METADATA

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Abstract

The book covers the principles of traffic engineering as taught at the end of the undergraduate cycle, it also includes concepts that can support undergraduate students. Specifically, it addresses the basic principles of traffic engineering including basic traffic quantities, data collection methods and analysis. First of all, basic traffic quantities and their relationships are described, comprising elements of the traffic theory. Dedicated tools for traffic data collection are presented, together with their advantages and disadvantages. In addition, the spatial and temporal dimensions of traffic flow are also discussed. The book also presents different measures of operational performance of road network elements, while at the same time it presents methodologies for estimating operational performance in various road network segments and sections (motorways, rural roads, signal-controlled junctions, priority junctions and roundabouts, as well as interchange elements, such as entry/exit ramps and weaving sections). The methodology for designing traffic signal control programs is also presented. Additionally, the book also covers the topic of traffic simulation, which is recognized today as an important complement to traditional methods of estimating traffic studies, as it offers solutions for networks/elements of networks not covered by other methods. Microscopic, mesoscopic and macroscopic simulation and discussed. Principles of network simulation are also presented, as well as demand simulation, along with examples of dedicated software. Emphasis is also placed on basic concepts such as calibration and verification of results.