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.

COURSE TITLE: Electric Motor Controls I COURSE NUMBER: ELEC 2205

COURSE DESCRIPTION:

This course covers electrical tools, instruments, safety, electrical symbols, line diagrams, AC manual contactors and motor starters, AC magnetic contactors and motor starters, time delay logic and control devices. Lab classes give students the opportunity to hard wire, test, and troubleshoot common control circuits.

4 Credits (1 lect/pres, 3 lab, 0 other)

PREREQUISITES OR NECESSARY ENTRY SKILLS/KNOWLEDGE:

ELCO 1100 or ELCO 1110

COURSE GOALS:

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. describe hard hat safety
2. describe eye safety
3. describe NEC motors sections
4. select proper tools
5. identify symbols
6. describe electromagnetic devices
7. describe NEMA ratings
8. describe overload devices
9. select short-circuit protection
10. select circuit conductors
11. read circuit diagrams
12. draw line diagrams
13. describe manual contactor operation
14. describe manual starter operation
15. select manual starter
16. describe magnetic contactor operation
17. describe magnetic starter operation
18. select magnetic starter
19. describe basic pilot devices
20. describe timer operation
21. describe basic timer circuit operation
22. describe manual reversing starters
23. describe magnetic reversing starters
24. describe drum control switches
25. describe reversing circuits
26. wire timer circuits
27. wire pilot light circuits
28. wire manual starter circuits
29. wire magnetic starter circuits
30. wire magnetic reversing circuits
31. wire drum control circuits
32. wire basic relay circuits
33. read motor nameplate
34. describe AC/DC contactor operations
35. describe counter operation
36. wire counter circuits
37. describe sequencer operation
38. wire sequencer circuits
39. describe jogging circuits
40. wire jogging circuits
41. describe electric braking circuit
42. wire electric braking circuit
43. describe plugging circuits
44. wire plugging circuits
45. describe friction brake circuits
46. wire friction brake circuits
47. describe dynamic braking circuits
48. describe wye-delta starting circuits
49. wire wye-delta starting circuits
50. describe part-winding circuit
51. wire part-winding circuit
52. describe autotransformer starting circuit
53. wire autotransformer starting circuit
54. describe primary resistor starting circuit
55. wire primary resistor starting circuits
56. describe various motor connections
57. select control transformer
58. describe multi-speed motor circuits
59. wire two-motor sequenced operation
60. wire two-hand safety circuit
61. wire low voltage control circuit
62. describe phase reversal/phase loss protective devices
63. wire mechanical latching relays
64. describe preventive maintenance procedures
65. describe phase converter control circuit

ATTENDANCE:

Students will be required to attend a minimum of 95% to satisfactorily complete this course.

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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