IZMIR INSTITUTE OF TECHNOLOGY
CIVIL ENGINEERING DEPARTMENT

CE 454 – SYLLABUS for TRAFFIC ENGINEERING COURSE
FALL 2025

Class Meeting Time: Fridays 9:45 – 12:30

Location: CZ12

Instructors: Asst. Prof. Dr. Tolga ERCAN – Email: tolgaercan@iyte.edu.tr
Res. Asst. Fırat KESMEZ – Email: firatkesmez@iyte.edu.tr

Office Hours: Only by appointment

Description: The purpose of the course is to introduce students to the field of Traffic Engineering, which covers the different components of traffic system, traffic-stream characteristics, traffic studies, data collection, and traffic control of urban streets and highways.

Textbook: Traffic Engineering by Roess, Prassas, and McShane. Pearson. Fourth Edition.

References:
2918 Sayili Karayollari Trafik Kanunu
Karayollari Trafik Yonetmeligi
Karayolu Trafik Isaretleme Standartlari
Highway Capacity Manual 6th and 7th Editions
Highway Safety Manual, 1st Edition, 2010, (including 2016 Errata)
Manual of Uniform Traffic Control Devices (MUTCD), 2009, https://mutcd.fhwa.dot.gov/

Learning Outcome:

- Fundamentals of traffic flow theory and stream characteristics
- Evaluate transportation alternatives
- Analyze traffic conditions at intersections and roadways
- Develop signal phasing and timing plans
- Learn the basics of traffic data collection techniques and analyses

Grading Policy:

- Class Project (Group Project): %30 of the final grade
    - Data Collection from a 4-leg intersection, delay and volume analysis, SUMO Traffic Simulation Application (*more details of the project will be announced during class meetings*)
- Midterm Exam: %30 of the final grade
- Final Exam: %40 of the final grade

Date	Week	Lecture Content
3/10/2025	Week 1	Introduction to Class & Introduction of Concepts
10/10/2025	Week 2	Components of the Traffic System and Roadway
17/10/2025	Week 3	Traffic Control Devices - Traffic Stream Characteristics
24/10/2025	Week 4	Traffic Flow Theory – Statistical Applications – Traffic Data Collection
31/10/2025	Week 5	Volume - Speed, Travel Time, and Delay Studies – Fundamentals & Concepts of Uninterrupted Flow Facilities
7/11/2025	Week 6	Level of Service for Basic Freeway Segments & Multilane Highways
14/11/2025	Week 7	Level of Service for Multilane Highways Level of Service for Two-Lane Highways
21/11/2025	**Week 8**	**Midterm Exam Review**
28/11/2025	Week 9	**Mid-Term Exam** 10:00 – 12:000
5/12/2025	Week 10	**SUMO Traffic Simulation Education**
12/12/2025	Week 11	Level of Service for Two-Lane Highways
19/12/2025	**Week 12**	**Field Trip to İZUM**
26/12/2025	Week 13	Elements of Intersection Design and Layout – Fundamentals of Signalized Intersection Design
2/1/2026	Week 14	Fundamentals of Signal Timing and Design
9/1/2026	Week 15	**Student Project Presentations** Intelligent Transportation Systems
12/1/2026 – 23/1/2026	**Final Exams – TBD**	