

University of Massachusetts Amherst  
College of Engineering  
Department of Electrical and Computer Engineering  
COURSE OUTLINE AND SYLLABUS

<http://tennis.ecs.umass.edu/ece634-Fall06>

- CourseName: ECE634, Optimization of Dynamic Systems
- Time/Place: TuTh 9:30AM-10:45PM, Elab 305
- Instructor: Weibo Gong, 211E Knowles Engineering Building
- Phone/E-mail: 413-545-0384, [gong at ecs.umass.edu](mailto:gong@ecs.umass.edu)
- OfficeHours: TuTh 10:45PM-12:00Noon
- Prerequisites: Multivariable Calculus, Matrix Algebra, Basic Probability Theory.
- Credits: 3 Units
- Textbook: *Mathematical Optimization and Economic Theory*  
Michael D. Intriligator, SIAM Classics in Applied Mathematics, 2002. ISBN 0-89871-511-3.
- Objective: The course tries to enable engineering students to master a rich set of optimization tools for today's complex engineering systems, which often involves economic theory considerations.
- Grading: Homework: 15%; Midterm Exam: 35%  
Final Exam or Term Paper: 50%
- Topics Covered: Introduction. The Mathematical Programming Problem. Classical Programming. Linear Programming. Game Theory. The Control Problem. Calculus of Variations. Dynamic Programming. Differential Games. Applications in Complex Engineering Systems and Economics.
- References: Optimization by Vector Space Methods. David G. Luenberger, J.W&Sons, ISBN 0-471-18117-X