

Combustion in Engines

Overview

The course comprises combustion fundamentals and its application to spark ignition, Diesel and gas turbine engines. The lectures focus on physical descriptions, analysis and interpretations, without complex mathematical derivations. It will include examples of recent state-of-the-art experimental research carried out all over the world.

The primary objectives of this course is to bring out the fundamental concepts in combustion science and to physically explain the complex phenomena involved in the combustion processes in different types of engines. The secondary objective of this course is to present the usefulness of Laser diagnostics in studying the combustion processes in engines

The contents of this course are: (1) Introduction, (2) Combustion fundamentals: Laminar premixed flames, Turbulence and Turbulent premixed flames, Spark Ignition, (3) Diesel Engines; Two-phase combustion, Auto-ignition, Fuel injection, Emissions and (4) Gas Turbines; Gas turbine combustion chambers and Aerodynamics Combustion

Course participants will learn these topics through lectures. Also case studies and assignments will be shared to stimulate research motivation of participants.

Course Schedule	September 4, 2017 - September 11, 2017 Number of participants for the course will be limited to forty.
You Should Attend If...	<ul style="list-style-type: none">▪ you are an automotive engineer or research scientist interested in understanding combustion processes involved in IC engines and Gas turbines.▪ you are a mechanical engineer interested to learn the applications of combustion to engines and to understand the complexities in those processes.▪ you are a student or faculty from academic institution interested in learning the fundamentals aspects of combustion and the complex nature of flames in engines and gas turbines. <p><i>All of you are expected to have taken a course in Engineering Thermodynamics</i></p>
Fees	The participation fees for taking the course is as follows: Industry/ Research Organizations: Rs. 10000 Faculty from universities and colleges: Rs. 5000 Students: Rs. 1000 The above fee include all instructional materials, tutorials and assignments. The participants will be provided with accommodation on payment basis.

The Faculty



Prof. Malcolm Lawes is an expert in Laminar and turbulent Flames, Combustion of gas fuels, fuel droplets and powders and in Laser Diagnostics. His research interests are directed towards developing a fundamental understanding of Combustion. His present research activities include laminar and turbulent studies of combustion and utilise several unique combustion vessels, which have exceptional optical access for the use of sophisticated laser diagnostic techniques to provide data that cannot be obtained elsewhere.



Dr. V. Raghavan is an Associate Professor of Indian Institute of Technology, Madras. His areas of research include evaporation and combustion of liquid fuel droplets, laminar flames, flame spread, fire dynamics, and coal and biomass gasification.

Course Co-ordinator

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