An introduction to civil drafting and design using surveying and engineering data to draw civil engineering plans. Topics included are legal descriptions, plan and profile drawings, topographic mapping, cross-sections, and required calculations. An introduction to a Civil specific CADD package is included.

PREREQUISITES
ETEC 152

EXPECTED STUDENT OUTCOMES IN THE COURSE
Upon completion of this course, the student will be able to:

1. Describe various employment opportunities within civil engineering.
2. Distinguish the various types of maps and drawings used in civil engineering.
3. Identify a variety of common mapping scales, symbols and lettering techniques.
4. Describe the surveying process and interpret field notes.
5. Describe the components of the U.S. Public Land Survey System.
6. Interpret and draft parcels of land from various types of legal descriptions.
7. Identify different aspects of subdivision design.
8. Construct a topographic map from surveying field data.
9. Determine stationing distances and adjustments on map center lines.
10. Use appropriate data to produce plan and profile drawings of a civil engineering project containing both horizontal and vertical curves.
11. Construct typical cross-sectional views of a roadway containing grade and slope earthwork calculations.
12. Determine cut-and-fill requirements for a given project.
13. Match utilities with corresponding drawing types.
14. Demonstrate an understanding of Geographic Information Systems (GIS) as it relates to civil engineering.
CLASS-LEVEL ASSESSMENT MEASURES
Student accomplishment of expected student outcomes will be assessed using the following measures. (Identify which measures are used to assess which outcomes.)

- Daily quizzes (1-14)
- Written exams (1-5, 7, 13)
- Daily projects (3-12, 14)
- Performance exams (6, 8, 9, 11, 12)
- Final project (3, 4, 6, 8, 10)

PROGRAM-LEVEL OUTCOMES ADDRESSED

General Education Outcomes
Specify which general education outcomes, if any, are substantially addressed by the course by completing the “Course/Program Assessment Matrix” to show the relationship between course and program outcomes and assessment measures.

Occupational Program Outcomes
Specify which occupational program outcomes, if any, are substantially addressed by the course by completing the “Course/Program Assessment Matrix” to show the relationship between course and program outcomes to assessment measures.
Individual instructors may order this outline as fits the needs of their individual courses. In addition, they may place more emphasis on some areas than on others. What is assured is that this particular list is covered in the course. Other topics may be added to a course as the instructor sees fit, and as time and interest allow. An *asterisk can be used to mark an item as optional.

I. Introduction to Civil Drafting
   A. Employment prospects
   B. Specialty areas
   C. Occupations related to civil engineering
   D. Major classes of maps
   E. Typical drawings in civil engineering

II. Map Drafting Procedures
   A. Scales
   B. Symbols
   C. Lettering
   D. Drafting media

III. Interpretation of Surveyor's Notation
    A. Types of land surveys
    B. Measuring distance
    C. Measuring angles
    D. Stationing

IV. Property Surveys and Legal Land Descriptions
    A. U.S. Public Land Survey System
    B. Metes and bounds description
    C. Lot and block description
    D. Boundary surveys

V. Plats and Subdivisions
    A. Steps in planning a subdivision
    B. Official agents in regulation
    C. Research of plat information
    D. Plot plans

VI. Topographic Mapping
    A. Types
    B. Characteristics
A. Route surveys
B. Stationing
C. Horizontal curves
D. Horizontal alignment
E. Vertical curves
F. Vertical alignment

VIII. Cross-Sections
A. Types
B. Cut and fill
C. Grade and slope
D. Superelevations

IX. Municipal Mapping
A. Types of utilities
B. Types of drawings

X. Geographic Information Systems (GIS)
A. Data formats
B. Related disciplines
C. Applications