Requirements

A minimum of 2 credit hours in word processing and spreadsheets.

Suggested courses:

BSAD1010	Microsoft Applications I	4.5
	or	
INFO1121	Microsoft Word & PowerPoint and	1.5
INFO1131	Microsoft Excel	1.5
	Or if considering transfer to another institution:	
INFO1010	Computer Literacy	4.5

General Education Requirements: A.A.S.

Contact your program advisor to select general education courses from each category which will meet your program's graduation requirements. See the General Education pages online for a complete list.

(One class from each area below).

Oral Communications	4.5
Written Communications	4.5
Mathematics	4.5
MATH1050 or higher	
Science	4.5
PHYS1017 or PHYS1150 or PHYS1410	
(Plus one class from one of the two areas below).	
Social Science or Humanities	4.5
	22.5 hours

Electrician Construction - IBEW Option

The curriculum is provided with the cooperation of representatives of SCC and Nebraska representatives of the International Brotherhood of Electrical Workers, IBEW-Local 265. Applicants must meet the stated SCC and IBEW-Local 265 entrance requirements to be accepted into the program. The curriculum is normally delivered over a five-year period. Instruction will be delivered at the IBEW training facility.

Roy Lamb, Director of Training

Joint Apprenticeship and Training Committee (JATC); 402-423-4519

Classes are held at the IBEW Training Center, 6200 S. 14th St. in Lincoln. Prepares students for a career in the commercial and residential electrical construction industry.

Combination Theory/Laboratory classes one per year, as follows:

Course #	Course title	Credit hrs
ELET1714	DC Circuits and Conduit Bending	14.0
ELET1719	AC/DC Circuits and Blueprint Reading	14.0
ELET1724	AC Theory, Fire Alarm & Grounding and Bonding	14.0
ELET1729	Logic Circuits and Electrical Motors	14.0
ELET1734	Process Controllers and Special Electrical Circuits	14.0
		70.0 hours

General Education Requirements:

Contact your program advisor to select general education courses from each category which will meet your program's graduation requirements. See the General Education pages online for a complete list.

(One class from each area below).

Oral Communications	4.5
Written Communications	4.5
(Plus three classes from the five areas below; no two classes from the same area).	
Mathematics, Science, Social Science, Humanities, and/or Computer Technology	13.5
	22.5 hours

On-the-job Training:

One course of 200 clock hours per year. Skills checklist, as shown on syllabi, verified to SCC by IBEW. Supervision by IBEW members. Location of the OJT site varies with the demands of the Electrical industry.

Course #	Course title	Credit hrs
ELET1715	Electrical Wiring Applications I	5.0
ELET1720	Electrical Wiring Applications II	5.0
ELET1725	Electrical Wiring Applications III	5.0
ELET1730	Electrical Wiring Applications IV	5.0
ELET1735	Electrical Wiring Applications V	5.0
		25.0 hours



First Quarter		
ELEC1132	DC Principles I	5.0
ELEC1133	DC Principles II	5.0
ENGL1010	English Composition I	4.5
MATH1050	Thinking Mathematically	4.5
BSAD1010	Microsoft Applications I	4.5
		23.5



Second Quarter		
ELEC1217	AC Principles	10.0
PHYS1017	Technical Physics	4.5
SPCH1110	Public Speaking	4.5
ECON1200	Personal Finance	4.5
		23.5

ELECTRICAL FOCUS		
Third Quarter		
ELEC1366*	Residential & Commercial Wiring I	9.0
ELEC1367*	Residential & Commercial Wiring II	9.0
ELEC1336*	CAD & Electrical Estimating	3.0
ELEC1344	Motor Controls	3.0
		24.0

ELECTROMECHANICAL FOCUS		
Third Quarter		
ELEC1337**	Sketching & CAD	3.0
WELD1184**	Welding for Electrical & Electromechanical	3.0
ELEC1356**	Fluid Power	7.0
MACH1121**	Manufacturing Processes	5.0
MACH1131**	Manufacturing Processes II for Electromechanical	4.5
		22.5

Fourth Quarter		
ELEC1474	Predictive Maintenance Principles	4.0
ELEC1464	Transformers, Three-Phase Systems	7.0
ELEC1495*	Industrial Wiring	13.0
		24.0

Fourth Quarter		
ELEC1474	Predictive Maintenance Principles	4.0
ELEC1464	Transformers, Three-Phase Systems	7.0
ELEC1446**	Industrial Machines & Mechanical Systems	6.0
ELEC1344	Motor Controls	3.0
ELEC1436**	Power Transmissions & Lubricants	5.0
		25.0

Construction Electrician Diploma option offered at this point.



Fifth Quarter		
ELEC2534	Programmable Logic Controllers I	5.5
ELEC2564	Industrial Electronic Controls	9.0
BSAD2155	Career Transition & Management Strategies	4.5
ELEC2546	Electrical Machine Controls	3.0
ELEC2555	Industrial Communications & Alarm Systems	3.0
		25.0



Sixth Quarter		
ELEC2624	Programmable Logic Controllers II	13.0
ELEC2614	Robotics and Integrated Automation	10.0
		23.0

* Additional courses an EM graduate would need to complete to obtain a focus in Electrical Systems. (6 months -- 34 Quarter Credits)

** Additional courses an EL graduate would need to complete to obtain a focus in Electromechanical Systems (6 months--34.5 Quarter Credits)

Estimated Expenses

To determine overall costs, students should plan a budget that includes room, meals, clothing, laundry, medical care, recreation and entertainment, transportation, insurance, etc.

Nebraska Resident tuition rate is \$61.50 per credit hour. Out-of-state tuition rate is \$75.50 per credit hour.

Student fee is \$1.50 per credit hour. Graduation fee is \$25.

Housing is available at Beatrice and Milford campuses only. Quarterly tuition, books and fees are dependent upon classes taken each quarter.

FIRST QUARTER

Tuition And Fees	\$1,481
Books	685
Supplies	66
Total	\$2,232

SECOND QUARTER

Tuition And Fees	\$1,481
Books	545
Total	\$2,026

ELT THIRD QUARTER

Tuition And Fees	\$1,512
Books	465
Tools	350
Total	\$2,327

ELM THIRD QUARTER

Tuition And Fees	\$1,418
Books	225
Tools	80
Supplies	120
Total	\$1,843

ELT FOURTH QUARTER

Tuition And Fees	\$1,512
Books	120
Total	\$1,632

ELM FOURTH QUARTER

Tuition And Fees	\$1,575
Books	180
Tools	400
Total	\$2,155

FIFTH QUARTER

Tuition And Fees	\$1,575
Books	350
Supplies	16
Total	\$1,941

SIXTH QUARTER

Tuition And Fees	\$1,449
Total	\$1,449

Program total ELT: \$11,607

Program total ELM: \$11,646

Basic Tools Required

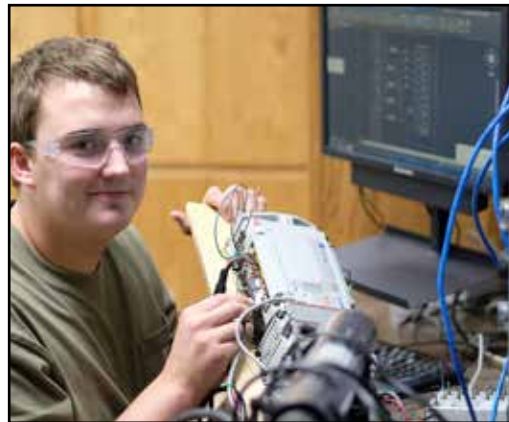
* May be purchased at the campus bookstore.

Required Tools To Enter 1st Quarter

- Safety Glasses (must meet Z87 specs.)
- Large 3-Ring Binder (2)
- Graph Paper Pad 10 x 10 (10 sq./in.)
- Electronic Calculator (specifications to be provided in class)
- Flash Drive
- Set of Colored Pencils

Electrical Tools for 3rd Quarter

- Tool Pouch (equipped with large utility pocket, small utility pocket, two plier pockets, two screwdriver pockets, a chain tape thong and a knife snap)
- Tool Belt (heavy duty leather or fully adjustable poly web)
- Aluminum torpedo level with magnetized strip on bottom
- Steel locking tape (3/4" by 25 feet minimum)
- Electricians pocket knife
- Hammer (heavy duty curved claw)
- 10" adjustable jaw wrench
- 10" pump plier (with plastic dip handles)
- 6 3/4" diagonal cutters (with plastic dip handles)
- 6" long nose pliers with cutters (with plastic dip handles)
- 9 1/4" high leverage lineman plier (with plastic dip handles)
- Phillip screwdriver size #2 with 4" shank
- Standard screwdriver 3/16" blade with 6" shank
- Standard screwdriver 5/16" blade with 6" shank
- Shoes (hard-sole)
- *Architecture Ruler
- Multimeter (see Program Chairperson for details)
- Hard Hat
- 3mm x 100mm Screwdriver
- Wire Strippers w/Terminal Crimp Jaw



Required For 2nd Quarter

- * Pad of Oscillogram paper

Supplies Required For 5th Quarter

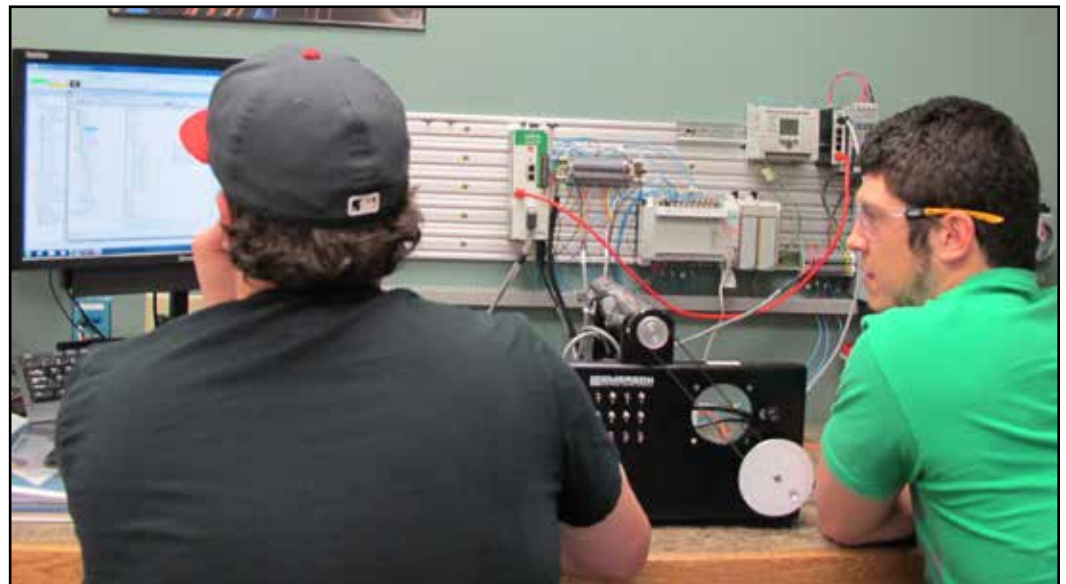
- *1 Pad of Oscillogram Paper
- *1 Circuit Breadboard

Electromechanical Tools for 3rd Quarter

- Some type of leather shoes required. No canvas. Must be high tops.
- *Oxy-Fuel Face Shield
- *Arc Welding Helmet (No. 10 Lens)
- *Leather Gauntlet Welding Gloves
- *Pliers or Locking Pliers (Vice-Grips)
- *Chipping Hammer and Wire Brush
- *Wire Cutter Pliers, Side Cutters
- *Safety Glasses With Side Shields

Supplies Required For 4th Quarter

- Portable Tool Chest
- 1/2" or 3/8" Socket Set (1/4" through 3/4")
- 10" Ratchet For The Above Socket Set
- 5" Extension For The Above Socket Set
- 10" and 8" Adjustable Wrench
- 7 Piece Combination Wrench Set
- Wire Strippers With Terminal Crimp Jaw
- Standard Tip Screwdriver -1/4" Blade With 4" Shank
- Standard Tip Screwdriver - 5/16" Blade With 6" Shank
- Phillips Screwdriver - Size 1
- Phillips Screwdriver - Size 2
- Locking Tape (1/2" by 12 feet)
- Hex Key Set (5/64" through 3/8")
- 6 3/4" Slip Joint Pliers
- 7 3/4" Curved Diagonal Cut Pliers
- 6" long nose pliers
- 10" locking pliers (straight or curved jaw)
- 1 1/2 lb. standard deadblow hammer
- 16 oz. ball peen hammer
- 5 piece punch set (1/16" through 5/32")
- Multimeter (see Program Chairperson for details)
- 3mm x 100mm Screwdriver
- Utility Knife



Electrician Construction – IBEW Option
The IBEW/NECA apprenticeship fund pays the tuition and student fees.

1ST YEAR APPRENTICE

Books	\$ 300
Tools	450
Total	\$ 750

2ND YEAR APPRENTICE

Books	\$ 400
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3RD YEAR APPRENTICE

Books	\$ 500
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4TH YEAR APPRENTICE

Books	\$ 600
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5TH YEAR APPRENTICE

Books	\$ 700
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No costs are shown for tools in the 2nd through 5th years, but it should be noted that the apprentice might need to replace tools from time to time due to normal wear and tear.