Phys 1003	THERMAL PHYSICS	(CR3)
Preq.	FSc/A-Level (Physics) or equivalent	

Objectives

The objective of this course is to develop an understanding about the laws and methods of thermodynamics and enable the student to apply their knowedge to practical systems.

Syllabus

Kinetic theory of the ideal gas, work done on an ideal gas, internal energy of an ideal gas, intermolecular forces. Statistical mechanics, statistical distribution and mean values, distribution of molecular speeds, distribution of energies, Brownian motion. Heat and Thermodynamics; heat, different theories of heat, specific heat, gram molecular specific heat, laws of thermodynamics, Zeroth law, first law, second law, third law of thermodynamics, reversible and irreversible processes, indicator diagram, entropy, law of increase of entropy, temperature-entropy diagram, Maxwell's thermodynamics relations, TDS equations, Clapeyron's equation, entropy and second law of thermodynamics, reversible and irreversible processes, second law of thermodynamics, Carnot Cycle, Carnot engine, thermodynamic temperature scale, entropy, low temperature physics, thermoelectricity, Seebeck effect, Peltier effect, thermocouple.

Recommended Books

1. *Physics (Volume 1 & 2) by R. Resnick, D. Halliday and K. S. Krane (5th Edition), Wiley (2002)*
2. *Concepts in Thermal Physics, by S. J. Blundell and K. M. Blundell, Oxford, (2009)*
3. *University Physics with Modern Physics by H. D. Young, R. A. Freedman (14th Edition), Addison-Wesley (2015).*
4. *Principle of Modern Thermodynamics by B. N. Roy, Institute of Physics, London (1995)*
5. *Physics for Scientists and Engineers by R. A. Serway and J. W. Jewett (8th Edition), Golden Sunburst Series (2010)*
6. *An Introduction to Thermal Physics, D. V. Schroeder, Pearson, (1999).*
7. *Heat and Thermodynamics by M. W. Zemansky (7th Edition), McGraw Hill (1999).*