Revised – 8/22/2016

Outline of Topics for Econ 601 and 603
Microeconomic Theory Core

I. Review of Optimization Theory

II. Theory of the Consumer
- Preferences, Utility Function and Utility Maximization
- Duality: Indirect Utility and Expenditure Functions
- Slutsky Equation
- Separability and Homotheticity
- Consumer Surplus and Compensating/Equivalent Variations
- Revealed Preferences

III. **Theory of the Firm**
- Technology
- Cost Minimization and Cost Function
- Envelope Theorem and Comparative Statics
- Profit Maximization and Profit Function
- Long Run vs. Short Run
- Duality
- Joint Production (as time permits)

IV. **Partial Equilibrium in a Competitive Industry**
- Aggregation and Market Demands
- Market Supply: Short Run and Long Run
- Equilibrium: Short Run and Long Run
- Welfare Analysis of Equilibrium

V. **Monopoly and Imperfect Competition**
- Pure Monopoly Solution
- Monopoly vs. Competition: Price, Output, Welfare
- Price Discrimination
- Policy - Price Controls, Subsidies
- Oligopoly (done with game theory – see below)

VI. **Risk/ Uncertainty Analysis**
- Axiomatic Basis Expected Utility Theorem
- Modeling Behavior under Risk
- Insurance, Portfolio and other risk problems (as time permits)

VII. General Equilibrium

a. 2x2 Exchange Economy
   - Edgeworth Box, Exchange Efficiency, Equilibrium, Welfare Theorems
   - Uncertainty Interpretation
     - Implications for Risk Sharing and Asset Pricing

b. Robinson Crusoe Economy
   - Efficiency of Productive Mix, Equilibrium, Welfare Theorems

c. 2x2 Production Economy
   - Productive Efficiency, Implications of Convex Production Sets

d. The 2x2 Production Model
   - Factor Price Equalization Theorem, Stolper-Samuelson Theorem, Rybczynski Theorem

e. The General Case
   - Pareto Optimality and Equilibrium
   - Proof of the Two Welfare Theorems
   - Pathological Cases

f. Externalities and Public Goods

VIII. Game Theory

a. Basic Elements of Noncooperative Games
   - Extensive Form Games, Normal Form Games, Randomization

b. Simultaneous-Move Games
   - Strict Dominance and Iterative Strict Dominance
   - Nash Equilibrium
     - Applications: Cournot and Hotelling Competition
   - Proof of The Nash Existence Theorem
   - Bayesian Nash Equilibrium
     - Applications: Cournot, Public Good Provision, Auctions

c. Dynamic Games
   - Backwards Induction
   - Subgame Perfect Equilibrium
     - The One-Stage Deviation Principle
     - Applications: Repeated Prisoner's Dilemma; Bargaining
   - Perfect Bayesian Equilibrium
     - Application: Reputation Effects