

Many systems evolve over time with an inherent amount of randomness. The price of commodity, the items sold by a store or the tasks waiting to be processed by a processor are not exactly predictable, but rather will exhibit an inherent variation that should be taken into account. The purpose of this course is to develop and analyse probability models that capture the salient features of the system under study to predict the short and long term effects that this randomness will have on the systems under consideration. The study of probability models for stochastic processes involves a broad range of mathematical and computational tools.

**Textbook:** *Introduction to Probability Models*, 8th Edition  
by S. M. Ross (Academic Press)

**Prerequisite:** STAT-251\* or 356\*.

**Instructor:** A. Savu

<b>Evaluation:</b>	Final examination	40%
	Midterm test	20%
	Assignments	40%

**Outline:**

- Conditional Probability and Conditional Expectation
- Markov Chains
- The Poisson Process
- Markov Processes in continuous time
- Queueing Theory
- Brownian Motion and Stationary Processes, if time permits