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: Applied Electrical Calculations  
COURSE NUMBER: ELEC 1235

COURSE DESCRIPTION:
This course covers the math necessary for the solution of electrical circuit problems in the industry.
2 Credits (1 lect/pres, 1 lab, 0 other)

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. perform signed number arithmetic operations
2. round-off approximate values
3. perform approximate number arithmetic operations
4. calculate signed number powers/ roots/reciprocals
5. calculate approximate number powers/ roots/reciprocals
6. identify metric prefix structures
7. convert measurement units
8. substitute given values to equations/formulas
9. convert decimal/scientific notation numbers
10. calculate (multiply/divide) scientific notation numbers
11. simplify expressions
12. combine powers expressions
13. add algebraic expressions
14. subtract algebraic expressions
15. multiply algebraic expressions
16. solve simple linear equations
17. check linear equation solutions
18. solve simple fractional equations
19. solve for unknown values in series circuits using Ohms Laws
20. solve for unknown values in series circuits
21. solve for unknown values for the control of current in series circuits
22. define voltage, current and resistance in parallel circuits
23. solve for unknown values in parallel circuits using Ohms Laws
24. solve total resistance in parallel circuits
25. solve for division of current in parallel circuits
26. define combination circuits
27. solve parallel-series combination circuits
28. solve series-parallel combination circuits
29. solve for line drop in combination circuits
30. solve voltage drop in distribution systems
31. define Kirchhoff’s First law
32. define Kirchhoff’s Second Law
33. solve series circuits using Kirchhoff’s Laws
34. solve parallel circuits using Kirchhoff’s Laws
35. define trigonometric functions of a right triangle
36. find right triangle sides/angles
37. find trigonometric function values of standard position angles
38. determine trigonometric function values of special angles
39. define Pythagorean Theorem
40. find (by calculator/ table) trigonometric function values
41. solve right triangle problems
42. solve right triangle applied problems
43. solve for unknown values in phasors diagrams
44. solve for unknown values in basic series AC circuits
45. solve for unknown values in basic parallel AC circuits
46. solve for unknown values in basic inductive circuits
47. solve for unknown values in basic capacitive circuits
48. solve for unknown values of capacitance in series circuits
49. solve for unknown values of capacitance in parallel circuits
50. solve for unknown values in RL series AC circuits
51. solve for unknown values in RL parallel AC circuits
52. solve for unknown values in RC series AC circuits
53. solve for unknown values in RC parallel AC circuits
54. solve for unknown values in RLC series AC circuits
55. solve for unknown values in RLC parallel AC circuits
56. define series and parallel resonance
57. solve for unknown values in series resonance circuits
58. solve for unknown values in parallel resonance AC circuits
59. define electrical power in DC circuits
60. solve total power in DC circuits
61. calculate size of wire needed to prevent excessive voltage drops
62. define conversion factors for electrical and mechanical power
63. solve for input and output power of electrical devices
64. solve for voltage and current using power formula
65. solve for efficiency of electrical apparatus
66. solve for unknown values of VA, watts and VARS in AC circuits
67. solve for power factor correction in AC circuits

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.

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