Course Description
This course is unlike any other graduate course you have taken. You will play games, solve puzzles, and tell stories. Each activity will create a system around you, with its own dynamics. Sometimes you will try to beat the system and discover you cannot. Other times you will discover you can change a system by changing your perspective of it. In the process, you will discover how complex patterns of behaviour can arise from simple structures and simple rules. You will draw on such insights to develop a deeper understanding of how the world works. You will start to see the systems around you in a whole new light, and you will develop a new mental toolkit for analyzing complex global issues, modeling their structure and behaviour, and understanding how and why change happens.

Along the way, you will read about the theory and practice of systems thinking, trace the history of the key ideas, and discover how they have been applied. You will explore how systems thinking provides new ways of studying the relationships between the most important global challenges of the twenty-first century, including globalization, climate change, conflict, democracy, energy, health & wellbeing, and food security.

Key topics will include:

- General Systems Theory, developed by Bertalanffy for understanding biological systems;
- Cybernetics: the study of feedback and control in living organisms, machines, and organizations;
- Systems Dynamics approaches for modelling and analyzing non-linear feedback mechanisms in complex systems;
- Complexity science and complex adaptive systems;
- The role of computational modelling and simulation as a central tool for understanding systems
- Philosophical roots of systems thinking as a counterpoint to the reductionism used widely across the natural sciences;
Emergent concepts from systems thinking, such as limits to growth, planetary boundaries, tipping points, sustainability, resilience, and chaos;

Soft Systems Methodology and Critical System Theory for engaging multiple stakeholders in processes of change;

Use of systems thinking to explore competing perspectives, trans-disciplinary synthesis, and modeling of global dynamics.