Faculty is 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 Academic Affairs and Standards Council.

DEPT. MECH_ COURSE NUMBER: 1125

NUMBER OF CREDITS: 2 credits (1 Lecture and 1 Lab)

COURSE TITLE: Electrical Controls I

CATALOG DESCRIPTION: Introduces basic electrical concepts. Students will be introduced to electrical theory, analyze electrical safety hazards and requirements, and demonstrate electrical circuit wiring and measurement. Course will cover identification and application of electrical control components used in an industrial environment. Students will develop the introductory skills necessary for designing, wiring, troubleshooting, and operation of electrical control circuits.

AUDIENCE: Mechatronics students

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:

LENGTH OF COURSE: 1 Semester

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

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

ACADEMIC CONTENT: The academic objectives of this course are:
a. Demonstrating the knowledge and skills of electrical control circuits used in an industrial environment.
THINKING SKILLS: This course will help students improve the effectiveness of their thinking skills through:
   a. Completing homework (reading, reports, labs, and worksheets)
   b. Participating in classroom discussions and activities
   c. Taking open and closed book quizzes and tests
   d. Design, wire, and troubleshoot electrical control circuits

COMMUNICATIONS SKILLS: This course will help students improve their oral and written communication skills through:
   a. Participating in class discussions and reports
   b. Participating in assignments, worksheets, and reports

HUMAN DIVERSITY: This course will help students recognize, understand, and appreciate human diversity through:
   a. Participating in classroom discussions
   b. Working with other students on research and lab activities
   c. Working with students from other cultures

TOPICS TO BE COVERED:
1. Electrical quantities and basic circuits
2. Symbols and diagrams
3. Test instruments
4. Electrical safety
5. Control logic
6. Input control devices
7. Solenoids
8. Relays and Timers
9. AC and DC circuits and components

COURSE LEARNING OUTCOMES (GENERAL):
1. Identify electrical components and where they are located
2. Demonstrate how to read schematics and understand symbols
3. Describe the function of electrical control devices
4. Apply skills in designing, wiring, troubleshooting, and operation of electrical control circuits.

STUDENT LEARNING OUTCOMES (SPECIFIC):
1. Analyze electrical quantities and basic circuits
2. Interpret symbols and diagrams
3. Perform circuit measurements using test instruments
4. Identify electrical safety hazards
5. Design, connect and operate basic electrical control circuits
6. Connect and operate input control devices
7. Connect and operate circuits with solenoids
8. Design, connect and operate circuits utilizing relays and timers
9. Analyze AC and DC circuits and components
10. Troubleshoot electrical control circuits

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

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

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.

The information in this course outline is subject to revision

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 via your preferred Telecommunications Relay Service.

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Revised 10/1/16