DS 290 Aug 3:0

Modelling and Simulation

Instructor

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Department: Computational and Data Sciences

Course Time: Tue, Thu 3:30 - 5:00 pm

Lecture venue: CDS 202

Detailed Course Page: http://cds.iisc.ac.in/courses/descriptions/

Announcements

Brief description of the course

This course introduces stochastic simulation algorithms and their analysis for both discrete event and continuous time systems. It introduces an MTech or a beginning doctoral student to ffundamentals of statistical analysis and numerical methods of stochastic differential equations.

Prerequisites

Linear Algebra, Numerical Methods

Syllabus

Statistical description of data, data-fitting methods, regression analysis, analysis of variance, goodness of fit. Probability and random processes, discrete and continuous distributions, Central Limit theorem, measure of randomness, Monte Carlo methods. Stochastic Processes and Markov Chains, Time Series Models. Modelling and simulation concepts,Discrete-event simulation: Event scheduling/Time advance algorithms verification and validation of simulation models. Continuous Simulation: Modelling with and Simulation of Stochastic Differential Equations

Course outcomes

An algorithmic view of stochastic simulation and analysis of convergences, confidence intervals, modeling of input, statistical interpretation of outputs etc.

Grading policy

2 midterms, @ 25 marks each. Finals - 50 marks.

Assignments

x

Resources

x