

Course Syllabus

PPOL 5220: Complex Systems for Policy

Spring Semester, AY 2025-26

Standard economics, arguably the main theoretical cornerstone of public policy, usually starts with the assumption of *rational agency*. Agents are assumed to maximise their individual interests, their preferences are transitive and consistent across time, and they rely on cost-benefit calculations to make decisions. But the evidence shows that human behaviours in a variety of situations not only deviate from these assumptions, they also do so in systematic and predictable ways. People are often, as Dan Ariely says, “predictably irrational”. These deviations are due to behavioural biases (such as our asymmetric responses to gains and losses, our subjective weighting of probabilities, etc), cognitive limitations (such as inattention or inertia), and social norms and influences. Policy analysis based only on the standard assumptions of neoclassical economics may thus lead to the wrong conclusions and overly simplistic policy recommendations.

Standard economics is also based on the assumption that *markets tend towards equilibrium*, and that, barring market failures, the equilibrium is efficient. This assumption implies that the economy is a mechanical system that can be precisely engineered/controlled. But the reality of boom-bust cycles and inherent uncertainty in much of our economic lives suggest that we need a different way of studying and analysing the market economy.

The course will argue that the economy or society is a **complex adaptive system** made up of many interconnected agents (households and firms) which are interacting with, and adapting to, each other and the environment. This suggests that the economy cannot be easily reduced to a set of stable, predictable causal relationships that standard economics assumes. We will examine the various ways in which the market economy departs from the assumptions of neoclassical economics. It draws on economic traditions other than neoclassical economics to analyse complex systems (of which the market economy is an example) and highlights the policy implications and applications of such an understanding.

In the first half of the course, we question the neoclassical economics assumption of rational agency and examine the numerous **behavioural biases and cognitive limitations** that influence decision-making. Students will be exposed to the key concepts in behavioural economics and their applications in areas such as finance, health, retirement, the environment, transport, etc. We look at how people’s bounded rationality, bounded willpower, and bounded self-interest can affect their choices and behaviours, how behavioural considerations can improve policy design, and how policy should incorporate the insights of behavioural economics.

In the second half of the course, we study why the economy is a complex adaptive system. As a complex adaptive system, the economy is characterised (often)

by **disequilibria**, **interconnectedness** (or networks), **emergence**, and **evolution**. To illustrate these concepts, we look at industrial and economic development, inequality, the pandemic, and political polarisation through the lens of complexity.

Instructor: Professor Donald Low

Class: Thursday, 12:30 – 15:20 (Room 5, 30/F, The Millennity Tower 1)

Consultation: Thursday, 10:00 – 11:30 (Rm 4616F, PPOL office)

Readings

Many of the readings are from the *World Development Report 2015: Mind, Society, and Behaviour*, Eric Beinhocker's *The Origin of Wealth: Evolution, Complexity, and the Radical Remaking of Economics* (2006) and Donald Low's *The Price of Zero: China's policy missteps during and after Covid*. The first two publications will be made available on Canvas; students are encouraged to obtain their own copies of *The Price of Zero*.

Assessment

- Group presentation and summary (2-3 students per group; 8-10 minutes per group on **12 Mar**; 3-4 page summary): 15%
- Mid-term examinations (no electronics and no internet, open book, **26 Mar**): 25%
- Summary of key points (of at least 4 pages per class to be submitted at the end of the class) for 4 classes (Classes 8-12): 20%
- Term paper* (2-3 students per group; due on **24 May**): 25%
- Class participation: 15%

*The term paper shall take the form of a **policy brief** jointly written by 2-3 students applying complexity thinking to a policy issue of the students' choice. The brief should be no more than 1,500 words if written by a pair, and no more than 2,000 words if written by a trio. The policy brief should first *articulate and explain* the policy issue/problem (focusing on why it is complex and not merely complicated), draw on some of the key ideas taught in this course to *analyse* the issue/problem, and *propose* one or two high-level approaches for policymakers to address the issue.