MINNESOTA WEST COMMUNITY & TECHNICAL COLLEGE
COURSE OUTLINE

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.  1115

NUMBER OF CREDITS:    3

COURSE TITLE   Generation, Transmission, and Distribution

CATALOG DESCRIPTION: This course is designed to simulate the Power Industry. Through the use of laboratory projects, the student will receive background in understanding the concepts of generation, transmission, and distribution of electric power.

AUDIENCE: This practical, hands on course can be grasped by anyone who has a knowledge of electricity and would like to obtain a better understanding of AC power, both in single-phase and three-phase.

FULFILLS MN TRANSFER CURRICULUM AREA(S) (Leave blank if not applicable)
Area: by meeting the following competencies:
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PREREQUISITES OR NECESSARY ENTRY SKILLS/KNOWLEDGE: The student should have passed or in the process of completing Electric Circuit Fundamentals, ELCO 1100.

LENGTH OF COURSE 1 semester

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

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

1) ACADEMIC CONTENT: Math, Reading

2) THINKING SKILLS:

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: Learn about simple rules of safety. Determine the phase sequence of a three-phased line. Interpret the meanings of real, apparent, and reactive power. Observe the phase angle between
the voltages at the sending and receiving ends of a transmission line. Test and observe the effects of resistance, inductance, and capacitance has on an electrical line. Study the effects of power factor and ways to correct it.

LIST OF EXPECTED COURSE OUTCOMES:
The student will:
1. Use the functions sine, cosine, and tangent, which define the relationship between real, reactive and apparent power.
2. Explain effective resistance in an ac circuit and show how eddy current losses and hysteresis losses cause effective resistance to be greater than the true ohmic resistance.
3. Solve series circuit problems involving resistance, inductive reactance, and capacitive reactive components, making use of the appropriate formulas.
4. Develop vector diagrams showing the relationship between the voltage across the R, Xl, Xc components and the applied line voltage.
5. Connect single-phase R loads, Xl loads, Xc loads, and other electrical devices, using wye connection and the delta connection, to form three-phase circuits.
6. Calculate the power (in volt-amperes), the true power (in watts), and reactive power (vars) in three-phase systems.

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

ASSIGNMENTS AND ASSESSMENTS FOR THIS CLASS INCLUDE:
X Reading             X Tests            X Individual Projects
     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 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.

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