



Invited Lecture

Signal control strategies for improved person mobility and air quality in multimodal transportation systems

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Railways Amphitheater, Materials Resistance Building, NTUA Campus

A big challenge that cities are facing is that they have to improve air quality while at the same time maintain efficient and reliable traffic operations for travelers using all modes of transportation. Increasing capacity by building new infrastructure is not always feasible due to financial or spatial limitations. Traffic management strategies that can be implemented with existing infrastructure are a promising solution to addressing both mobility and air quality concerns. Signal systems that are widely available in urban areas can be utilized to achieve more efficient traffic operations for all travelers and reduce vehicle pollutant emissions. This presentation will focus on the development and evaluation of two real-time signal control systems, one that minimizes total person delay and a second one that minimizes total emissions for both cars and buses. For the evaluation of these systems, data from the intersection of Mesogion and Katechaki Avenues located in Athens, Greece are used. The evaluation is performed through deterministic arrival tests under the assumption of perfect information of vehicle arrival demand and times as well as through stochastic arrival tests in a microsimulation environment.



Dr. Eleni Christofa is Assistant Professor of Civil and Environmental Engineering at UMass Amherst. Her research interests focus primarily on traffic operations and signal control, intelligent transportation systems, and public transportation. Her work has mostly focused on the development of sustainable management strategies for urban multimodal transportation systems with the use of innovative technologies. While at UMass, she has taught courses in Traffic Flow Theory and Simulation, Public Transportation Systems, and Transportation Sustainability. Dr. Christofa is the author and coauthor of multiple technical papers in scientific journals and conference proceedings. She is a reviewer for several journals and conferences and serves as the paper review coordinator for the TRB Traffic Signal Systems Committee. Dr. Christofa joined UMass in September 2012 after receiving her PhD and Masters in Civil and Environmental Engineering from the University of California, Berkeley. She also has a Diploma in Civil Engineering from the National Technical University of Athens, Greece.