1. *Course number and name*
   ENGR 436: Transportation Engineering

2. *Credits and contact hours*
   3 credit hours; three 50-minute lecture sessions/week, or two 1hr-15-minute lecture sessions/week, depending on semester.

3. *Instructor's or course coordinator's name*
   Instructor: Dragomir Bogdanic, Instructor

   Course coordinator: Ghassan Tarakji, Professor of Civil Engineering

4. *Text book, title, author, and year*
   None

   a. *other supplemental materials*
      A policy on geometric design of highways and streets. American Association of State Highway and Transportation Officials, Washington, D.C., 2004. (recommended reference)

5. *Specific course information*
   a. *brief description of the content of the course (catalog description)*
      Principles, theories, and practice of transportation planning and design.

   b. *prerequisites or co-requisites*
      ENGR 235: Surveying

      ENGR 430: Soil Mechanics (may be taken concurrently)

   c. *indicate whether a required, elective, or selected elective course in the program*
      Required for Civil Engineering

6. *Specific goals for the course*
   a. *specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.*
      - The student must gain an understanding of the five modes of transportation, and the significance of each of these modes in the U.S.
      - The student must gain knowledge in the geometric design of highways (sight distances, horizontal and vertical curves, lane width, shoulders, etc.)
      - The student must demonstrate familiarity with the AASHTO standards for roadway design.
      - The student must learn some of the methods for evaluating traffic demand, highway capacity, and level of service.
      - The student must learn how to perform earthwork calculations.

- The student must be able to draw and analyze mass-diagrams, and use this information to determine and analyze the amounts of cut, fill, borrow, waste, and over-haul.
- The student must learn about the tools of pavement design and pavement preservation.
- The student must learn how to draw wind-rose diagrams, and utilize this information to optimize runway orientation.
- The student must learn how to apply and use queuing theory in transportation problems.

b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

Course addresses ABET Student Outcome(s): c, g, i

7. Brief list of topics to be covered

- Introduction and background
- The U.S. transportation system
- Roadway, air, rail, pipeline, water, and urban mass transit systems
- Transportation planning
- Traffic analysis techniques
- Capacity and level of service
- Geometric Design of Highways
- Earthwork and mass diagrams
- Design of flexible and rigid pavements
- Pavement preservation
- Airport planning and design
- Wind-Rose analysis
- Queuing theory