3450:631 Calculus of Variations  
Course Syllabus, Spring 2009

Instructor: Truyen Nguyen  
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Class Room: Olin Hall 119B  
Meeting Times: MWF 12:05PM-12:55PM

Textbook: Calculus of Variations, by I. M. Gelfand and S. V. Fomin  
Supplementary Material: Chapter 3 of the text Applied Mathematics by J. David Logan

Course Description: The aim of this course is to present the basic elements of the calculus of variations. The approach is oriented towards the differential equation aspects. We will focus on variational problems that involve one independent variable. The fixed endpoint problem and problems with constraints will be discussed in detail. Topics will also include Euler-Lagrange equation, the first and second variations, necessary and sufficient conditions for extrema, the principle of least action, Hamilton's principle, isoperimetric problems and Noether's theorem.

Homework: I will assign homework problems every two weeks. You will turn these in and I will grade them. I strongly encourage people to collaborate on homework. However, each student must write up his or her own solutions.

Grades: Grading will be based on homework assignments and a final project. Your final score will be scaled to 100% and calculated according to the following rule: homework will count for 75% of the final score, and the final project for 25%. I will assign letter grades using the standard cutoffs: 90 − 100% of the total possible points is an A, 80 − 89% is a B, etc. Pluses and minuses will be added at my discretion.

Late Homework Policy: I may occasionally accept late homework. However, people who consistently hand in homework late will be penalized.

Other Comments: I will follow the university withdrawal policy, i.e., I will sign withdrawal slips up until Friday, April 10th.