Syllabus  
CSC 754 System Simulation Topics 
Spring 2015  

Time and Place  Tuesday, 8:20-10:00 p.m., 1N 111  
Instructor:  Dr. Feng Gu (Feng.Gu@csi.cuny.edu)  
Office Hours  Tuesday 4:00 P.M. - 5:00 P.M. 
Tuesday and Thursday 1:00 P.M. - 2:00 P.M. 
or by appointment  
2. Users-guide for using DEVSJAVA modeling and simulation software tool (available online)  
3. DEVSJAVA modeling and simulation software including source code  

Course Description  This course will introduce the theories and applications of computer modeling and simulation. It covers basic concepts of systems modeling, in-depth discussions of modeling elements, simulation protocols, and their relationships. The modeling and simulation techniques will be illustrated by examples in DEVSJAVA, which is a Java implementation of the systematic and generic DEVS (Discrete Event System Specification) approach to modeling and simulation. Possible application domains of this course include communication, manufacturing, social/biological systems, and business. Selected advanced concepts and practices will also be presented.  

Learning Goals  Students are expected to  
  - Understand concepts of computer modeling and simulation  
  - Apply concepts of modeling and simulation to a wide variety of technological, natural, and social systems  
  - Learn a set of computer-based tools for constructing, simulating and analyzing dynamic models of complex systems  
  - Prepare students to conduct research in modeling and simulation  

Topics  
  - Systems concept, basics of modeling and simulation  
  - Discrete time model and discrete event model  
  - Discrete event modeling and simulation as exemplified by DEVS  
  - Agent-based modeling and simulation
Cellular space modeling and simulation
Complex systems science
System dynamics models
Data assimilation
Simulation performance, parallel and distributed simulation

Grading
This course will include three programming assignments (20% each) and a final project (40%).

Last Date for Withdrawal
April 16, 2015 (double check with the registrar's office)

Others
Disruptive classroom behavior will not be tolerated. Cell phones must be turned off during the class time. Class participation is strongly encouraged. Please refer to the policies of CSI on academic integrity, plagiarism, and cheating.

Disclaimer
This syllabus represents a general plan for the course and deviations from this plan may be necessary during the duration of the course.
Term Project

The term project can be done individually or in group (two members). Each individual/group should choose a topic for your term project. You should email Dr. Gu (Feng.Gu@csi.cuny.edu) a brief description of your project topic, the scope of your project, and the M&S goals of your project. If your topic has been approved, you should have received a confirmation email from Dr. Gu.

The term project includes a presentation (including live demonstration) in the class and a term project report. Both the presentation and project report will be graded, each accounting for 50% of the final grade of the term project. Below is a general guideline for what to include in your PPT presentation: background (problem description), M&S goals, the developed model (using diagrams and pseudo code if needed), experiment setup, experiment results and preliminary analysis (e.g., outcomes, numerical measurements and analysis), and conclusion/future work.

The project report should include a cover page, background/problem description, M&S goals, the developed models (including diagrams and some pseudo code), experiment setup, experiment results (including snapshots of the simulation, and analysis of the results), a conclusion/future work section, and a reference page. The project report will be 10-12 pages (Times New Roman, 12 font size, single space, and single column) excluding the cover page and the reference page.

The final due date for the term project is May 12, 2015. You should email your project report (doc or pdf), PPT slides, and the developed model to Dr. Gu (Feng.Gu@csi.cuny.edu).