

1.	Title of the course	Applied Thermal Engineering
2.	Course number	ME310L
3.	Structure of credits (L-T-P-C)	3-0-0-3
4.	New course/modification to	Modified with ME305L/APPLIED THERMAL ENGINEERING
5.	To be offered by	Mechanical Engineering
6.	Proposed by	AVULAPATI MADAN MOHAN
7.	Prerequisite	None
8.	Course Objective(s): To introduce the concepts of exergy, gas power cycle and psychrometry. To discuss the concept of thermodynamic cycles to solve engineering problems.	
9.	Course Content: Second law analysis for a control volume: irreversibility and availability; Exergy balance equation and exergy analysis; Vapor power cycles: Rankine cycle with superheat, reheat and regeneration, super-critical and ultra-supercritical Rankine cycle; Combined gas and vapor power cycles; Vapor compression refrigeration cycles; Vapor refrigeration systems and their analysis, commonly used refrigerants and their properties; Supercritical vapor compression refrigeration cycles; Psychrometry: introduction to psychrometric principles, application of mass and energy balances to air-conditioning systems, wet and dry-bulb temperatures, psychrometric chart, air conditioning processes; Gas dynamics: basic concepts in compressible flow.	
10.	Textbook(s): 1. Cengel Y A, Boles M A and Kanoglu M, Thermodynamics: An Engineering Approach, 9th Edition, McGraw Hill (2019).	
11.	Reference(s): 1. Eastop T D and Mcconny A, Applied Thermodynamics for Engineering Technologists, 5th Edition, Pearson (2002). 2. Moran M J, Shapiro H N, Boettner D D and Bailey M B, Fundamentals of Engineering Thermodynamics, 7th Edition, Wiley (2010).	