A. Course Description

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

Determination of soil composition and structure is the first phase of project delivery for every type of civil engineering related activity. This course covers the classification of soils through: soil exploration, basic geology, hydraulics of groundwater, weight-volume relationships, sampling procedures, stresses, strains, bearing capacity, settlement and expansion, compaction, stabilization, and an introduction to foundations and retaining walls. Soil mechanics are determined by both field and laboratory test methods. In this course, you will gain hands on experience by applying the methods that are commonly performed to determine soil mechanics. This course also familiarizes students with lab and testing procedures for testing construction materials. Topics include sieve analysis, relative density, compaction tests, Atterberg limits, and soil classification, concrete strength testing, and bituminous sampling. Prerequisites: NONE

B. Course Effective Dates: 8/22/16 – Present

C. Outline of Major Content Areas

   As noted on course syllabus

D. Learning Outcomes

1. Administer tests on soils to classify them
2. Be aware of the testing done on bituminous materials used in roadway construction
3. Develop the ability to apply problem solving skills to engineering applications of soil mechanics
4. Gain hands on experience and become familiar with laboratory testing applications of soil mechanics
5. Gain the ability to determine soil composition and structure through common engineering practices
6. Sample materials in the field on a construction site
7. Understand concrete testing
8. Understand material density
9. Understand nuclear soils testing by reading and demonstration
10. Understand the integral part testing plays in construction
11. Use the MnDOT construction manual for material specification

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

F. Learner Outcomes Assessment
   As noted on course syllabus

G. Special Information
   None noted