

1. CEE 4630 (5630) – Traffic Engineering
2. Course credit hours: 3
 Contact hours per week: 3
 Credit category: Engineering Topics (Significant Design)
3. Course coordinator: Steven M. Click
4. Textbook: *Highway Capacity Manual*, Current Edition, Transportation Research Board, Washington, DC

5. Course information:

2020 Catalog description	Techniques of traffic engineering measurements, investigations, and data analysis; design, application, and operation of traffic control systems and devices.
Prerequisite(s)	CEE 3610
Course type	Selected Elective

6. Course instructional outcomes:

Course Outcome No.	Course Outcome (CO)	ABET Student Outcome
CO1	Become familiar with the Highway Capacity Manual, including its purpose and its analysis methods	1
CO2	Become familiar with traffic stream characteristics such as Volume, Flow Rate, Speed, and Density and operational characteristics such as Facility Types, Capacity, and Level of Service	1
CO3	Utilize HCM procedures to analyze uninterrupted flow facilities such as Basic Freeway Segments, Freeway Weaving Areas, Merge and Diverge Areas, and Two-lane Highways	1, 2
CO4	Utilize HCM procedures to analyze interrupted flow facilities such as at Two- and Four-way Stops, Roundabouts, Traffic Signals, and Urban Streets	1, 2
CO5	Utilize HCM procedures to analyze non-highway facilities like Pedestrian Paths, Bicycle Paths, Shared Pedestrian-Bike Paths, and Transit Routes	1, 2
CO6	Become familiar with field data collection methods for operational analysis, including speed studies, volume studies, and traffic signal studies	1, 7
CO7	Become familiar with industry-standard software packages like HCS+ and Synchro+SimTraffic	1, 7

ABET criterion 3 Student Outcomes addressed by this course:

SO No.	Student Outcome (SO)
3.1	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
3.2	an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3.7	an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

7. Course topics:

1. Introduction and Flow Concepts
2. Freeway Analyses – Basic Freeway Segments, Freeway Weaving, Ramps and Ramp Junctions
3. Two-lane Highways
4. Unsignalized Intersections – 2-way Stops, 4-way Stops, and Roundabouts
5. Signalized Intersections – Warrants, Timing, Analysis, Urban Streets, and Coordination
6. Non-Highway Facilities – Pedestrian and Bike Paths, Transit Routes
7. Industry Software – HCS+ and Synchro+SimTraffic
8. Special Topics, Professional Issues, and Reviews

Program criteria (curriculum) addressed by this course:

1. Apply knowledge of mathematics through differential equations, calculus-based physics, chemistry, and at least one additional area of basic science
2. Analyze and solve problems in at least four technical areas appropriate to civil engineering
3. Conduct experiments in at least two technical areas of civil engineering and analyze and interpret the resulting data
4. Explain the importance of professional licensure

8. Additional topics, assignments, or requirements for dual-level (4000/5000) course:
Graduate students are required to complete a series of special assignments intended to provide them with greater theoretical background and to require them to work more complex problems. They are also required to complete additional test questions.

9. Date: 07/16/2020