Systems And Ecosystems 2019 Session 1

Session 1, Tuesdays 11:00 AM - 12:30 PM
Tim Handley, Instructor
tim@onesparkacademy.com
syllabus v1.01 (2019.08.26)

The Philosophy of Complexity:

If life were simple, it would also be boring. So, thank goodness for complexity – the thousand petals of a sunflower, the trillion living pieces of the Earth's biosphere, and the diverse voices around and within us all. Our world is made up of systems within systems within systems. It is a beautiful, bewildering, and complicted collection of interconnected and interdependent parts. It is a place where every action sparks multitudes of reactions – sometimes predictable, sometimes unpredictable, and sometimes even dangerous.

Course Overview:

In this class, we'll dig into this complexity. We'll explore true stories of action and reaction in the natural world, covering the hopeful history of wolves in Yellowstone, the unfinished story of California sea otters, and the subtly pernicious dangers of New Zealand mud snails. From these stories, we'll extract general principles related to systems and systems thinking, and attempt to apply them to everyday life. Classes will include a mix of lectures, discussions, and hands-on activities.

Course Expectations:

- Attend all classes unless ill.
- Arrive on time and prepared.
- Be open to ideas and to work safely.
- Be mindful of yourself and your behavior.
- Be mindful of the need to balance freedom, focus, your needs, and the needs of others.

Connections to Next Generation Science Standards

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
● Developing and Using Models ● Engaging in Argument from Evidence	● LS2.C: Ecosystem Dynamics, Functioning, and Resilience ● LS4.D: Biodiversity and Humans ● ESS3.C: Human impacts on Earth systems	● Patterns ● Cause and effect ● Systems and system models ● Structure and function ● Stability and change

Schedule of topics and activities*
*Dates and topics may change based on needs and interests of students.

Day 1 - 08.27
- Systems Basics - Flows and Stocks
- The Puzzle of Life

Day 2 - 09.03
- Feedback In Systems - Part I
- Ecological Footprints
- The Puzzle of Life - Hard Mode

Day 3 - 09.10
- Feedback In Systems - Part II
- Wolves in Yellowstone
- Storycrafting - Kelp Forests

Day 4 - 09.17
- .Feedback in Systems - Part III
- Storycrafting - TBA

Day 5 - 09.24
- Personal Puzzle Project – Part I

Day 6 - 10.01
- Personal Puzzle Project – Part II

Day 7 - 10.8
- TBA

Grades and Scores

The core goal of this class is to inspire curiosity about the world, and the interdependence of things in this world. Therefore, grades will be only semi-formal, based on qualitative metrics, and available upon request. Students will be assessed on the following skills, which are then combined in a weighted average:

- Attendance – 20%
  - This class, like OSA, is a community. This means presence matters. Were you here?
- Participation – 20%
  - Do you listen to others, and offer appropriate respect to others? Do you contribute original questions and ideas?
- Daily projects/puzzles – 40%
  - Most days, there will be a core activity. This may be a puzzle to solve, a story to craft, or something else that requires engagement of your heart, head, and hands. Do you engage in these puzzles and projects in a courageous manner? Do you take risks, make mistakes, learn from those mistakes, and make things that you've never made before?
- Final project – 20%
  - The final project, which will likely fill the last three weeks of class, will be to research a system of personal interest, and then build a multi-piece tabletop puzzle based on that system. A good puzzle will be a fact-based, artistically interesting, a little personal, and a little whimsical. Is your puzzle intellectually interesting? Is it visually beautiful? Does it show care and curiosity? Does it surprise the player? Does it say something?