A. Course Description

- **Credits:** 3.00
- **Lecture Hours/Week:** 2.00
- **Lab Hours/Week:** 1.00
- **OJT Hours/Week:** 0
- **Prerequisites:** None
- **Corequisites:** None
- **MnTC Goals:** None

Knowledge of the maintenance, servicing and charging of residential and commercial air conditioners and residential heat pumps is covered. The student will replace components, test pressures and temperatures and perform charging and refrigerant recovery procedures. The student also will troubleshoot air conditioners, heat pumps, and rooftop heating-cooling units.

B. Course Effective Dates: 8/24/15 – Present

C. Outline of Major Content Areas

As noted on course syllabus

D. Learning Outcomes

1. Demonstrate proper HVAC/R technician behavior and participate in the ride along days, as well as recognizing, defining and practicing safe work habits.
2. Trace and analyze air conditioner and heat pump schematics diagrams to help locate control and component problems and determine sequence of operation
3. Describe and perform air conditioner and heat pump installation, maintenance and service procedures. Including, but no limited to: electrical diagnostics, refrigerant charging or recovery, system evacuation, pressure and temperature measurements.
4. Analyze, compare, and list the differences between R-22, R-410A, and the respective replacement refrigerants. Include the safety concerns and different characteristics.
5. Identify and explain the function of individual components of an air conditioner and heat pump system. Include mechanical and electrical components.
6. Select and install miscellaneous controls on air conditioning and heat pump systems

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies
F. Learner Outcomes Assessment
   As noted on course syllabus

G. Special Information
   None noted