A. Course Description
   - Credits: 5.00
   - Lecture Hours/Week: 1.00
   - Lab Hours/Week: 4.00
   - OJT Hours/Week: 0
   - Prerequisites: None
   - Corequisites: None
   - MnTC Goals: None

This course covers the basics of horizontal and vertical curve geometry as used in highway design before undertaking the study of more advanced surveying topics including: use of mass diagrams to track earthwork on highways, control surveying mathematics, universal coordinate systems, and boundary location. Laboratory exercises will vary between CAD drawings and outdoor exercises.

B. Course Effective Dates: 5/21/14 – Present

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

D. Learning Outcomes
   1. Appreciate and understand global positioning systems (GPS)
   2. Understand and apply mathematical methods for establishing location in non-Euclidian space
   3. Understand control surveying techniques and calculations
   4. Understand fundamentals of geographic information systems (GIS)
   5. Understand the calculations used for spiral curves
   6. Understand the geometry of horizontal and vertical curves
   7. Use CAD to prepare plan and profile drawings

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

F. Learner Outcomes Assessment
   As noted on course syllabus

G. Special Information
None noted