

An overview of classical mechanics

Take a moment to consider the staggering impact of what has just been set forth. If you aren't excited beyond belief, then you have missed the point. We assumed a periodic driving force, but there were no constraints placed as to the origin of the force when we started our discussion. This implies that the force in question could be a contact force, or a field force...*from any field!*

This means that if we can design the right system, we could potentially use any field to power useful devices. Arguably, the scientific triumph of the 20th century was the realization that the electromagnetic field existed. This realization was followed in a short time by the development of radio, television and the entire telecommunications industry. Manipulation of the electromagnetic properties of materials has yielded the birth of the semi-conductor industry and the widespread use of solar cell technology.

While the investigation into the properties of nuclear energy is still in its infancy, each revelation about the properties of matter has yielded applications in medicine and energy generation technologies. Indeed, a current goal of nuclear physics is the development of a sustainable fusion reactor. When such a feat is possible, humanity is freed of the constraints placed by available energy. What this might yield is impossible to determine, but effects of cheap and plentiful energy that does not involve the breakdown of hydrocarbons would help provide essential services to the population at a reduced cost to the environment.

Investigation into the quantum nature of the universe has already helped solve some puzzling aspects of the behavior of atoms, but raises almost as many questions as it answers. Quantum has already led to the development of hydrogen fuel cells, and hints at unparalleled computational power. Further understanding of the fundamental aspects of space, time and

energy will undoubtedly lead to unimaginable discoveries!

Here ends our investigation. Our curiosity and a desire to consistently explain our world led us to logic and reason. The application of logic and reason led us to mathematics. The application of mathematics and logic to our observable and measurable reality led to physics. The application of physics has produced unimaginable advances in all areas of our existence. The tools that have been developed here continue to be used again and again in every branch of science. The application of science as a whole has had a direct and lasting impact on the lives of every person on earth.

What you have learned in this course goes far beyond ropes and pulleys, cannonballs and car wrecks. You have learned to analyze problems and to develop a mindset of inquiry and reason. You are now equipped with a set of tools that have been used to shape our present and have the power to shape our future.

It seems appropriate to end with the famous quote from Isaac Newton :

"If I have seen further, it is by standing on the shoulders of giants."