TCN-5421 Theory of Networked Computation

Catalog Description
Fundamental mathematical models of general and networked computation: finite state automata, regular languages, decidability; stochastic processes, Markov chains, queueing theory. (3 credits)

Prerequisites
SCIS Graduate Standing

Type
Elective for MSTN, Core option for PhD

Course Objectives
This course provides an in-depth understanding of the theoretical foundations for networked computation. In addition to various models of general computation, such as finite state automata and decidability theory, students will also learn mathematical background for stochastic processes and queueing models.

Topics
Introduction
Finite State Automata
Regular Languages
Decidability
Random Variables
Stochastic Processes
Markov Chains
Queueing Analysis of Computer Systems

Textbook
Michael Sipser, Introduction to the Theory of Computation (3rd Edition), Course Technology, 2012.

D. Gross, J. Shortle, J. Thompson, and C. Harris, Fundamentals of Queueing Theory (4th Edition), Wiley, 2009.

Last Update
Deng Pan and Shaolei Ren 11/6/2012