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**  

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