

Quantifying Ideas by Computation & Simulation

Mathematics is a natural language for quantifying and codifying thoughts and ideas. It is also a language of precision and logic. Just as pictures or words can be used to describe objects or actions, so too can mathematical models be used as a basis for an idealized or abstract understanding. This course will explore the concepts of mathematical models by utilizing the numerical and algorithmic nature of computers.

Lectures and labs will be based upon a *case-study* approach of various themes in mathematical modelling. Among the types of models to be presented are: dynamical systems, random processes and statistical data sets. The rudiments of computation and simulation and graphical presentation will be developed through the use of the Matlab and Maple computing environments.

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- Professor:** David Muraki, office K10538, phone 604.291.4814
- Lectures:** monday/wednesday 1:30-3:00pm in AQ5018
- Labs:** tuesday sessions in PC lab AQ3148B
- Office Hours:** wednesday 3:45-6:00pm
- TAs:** Leslie Fairbairn
Keshav Mukunda
- Textbook:** *A Course in Mathematical Modeling*
Mooney/Swift, MAA (1999)
- Webpage:** visit www.math.sfu.ca/~muraki & follow class link
updated weekly: assignments, computing demos & announcements
link to online notes from main library
- E-Mail:** channel for class communications
webct-based e-mail: class e-mail & discussion group
muraki@fraser.sfu.ca: private class-related e-mail correspondence
muraki@math.sfu.ca: urgent correspondence only please
- Computing:** Maple & Matlab are the course computing environments
lecture demos & lab scripts will be posted on class webpage
Maple & Matlab are accessible from the Assignment Lab in AQ3144
- Responsibilities:** complete lab notebook
weekly written reports, due at start of Monday lecture ($\approx 40\%$)
corrected reports assembled into a complete portfolio ($\approx 10\%$)
midterm ($\approx 20\%$, late-february) & final exam ($\approx 30\%$, 12 April)