

Queueing Theory and Teletraffic Engineering

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Queueing Theory is a fundamental tool for performance evaluation in many Engineering areas, and in particular in the fields of Computer and Telecommunications Systems. The aim of the course is to provide a self-contained treatment of some basic and advanced material in these two fields, in order to highlight analytical modelling tools that can be used for both purposes of performance evaluation and control.

The course will be organized in two parts: Part I will provide the basics on Markov processes and Markovian queues, along with M/G/1 models and applications, followed by a short account on Jackson Networks. Part II will deal with more advanced material, including $M^X/G/1$ models, vacation and setup times, flow-level models and the Stochastic Knapsack, asymptotic packet-level approximations, and applications to Traffic Engineering.

Supporting material: F. Davoli, *Lecture Notes for the Courses of Telecommunication Networks – Queueing Theory and Teletraffic*