

# 生產經濟學二

## Production Economics II

627 M2920

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## Objectives

- This course intends to give students a full exposition of the developments of theoretical as well as econometric models used for production studies.
- The major intent of the course includes development of econometric production models, static duality theory and applications, theory of production under uncertainty, as well as the theory and applications of learning.
- Specific topics such as agricultural productivity analysis, industrial competitiveness, knowledge spillovers will also be included.

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## Course Requirement

Class participation	15%
2 short papers	40%
Final Report	45%

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## Agenda – Introduction

- ➔ The Contexts of Production Analysis
  - Definition of production economics
  - Types of production models
- ➔ Some useful terms in production economics
- ➔ Assumptions in standard production analysis
- ➔ Key economic concepts needed for a proper understanding of applied production analysis
  - Assigned reading: Solow, *Review of Economics and Statistics*, 1957

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## References

- *Applied Production Analysis – A Dual Approach*
  - Robert G. Chambers
- *An Introduction to Efficiency and Productivity Analysis*
  - Tim J. Coelli
  - D.S. Prasada Rao
  - Chris J. O'Donnell
  - George E. Battese

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## Agenda – Static Primal Approach

- Properties of the production function
  - Lecture Notes B
  - Assigned reading: Chambers, Section 1.2
- Econometrics problems associated with the estimation of the production functions
  - Lecture Notes C
  - Assigned reading: Hoch, *Econometrica*, 1958

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## Agenda – Static Primal Approach

### → Special topics

- Berndt and Christensen, *J of Econometrics*, 1973
- Aw and Huang, *J of Development Economics*, 1995
- An Overview of Productivity Measurement
  - Chapter 1 in *Productivity Measurement in Regulated Industries*, edited by T.G. Cowing and R.E. Stevenson

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## Agenda – Static Dual Approach

### → Theory of duality and historical development

- Lecture Notes D

### → The cost function approach

- The translog cost model, pp. 74-82 in *Agricultural Productivity Measurement and Explanation*, edited by S.M. Capalbo and J.M. Antle
- Assigned reading: Ray, *American J of Agricultural Economics*, 1982

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## Agenda – Static Dual Approach

- ➔ Topics on Productivity Measurement
  - Assigned reading: Denny, Fuss and Waverman, chapter 8 in *Productivity Measurement in Regulated Industries*, edited by T.G. Cowing and R.E. Stevenson
- ➔ Environmental Regulations and Productivity Measurement
  - Assigned reading: Gollop and Roberts, *J of Political Economy*, 1983

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## Agenda – Modeling Technical Change

- ➔ Definitions of technical change
- ➔ Types of technical change
- ➔ Current research on technical change
  - Lag structure of research and development
  - Modeling knowledge accumulation
  - Determinants of technology adoption
  - Sectoral spillovers
  - International productivity analysis

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## Agenda – Decision Making under Uncertainty and Its Application

- Production analysis under price uncertainty
  - Sandmo, *American Economic Review*, 1971
  - Batra and Ullah, *J of Political Economy*, 1974
- Production analysis under output uncertainty
  - Just and Pope, *J of Econometrics*, 1978

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## Agenda – Modeling the Learning Effect

- Individual learning
  - Learning by Doing, Arrow, *Review of Economic Studies*, 1962
  - Learning from others, the peer or neighborhood effects
- Organizational learning
  - Application in the health industry, *Luh et al., Applied Economics*, 2012

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