

INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI

PROFORMA FOR MODIFIED COURSE

1.	Title of the Course	Refrigeration and Thermal Power Engineering
2.	Course Number	ME3212
3.	Status of the Course	Core
4.	Structure of Credits	3-1-0-4
5.	Offered to	UG
6.	New Course/ Modification to	Modification to Applied Thermal Engineering
7.	To be offered by	ME faculty member
8.	To take effect from	January 2018
9.	Prerequisite	ME1100 Thermodynamics
10.	Whether approved by the Program	Yes
11.	<p>Course Objective (Max 70 words): By the end of this course, students should be able to (a) Understand different refrigeration process and perform their thermodynamic analysis (b) analyze problems relating to HVAC (c) Understand and analyze power generation cycles and (d) size different power plant components.</p>	
12.	<p>Course Content (Max 100 words): Vapour Compression Refrigeration Systems: Single stage and multistage vapour compression refrigeration systems, Refrigerants and their properties. Vapour Absorption Refrigeration Systems: Lithium bromide-water absorption, Aqua-ammonia absorption refrigeration system, resorption absorption refrigeration, new mixtures for absorption systems. Non-conventional Refrigeration Systems: Air cycle, Vapour jet, Vortex and pulse tube refrigeration systems, thermoelectric refrigeration systems. Pschyrometry: Introduction to Pschyrometric principles. Application of mass and energy balances to air-conditioning systems. Wet- and dry-bulb temperatures. Pschyrometric chart. Air conditioning processes, Cooling Load Calculations. Power plant cycles: Reheat-Regenerative-Supercritical- Combined cycles, Cogeneration plants, Exergy analysis of power plant cycles. Analysis and sizing of power plant components: Steam generators, condenser, Cooling tower and other heat exchangers.</p>	
13.	<p>Text Book(s): 1. G.W. Gosney, Principles of Refrigeration, Cambridge University Press, 1982. 2. M. M. Elwakil, Power Plant Technology, McGraw Hill, 2010.</p>	
14.	<p>Reference(s): 1. W.F. Stoecker and J.W. Jones, Refrigeration and Airconditioning, Tata Mc Graw Hill, 1986. 2. C. P. Arora, Refrigeration and Airconditioning, 3/e, Tata Mc Graw Hill, 2008. 3. P. K. Nag, Power Plant Engineering, 4/e, McGraw Hill, 2014 4. R. W. Haywood, Analysis of Engineering Cycles, Pergamon Press, 1975.</p>	