

Heat Transfer

heat radiation transfer

IDENTIFICATION

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

HOURS

Lectures : 10.0 h
Seminars : 10.0 h
Laboratory : 8.0 h
Project : 0.0 h
Teacher-student
contact : 28.0 h
Personal work : 15.0 h
Total : 43.0 h

ASSESSMENT METHOD

Radiation: 2 hours [lesson
documents authorized]

Report and software of the project

Lab reports

TEACHING AIDS

A student textbook
slides

TEACHING LANGUAGE

French

CONTACT

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AIMS

COMPETENCES :

OBJECTIVE :

calculate radiative heat fluxes in a system, measurement of temperature and radiative properties by infrared measurements and pyrometry
Radiation heat transfer: Black body, surface properties (emissivity, reflectivity, absorptivity, transmittivity), radiation exchange between diffuse, black or gray surfaces separated by a nonparticipating medium, solar photovoltaic energy

CONTENT

Introduction to radiative heat transfer, Black body radiation, surface properties (emissivity, reflectivity, absorptivity, transmittivity), radiative metrology, radiation exchange between diffuse, black or gray surfaces separated by a nonparticipating medium, solar photovoltaic energy

Lab Infrared measurements and radiative properties of surfaces

Lab Radiation of a metal

BIBLIOGRAPHY

Sacadura, J.F., Initiation aux transferts thermiques, Lavoisier, 2015

Howell J. R., Siegel R. and Menguç P, Thermal Radiation Heat Transfer. CRC Press, 2010

PRE-REQUISITE

Mathematics: Integral and derivative

GEN-3-cond

GEN-3-conv

Knowledge of a programming language