

ABSTRACT

Precise thermodynamics education is a requirement to discuss issues that one faces in global warming, energy conversion and other energy related topics that affect sustainability in the global sense. For this reason, learning, understanding and meaningful and relevant application of topics in thermodynamics are required. To accomplish this, educating students at the undergraduate and graduate levels in classical, statistical, and non-equilibrium thermodynamics becomes important. A short synopsis of fundamentals of classical thermodynamics will be discussed with the intent of bringing clarity to the laws of thermodynamics and their applications in design of experiments as well as applications in other fields such as heat transfer, and physical interpretation of the mathematical relations that are so useful in explaining why certain things happen in thermodynamics and nature.

For all scientists and engineers, the courses that end in -ics must be studied and understood well with their correct and precise application, such as mathematics, physics, chemical kinetics, mechanics, and ethics. Of course, thermodynamics is one portion of mechanics that is very important in the education of all engineers but particularly mechanical and chemical engineers. It relates natural phenomena to some order and disorder. From a thermal energy point of view, therefore, thermodynamics is the science that dictates what happens in nature and what not and why. Thus, to better understand nature, we need to study precise thermodynamics

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