Fall 2015  
Econ 600, Quantitative Methods in Economic Analysis II  
Course Outline for Part I (first 7.5 weeks)

Instructor: John Schroeter, 273 Heady, 294-5876, johns@iastate.edu
Office hours: No regular office hours but “drop-ins” welcome. Or email to make an appointment.

T.A.: Tianyang Zhang, 275 Heady, 294-2428, tianyang@iastate.edu
Office hours: Thursday 2:00 – 5:00 p.m.; or email to make an appointment.

Class meeting time: MW 9:00 – 10:50 a.m., 272 Heady (lecture); F 11:00 - 11:50 a.m., 272 Heady (recitation).

Course webpage: http://www2.econ.iastate.edu/classes/econ600/Schroeter/

Course requirements: Two exams; one required homework set. The first exam will be held in class, probably during the week of September 21st. The second exam will be held in a special evening session to be scheduled later, at (or just after) the end of Part I of the course, probably during the week of October 19th. The grade for Part I of the course will be determined based on the following weights: Exam #1 – 30%; required homework – 15%; Exam #2 – 55%. The overall grade for Econ 600 will be a simple average of the grades for Parts I and II. Practice exercises will be assigned each week. Solutions will be presented by the T.A. during recitation.

Books:

Required:


Additional books:


Simon and Blume is available in the bookstore. All three books are will also be available on course reserve at the Reserve and Media Services Desk in the basement of Parks Library. Intriligator is a classic reference. Our treatment of equality-constrained optimization will closely follow Intriligator's method and notation. Sundaram provides a somewhat higher-level treatment of most of the topics we will study.

Prerequisites: The outline for the summer's Ph.D. Math Review Course, or “math camp,” lists the topics in calculus, linear algebra, and elementary real analysis that are considered prerequisite knowledge for Econ 600. The outline also lists the sections of Simon and Blume that serve as references for each of these topics. Students should use these references to review any unfamiliar concepts.
Course learning objective: The objective of the course is to equip students with the ability to apply the concepts listed under “course content” in the construction and analysis of mathematical models of economic phenomena.

Course content: Part I of Econ 600 will focus primarily on static optimization problems, the characterization of solutions to these problems, and the comparative statics of optimization systems. At the end of Part I, we will study a few topics from real analysis, some of them introduced in math camp, as a prelude to the work you will do in Part II.

Concave and quasi-concave functions, convex sets (SB 3.2, 21.1-4; S 1.2.9, 7, 8)
Statement of the mathematical programming problem (I 2; SB 17.1, 18.1)
Unconstrained optimization (SB 17.2-4; S 4)
Equality constrained optimization and the method of Lagrange (SB 18.2, 19.3; I 3.2, 3.3)
Envelope theorem, first- and second-order envelope properties, interpretation of Lagrange multipliers (SB 19.1, 19.2)
Inequality constrained optimization and the Kuhn-Tucker formulation (SB 18.3, 18.4, 18.6, 19.3)
Sequences, limits, convergence, Cauchy sequences in \( \mathbb{R}^n \). Compact sets. Weierstrass theorem (SB 12.1-5, 29.1-2, 30.1; S 1.2.1-8, 3.1)

University approved statement disability accommodations policy: Iowa State University is committed to assuring that all educational activities are free from discrimination and harassment based on disability status. All students requesting accommodations are required to meet with staff in Student Disability Resources (SDR) to establish eligibility. A Student Academic Accommodation Request (SAAR) form will be provided to eligible students. The provision of reasonable accommodations in this course will be arranged after timely delivery of the SAAR form to the instructor. Students are encouraged to deliver completed SAAR forms as early in the semester as possible. SDR, a unit in the Dean of Students Office, is located in room 1076, Student Services Building or online at www.dso.iastate.edu/dr/. Contact SDR by e-mail at disabilityresources@iastate.edu or by phone at 515-294-7220 for additional information.