COURSE DETAIL

APPLIED STOCHASTIC PROCESSES

Country
Italy

Host Institution
University of Commerce Luigi Bocconi

Program(s)
Bocconi University

UCEAP Course Level
Upper Division

UCEAP Subject Area(s)
Statistics

UCEAP Course Number
120

UCEAP Course Suffix

UCEAP Official Title
APPLIED STOCHASTIC PROCESSES

UCEAP Transcript Title
APLD STCHASTIC PRCS

UCEAP Quarter Units
6.00

UCEAP Semester Units
4.00

Course Description

The course provides a basic understanding of the probabilistic models and techniques underlying the most widely used classes of stochastic processes. The main focus is on modeling aspects, which are completed by a description of some popular algorithms for simulation. Mathematical concepts are integrated with real-world applications and examples and illustrated through simulations. At the end of the course, students will have bridged the gap between their elementary probability skills and the knowledge required to understand and use basic models based on stochastic processes. The course discusses topics including conditional probabilities and conditional expectations; introduction to stochastic processes and Markov chains; discrete-time Markov chains: Chapman-Kolmogorov equation, Classification of states, Limiting properties, and Applications (e.g. stochastic models, sequential testing, and website ranking); introduction to Stochastic Simulation, Simulation techniques, and Monte Carlo methods; Markov Chain Monte Carlo algorithms, and Computational applications; counting processes and the Poisson process, Continuous-time stochastic processes, and examples and modeling applications. The course requires students to have solid knowledge of calculus and basic probability theory (e.g. probability distributions and random variables) as a prerequisite. Some knowledge of basic programming tools (such as R) is also required.

Language(s) of Instruction
English

Host Institution Course Number
30515

Host Institution Course Title
APPLIED STOCHASTIC PROCESSES

Host Institution Course Details
https://didattica.unibocconi.it/ts/tsn_anteprima.php?cod_ins=30515&anno=2023&Id…

Host Institution Campus Bocconi University
Host Institution Faculty
Host Institution Degree
Host Institution Department Decision Sciences
Course Last Reviewed 2022-2023

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