

M.Sc. Economics

Code:	017 919	Type:	M.Sc. 2 nd year, fall 2011
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Title:	Applied General Equilibrium Theory (Elective course)
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Lecturer:	Larry Blume
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ECTS:	3	Contact hours (per term):	20
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Semester:	Fall 2011	Frequency of the lecture:	10 units
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Dates:	November 21, 2011 until December 9, 2011, final exam: Dec 14, 2011
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Prerequisites:	
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Learning objectives (What are the intended learning outcomes? Which skills will be acquired?):

The goal of the course is to build up enough analytical familiarity with basic general equilibrium modelling to discuss intertemporal general equilibrium models and general equilibrium under uncertainty.

Content (Which professional competence and which contents will be imparted?):

This course is an introduction to general equilibrium theory and welfare economics. There is no wonderful textbook. *Microeconomic Theory*, hereinafter referred to as *MWG*, is not bad, but sometimes it is too much about trees and not enough about forests. *A Course in Microeconomic Theory* by David Kreps, referred to as *K* below, is idiosyncratic, but has some interesting points of view. Another interesting read is Bryan Ellickson's *Competitive Equilibrium: Theory and Applications*, also known as *E*. But remember that textbooks are largely to help undergraduates survey lots of material quickly and without depth, which describes neither you nor the goal of this course. More readings come from the journal articles linked below. This course will cover parts 3 and 4 of *MWG*. Naturally, we begin with part 4, and then return to part 3.

The single best reading on general equilibrium theory is essay 1 of T. C. Koopmans, *Three Essays on the State of Economic Science*. All serious GE scholars will want this in their library. Although it is out of print, used copies are frequently available and inexpensive at [Alibris](#), [Powells](#), [ABEbooks](#), and the like. Whether you buy it or not, you should read it. An important text for the specialist is Arrow and Hahn's *General Competitive Analysis*. The urtext, of course, is Gerard Debreu's [Theory of Value](#).

1. Introduction — The one person economy
2. Ricardian economies
3. Hecksher-Olin economies
4. Exchange Economies
 - (a) Existence (brief)
 - (b) Welfare theorems
 - (c) Comparative statics
 - i. Sonnenschein's theorem
 - (d) Interpretations of the model
5. Uncertainty
 - (a) The state-preference approach
 - (b) Complete markets
 - (c) An introduction to GEI
 - (d) Asset Pricing
 - i. CAPM
 - ii. APT
 - iii. Lucas
6. Intertemporal equilibrium models



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- (a) The overlapping generations model
- (b) Overlapping generations with production — The Diamond model
- (c) The Cass-Koopmans model as a market equilibrium

Teaching approach (Description of the learning and teaching methods):
Lecture

Workload (Definition of workload (ECTS), divided in pre-modules (e.g. pre-readings), core-modules (contact hours), post-modules (e.g. case studies)):

Language of instruction (Information on the language of teaching):
English

Mode of examination (Mode of the examinations and tests (e.g. oral or written examination, lecture, homework, papers, class participation)):
Final exam

Grading (A maximum of 20% outside the class room):
To be announced in class.

Special features (E.g. excursion, guest speaker):

Office hours:	
Contact information:	
Prof. Larry Blume Department of Economics Uris Hall, Cornell University Ithaca, NY 14850 Voice: (607) 255-9530 Email: lb19@cornell.edu	By appointment

Course website:
<http://elaine.ihs.ac.at/~blume/>

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Literature:

Background

This material will not be covered in class, and you are not likely to have to sit an exam on it. But the scholars and intellectuals among you should want to know why we're doing what we do, and how it came to be that way.

Why study general equilibrium theory?

- [Here](#) is a nice essay by Paul Krugman.
- Kenneth Arrow, [General Economic Equilibrium: Purpose, Analytic Techniques, Collective Choice](#), **American Economic Review** **64**, 253-272 (1974).

History of General Equilibrium Theory

- Weintraub, E. Roy, *How Economics Became a Mathematical Science*, Duke U. Press, 2002.
- Weintraub, E. Roy. "[On the Existence of a Competitive Equilibrium: 1930-1954](#)." **Journal of Economic Literature** **21**, 1-39 (1983).
- Leonard, R.J., "[From Parlor Games to Social Science: von Neumann, Morgenstern, and the Creation of Game Theory 1928-1944](#)." **Journal of Economic Lit.** **33**, 730-761 (1995). Not strictly our subject, but impress Professor Ritzberger with your erudition.
- Duffie, D. and H. Sonnenschein. "[Arrow and General Equilibrium Theory](#)." **Journal of Economic Literature** **27**, 565-598 (1989).
- Gerard Debreu, [Economic Theory in the Mathematical Mode](#). **American Economic Review** **74**, 267-278 (1984). His Nobel prize speech.

Methodology

It is important also to have some understanding of the methodology of modern economics. Economics is about fashion. What people like and don't like has more to do with inherited taste than with any rigorous analytical standards. One thing we all find peachy-keen is *methodological individualism*.

- Kaushik Basu, [Methodological Individualism](#), in *The New Palgrave Dictionary of Economics*, 2nd edition, edited by Steven N. Durlauf and Lawrence E. Blume, Palgrave Macmillan (Basingstoke and New York).
- Kenneth J. Arrow, [Methodological Individualism and Social Knowledge](#), **American Economic Review** **84**, 1-9 (1994).

The relationship between theory and empirical work is not well understood. Here are two pieces worth looking at:

- Tjalling C. Koopmans, [Measurement Without Theory](#), *Review of Economic Statistics* **29**, 161-172 (1947).
- N. R. Hanson, [Patterns of Discovery](#). This link is to Chapter I.

Other takes on markets

Economics is at its best when it discusses systems, and this is what general equilibrium theory is about. But other notable economists have had systems models that do are not inspired by the Lausanne school from which our formulation of multi-market equilibrium analysis descends. One example is F.A. Hayek. One of his most famous articles is [The Use of Knowledge in Society](#), **American Economic Review** **35**, 519-30 (1945). I'm looking for something pithy by the 5ft 4in Schumpeter, but I bet he was never pithy for a moment, except for his famous comment about aspiring to be the greatest lover in Vienna; the greatest rider in Austria, and the greatest economist in the world, and having succeeded in only two out of three.

Introduction: **Readings for the first class.**

The good and the bad of theory.

- Jorge Luis Borges, [On Exactitude in Science](#).
- Jean Baudrillard, [Simulacra and Simulations](#).

Examples

Robinson Crusoe

- MWG 15.C

Capital Asset Pricing Model

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The Ramsey-Cass-Koopmans Model

- Ramsey, F., ["A Mathematical Theory of Saving"](#), **Economic Journal** 38, 543--559 (1928). This is the urtext for modern growth theory.
- Weitzman, M. L., ["Duality Theory for Infinite Horizon Convex Models"](#), **Management Science** 19, 783--9 (1973)
- Malinvaud, E., ["Capital Accumulation and Efficient Allocation of Resources"](#), **Econometrica** 21, 233--268 (1953).
- Malinvaud, E., ["Efficient Capital Accumulation: A Corrigendum"](#), **Econometrica** 49, 570--573 (1962).

The Ricardian Model

- MWG 15.D
- Koopmans Sec. 3
- Chipman, J., ["A Survey of the Theory of International Trade: Part I, The Classical Theory"](#), **Econometrica** 33, 477--519 (1965).
- The continuum-goods version of this model has been important. See Matsuyama, K., ["Ricardian Trade Theory"](#) in *The New Palgrave Dictionary of Economics*, 2nd edition, edited by Steven N. Durlauf and Lawrence E. Blume, Palgrave Macmillan (Basingstoke and New York).
- Samuelson, P., ["Theoretical Notes on Trade Problems"](#), **Review of Economic Studies** 46, 145--54 (1964).
- Any good grad text on international trade

Pure Exchange

- MWG 15.B
- Ellickson 1.2
- Kreps 6.1

The Two-by-Two Production Model

- Francis Bator, ["The Simple Analytics of Welfare Maximization"](#), **American Economic Review** 47, 22-59 (1957).
- Chipman, J., ["A Survey of the Theory of International Trade: Part 3, The Modern Theory"](#), **Econometrica** 34, 18--76 (1966).
- MWG 15.D (again)

Equilibrium and Welfare

The Basic Model

Equilibrium and Pareto Optimality --- Definitions

The Welfare Theorems

- Kenneth Arrow, ["An extension of the basic theorems of classical welfare economics"](#), in *Proceedings of the Second Berkeley Symposium on Mathematical Statistics and Probability*, ed. J. Neyman, Berkeley: University of California Press.
- Koopmans

A Calculus Approach to Optimality

- Oscar Lange, ["The Foundations of Welfare Economics"](#), *Econometrica*, Vol. 10, No. 3/4. (Jul. - Oct., 1942), pp. 215-228.

Existence and Comparative Statics

Excess Demand

Preferences

Regular Economies, Local Uniqueness and Comparative Statics

- Gerard Debreu, ["Regular Differentiable Economies"](#), **American Economic Review** 66, 280-287 (1976).

Applications of the Model

Uncertainty

- K. J. Arrow, ["The Role of Securities in the Optimal Allocation of Risk-Bearing"](#), **Review of Economic Studies** 31, 91-96 (1964).
- R. Radner, ["Existence of Equilibrium of Plans, Prices and Price Expectations in a Sequence of Markets"](#), **Econometrica** 1972, 289--303.

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- Oliver Hart, "On the Optimality of Equilibrium when the Market Structure is Incomplete," **Journal of Economic Theory** 1975, 418--443.

The Overlapping Generations Model

- John Geanakoplos, [Overlapping Generations Model of General Equilibrium](#), in *The New Palgrave Dictionary of Economics*, 2nd edition, edited by Steven N. Durlauf and Lawrence E. Blume, Palgrave Macmillan (Basingstoke and New York).

Readings

Here is a useful set of readings. They are not **required**, but they are very useful for the student who wants to have general equilibrium in his or her toolkit.

- Arrow, K. 1963. The Role of Securities in the Optimal Allocation of Risk- Bearing. *Review of Economic Studies* 31: 91–96.
- Brown, D. J., and R. L. Matzkin. 1996. Testable Restrictions on the Equilibrium Manifold. *Econometrica* 64:1249–62.
- Chipman, J. 1987. International Trade. in *The New Palgrave: A Dictionary of Economics*, vol. 2. J. Eatwell, M. Milgate and P. Newman, eds. London: The Macmillan Press.
- Diamond, P. A. 1965. National Debt in a Neoclassical Growth Model. *American Economic Review* 55: 1126–50.
- Diamond, P. A. 1967. The Role of a Stock Market in a General Equilibrium Model with Technological Uncertainty." *American Economic Review* 57: 759–76.
- Dybvig, P. 1983. An explicit bound on deviations from APT pricing in a finite economy. *Journal of Financial Economics* 12, 483–96.
- Gale, D. 1973. Pure exchange equilibrium of dynamic economic models. *Journal of Economic Theory* 6: 12–36.
- Geanakoplos, J. 1990. An Introduction to General Equilibrium with Incomplete Asset Markets. *Journal of Mathematical Economics* 19: 1–38.
- Geanakoplos, J. 2008. overlapping Generations Model of General Equilibrium. In *The New Palgrave: A Dictionary of Economics*, 2nd Ed. vol. 6. S. Durlauf and L. Blume, eds. Basingstoke: Palgrave-Macmillan, Ltd.
- Hart, O. 1975. On the Optimality of Equilibrium When the Market Structure Is Incomplete. *Journal of Economic Theory* 11: 418–443.
- Kehoe, T. 1989. Intertemporal General Equilibrium Models. in *The Economics of Missing Markets, Information and Games*. F. Hahn, ed. Oxford: Clarendon Press.
- Koopmans, Tjalling. *Three Essays on the State of Economic Science*. McGraw-Hill, 1957.
- Lucas, R. E. 1978. Asset Prices in an Exchange Economy. *Econometrica* 46: 1429–45.
- Mas-Colell, A., M. Whinston, and J. Green. 1995. *Microeconomic Theory*. New York, NY: Oxford University Press.
- Samuelson, P.A. 1958. An exact consumption-loan model of interest with or without the social contrivance of money. *Journal of Political Economy* 66: 467–82.