Our Universe, dominated by strange forms of dark matter and energy, is more bizarre than astronomers imagined only two decades ago. Structure in the early Universe began as minute variations in density from place to place when the Universe was very young, no more than 400,000 years after the Big Bang. Over time, gravity pulled this nascent structure into the huge web of galaxies and empty space that characterizes our modern Universe. Now, that same strange, dark energy is beginning to pull our Universe apart into a future that is unimaginably vast and empty.

We will explore the origins of our Universe and its structure and contents, as well as the role that dark matter and dark energy play in shaping the Universe we live in today. Topics include the Big Bang, the beginning of structure, the formation of galaxies, stars, and planets, and even the origins of the elements themselves.

The course will emphasize observations and concepts over a mathematical approach, but simple mathematical manipulations at the level of high school algebra, geometry, and/or pre-calculus will be required. Some evening work will be required as part of the course.