



Learning Objectives for Understanding Complex Systems

By the end of this online topic, students will be able to:

- Define systems thinking
- Discuss why systems thinking is essential to the well-being of society and the environment
- Identify examples of systems thinking
- *Choose to adopt a systems view*

- Identify the key characteristics of a complex system
- Given a set of examples, identify which are complex systems

- Define negative and positive feedback loops
- Identify examples of both balancing (negative) and amplifying (positive) feedback loops.

- Discuss the role of each of the following in complex systems:
 - Negative and positive feedback loops
 - Self organization and emergence
 - Boundaries
 - Flows
 - Resilience, diversity, and redundancy
 - Rigidity
 - Behavior over time
 - Repetition
 - Qualitative feedback:

- Discuss the concepts of holons and hierarchies and coherence

- *Choose to embrace an interconnected world view*