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