

# 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