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 Motors COURSE NUMBER: ELEC 1225

COURSE 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.

3 credits (1 lect/pres, 2 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. 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
12. describe DC shunt generator characteristics
13. determine DC shunt generator characteristics
14. describe DC compound generator characteristics
15. determine DC compound generator characteristics
16. describe DC series generator characteristics
17. determine DC series generator characteristics
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
53. describe repulsion motor construction
54. describe repulsion motor characteristics
55. determine repulsion motor characteristics
56. reverse repulsion motor
57. describe universal motor construction
58. determine universal motor characteristics
59. reverse universal motor
60. describe shaded pole motor characteristics
61. describe shaded pole motor construction

62. determine shaded pole motor characteristics

63. interpret AC motor nameplate data

64. describe roto-phase converter operation

65. describe static phase converter operation

ATTENDANCE:

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

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.

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