DEPT. Wind Energy Technology COURSE NUMBER: ELWT 1250

NUMBER OF CREDITS: 2

COURSE TITLE: Fundamentals of Electric Motors

CATALOG DESCRIPTION:
This course covers alternating (AC) and direct current (DC) motors and generators/alternators. Theory of operation, connections, installation and maintenance will be covered in the lecture portion of the course. The lab will give students an opportunity to determine the load characteristics and connections of AC and DC motors and generators/alternators.

AUDIENCE:

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:

LENGTH OF COURSE: 2 credits

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

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

1) ACADEMIC CONTENT: The academic objectives of this course are:

2) THINKING SKILLS: This course will help students improve the effectiveness of their thinking skills through:

3) COMMUNICATIONS SKILLS: This course will help students improve their oral and written communication skills through:

4) HUMAN DIVERSITY: This course will help students recognize, understand, and appreciate human diversity through:
TOPICS TO BE COVERED:
The following list of course goals will be addressed in the course. These goals are directly related to the performance objectives. (*designates a CRUCIAL goal)
1. exhibit safe work practices
2. describe DC motor construction
3. describe DC shunt motor characteristics
4. determine shunt motor characteristics
5. reverse DC shunt motor
6. describe DC series motor characteristics
7. determine DC series motor characteristics
8. reverse DC series motor
9. describe compound motor characteristics
10. determine compound motor characteristics
11. reverse compound motor
18. describe cumulative compounding
19. describe differential compounding
20. interpret DC motor nameplate data
21. describe rotating synchronous field
22. describe squirrel-cage motor construction
23. describe squirrel-cage motor characteristic
24. measure squirrel-cage motor characteristic
25. reverse squirrel-cage motor
26. describe wound-rotor motor construction
27. describe wound-rotor motor characteristic
28. measure wound-rotor motor characteristic
29. reverse wound-rotor motor
30. describe synchronous motor construction
31. describe synchronous motor characteristic
32. determine synchronous motor start characteristic
33. determine synchronous motor L/C characteristics
34. draw synchronous motor AC/DC current curve
35. determine synchronous motor load characteristics
36. reverse synchronous motor
37. describe alternators types
38. describe alternator characteristics
39. obtain alternator saturation characteristics
40. obtain alternator voltage regulator characteristics
41. describe alternator synchronization
42. synchronize alternators
43. describe split-phase motor construction
44. determine split-phase motor characteristics
45. reverse split-phase motor
46. describe capacitor start motor construction
47. describe capacitor start motor characteristic
48. determine capacitor start motor characteristics
49. reverse capacitor start motor
50. describe capacitor run motor construction
51. describe capacitor run motor characteristics
52. reverse capacitor run motor
57. describe universal motor construction
58. determine universal motor characteristics
59. reverse universal motor
63. interpret AC motor nameplate data

LIST OF EXPECTED COURSE OUTCOMES:

LEARNING/TEACHING TECHNIQUES used in the course are:

☐ Collaborative Learning ☐ Problem Solving
☐ Student Presentations ☐ Interactive Lectures
☐ Creative Projects ☐ Individual Coaching
☐ Lecture ☐ Films/Videos/Slides
☐ Demonstrations ☐ Other (describe below)
☐ Lab

ASSIGNMENTS AND ASSESSMENTS FOR THIS CLASS INCLUDE:

☐ Reading ☐ Tests ☐ Individual Projects
☐ Oral Presentations ☐ Worksheets ☐ Collaborative Projects
☐ Textbook Problems ☐ Papers ☐ Portfolio
☐ 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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