Faculty are required to have the outline submitted to the Academic Affairs Office. The course outline is the form used for approval of new courses by the Collegewide Curriculum Committee.

DEPT.  ELUT                    COURSE NO.  2121

NUMBER OF CREDITS:  3

COURSE TITLE  PROTECTIVE RELAYS

CATALOG DESCRIPTION: This course is designed to give a broad understanding of simple relays that are used in the protection of high voltage lines and substations. Emphasis is on understanding design, construction, and application, performing testing, calibrating, cleaning and adjusting relays. The following relays will be studied if time allows: overcurrent induction disc, thermal overcurrent, induction disc voltage, over/under voltage, voltage restraint, percentage differential, and transformer differential relays

AUDIENCE: Persons that would like to major in Powerline and Electric Utility, as technicians or lineman.

FULFILLS MN TRANSFER CURRICULUM AREA(S) (Leave blank if not applicable)

Area: by meeting the following competencies:
Area: by meeting the following competencies:
Area: by meeting the following competencies:

PREREQUISITES OR NECESSARY ENTRY SKILLS/KNOWLEDGE: (ELCO1100)Electrical Circuits Fundamentals

LENGTH OF COURSE 1 semester

THIS COURSE IS USUALLY OFFERED:
Every other year fall X spring summer undetermined

Four goals are emphasized in course at Minnesota West Community & Technical College:

1) ACADEMIC CONTENT: Math, Reading

2) THINKING SKILLS: Connect Relays to different drawings, current and voltages systems.

3) COMMUNICATIONS SKILLS: Must communicate well with others and communicate problems well that will arise in the field.

4) HUMAN DIVERSITY:

TOPICS TO BE COVERED: Installation, testing and calibrating of simple and compound relays,
LIST OF EXPECTED COURSE OUTCOMES:
The student will:
1. Describe the design, construction, application, function, and perform testing of overcurrent induction disc relays.
2. Describe the design, construction, application, function, and perform testing of thermal overcurrent relays.
3. Describe the design, construction, application, function, and perform testing of induction disc voltage relays.
4. Describe the design, construction, application, function, and perform testing of voltage controlled overcurrent induction disc relays.
5. Describe the design, construction, application, function, and perform testing of voltage restraint overcurrent induction disc relays.
6. Describe the design, construction, application, function, and perform testing of directional overcurrent induction relays.
7. Describe the design, construction, application, function, and perform testing of percentage differential relays and transformer differential relays.

LEARNING/TEACHING TECHNIQUES used in the course are:
X Collaborative Learning  X Problem Solving
X Student Presentations X Interactive Lectures
X Creative Projects Individual Coaching
X Lecture X Films/Videos/Slides
X Demonstrations Other (describe below)
X Lab

ASSIGNMENTS AND ASSESSMENTS FOR THIS CLASS INCLUDE:
X Reading X Tests X Individual Projects
X Oral Presentations X Worksheets Collaborative Projects
X Textbook Problems X Papers Portfolio
X Group Problems Term Paper
Other (describe below)

EXPECTED STUDENT LEARNING OUTCOMES: The student should be able to distinguish the difference between simple relays. Define their purpose and show the connections for different tests and calibrations.

The information in this course outline is subject to revision

Veteran Services: Minnesota West is dedicated to assisting veterans and eligible family members in achieving their educational goals efficiently. Active duty and reserve/guard military members should advise their instructor of all regularly scheduled military appointments and duties that conflict with scheduled course requirements. Instructors will make every effort to work with the student to identify adjusted timelines. If you are a veteran, please contact the Minnesota West Veterans Service Office.

To receive reasonable accommodations for a documented disability, please contact the campus Student Services Advisor or campus Disability Coordinator as arrangements must be made in advance. In addition, students are encouraged to notify their instructor.

This document is available in alternative formats to individuals with disabilities by contacting the Student Services Advisor or by calling 800-658-2330 or Minnesota Relay Service at 800-627-3529 or by using your preferred relay service.