A. Course Description
   - **Credits:** 2.00
   - **Lecture Hours/Week:** 2.00
   - **Lab Hours/Week:** 0.00
   - **OJT Hours/Week:** 0
   - **Prerequisites:** None
   - **Corequisites:** None
   - **MnTC Goals:** None

   The student will study the operational principals of machine systems such as Air Conditioning, Hydraulics and Powershift Transmissions.

B. Course Effective Dates: 8/21/17 – Present

C. Outline of Major Content Areas
   - As noted on course syllabus

D. Learning Outcomes
   1. Identify the characteristics of the air conditioning electronic control system
   2. Identify the correct operation for fixed hydraulic circuits
   3. Identify the correct operation of a flow control valve
   4. Identify the correct operation of hydraulic pumps and motors
   5. Identify the principals of operation for countershaft transmissions
   6. Identify the principals of operation for planetary transmissions
   7. Study the laws concerning basic service of air conditioning systems
   8. Understand the operation of PPPC hydraulic circuits
   9. Understand the operation of electrohydraulic circuits
   10. Understand the operation of hydraulic cylinders and accumulators
   11. Understand the operation of load sensing pressure compensated hydraulic circuits
   12. Understand the operation of negative flow hydraulic circuits
   13. Understand the operation of the directional control valve
   14. Understand the theory and principals of operation for the hydrostatic systems

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

F. Learner Outcomes Assessment
As noted on course syllabus

G. **Special Information**
   None noted