COMMON COURSE OUTLINE: Course discipline/number/title: BU 2602: HVAC/ Refrigeration Systems Theory

A. CATALOG DESCRIPTION
   1. Credits: 4
   2. Hours/Week: 4
   3. Prerequisites (if any): BUM II courses or background in Electricity.
   4. Co-requisites (if any): None
   5. MnTC Goals (if any): NA

   This course covers principles of HVAC and air conditioning systems. Furnaces, boiler, air conditioners, heat pumps, economizers, heating & cooling decks, and zones are identified and explained. Recommended Entry Skills/Knowledge: Electrical and/or Mechanical Ability.

B. DATE LAST REVISED (use current date): April, 2004

C. OUTLINE OF MAJOR CONTENT AREAS:
   1. Demonstrate dependability.
   2. Explain the function and operation of hot water boilers.
   3. Explain the function and operation of forced air furnaces.
   4. Explain the function and operation of electric furnaces.
   5. Explain the function and operation of alternate heating systems.
   6. Explain the function and operation of air conditioning systems.
   7. Explain the function and operation of air handling.
   8. Explain the function and operation of economizer/damper construction.
   9. Explain the function and operation of economizer/damper operation.
   10. Explain the function and operation of air to air heat pumps.
   11. Explain the function and operation of geothermal heat pumps.
   12. Explain the function and operation of gas fired furnaces.
   13. Explain the function and operation of oil fired furnaces.
   14. Explain the function and operation of the total HVAC control circuit.
   15. Explain the function and operation of an Andover energy managing system.
   16. Explain the programs and reports of an Andover energy managing system.
   17. Explain the importance and consequences of indoor air quality.
   18. Explain the function and operation of temperature graphing.
   19. Explain comfort and psychrometrics.
   20. Identify hot water boiler components.
   22. Identify forced air furnace components.
   23. Identify air conditioning components.
   24. Identify heat pump components.
   25. Identify alternate heating components.
   26. Identify air handling components.

D. LEARNING OUTCOMES (GENERAL): The student will be able to:
   1. Test
   2. Analyze
   3. Repair
   4. Install
   5. Operate – Heating, Cooling, and Ventilation Systems

E. LEARNING OUTCOMES (MNTC): NA

F. METHODS FOR EVALUATION OF STUDENT LEARNING:
   1. Written Class Tests
   2. Fully Operational Lab Tests
F. METHODS FOR EVALUATION OF STUDENT LEARNING: Continued.
3. Workbook and lab assignments
4. Quizzes

G. SPECIAL INFORMATION (if any): None