Ph.D. Program in Computer Science

CSc 86005  Statistical Models in Computer Science
45 hours, 3 credits

Description: The purpose of this course is to provide a background for computer science students who intend to do research that requires using statistical techniques for analyzing multivariate data sets, who may be required to do searching on a multivariate space with an objective function, or who are interested in modeling computer systems including using simulation.

Stochastic Processes
  - Review of Probability and Random Variables
  - Markovian Processes
  - Networks of Queues

Statistics
  - Hypothesis testing of Multivariate Data
  - Canonical Data Representation

Optimization and Linear Algebra
  - Convex Sets, Set Covering
  - Search Methods

Prerequisite: Passing the Program’s First Exam requirement or permission of the instructor

Rationale: This course is meant as a “second year” course for a student who wishes to specialize in our area of Scientific Computing and Modeling of Systems. The material of this course is useful background for research in several topic areas in this specialty of our program. It was proposed when it was found that other courses had material that overlapped the ones proposed here. Having this course allows instructors in other courses to assume students have this background knowledge.

Grading Mode: Letter grades

Type of Course: Lecture

Is the Course Repeatable: No

Projected Enrollment: 12-15 students

Is the course a requirement or an elective: elective