**NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI**

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| Course Title | | | STATISTICAL MECHANICS | | | | | | | | |
| Course Code | | | PH656 | | No. of Credits | | | 4 | | | |
| Department | | | Physics | | Faculty | | | Dr. R. Sankaranarayanan | | | |
| Pre-requisites  Course Code | | | - NIL - | | | | | | | | |
| Course Coordinator(s)  (if, applicable) | | | - NIL - | | | | | | | | |
| Course  Teacher(s)/Tutor(s)  E-mail | | | sankar@nitt.edu | | | Telephone No. | | | | 0431-250-3609 | |
| Course Type | | | ☑ Core course 🗵 Elective | | | | | | | | |
| COURSE OVERVIEW | | | | | | | | | | | |
| * NIL - | | | | | | | | | | | |
| COURSE OBJECTIVES | | | | | | | | | | | |
| 1. To learn the connection between macroscopic and microscopic state of a system of large number of particles. 2. To understand thermal equilibrium of a system in statistical sense. | | | | | | | | | | | |
| COURSE OUTCOMES (CO) | | | | | | | | | | | |
| 1. Students will be able to understand various properties of matter and radiation in thermal equilibrium through appropriate statistics. 2. Students will be prepared to understand solid state physics. | | | | | | | | | | | |
| COURSE TEACHING AND LEARNING ACTIVITIES | | | | | | | | | | | |
| S. No. | Week | Topic | | | | | | | Mode of Delivery | | |
| 1 | 1-3  4-6  7-9  10-12  13-15 | Thermodynamics  Theory of Ensembles  Maxwell-Boltzmann Statistics  Bose-Einstein Statistics  Fermi-Dirac Statistics | | | | | | | Chalk & Talk  Chalk & Talk  Chalk & Talk  Chalk & Talk  Chalk & Talk | | |
| COURSE ASSESSMENT METHODS | | | | | | | | | | | |
| S. No. | Mode of Assessment | | | Week/Date | | | Duration | | | | % Weightage |
| 1  2  3  4 | I Cycle Test  II Cycle Test  Assignment/Quiz  Final Exam | | | 6th week  12th week  4th and 8th week  16th week | | | 1 Hour  1 Hour  -  3 Hours | | | | 20 %  20 %  10 %  50 % |
| ESSENTIAL READINGS : Textbooks, reference books Website addresses, journals, etc. | | | | | | | | | | | |
| *Text Books*   1. M.W. Zeemansky and R.H. Dittman, Heat and Thermodynamics, 8th edition, Mc-Graw Hill (2011). 2. K. Haung, Statistical Mechanics, 2nd edition, Wiley India (2010). 3. F.W. Sears and G.L. Salinger, Thermodynamics, Kinetic Theory and Statistical Thermodynamics, 3rd edition, Narosa Publishing House (1998).   *Reference Books*   1. Enrico Fermi, Thermodynamics, Dover (1956). 2. R.K. Pathria and Paul D. Beale, Statistical Mechanics, 3rd edition, Academic Press (2011). 3. F. Reif, Fundamentals of Statistical and Thermal Physics, International Students edition, Tata McGraw-Hill (1988). 4. S.J. Blundell and K.M. Blundell, Concepts in Thermal Physics, Oxford University Press (2006). 5. L.D. Landau and E.M. Lifshitz, Statistical Physics – Part I, 3rd edition, Elsevier (2010). | | | | | | | | | | | |
| COURSE EXIT SURVEY | | | | | | | | | | | |
| 1. Feebback from students. 2. Identifying scope for improvement through self assessment. | | | | | | | | | | | |
| COURSE POLICY (including plagiarism, academic honesty, attendance etc.) | | | | | | | | | | | |
| 1. 75% attendance is mandatory. 2. Interactive learning in lecture session. 3. Students should solve problems in tutorial session. | | | | | | | | | | | |
| ADDITIONAL COURSE INFORMATION | | | | | | | | | | | |
| Interaction with the staff is highly encouraged inside/outside the class room. | | | | | | | | | | | |
| FOR SENATE’S CONSIDERATION | | | | | | | | | | | |
| Course Faculty \_\_\_\_\_\_\_\_\_\_ CC-Chairperson \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ HOD \_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | |