

Performance Evaluation of Computer Systems

Dr. Ahmad Khonsari

Feb

2026

Teaching Staff

- **Instructor:**

Ahmad Khonsari

- **Chief Teaching assistants:**

Zeynab Kabiri (z.kabiri@ut.ac.ir)

- **Teaching assistants:**

Niaz Ghafarian (niaz.ghafarian@ut.ac.ir)

Zahra Aynedast (zahra.aynedast@ut.ac.ir)

Mohammad Tavassolinia (m.tavassoli97@ut.ac.ir)

Course Goals

- Measurement techniques and tools
- Review the principles of probability
 - Review probability theory
 - Laplace and Z transform
 - Bounds (Union Bound,...)
 - Inequalities: Chebyshev, Chernoff, ...
 - Limit law
 - Sequence of random variables
 - Discrete time Markov Chain
 - Continuous time Markov Chain
 - Poisson process, PASTA
- Queuing Theory
 - Little law
 - M/M/1 Queueing system
 - M/G/1 Queueing systems
- Learn the simulation basics and techniques

Course Format

- **Self-read lectures**
- **4 homework assignments**
 - All Exercises must be typed with LaTeX
 - Upload tex files + PDF version
 - Pictures must be drawn with Visio
- **4 computer assignments**
 - Short reports are required, written via Latex
 - Python, Java, Matlab, C, R are accepted
 - Use a **Jupyter Notebook** (Microsoft Azure Notebook) to show your python, R codes and also your reports.
- **Final Project**

Grading Plan

- 20% for Home work Assignments
- 30% for Computer Assignments and Project
- 50% exams and quizzes

Submission Rules

- All assignments (class/computer assignment & final project) have a hard deadline.
- with 36 extra hours for submission , but you may lose up to 15% of the homework point based on your uploading date.
- You may get extra credit doing extra work on your final project or computer assignments
- Copying is not acceptable. Any detected fraud leads to a ZERO point.

Course Material

- **Textbook:**
- D.P. Bertsekas and J. N. Tsitsiklis, " Introduction to Probability, 2nd Edition", Athena Scientific; 2008.
- **Further reading**
 - [Mor Harchol-Balter](#), " Performance Modeling and Design of Computer Systems: Queueing Theory in Action ", Cambridge University Press, 2013.
 - System Modeling and Analysis: Foundations of System Performance Evaluation, by Kobayashi.
 - The Art of Computer Systems Performance Analysis: Techniques for Experimental Design, Measurement, Simulation, and Modeling, by Jain

