Special Topics in Mathmatical Programming

Semester: Spring, 2017 *ID:* 627 (M3120) *Credits*: 3
Professor: Ching-Cheng Chang (張靜貞)
Room: AG ECON 農經二會議室

COURSE OBJECTIVES

1. Deepen student's understanding of the fundamental concept and theoretical background of mathematical programming.

2. Master problem solving skills using mathematical programming as a tool that can help the agricultural economists, politicians, or agribusiness decision-makers make more satisfactory decisions.

3. Learn how to apply all these tools to real-world data through modeling exercises.

4. Learn to use computer software (EXCEL, DEAP, GAMS, etc) to solve the models and to achieve an acceptable balance between theory and real world applications.

OUTLINE

1. Introduction: Simplex Method、Duality, etc.
2. Programming Modeling Using GAMS
3. Examples of Linear Programming: Diet/Feed Mix/Blending Problem, Joint Product Production Problem, ..., etc.
4. Data Envelopment Analysis
5. Risk Programming
6. Spatial Equilibrium Models
7. Price Endogenous Programming and Agricultural Sector Modeling

REQUIREMENTS

Class Discussion	10%
Homework and Oral Presentation	30%
Mid-Term Exam	30%
Final Exam/Term paper	30%
Total	100%

Textbooks

1. Bazarra, M.S. and J.J. Jarvis. Linear Programming and Network Flows. New York: John Wiley & Sons, 1977.

2. Bradley, S.P., A.C. Hax and T.H. Maganti. Applied Mathematical Programming. Reading, Mass.: Addison-Wesley Publishing Co., Inc., 1977.

***3. Brooke, A., Kendrick D., and Meeraus A. GAMS: A Users' Guide. The Scientific Press, 1988.**
Note: New Electronic version from different authors (available for download)

***4. Hazell, P.B.R., and Norton R.D. Mathematical Programming for Economic Analysis in Agriculture. MacMillan Pub. Co., New York, 1986.**

5. Hillier, F.S. and G,J, Lieberman. Introduction to Operations Research. Third Ed., San Francisco: Holden-Day, 1980.

6. Paris, Q. An Economic Interpretation of Linear Programming. Iowa State University Press: Ames, Iowa, 1991.

7. Takayama, T. and G. Judge. Studies in Economic Planning over Space and Time. New York: North Holland Co., 1973.

***8. Thompson G.L., and S. Thore. Computational Economics: Economic Modeling with Optimization Software. The Scientific Press, 1992.**

***9. Williams, H.P. Model Building in Mathematical Programming. Chichester: John Wiley & Sons, 1978.**

10. Bruce A. McCarl and Thomas H. Spreen , Applied Mathematical Programming Using Algebraic Systems.