1.	Title of the course	Fundamentals of Combustion
2.	Course number	ME537L
3.	Structure of credits (L-T-P-C)	3-0-0-3
4.	New course/modification to	New
5.	To be offered by	Mechanical Engineering
6.	Prerequisite	CoT
7.	**Course Objective(s):** To apply the knowledge of thermodynamics to combustion. To learn the basics of fuels, stoichiometry, chemical kinetics, and equilibrium mass transfer for different types of combustion processes. To discuss the mathematics involved in transport processes of reactive flows and the parameters affecting different types of combustion processes.	
8.	**Course Content:** Review of thermodynamics of ideal gas mixtures; Fuels and their properties; Stoichiometry; First and second laws of thermodynamics applied to combustion; Basics of mass transfer; Combustion kinetics; Governing equations for a reacting flow; Characteristics of combustion flame and detonation; Laminar flame propagation; Quenching, ignition and flame stabilization; Combustion of gaseous fuel jets; Turbulent flames; Droplet evaporation and combustion.	
9.	**Textbook(s):** 1. Turns S R, An Introduction to Combustion Concepts and Applications, 3rd Edition, McGraw-Hill Education (2017).	
10.	**Reference(s):** 1. Williams F A, Combustion Theory, 2nd Edition, CRC Press (2018). 2. Mukunda H S, Understanding Combustion, Universities Press (India) Private Limited Publication (1989). 3. Mishra D P, Fundamentals of Combustion, PHI Learning (2007).	