



**Course Name:**

Traffic Flow Theory

<b>Course Number:</b> 20-552	<b>Credit:</b> 3
<b>Program:</b> Graduate	<b>Course Type:</b> Technical Selective
<b>Prerequisite:</b> -	<b>Corequisite:</b> -

**Course Description (Objectives):**

The goal of this course is to present the principles of traffic flow and its modeling, with an emphasis on microscopic and macroscopic differences, as well as analyzing the relationships between speed, volume, density, shock waves, and queuing phenomena.

**Course Content (outline):**

- Chapter 1: Traffic Flow Fundamentals
- Chapter 2: Characteristics of Traffic Flow
- Chapter 3: Statistical Distribution of Traffic Flow Parameters
- Chapter 4: Traffic Flow Models
- Chapter 5: Car-Following Models
- Chapter 6: Continuous Flow Models
- Chapter 7: Shock Wave Analysis
- Chapter 8: Queue Analysis
- Chapter 9: Traffic Flow Models at Intersections
- Chapter 10: Traffic Simulation
- Chapter 11: Monitoring and Controlling Flow in Networks

**References:**

- FHWA's Traffic Flow Theory a State-of-the-Art Report, 2001
- Transportation Research Board, Monograph on Traffic Flow Theory, 1975
- Fundamentals of Transportation & traffic Operations, C. F. Daganzo, 1997
- May, A. D. Traffic Flow Fundamentals, 1990. Finite Element Analysis By: P. Seshu