HIBBING COMMUNITY COLLEGE
COURSE OUTLINE

COURSE TITLE & NUMBER:  ELM 2202: AC/DC Motor Control 2
CREDITS:  5 (Lec 2/Lab 3)
PREREQUISITES:  ELM2201: AC/DC Machinery or approval of the instructor

CATALOG DESCRIPTION:
AC/DC Motor Control 2 covers the installation, maintenance and troubleshooting of motor and process controls, motors, variable frequency drives, and programmable logic controllers according to applicable National Electrical Code articles.

OUTLINE OF MAJOR CONTENT AREAS:
1. Safety
2. Solid-state Electronic Control Devices
3. Photoelectric and Proximity Controls
4. Programmable Controllers
5. Reduce-voltage Starting
6. Wound Rotor Motors
7. Accelerating and Decelerating Methods
   A. Soft starter
   B. VFD’s
8. Preventive and Predictive Maintenance Procedures
9. Troubleshooting, Print Reading and Electrical Test Equipment

COURSE GOALS/OBJECTIVES/OUTCOMES:
1. Students will draw the symbols for: SCR, triac, and diac and explain their use in a PLC circuit.
2. Students will design and implement proximity control.
3. Students will identify and explain the purpose of the power supply, input/output, processor and programming section of a PLC.
4. Students will connect inputs and outputs to a PLC.
5. Students will convert a hardwire ladder diagram into a PLC program.
6. Students will explain and program the XIC, XIO, OTE and timer instructions on a PLC.
7. Students will program a Micrologix PLC using RSLogix software.
8. Students will network a computer and various PLC’s.
9. Students will connect, program and troubleshoot various VFD’s.
10. Students will identify and explain various types of braking.

**HCC COMPETENCIES MET:**
Working Productively and Cooperatively, Communicating Clearly and Effectively, Thinking Creatively and Critically and Valuing Self

**STUDENT CONTRIBUTIONS:**
The student is expected to read the required textbook, spend sufficient time outside of class to complete assignments, submit assignments when due, take tests on scheduled dates, and participate in class discussions.

**STUDENT ASSESSMENT SHALL TAKE PLACE USING INSTRUMENTS SELECTED/DEVELOPED BY THE COURSE INSTRUCTOR.**

**ADDITIONAL INFORMATION:**
ELM2201 requires students to maintain a minimum of 95% attendance. Attendance below 95%, may be made up by completing 1-credit make-up classes. The 1-credit make up class will equal 3 days of attendance. This course must be pre-approved by the course instructor. Three days that are less than full days (tardy or leave early) will equal one full day absence. Course attendance below 95% will result in retaking this course.

**AASC APPROVAL DATE:** November 15, 2017
**REVIEW DATE:** November 2022