



### Fundamentals Of Combustion - I

Aerospace Engineering

**Instructor Name:** Prof .D.P. Mishra

**Institute:** IIT Kanpur

**Department:** Aerospace Engineering

**About Instructor:** Dr. D.P. Mishra is a professor in the Department of Aerospace Engineering at Indian Institute of Technology (IIT) Kanpur, India where he was instrumental in establishing a combustion laboratory. He currently holds the Indian Oil Golden Jubilee Professional Chair in IIT Kanpur. He was a Visiting Professor in 2002 at the Tokyo-Denki University, Japan. His areas of research interest include combustion, computational fluid dynamics, atomization, etc. He is the recipient of the Young Scientist Award in 1991 from the Ministry of New and Renewable Energy, Government of India. He was conferred the INSA-JSPS Fellowship in 2002. In recognition of his research, Dr. Mishra received Sir Rajendranath Mookerjee Memorial Award from the Institution of Engineers (India). Dr. Mishra is a recipient of the Samanta Chadrasekhar Award for his contributions to science and technology. For technological contribution for the common people, he has been conferred with the Vikash Prerak Sanman in 2010.

**Pre Requisites:** : Engineering Thermodynamics

**Core/Elective:** : Elective

**UG/PG:** : Both

**Industry Support** : NIL

**Course Intro:** : This is an introductory course on Fundamentals of Combustion. The objective of this course is to impart knowledge on fundamentals of combustion to both UG and PG students. In this course, fundamentals aspects namely thermochemistry, chemical kinetics, transport phenomena including mass transfer required for understanding of intricate combustion process are to be covered extensively.

#### COURSE PLAN

SL.NO	Week	Module Name
1	1	Introduction to Combustion
2	2	Thermodynamics of combustion
3	3	Thermochemistry
4	4	Chemical Equilibrium kinetics
5	5	Chemical Kinetics
6	6	Types of reactions and Introduction to Physics of combustion
7	7	Transport Phenomena
8	8	Conservation Equations