

TOPICS IN MODELING

MATH/CSCI 4760/8766

Course Description:

Selection of such topics as formulation and analysis of various models involving Markov chains, Markov processes (including birth and death processes), queues, cellular automata, difference and differential equations, chaotic systems, and fractal geometries. **3 credits**

Prerequisites:

MATH 2350 and 4740/8746

Overview of Content and Purpose of the Course:

The student should be able to develop and analyze simple mathematical models arising in the physical, biological, and social sciences.

Major Topics:

1. Markov Chains
2. Reliability Theory
3. Queuing Systems
4. Difference and Differential Equations
5. Chaotic Dynamical Systems
6. Fractal Geometry

Methods:

The course will be presented by lecture, class discussion and questions. To receive graduate credit for this course, a student must do work not required of undergraduates. To meet this requirement the graduate students will be assigned more homework and/or computer projects than the undergraduate students.

Textbook:

Varies depending on the topic.