(ECON-728) Advanced Mathematical Economics

Course Description

This course is designed to provide concepts including number systems, set theoretic language, Euclidean Space, Vector Space, Metric Space, Convex Sets and their Properties, Bounded Sets and their Properties. Sequences include Sequences in Higher Dimensional Real Spaces, Bounded Sequences, Convergent Sequences, Cauchy Sequences, Cauchy Criterion of Convergence. Point Set Topology: Open, Closed, and Compact Sets in Real Space and their Properties. Classical Optimization: Equality Constrained Optimization, Weirestrass Theorem, Solution Sets as Correspondences and their Properties, Maximum and Minimum Value Functions and their Properties and Applications. Non-Linear Programming: Concave Programming Problems, Saddle Point Characterizations, Kuhn-Tucker-Uzawa Theorem and Applications.

Recommended Books

Dixit, A. K., *Optimization in Economic Theory*, Oxford University Press: New York

Protter, M. H., and Morrey, C. B., *A First Course in Real Analysis*, Springer-Verlag: New York

Rudin, W. *Principles of Mathematical Analysis,* McGraw-Hill: New York

Simon, C. P., and Blume, L. (1994) *Mathematics for Economists*, W.W. Norton.

Sundaram, R. (1996) *A First Course in Optimization Theory,* Cambridge University Press

Sydsaeter, K., Strom, A., and Berck P., *Economists' Mathematical Manual,* Springer-Verlag: Berlin

Takayama. A. (1985) *Mathematical Economics,* Cambridge University Press: New York.