

CAP300: Intro to Simulation

(for Economics/Management Science students)

During the fourteen weeks of the course, we cover:

class	section	topic
1	1.1,1.2	Elements of Simulation Modelling
2	1.3,1.4	Advantages/disadvantages/phases
3	3.3	Hand example of an M/M/1 queue
4	4.1	Queueing examples in Sandie/GPSS
5	4.2,App.C	First Blocks in GPSS language
6	4.3,App.C	Additional Blocks in GPSS
7	4.4,2.3	Wait line models in GPSS
8	4.5,3.2	Model Theory and GPSS application
9	4.5	Flow interruption in GPSS
10	2.1,4.6	Distribution Generation in GPSS
11	4.7	Wait line systems with larger capacity
13	Append. D	Pseudo Random Number Generators.
14	4.6	Generation of (Normal) Random Variates.
15	2.2	Inventory; performance measures and theory.
16	3.1	Spread Sheet and GPSS Inventory Simulation.
17	Review	Preparation/catch up for Midterm/project.
18	Midterm	Midterm Exam: Programming/modelling in GPSS.

==== 9th week: test and project delivery/review =====

19	5.1	Review of midterm/projects. Data collection.
20	5.2,5.3	Goodness-of-Fit. Data Collection Practicum.
21	6.1	Terminating Simulations: replication method.
22	Practicum	Running model/obtaining c.i. of given width.
23	6.2	Steady State Simulations. Problems/solutions.
24	6.3	Comparing w/Given Standard. Batch Means mthd.
25	6.4,6.5	Validation and Verification of simulations.
26	7.1	Comparing two alternatives in GPSS: t-test.
27	7.2	Comparing several alternatives in GPSS:ANOVA.
28	7.2	Project reviews and GPSS modelling examples.
29	Review	Case Studies of systems analysis with GPSS.

Material Covered in the first half of the course: Programming in GPSS.

We start with an introduction to systems analysis and wait lines.

Sections: 1.1 through 1.4, 2.1, 2.3, 3.2, 3.3, 4.1 through 4.8.

In addition, modelling of inventories: Sections 2.2, 3.1 and 4.8.

Material Covered in the Second half of the course: working with a model. We study terminating and steady state simulations and their problems. We study two methods of simulation output: batch means and replication. We discuss ways to overcome the initial Bias, non normality and auto correlation among batches. We obtain confidence intervals and validate the simulation model with real data. Then we work with the model (output analysis) to compare strategies and select the "best" ones.

=====
+ Jorge Luis Romeu + ROMEU@CORTLAND.EDU +
+ Associate Professor + Department of Mathematics +
+ SUNY-Cortland, NY 13045 + Spring of 1995 +
=====