Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Systems – The Science of Everything

Module Coordinator	**Kevin Mitchell (Genetics and Neuroscience), Mary-Lee Rhodes (Business), Harun Siljak (Engineering)**
What will you learn from this Elective?	You will be introduced to systems theories and concepts with general applicability to phenomena across disciplines. You will develop systems modelling skills to enable multidisciplinary qualitative and quantitative analyses for theory building and problem solving. You will develop increased competency in key skills for the 21st century including critical thinking, complex problem solving, and communication.
Student Workload	Contact hours (lectures, discussions and student presentations): 36 Self-directed study: 60 Assessment: 12 Recorded mini lectures: 15 Total: 123
Assessment Components	Engagement (20%). Group work and presentation (40%). Individual reflective essay (40%).
Indicative Reading List	General System Theory – Ludwig von Bertalanffy, 1968 Cybernetics: Or Control and Communication in the Animal and the Machine – Norbert Wiener, 1948 The Systems Bible: The Beginner's Guide to Systems Large and Small – John Gall, 2003 Complexity – A Guided Tour – Melanie Mitchell, 2011 Thinking in Systems – Donella Meadows, 2008

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Learning Outcomes	On successful completion of this module, students should be able to: 1. Identify, critically evaluate and synthesise the major principles, theories, frameworks and models that collectively comprise Systems Theory. 2. Recognise and apply the general concepts and principles of Systems Theory in diverse domains of knowledge or practice. 3. Communicate effectively about systems concepts and principles to people across diverse disciplines. 4. Critically assess strategies for solving societal problems through a systems lens. 5. Use modelling and simulation tools to illustrate dynamical principles in various types of systems. 6. Engage in productive group work, discussion and reflection to produce a specific output and enhance one's own teamwork skills