INSTITUT NATIONAL DES SCIENCES APPLIQUÉES LYON

DPT GENIE ENERGETIQUE ET ENVIRONNEMENT
ENERGETICS AND ENVIRONMENTAL ENGINEERING
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Energy

Combustion

IDENTIFICATION

CODE : GEN-3-S1-EC-COMB
ECTS : 2.0

HOURS

Lectures :	8.0 h
Seminars :	8.0 h
Laboratory :	8.0 h
Project :	0.0 h
Teacher-student contact :	24.0 h
Personal work :	15.0 h
Total :	39.0 h

ASSESSMENT METHOD

Exam in two parts:
General knowledge in Combustion (without document): 20 min
Applications (lesson documents authorized): 1h10

TEACHING AIDS

Slides

TEACHING LANGUAGE

French

CONTACT

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AIMS

Skills:

Objectives:
Basic knowledge on Combustion
Identification of different types of flames
Calculation of amount of heat and adiabatic flame temperature

CONTENT

A) Phenomenological approach and practical interest
- diffusion flame and premixed flame
B) Combustion chemistry and definitions
- chemical equations, equivalence ratio, definitions for practical devices.
C) Thermodynamics of Combustion
- First law of thermodynamics, standard enthalpy of reaction, adiabatic flame temperature.
D) Tools for industrial combustion
- measurements of exhaust gas emissions and Ostwald diagram.

BIBLIOGRAPHY

La combustion et les flammes. Michel Destriau et Roland Borghi. Editions Technip.
Theoretical and numerical combustion. Thierry Poinsot et Denis Veynante. RT Edwards.

PRE-REQUISITE

Chemistry: balance a chemical equation
Basics of atomic structure