



B.E. International Program

Faculty of Economics, Thammasat University



Course Outline

EE 422 Mathematical Economics 2

Semester 1/2012 (August 14 – December 1, 2012)

Number of credits: 3 credits

Lecture Time: Tuesdays and Thursdays 11.00– 12.30 hrs

Lecture Venue: Room 203, Faculty of Economics

Instructor: Pisut Kulthanavit, Ph.D.

Office: Room 16, 60th year building

E-mail: pisut@econ.tu.ac.th

Office hours: by appointment

Course Description:

The application of mathematical tools including integral calculus, differential equations, difference equations, phase diagram and dynamic optimization such as optimal control theory and dynamic programming for explaining dynamic economic phenomena as well as for locating time path and stability of variables in the context of both microeconomics and macroeconomics. A study of dynamic input-output models is also covered.

Prerequisites: EE421 and having completed or currently taking EE312

Course Objectives:

This course is a second sub-field course in quantitative economics and it is designed for the students who want to prepare themselves for further studying economics in the graduate level. This class will mainly focus on the dynamic analysis which will be used as a tool to analyze dynamic economic phenomena and the stability. This course consists of two parts: the ordinary differential equations and difference equations part and the dynamic optimization part.

Required Textbooks:

1. Chiang, A. and Wainwright, K. (2005). *Fundamental Methods of Mathematical Economics*, 4th edition, McGraw Hill, Singapore.
2. Sydsaeter, K., Hammond, P., Seierstad, A. and Strom, A. (2005). *Further Mathematics for Economic Analysis*, 2nd edition, Prentice Hall, England.

Recommended Textbooks:

1. Simon, Carl P., and Blume L. (1994). *Mathematics for Economists*. W.W . Norton & Company Inc, New York.
2. Chiang, Alpha E. (1992). *Elements of Dynamic Optimization*. McGraw Hill, Singapore.

Teaching Plan:

Topics

1. Integral Calculus (14, 16, 21 Aug)
2. Differential Equations (23, 28, Aug; 4, 6, 11, 13, 18, 20, 25 Sep)
 - 2.1 First-Ordered Differential Equations
 - 2.2 Higher-Ordered Differential Equations
3. Difference Equations (27 Sep; 9, 11 Oct)
 - 3.1 First-Ordered Difference Equations
 - 3.2 Higher-Ordered Difference Equations
4. System Equations (16, 18, 25, 30 Oct; 1, 6, 8 Nov)
 - 4.1 Eigenvalues and Eigenvectors
 - 4.2 System of Difference Equations
 - 4.3 System of Differential Equations
5. Dynamic Optimization (13, 15, 20, 22, 27, 29 Nov)
 - 5.1 Optimal Control Theory
 - 5.2 Calculus Variations
 - 5.3 Dynamic Programming: The Bellman's Equations

Evaluation:

Homework	25%	
Midterm Exam	25%	(Tuesday, October 2, 2012, 11.00 – 12.30 hrs)
Final Exam	50%	(Tuesday, December 11, 2012, 13.30 – 16.30 hrs)

Important Dates:

Classes Begins	August 14, 2012
Adding and Dropping Courses	August 14 – 28, 2012
Midterm Exam Period	October 1 – 6, 2012 (No Lectures)
Course Withdrawal with “W”	October 17 – 22, 2012
Class Ends	December 1, 2012
