

Class 9

A Stochastic Markovian Service Station in Steady State - Part I 4CallCenters - A Personal Tool for Workforce Management (WFM)

Modelling and Analyzing a Markovian Service Station

- On Simulation

- Analytical models:

“Exact” analysis of Approximate models

(vs. “Approximate” analysis of Exact models – to be taught later.)

- Mathematical framework: Ergodic (Steady-State) Markov Jump Processes (MJP).

Background reading: Hall Chapter 5;

Handout in Class (“Review: MJP”), and more.

- A Birth & Death Model: stability, MOP’s;
Some concrete models: Erlang B (Loss), Erlang C (Delay), self-service.
- Preparing the ground for **Erlang A** = $M/M/n + M$: The Fundamental Markovian Model of a Service Station (Call Center), namely Poisson arrivals, Exponential services and Exponential (Im)Patience.
- Introduction to Staffing.

Recitation 9:

- Part 1. Lognormal Service-Times and QQ-Plots.
- Part 2. Hazard Rate Function.

Recitation 10:

- Part 1. Patience Estimation.
- Part 2. Phase-type Distribution.