**Fond du Lac Tribal and Community College**
**COURSE OUTLINE FORM**

**Updated 9/23/14**

Please return this form to the college vice president of academic affairs and the chairperson of the Academic Affairs and Standards Council (AASC)

**1. Prepared by:**_____

**2. Date submitted:**_____

3. Date approved: 04/22/11 Date revised 09/23/14

**4. Department/discipline:** Electric Utility Technicians

**5. Department(s) endorsement(s):**_____
**(Signatures of the person(s) providing the endorsement are required.)**

6. Course Title: Programmable Logic Controllers
Abbreviated course title (25 characters or less):_____

7. Course Designator: EUT 8. Course Level: 1100 9. 2XXX

10. Number of Credits: Lecture 2 Lab 1

11. Control Number (on site) 20 Control Number (online)_____

12. Catalog/Course description:

In this course, the student will learn the basics of programmable logic controllers. They will learn the fundamentals of how PLCs operate and how to program them to perform simple control functions. The student will learn Ladder Logic programming using the Allen Bradley Control Logics software or equivalent, and interface input and output devices. (Prerequisite: EUT 1020 Basic Electricity or Electrical experience and instructor approval).

13. Course prerequisite(s) or co-requisite(s): Accuplacer scores/ Other courses

Prerequisite(s): EUT 1020 Basic Electricity or Electrical experience and instructor approval
Co-requisite:

14. **Course Materials** (Recommended course materials and resources. List all that apply, e.g. textbooks, workbooks, study guides, lab manuals, videos, guest lecturers).

Programmable Logic Controllers, Software – Allen Bradly Prologic or equivalent.
Texts to be determined yearly on the basis of content and availability, and will be on the syllabus.

15. **Course Content** (Provide an outline of major topics covered in course)

1. Review of PLC history.
2. PLC construction and design elements.
3. Ladder logic programming.
   a. Seal in circuits
   b. Timers
   c. Counters
   d. Complex circuits
4. PLC file structure, operating modes, downloads

5. Input and Output card usage.
    a. Discrete I/O
    b. Analog I/O
    c. Smart cards
6. PLC safety practices.

16. **Learning Goals, Outcomes, and Assessment**
At FDLTCC we have 4 Competencies Across the Curriculum (CAC) areas. They are as follows:

A. Information Literacy (the ability to use print and/or non-print tools effectively for the discovery, acquisition, and evaluation of information)
B. Ability to Communicate (the ability to listen, read, comprehend, and/or deliver information in a variety of formats.)
C. Problem Solving (the ability to conceptualize, apply, analyze, synthesize, and/or evaluate information to formulate and solve problems.)
D. Culture (knowledge of Anishinaabe traditions and culture, knowledge of one's own traditions and culture, knowledge of others' traditions and cultures, culture of work, culture of academic disciplines and/or respect for global diversity.)

Upon completion of this course the student shall:

1. Install a PLC and in and output (I/O) and communicate to the processor. (A, C)
2. Program a start stop motor circuit in the PLC. (C)
3. Wire input s into the I/O and address correctly (A, C)
4. Wire output devices to the I/O and activate. (C)
5. Use timers and counters in logic programming. (C)
6. Use both analog and digital outputs. (C)

17. **Minnesota Transfer Curriculum (MnTC):** If this course fulfills an MnTC goal area, state the goal area and list the goals and outcomes below:

See www.mntransfer.org

Goal Area(s):_____
Goal and Outcomes: