Lecture: Mo, We, Fr 12:20 – 1:10, Vincent Hall 20

Lecturer: Matthias Maier
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Prerequisites: Grade of at least C- in Math 2243, 2373 or 2573.

Overview: The course is divided into three parts, optimization models, dynamic models and probability models. In detail, we will cover the following topics. Optimization models: one variable and multivariable optimization, sensitivity and robustness, Lagrange multipliers, computational methods for optimization, Newton's method, linear programming. Dynamical models: steady state analysis, continuous and discrete time dynamical systems, stability analysis, phase portraits, simulation of dynamical models, the Euler method, instability and chaotic behavior. Probability models: discrete and continuous probability models, diffusion, Markov chains and processes, time series, Monte Carlo simulation.

Course assessment:
- There will be two midterm exams (in lecture), to be held on Friday February 19, Friday April 1.
- The final exam is scheduled for Wednesday May 11, 1:30pm – 3:30pm, room TBA.
- There will be five homework projects due at the beginning of class on Friday Feb. 12, Mar. 4, Mar. 25, Apr. 15, and May 6.

Exams: One sheet of handwritten notes (letter page, front and back) can be brought to each exam. Calculators may be needed. Exam absences, due to recognized University-related activities, religious holidays, verifiable illness, and family/medical emergencies will be dealt with on an individual basis. Students must make arrangements in advance (the sooner the better) if they will miss an exam (except for emergencies that prevent prior arrangements).

Grading: The final grade will be determined from the following weightings (whichever is favorable):
- 30% homework, 20% Midterm I, 20% Midterm II, 30% Final,
- 30% homework, 20% Best Midterm, 50% Final.

Other policies: A link to other general policy statements—including statements about equal opportunity, disability accommodations, and mental health resources—appears on the course website above.