Maths for Economics and Business

Xi'an Jiaotong Liverpool University

Dr. Martins Priede

Module code: ECO118

Year 2012/13 Semester 2

This module introduces students to the application of mathematics in economics, management and business. The material will show how mathematical methods can be applied to problems of market analysis, input-output analysis, compound interest calculations, investment appraisal and agent optimization (e.g. consumer utility maximization and firm profit maximization). The module design takes account of students' differing mathematical backgrounds in conjunction with the need to prepare all students for the second and third year courses.

Lecture: Wednesdays 0900 – 1100, room BA216, Building 4

Tutorial class: Starting from 14th March, 2013 at the following times:

- Thursdays, 1100 - 1200 at BA318, Building 4 (Y2-ECO-A1, Y2-ECO-A2, Y2-ECO-A3)
- Fridays, 1000 - 1100 at BA205, Building 4 (Y2-ECO-A6, Y2-ECO-A7, Y2-ECO-C)
- Fridays, 1100 - 1200 at BA205, Building 4 (Y2-ECO-A4, Y2-ECO-A5, Y2-ECO-B)

Office hours: Wednesdays 1300 – 1400 at my office BB453, Building 4. No appointment necessary, please come and ask if you have any questions. Any additional material or announcement will be given on module page in ICE.

Contact me: Phone ext 1720 E-mail: martins.priede@xjtlu.edu.cn

Essential text book: Used in module is Teresa Bradley (2009) *Essential Mathematics for Economics and Business* (3rd edition), John Wiley & Sons, Inc.,

Additional text books:

- Alpha C. Chiang, Kevin Wainwright (2005) *Fundamental Methods of Mathematical Economics* (4rd edition), McGraw Hill Higher Education

Evaluation is midterm and final exam with weights 30% and 70% of final score, respectively.

All exams are written in English and no textbooks or notes are allowed into exam room. You can use university approved calculator is Casio FS82ES/83ES. I suggest you familiarize with calculator early, because you will need it during exam. Date and time for exam will be announced in advance. Attending tutorial classes will prepare you for exams.

Following items to be covered in **Math for Economics and Business** module.

week	Lecture topic	Chapters	Tutorial class
1	Introduction to maths for economics, management and business, fractions, calculation of percentages, day count methods	Brad 1	
2	Functions, linear functions, graphs slopes and intercepts, supply and demand analysis, costs, elasticity	Brad 2, 3	
3	Functions, linear functions, graphs slopes and intercepts, supply and demand analysis, costs, elasticity	Brad 2, 3	Exercises
4	Non-linear functions - quadratic and polynomial functions, exponents, the exponential and logarithmic functions with economic applications	Brad 4	
5	Mathematics of Finance – bank discount, geometric series, compounded interest, deposits, discrete cash flows,	Brad 5	Exercises
6	Mathematics of Finance – discounting, analysis of cash flows, annuities, effective interest rates	Brad 5	
7	**Midterm**		
8	Mathematics of Finance - growth, compounding, discounting and pricing of bonds	Brad 5	Exercises
9	Limits, Differentiation - rules for differentiation	Brad 6	
10*	Application of differentiation to economics - marginal analysis and elasticity	Brad 6	
11	Optimization (unconstrained) - maxima and minima, minimizing costs, maximizing revenue and maximizing profit	Brad 6	Exercises
12	Partial differentiation - differentiating functions with at least two independent variables, partial elasticities, homogeneous functions and unconstrained optimization	Brad 6, 7	
13	Partial differentiation - differentiating functions with at least two independent variables, partial elasticities, homogeneous functions and unconstrained optimization	Brad 7	Exercises
14	Review		
	Final examinations		

* Lecture in week 10 will be scheduled in other day. Follow announcement on ICE.

Hope you enjoy the module!