CE I2400
ANALYTICAL TECHNIQUES IN TRANSPORTATION

The City College of New York

Department of Civil Engineering

Fall 2020

Mondays. 5:00pm – 7:30pm
City College Campus

What this course is all about?

This course deals with transportation analysis techniques. The rigorous application of various analytical techniques is required to understand and model our transportation systems as they are essential to transportation careers in traffic and transit operations, planning, and logistics. Nowadays, unprecedented amounts of data are constantly being generated in the form of transaction histories, social media feeds, data pricing, sensors in fleet and infrastructure, customer feedback, and the likes. To make sense of this vast amount of data is not an easy task. This course will introduce students to mathematical methods and models to address logistics and urban transportation problems such as optimizing operations, reporting and analyzing customer behavior, and building advanced routing solutions. This course will prepare students to:

- Construct advanced mathematical methods and models to address logistics and urban transportation problems.
- Perform statistical analysis of transportation data sources such as sampling techniques, sample error and bias, survey instrument design.
- Construct confidence interval estimates derived from random samples and population.
- Understand the concept of probability theory basics, random variables and probability distributions.
- Use the linear regression and multiple regression to build empirical model and to make a prediction of a future observation.
- Understand the standards in writing out the mathematical formulation for an optimization problem.
- Formulate a linear programming problem and solve a transportation problem to address logistics and urban transportation problems.

Who should sign up?

This course is designed for graduate students in transportation engineering, sustainability in the urban environment, urban planning, and other fields with an interest in transportation systems and their impacts on society.

What will I do?

Students will participate in interactive lectures and discussions aimed to stimulate independent thinking. Through in-class and take-home assignments, students will learn how to formulate word transportation problems into mathematical models and solve them.

About the instructor

Dr. Camille Kamga is an Associate Professor in the Department of Civil Engineering. His research interests include: intelligent transportation system; modeling and traffic simulation; analysis of very large transportation networks; use of real-time information for travel; transportation modeling using mobile sensors; transportation planning and policy, transportation operations; sustainability and environment; and transportation safety. Dr. Kamga is leading the University Transportation Research Center (UTRC) in innovative research, education, and technology transfer programs; addressing issues of urban mobility and sustainability; as well as concepts and technologies related to Big Data applications to transportation and traffic engineering.

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