

Astrobiology

Spring HSSP 2022

Introduction

Hello! My name is Kenny, and I'm super hyped to be teaching Astrobiology to you all! This class is intended for curious people interested in stretching their minds a bit and thinking about life itself in a different, broader way.

Scope and Brief Logistics

Astrobiology is an emerging discipline that puts a scientific spin on some enduring questions: why are we here? Is there anyone else out there in the universe? How would we know? It is the study of the emergence, maintenance, and propagation of life, both here on Earth and on other planets. We will also study related questions, some more philosophical in nature, that relate to space colonization, communicating with potentially advanced civilizations, and the implications of being alone in the universe.

Throughout the class, I will provide a number of readings and videos as companions to what we talk about in class. These aren't required *per se*, but I consider them quite interesting and entertaining, so watching and reading them will help you get a lot more out of the class.

Schedule

Week 1: Background + History of Life on Earth

Sense of scale ▪ Origin of life/key moments ▪ Silurian hypothesis

Week 2: The Fermi Paradox

Where are they? ▪ The Great Filter ▪ Solutions and possibilities

Week 3: Life and Evolution

Requirements for life ▪ Evolution in non-Earth environments

Week 4: Space Travel

Life in space ▪ Surviving long voyages (or not?) ▪ Interstellar travel

Week 5: Terraforming

Requirements ▪ Getting there ▪ Maintaining an artificial environment ▪ Artificial planets? (if time allows)

Week 6: Communication

Talking without words ▪ Sending messages (or not) ▪ Message content