

The University of Western Ontario
London, Ontario, Canada

Applied Mathematics 3911G / AM 9570B (*formerly 310g / 570b*)
An Introduction to Mathematical Modelling and Simulation.

Course Outline Winter 2009

Instructor:

Mikko Karttunen
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Text:

“An Introduction to Computer Simulation Methods”, 3rd Edition, H. Gould, J. Tobochnik and W. Christian, Addison-Wesley Publishers, 1996, ISBN 0-8053-7758-1. (2nd edition is also acceptable.)
Other books and papers may be introduced as topics arise.

Evaluation:

6 assignments	-> 40%
Major Project Write-up	-> 30%
3 quizzes worth 10% each	-> 30%

Graduate students taking 9570b should talk to the instructor to arrange additional course notes and different assignments.

Classes: Thursday 2:30 – 5:30 pm, VAC 100

Office hours: Monday, Wednesday 9:30pm-10:30pm

Some topics/methods we **may** cover:

Random Number Generators
Random Walks (RW)
Oscillatory Systems
Normal Modes and Waves
Bifurcation and Bifurcation Control
Complex Systems: Hopfield Model and Neural Networks
Monte Carlo Simulation: Ising Model
Chaos Control and chaos synchronization, Fractal Dimension
Particle simulations

Note: This course involves programming. Prior knowledge of some programming language is essential (e.g. C/C++, Fortran, Java, Python, Pascal,...)