Our planet is rich with structures on scales ranging from the atomic to the global. We explore the nature and origin of these structures. The overriding theme is that the emergence of such wondrous structure can be explained from the laws of physics and chemistry. This claim is verified via many examples from molecular order and society to the global biosphere. Thus rather than being a dry discipline, science is a way to appreciate the beauty and wonder of the world around us. With this understanding we can best preserve our Earth for future generations.

*Suggested Background*: Elementary calculus, chemistry, biology and physics.

*Grading System*: The course grade will be based on 3 exams, total homework as one exam equivalent and one research paper.