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: __________________ Date revised: 9/23/2014

4. Department/discipline: Electric Utility Technicians

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

6. Course Title: Protective Relaying
   Abbreviated course title (25 characters or less):

7. Course Designator: EUT

8. Course Level: 1050

9. Number of Credits: Lecture: 2 Lab: 1

10. Control Number (on site): 20  
    Control Number (online): 0

11. Catalog/Course description:

   In this course, students will be introduced to the technologies of protective relaying. Electric Utilities use protective relays to monitor and disconnect electric transmission and distribution lines for fault conditions. Relay components, relay types, and relay maintenance techniques will be taught by an experienced electric utility relay professional. Students will learn through hands-on use of electronic equipment. Fault simulation equipment will be employed, and students will become acquainted with the activities encountered by relay technicians.

12. Course prerequisite(s) or co-requisite(s):
    Prerequisite(s): EUT 1020 Basic Electricity, EUT 1021 AC Electricity for Electric Utility Technician, or concurrent registration in EUT 1040 Power Electronics & Communications Equipment
    Co-requisite: None
13. Course Materials (Recommended course materials and resources. List all that apply, e.g. textbooks, workbooks, study guides, lab manuals, videos, guest lecturers).

1. Protective Relaying Theory and Applications ISBN # 0824791525
2. Other texts to be selected yearly based upon content and availability, and will be listed on the syllabus.
3. Lab equipment will be provided.

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

1. Career Overview of Relay Technicians
   a. Employment forecasts
   b. Job requirements
   c. Educational requirements
2. Electrical Characteristics of Transmission and Distribution Lines
   a. Active and reactive power
   b. Frequency control
   c. Voltage control
   d. Voltage stability
   e. Angle stability
   f. Power oscillations
   g. Power system restoration
3. Three Phase "Y", Three Phase Delta, and Two Phase Circuits
4. Power Transformers
5. Power Circuit Breakers and Circuit Interruption
6. General Introduction to Protective Relays
7. Troubleshooting and Maintenance
8. Fault Simulation and Diagnostics Practice

15. 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
Course learning outcomes will fulfill the identified competencies:

Course Learning Outcomes:

Upon completion of this course, students will be able to:

1. Demonstrate knowledge of three phase control relays (B, C)
2. Properly connect electronic control relay (A, B)
3. Connect to and program a Switzser relay. (B, C)
4. Demonstrate ability to understand relay sequence. (A, B, C)

16. 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](http://www.mntransfer.org)

Goal Area(s): N/A

Goal and Outcomes:
  Goal: N/A
  Outcome:
Complete the following only if you are proposing a new course:

1. Planned pattern of offering:
2. Rationale for course: If this course is an ADDITION or replacement to current offerings, add a detailed explanation of the necessity for the change.
3. Does this course overlap with any course(s) offered at FDLTCC? If so, justify such duplication or indicate other adjustments to be made. Obtain signatures from affected departments.
4. What is the apparent or expressed student need for this course?
5. If this course includes a Native American or specifically Anishinaabe component, list campus resource person/s—i.e., campus cultural/spiritual resource person/s and, if necessary, elder/s—consulted and include specific comments and written responses as appropriate.
6. Are there any additional licensing/certification requirements involved?
   a. Provide a copy of the required licensing/certification standards to the AASC chair and to the vice president of academic affairs.
   b. Attach the required documentation to show course meets required licensing/certification standards.
7. What types of tutoring will be made available through the CAA to students taking this course?
8. How will the course be evaluated?
9. Special resources—e.g. faculty, space, equipment, library, etc
10. Special course fees:
11. Relationship of course to the college mission statement and goals.
12. Relationship of course to the department’s mission statement and goals.
13. Relationship of course to colleges/university offerings (include tribal colleges).

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