THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Transportation Engineering and Analysis

CIVILEN 3700

Credit Hours:
3.00 - 3.00

Course Levels:
Undergraduate (1000-5000 level)

Course Components:
Lecture

Course Description:
Introduction to mathematical analysis and design of various transportation engineering topics: scheduled services, sight distance, geometric design, freeway capacity, traffic flow and queuing, signalized intersections.

Prerequisites and Co-requisites:
Prereq: 2050 or Stat 3450, 3460, or 3470, and enrollment in CivilEn major; or permission of instructor.

Course Goals / Objectives:
- Be skilled in the mathematics, physics, and behavioral issues associated with the fundamentals of roadway design, vehicle movements, and macroscopic and queuing-based traffic analysis
- Be able to represent system components to determine travel times under various design configurations for a transit system and determine expected travel times from origin-destination flow information
- Understand the approach for design and analysis of network volume studies, uninterrupted freeway segments, and isolated fixed time traffic signals
- Be exposed to the field of transportation demand analysis
- Gain experience in using real and realistic (simulated) data to analyze and draw conclusions for various transportation applications and in communicating procedures and conclusions in written form
- Be exposed to various design parameters (e.g,, vehicle and driver eye height, vehicle accelerations, driver reaction times, maximum yellow times) and present approaches, their limitations, and potential for change in the future

Course Topics:

- Origin-destination flows and travel times
- Stopping and deceleration distances
- Stopping and passing sight distances
- Basics of vertical curves, horizontal curves, and superelevation
- Fundamentals of macroscopic traffic flows
- Traffic volume studies
- Basic freeway capacity and level of service
- D/D/1 traffic queues
- Introduction to signalized intersections
- Introduction to transportation demand modeling and forecasting

---

Designation:

Elective