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