1.	Title of the Course	Statistical Physics
2.	Course Number	PH5206
3.	Status of the Course	Core
4.	Structure of Credits	3-1-0-4
5.	Offered To	PG
6.	New Course/Modification to	New
7.	To be Offered by	Department of Physics
8.	To take effect from	July 2020
9.	Prerequisite	Nil
10.	Whether approved by the Department	Yes
11.	**Course Objective:** To discuss the foundational aspects of equilibrium statistical mechanics and to introduce the concepts related to its nonequilibrium counterpart. To familiarize with both the classical and quantum statistics to have microscopic understanding of different systems, natural processes and phenomena.	
12.	**Course Content:** Review of thermodynamics and essentials of quantum mechanics and classical mechanics; Phase space, Liouville theorem, a priori probability postulate, ergodicity, ensemble theory; Microcanonical ensemble, canonical ensemble and grand canonical ensemble; Formulation of quantum statistics; Ideal Bosonic and Fermionic systems; Statistical mechanics of interacting systems & phase transitions; Fluctuations and statistical mechanics of nonequilibrium systems.	
13.	**Text book(s):** 1. Huang K, *Statistical Mechanics*, Wiley (1987). 2. Pathria R K and Beale P D, *Statistical Mechanics*, Academic Press (2011).	
14.	**Reference(s):** 1. Le Bellac M, Mortessagne F and Batrouni G G, *Equilibrium and Non-Equilibrium Statistical Thermodynamics*, Cambridge University Press (2004). 2. Reif F, *Fundamentals of Statistical and Thermal Physics*, Waveland Press (2009).	