Minnesota State College Southeast

AUTO 1207: Auto Heating & Air Conditioning Theory

A. COURSE DESCRIPTION

   Credits: 2
   Lecture Hours/Week: 2
   Lab Hours/Week: *. *
   OJT Hours/Week: *. *
   Prerequisites: None
   Corequisites: None
   MnTC Goals: None

   This course covers basic heating and A/C theory, A/C safety, A/C environmental concerns, component and control identification. System service, maintenance, vacuum, and electrical circuits are discussed. Troubleshooting techniques of A/C and automotive temperature control systems are also covered.
   (Prerequisites: AUTO1105, AUTO1106, or instructor approval) (2 Credits: 2 lecture/0 lab)

B. COURSE EFFECTIVE DATES: 04/27/1998 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

   1. Air Conditioning Safety Procedures
   2. Air Conditioning Principles
   3. Environmental Laws Governing Air Conditioning
   4. Troubleshooting Techniques of A/C and Automatic Temperature Control Systems
**D. LEARNING OUTCOMES (General)**

1. Identify air conditioning safety procedures  
2. Identify technical information sources  
3. Explain heating systems operation  
4. Identify heater controls  
5. Identify coolant control valves and hose routing  
6. Identify heater electrical controls  
7. Identify heater electrical circuits  
8. Identify air flow  
9. Identify vacuum controlled components  
10. Explain vacuum heater controls  
11. Explain vacuum circuit operation  
12. Identify mode position operation  
13. Explain air conditioning principles  
14. Identify air conditioning components  
15. Define air conditioning terms  
16. Identify air conditioning controls  
17. Explain compressor control circuits  
18. Explain cooling fan operation  
19. Explain cooling fan control devices  
20. Complete mid-semester exam  
21. Explain air conditioning controlled engine idle systems  
22. Explain engine related air conditioning controls  
23. Identify air conditioning equipment  
24. Describe air conditioning component replacement procedures  
25. Identify air conditioning system discharge operation  
26. Identify air conditioning system evacuation procedure  
27. Identify recharge procedures  
28. Identify leak check operation and procedures  
29. Explain system oil check procedures  
30. Explain normal system maintenance procedures  
31. Identify system refrigerants and oils  
32. Explain evaporator pressure controls  
33. Explain system retrofit from R12 to R134A refrigerator  
34. Address environmental laws governing air conditioning  
35. Explain air conditioning certification and license  
36. Identify automatic temperature control operation  
37. Complete final

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

None

**F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus
G. SPECIAL INFORMATION

None noted