



ELECTRICAL SYSTEMS — HDTT 1218

A. Course Description

- **Credits:** 4.00
- **Lecture Hours/Week:** 2.00
- **Lab Hours/Week:** 2.00
- **OJT Hours/Week:** 0
- **Prerequisites:** None
- **Corequisites:** None
- **MnTC Goals:** None

This course covers the basic purpose and function of the various truck electrical systems, components, and instruments. Electrical theory, application, and diagnosis using typical test equipment will also be covered.
Prerequisites: None

B. Course Effective Dates: 3/22/98 – Present

C. Outline of Major Content Areas

As noted on course syllabus

D. Learning Outcomes

1. define electrical terms
2. define ohms law
3. describe a.c. charging circuits
4. describe alternator test bench operation
5. describe battery operation
6. describe battery tester operation
7. describe circuits
8. describe conductors
9. describe current
10. describe d.c. charging circuits
11. describe electrical safety
12. describe electricity
13. describe electromagnetism
14. describe heavy duty starter components
15. describe heavy duty starter operation

16. describe insulators
17. describe internal regulator functions
18. describe magnetism
19. describe on vehicle electrical tests
20. describe on-vehicle electrical testing
21. describe resistance
22. describe starter component operation
23. describe starter components
24. describe tractor wiring
25. describe trailer cord wiring
26. describe volt/ohmmeter usage
27. describe voltage
28. disassemble heavy duty alternators
29. disassemble light duty alternators
30. identify alternator types
31. identify battery types
32. identify d.c. generator components
33. identify d.c. generators
34. identify electrical diagram symbols
35. identify electrical diagrams
36. identify electrical test equipment
37. identify internal alternator components
38. identify internal voltage regulator
39. identify wire sizes
40. install cabover heavy duty starter
41. install conventional h.d. starter
42. list basic electrical failures
43. perform on vehicle alternator tests
44. perform on vehicle starter draw tests
45. reassemble light duty alternators
46. rebuild heavy duty starter
47. rebuild light duty starter
48. remove cabover heavy duty starter
49. remove conventional h.d. starter
50. repair tractor/trailer wiring
51. test heavy duty starter
52. test heavy duty starter on-vehicle
53. test light duty starter
54. test negative side voltage drop
55. test positive side voltage drop

56. test vehicle batteries
57. use alternator test bench
58. use battery charger
59. use battery load tester
60. use wiring diagrams

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

F. Learner Outcomes Assessment

As noted on course syllabus

G. Special Information

None noted