REGULAR COURSE SYLLABUS

School of: Professional Studies

Department: Engineering Technology

CIP Code: 15.0201

Prefix & Course Number: CET 4150  Crosslisted With*: ______

Course Title: Highway Engineering and Surveying

Check All That Apply:  Required for Major: X  Required for Minor: _____  Specified Elective: _____

Required for Concentration: _____  Elective: _____  Service Course: _____

Credit Hours: 3  (3+0)

Total Contact Hours per semester (assuming 15-16 week semester):

Lecture 45  Lab _____  Internship _____  Practicum _____  Other (please specify type and hours): ______

Schedule Type(s): L  Grading Mode(s): L

Prerequisite(s): at least junior standing or permission of instructor

Corequisite(s): None

Prerequisite(s) or Corequisite(s): ______

Banner Enforced:

Prerequisite(s): ______

Corequisite(s): ______

Prerequisite(s) or Corequisite(s): ______

Catalog Course Description:

This course is a specialized course in requirements, functional characteristics, and system characteristics of highway design, incorporating surveying essentials for the civil engineering field. The course develops design methods, procedures, and analysis for pavement design, roadway alignment, and user information for freeways, city arterials, and rural roadways.

APPROVED:

[Signature]

Department Chair OR Program Director  1/21/2010

[Signature]

Dean OR Associate Dean  2/1/2010

[Signature]

Associate VP, Academic Affairs  5/4/10

*If crosslisted, attach completed Course Crosslisting Agreement Form
Prefix and Course Number: CET 4150

**Required Reading and Other Materials will be equivalent to:**

**Specific, Measurable Student Behavioral Learning Objectives:**
Upon completion of this course the student should be able to:
1. Apply modern surveying methods for land measurement and/or construction layout.
2. Analyze functional classification and system characteristics of highway design.
3. Manage design controls and criteria for calculations and drawings for highway and street construction.
4. Organize design and structural criteria for highway and street construction.

**Detailed Outline of Course Content** (Major Topics and Subtopics) or **Outline of Field Experience/Internship (experience, responsibilities and supervision):**

**I. Classification and system characteristics of highway design**
   A. Requirements
   B. Functional relationships
   C. System characteristics

**II. Surveying**
   A. Surveying equipment
   B. Survey control
   C. Survey monitoring during construction
   D. Total station instrument performance
   E. Cut and fill calculations
   F. Closing survey loops
   G. Methods of writing field book notes
   H. Basics of State Plane Coordinates and legal descriptions of property boundaries

**III. Highway and street constructions**
   A. Vehicle
   B. Driver performance
   C. Information systems
   D. Highway capacity
   E. Pedestrian considerations
   F. Horizontal and vertical alignment
   G. Drainage and lighting
   H. Traffic signals
   I. Drainage

**IV. Design and structural criteria for highway and street construction**
   A. Pavement
   B. Curbs and walkways
   C. Tunnels
   D. Freeways
      1. Grade level
      2. Elevated
   E. Intersections
      1. Grade level intersections
      2. Traffic control signals
      3. Overpasses
      4. Freeway interchanges

**Evaluation of Student Performance:**
1. Written examinations
2. Assigned homework problems
3. Formal written reports