ELECTRICAL LINE WORKER TECHNOLOGY

DIPLOMA – 36 CREDITS

About this program

The Electrical Line Worker program provides trained personnel for the power industry. Coursework provides both theory and practical hands-on experience in all phases of power line construction and maintenance. Coursework includes electrical math, national electrical safety codes, construction of overhead and underground distribution systems, conductor applications, over-voltage and over-current protection, guying and pole grounding. The 90-acre training field located near the campus provides a site for hands-on experience in pole setting. The successful graduate is eligible for employment in rural electric and municipal utilities or with private contractors.

Program outcomes

1. Install electrical structures.
2. Interpret trade specifications and drawings.
3. Install single and multiphase overhead and underground distribution systems.
4. Demonstrate competent climbing abilities.
5. Demonstrate aerial rescue procedures.
6. Install fusing, lightning protection devices, transformers and related electrical equipment.
7. Interpret and apply the National Electric Safety Code.
8. Demonstrate professionalism and related soft skills.
9. Demonstrate professional safety practices.

Curriculum overview

Crds	Requirement type
31	Required courses
2	Restricted electives in courses
3	Restricted electives in course types
36	**Total**

Developmental courses note: A student may be required to enroll in developmental courses in reading, writing and math. A student's scores on the Accuplacer assessment will determine enrollment in developmental courses. The purpose of developmental courses is to prepare students for the demands of a college-level curriculum. *Credits may vary.*

Accreditation: Minnesota State Community and Technical College is accredited by the Higher Learning Commission, a regional accreditation agency recognized by the U.S. Department of Education. The Higher Learning Commission 230 South LaSalle Street, Suite 7-500 Chicago, IL 60604-1411 http://www.ncahigherlearningcommission.org Phone: 312.263.0456 / 800.621.7440

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Curriculum requirement details

Required courses

Course	Crds
ELWT1102 - Electrical Line Worker Theory I	4
ELWT1104 - Electrical Structure Installation	5
ELWT1106 - Climbing Electrical Structure	4
ELWT1108 - Construction of Overhead Structures	3
ELWT1110 - Line Worker Theory II	4
ELWT1112 - Transformers	2
ELWT1114 - Line Construction Reports	2
ELWT1116 - Pole Top and Bucket Rescue	1
ELWT1118 - Field Construction I	3
ELWT1120 - Field Construction II	3

Other requirements or restricted electives

2 credits from one or more of these Courses:

Course title	Credits
ELWT1122 - Field Construction III	3
ELWT1130 - Electrical Line Worker Internship	2

3 credits from these Course Types:

- General Education w/MnTC Goals

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Course summaries

ELWT1102 - Electrical Line Worker Theory I ..... ***(4 credits)***
This course provides the student with basic electrical theory involved in the production and use of electrical energy. In addition, the student practices basic direct current circuitry calculations and rigging skills including basic knots and splices pertaining to the electrical industry.

ELWT1104 - Electrical Structure Installation ..... ***(5 credits)***
This course provides the student with the introductory knowledge and skills necessary to properly install electrical structures with hand tools and with mechanized structure installation machinery.

ELWT1106 - Climbing Electrical Structure ..... ***(4 credits)***
This course provides the student with the knowledge and skills to safely climb and frame various electrical structures to heights of 50 feet. Topics include free-hand and safety-strap climbing, and installation and removal of pole line hardware.

ELWT1108 - Construction of Overhead Structures ..... ***(3 credits)***
This course provides the student with the technical understanding and skill necessary to construct overhead high voltage structures. Topics include interpretation of industry specification manuals, identification of overhead hardware, construction techniques and tool use.

ELWT1110 - Line Worker Theory II ..... ***(4 credits)***
This course provides the study of the principles of alternating current high voltage distribution circuitry. Included in this course are mathematical computation of AC power, conductor application including practice at armor rodding, hand and pre-formed ties, overvoltage and overcurrent installations, and street lighting circuits.

Prerequisites:

- ELWT1102

ELWT1112 - Transformers ..... ***(2 credits)***
This course provides the student with the knowledge and skills necessary for mounting and connecting transformers to primary and secondary systems. The course will also cover paralleling of closed and open banks.

Prerequisites:

- ELWT1108

Corequisites:

- ELWT1110

ELWT1114 - Line Construction Reports ..... ***(2 credits)***
This course provides the student with an understanding of the design of line work construction drawings and equipment installation orders.

Prerequisites:

- ELWT1108

ELWT1116 - Pole Top and Bucket Rescue ..... ***(1 credits)***
This course provides the student with an understanding of procedures necessary to complete a rescue of a line worker disabled while on a pole or in an aerial device.

Prerequisites:

- ELWT1106

ELWT1118 - Field Construction I ..... ***(3 credits)***
This course covers the installation of single-phase high voltage systems under actual field conditions. The overhead construction component of the course includes structural assembly, including grounding requirements, guying, conductor installation including stringing and tying, single-phase transformer, capacitor and regulator installation. The second component of the course is underground installation, covering trencher operation, primary and secondary cable termination, services, pad mount transformers and sectionalizing cabinets, and street lighting.

Prerequisites:

- ELWT1106

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ELWT1120 - Field Construction II ..... ***(3 credits)***
This course covers the installation of multi-phase high voltage systems under actual field conditions. The overhead section will cover structure assembly including grounding, structural guying, conductor installation including stringing and tying, multi-phase transformer installation, capacitor installation, regulator installation, and the use of protective cover-up material and hot sticks. The underground section will cover multiple cable installation, primary and secondary cable termination, three-phase pad mount transformer installation and multi-phase sectionalizing cabinet installation.

ELWT1122 - Field Construction III ..... ***(3 credits)***
This course gives the student a basic understanding of overhead transmission structure construction and installation requirements for 69KV systems. Students will also participate in two industry hot line schools, one sponsored by the Minnesota Municipal Utilities Association and the other by the Minnesota Rural Electric Cooperatives.

ELWT1130 - Electrical Line Worker Internship ..... ***(2 credits)***
This course will concentrate on the student receiving apprentice line work skills under the supervision of an appropriate industry representative.

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Program Plan — "Primary"

Locations: Wadena,Customized Training

1st Fall Term (16 credits)

Courses

Course	Crds
ELWT1102 - Electrical Line Worker Theory I	4
ELWT1104 - Electrical Structure Installation	5
ELWT1106 - Climbing Electrical Structure	4
ELWT1108 - Construction of Overhead Structures	3

1st Spring Term (20 credits)

Courses

Course	Crds
ELWT1110 - Line Worker Theory II	4
ELWT1112 - Transformers	2
ELWT1114 - Line Construction Reports	2
ELWT1116 - Pole Top and Bucket Rescue	1
ELWT1118 - Field Construction I	3
ELWT1120 - Field Construction II	3

2 credits in one or more of the following:

ELWT1122 - Field Construction III 3
ELWT1130 - Electrical Line Worker Internship 2

3 credits in one or more of the following:

General Education w/MnTC Goals

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