Sustainability in Physics 1010
David Kardelis, Ph.D.
Associate Professor of Physics
Utah State University Eastern

Course Description

PHYS 1010 - Elementary Physics (BPS)
BPS Breadth Physical Science
3 credits
This course provides a solid foundation in physics principles, focusing on fundamental concepts and logic rather than numerical problem-solving. Students come to understand that the world works by a discoverable set of rules. The physics principles are discussed on a historical basis, while many real-world applications of these principles show the relevance of the underlying physics principles.
Prerequisites: ACT Math score of 23 or higher or equivalent SAT Math score, AP Calculus AB score of 3 or higher, or MATH 0995 with a grade of C or better

Currently a phenomenological survey course covering a variety of topics from mechanics to light

Why Physics

Conservation of Energy provides a fundamental physical law from which to approach sustainability. Different forms of energy are discussed throughout the course, kinetic, gravitational, chemical, electrical, nuclear.

Alternative Fuels such as Wind, Biomass, and Solar will be discussed

Cost
Availability
Land Use
Sustainability.

Exponential Growth

Exponential growth is a natural phenomena that has dire consequences when dealing with the use of finite resources.
The consequences of exponential growth and its meaning will be discussed as applied to finances and resource depletion.
Discussion of why new found very large reserves will only stave off disaster for a short while.

“The greatest shortcoming of the human race is our inability to understand the exponential function.”
Albert A. Bartlett

Objective:
Understand the power of exponential growth. Students will realize the importance of growth and its relationship to sustainability regarding natural resources

Assignments

Students will consider personal energy usage by estimating gas usage driving, trash produced for a week
Reflection on how personal energy usage/trash generated could be reduced.
A personal challenge to try to use ½ as much in subsequent weeks

A report on their findings and choices

Resources

Sustainable Energy - Without the Hot Air by David JC MacKay
The Essential Exponential by Albert A. Bartlett
Energy by Gordon J Aubrecht
Energy Simulator by Richard Tarara
Internet

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