



## MASTER COURSE OUTLINE

A. ELEC 1703 Electrical Lab

B. COURSE DESCRIPTION:

This course covers the basic concepts of electricity, direct current circuits, and alternating current circuits. The basic study of atomic structure, current and voltage, power conductors, electromagnetic and insulators, and resistance, Ohm's Law, Electromagnetic Field (EMF) source, series and parallel circuit construction and analysis, applications of test meters, circuit theorems, magnetic, and terminology are also included.

**(2 Cr – 0 lect, 2 lab)**

C. \*Core Theme: Critical Thinking

D. RIVERLAND INSTITUTIONAL LEARNING OUTCOMES:

This course addresses the following Riverland Institutional Learning Outcome(s):

- ILO 1: critical thinking (*Core Theme Goal 2*)
- ILO 2: awareness of the larger global community (*Core Theme Goal 7 or 8*)
- ILO 3: ethical, engaged citizenship (*Core Theme Goal 9 or Goal 10*)
- ILO 4: communication and collaboration (*Discipline Goal 1 and by any learning outcome(s) involving communication or collaboration*)

E. MAJOR CONTENT AREAS:

- Safe work practices
- Hand tools
- Micrometer
- American wire gauge
- Wire display
- Screw sizes and nail types
- Screw and nail display
- Hand and hydraulic knock-out sets
- Drill and tap holes
- Fastening devices
- Plastic and lead anchors
- Toggle bolts
- Solar photovoltaic (PV)
- Wire connector types
- Split bolt connectors
- Sta-kon pliers

F. GOAL TYPES, OBJECTIVES, AND OUTCOMES:

<u>GOAL</u>	<u>OBJECTIVES</u> Students will be able to	<u>OUTCOMES</u> The student will successfully
<u>*Critical Thinking</u>	gather factual information and apply it to a given problem in a manner that is relevant, clear, comprehensive, and conscious of possible bias in the information selected.	<ol style="list-style-type: none"> <li>1. describe the local, regional, and national job market for careers in the electrical industry.</li> <li>2. identify research testing labs (UL, CSA, ETL, etc.) using a variety of resources.</li> </ol>
<u>CS</u>	exhibit safe work practices.	<ol style="list-style-type: none"> <li>1. explain the need for safety glasses at all times.</li> <li>2. inspect all hand tools for damage and proper function.</li> <li>3. inspect work area for hazards before starting project.</li> <li>4. repair or remove from use all tools and materials that are damaged or do not function properly.</li> </ol>
<u>CS</u>	use hacksaw correctly.	<ol style="list-style-type: none"> <li>1. check saw blade for damage or missing teeth.</li> <li>2. tighten blade tension to proper tightness.</li> <li>3. use proper two-handed technique to cut material safely.</li> </ol>
<u>CS</u>	identify electrical materials.	<ol style="list-style-type: none"> <li>1. use proper names for and explain the proper use of various materials and parts that are commonly used in the electrical trades.</li> </ol>
<u>CS</u>	identify the different types of photovoltaic (PV) components.	<ol style="list-style-type: none"> <li>1. display proper use and connection of photovoltaic panels.</li> </ol>
<u>CS</u>	identify the effect of lift on different wind turbine blade designs.	<ol style="list-style-type: none"> <li>1. demonstrate the effects of blade design by measuring energy output.</li> </ol>

G. SPECIAL INFORMATION:

This course may require use of the Internet, the submission of electronically prepared documents and the use of a course management software program. Students who have a disability and need accommodations should contact Accessibility Services at the beginning of the semester. This information will be made available in alternative format, such as Braille, large print, or current media, upon request.

H. COURSE CODING INFORMATION:

Course Code S/Class Maximum 24; Letter Grade

Revision date: 04/13/10; 12/09/19; 04/02/24

AASC Approval date: 04/19/11; 12/17/19; 05/07/24

\*These five MnTC Goals have been identified as Riverland Community College Core Themes. Every course in the Riverland Community College curriculum shall meet outcomes from one of these themes.

\*\*These five MnTC Goals have been identified as Riverland Community College Disciplines. Riverland’s MnTC courses also shall meet outcomes from a Discipline Area.

NOTE: The Minnesota Transfer Curriculum “10 Goal Areas of Emphasis” are reflected in the five required discipline areas and five core themes noted in the Riverland Community College program of study guide and/or college catalog.

<b>*Riverland Community College Core Themes</b>	<b>MnTC Goal Number</b>
Critical Thinking (CT)	<b>2</b>
Human Diversity (HD)	<b>7</b>
Global Perspective (GP)	<b>8</b>
Ethical and Civic Responsibility (EC)	<b>9</b>
People and the Environment (PE)	<b>10</b>

<b>**Riverland Community College Discipline Areas</b>	<b>MnTC Goal Number</b>
Communication (CM)	<b>1</b>
Natural Sciences (NS)	<b>3</b>
Mathematics/Logical Reasoning (MA)	<b>4</b>
History and the Social & Behavioral Sciences (SS)	<b>5</b>
Humanities and Fine Arts (HU)	<b>6</b>