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