

Syllabus

Last updated: January 7, 2013

Course description This course investigates the use of simulation as a decision-making tool, including explorations into what simulation is, how to use it, and when its use is appropriate. These topics will be studied using general-purpose spreadsheet software (e.g. Microsoft Excel) as well as specialized simulation software (e.g. ProModel).

Textbook T. J. Sanders, *Simulation Notes*, United States Naval Academy, 2013. Available from the course website.

Software Microsoft Excel (2010 for Windows, 2011 for Mac OS X)
ProModel (2010 student version, available from <http://www.promodel.com/academic>)

Schedule

This schedule is subject to change.

Date	Topic	Reading
Introduction to simulation		
1/8	Overview, an example	1.1
1/9	Simulation using Excel	1.2
1/11	Simulation using Excel, cont.	1.2
1/14	Performance measures	1.3
1/16	Standard error	1.4
1/18	Replications using Excel	1.5
1/21	Holiday: Martin Luther King Jr. Day	
Generating randomness		
1/23	Random number generation	2.1
1/25	Chi-square test for uniformity	2.2
1/28	Kolmogorov-Smirnov test for uniformity	2.3
1/30	Testing for independence	2.4
2/1	Inverse transform method	3.1
2/4	Inverse transform method, using Excel's functions	3.1, 3.2
2/6	Chi-square test for goodness-of-fit	3.3
2/8	Using random numbers to estimate area	3.4
2/11	Review	
2/13	Exam 1	

Date	Topic	Reading
Simulation using ProModel		
2/15	Introduction to ProModel	4.1-4.6
2/18	Holiday: Washington's Birthday	
2/20	Introduction to ProModel, cont.	4.1-4.6
2/22	Global variables	4.7
2/25	Attributes and user-defined distributions	5.1-5.4
2/27	Alternate routing, routing by chance	6.1-6.2
3/1	Percentage routing, steady state	6.3-6.4
3/4	Trace and multiple runs	7.1-7.2
3/6	Model parameters and scenarios	8.1-8.2
3/8	Explorations	
3/11	Holiday: Spring Break	
3/13	Holiday: Spring Break	
3/15	Holiday: Spring Break	
3/18	Split and combine statements	9.1-9.2
3/20	Path networks and resources	10.1-10.3
3/22	Input data analysis	11.1-11.5
3/25	Input data analysis, cont.	11.1-11.5
3/27	Input data analysis, cont.	11.1-11.5
3/29	Verification and validation	12.1-12.4
4/1	Output data analysis	13.1
4/3	Review	
4/5	Exam 2	
Putting it all together		
4/8	Putting it all together / project model walk-throughs	
4/10	Putting it all together / project model walk-throughs	
4/12	Putting it all together / project model walk-throughs	
4/15	Review / project clinics	
4/17	Review / project clinics	
4/19	Review / project clinics	
4/22	Project presentations	
4/24	Project presentations	
4/26	Project presentations	
4/29	Wrap-up	