A. Course Description

- Credits: 4.00
- Lecture Hours/Week: 4.00
- Lab Hours/Week: 0.00
- OJT Hours/Week: 0
- Prerequisites: None
- Corequisites: None
- MnTC Goals: None

This course covers the theory and applications of transformer principles of magnetic and electrical circuits for primary and secondary connections. Understanding of polarities is examined and applied. Use of the different types and possibilities of connections will also be covered, with the needed information for choosing the loading, transformer types and sizes, and the fusing of the same. Prerequisites: ELLW1130 and concurrent enrollment in ELLW1161.

B. Course Effective Dates: 3/21/98 – Present

C. Outline of Major Content Areas

As noted on course syllabus

D. Learning Outcomes

1. apply Delta primary connections
2. apply Delta secondary connections
3. apply Wye primary connections
4. apply Wye secondary connections
5. apply angular displacement
6. apply angular displacement to connections
7. apply transformer grounding requirements
8. apply transformer safety work requirements
9. apply trouble shooting practices
10. calculate CT ratings
11. calculate VT ratings
12. calculate single phase coil currents
13. define additive coil characteristics
14. define angular displacement
15. define impedance requirements
16. define paralleled transformer coils
17. define phasing sticks
18. define series transformer coils
19. define single phase parallel requirements
20. define subtractive coil characteristics
21. define transformer action
22. define transformer bank secondaries using Wye and Delta configurations load characteristics
23. define transformer principals
24. define transformer purposes
25. describe polarity testing
26. describe primary mains
27. describe secondary mains
28. describe three phase service requirements
29. determine alternative source phasing
30. determine bank paralleling requirements
31. determine open bank capacities
32. determine power and light single phase capacities
33. determine power factor
34. determine primary line fusing
35. determine single phase installation lists
36. determine single phase installation requirements
37. determine single phase line currents
38. determine single phase metering
39. determine single phase transformer capacities
40. determine three phase meter connections
41. identify Delta power and light bank connection
42. identify Delta power bank connection
43. identify a CSP transformer
44. identify a conventional transformer
45. identify a floating neutral connection
46. identify core constructions
47. identify demand meters
48. identify distribution transformer polarities
49. identify distribution transformer ratings
50. identify dual voltage design
51. identify instrument transformer polarities
52. identify link fuses
53. identify over current protection
54. identify over voltage protection
55. identify power transformer polarities
56. identify power transformer ratings
57. identify primary CT'S
58. identify primary VT'S
59. identify primary bushing placement
60. identify secondary CT'S
61. identify secondary bushing placement
62. identify single phase Delta primary connections
63. identify single phase Wye primary connections
64. identify single phasing
65. identify single voltage transformer design
66. identify standard connections
67. identify transformer losses
68. identify voltage polarities
69. list transformer categories
70. parallel [bank] single phase units
71. use phase rotation meter
72. use volt meter for phasing secondaries

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

F. Learner Outcomes Assessment
   As noted on course syllabus

G. Special Information
   None noted