

COURSE OUTLINE: STOCHASTIC ECONOMIC DYNAMICS

Lecture 1. Introduction to Dynamics.

- discrete time dynamic systems
- finite state Markov chains

Lecture 2. A Crash Course in Measure Theory

- measures and probabilities
- integration and expectation
- function spaces

Lecture 3. Stochastic Dynamics

- Markov models on infinite state spaces
- simulation
- stability theory

Lecture 4. Introduction to Dynamic Programming

- principle of optimality
- applications

Lecture 5. Numerical Dynamic Programming

- value iteration
- policy iteration
- approximation and numerical DP

Please be aware that this is not an applied course. We will be focusing almost entirely on techniques, with only a few relatively simple applications to motivate the course.

References

The main reference material will be a set of notes which are available on my web site:

- www.economics.unimelb.edu.au/jstachurski/teaching.html

The notes are still being written, so please do NOT print them out until the week before the class!

In addition, a well-known reference for dynamic economics is:

- Stokey, Lucas and Prescott (1989): *Recursive Methods in Economic Dynamics*, Harvard University Press.

The lectures will assume you have some familiarity with the material in Chapter 3 (Mathematical Preliminaries) of that text.