

# **SYSC 512 Quantitative Methods of Systems Science**

**Fall 2010**

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**MW 18:40-20:30**

**Harder House, Room 104**

This class presents a unified introduction to quantitative concepts for all students of Systems Science. It will be offered in a dual track format, allowing students to self select the type of assignments to be completed based on their mathematical background. The theories of dynamic systems, stochastic processes, and optimization will be surveyed in the context of modeling, control and classification problems. Students will gain perspective on issues such as discrete versus continuous systems, types of system representations and linear versus non-linear systems. Topics will include concepts such as controllability, observability, system response, random variables and techniques for gradient and nongradient optimization.