INSTITUT NATIONAL DES SCIENCES APPLIQUÉES LYON

DPT GENIE ENERGETIQUE ET ENVIRONNEMENT
ENERGETICS AND ENVIRONMENTAL ENGINEERING
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Energy

Coupled Heat transfer

IDENTIFICATION

CODE : GME-3-TTC-S2
ECTS : 2.0

HOURS

Lectures :	7.0 h
Seminars :	6.0 h
Laboratory :	6.0 h
Project :	8.0 h
Teacher-student contact :	27.0 h
Personal work :	20.0 h
Total :	47.0 h

ASSESSMENT METHOD

Exam (lesson documents authorized, duration : 1 h 30)
practicals 10%
projectwork 10%

TEACHING AIDS

lesson textbook

TEACHING LANGUAGE

French

CONTACT

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AIMS

knowledge
Know the different heat transfer modes, their physical mechanisms and the medium in which they are present
Know the basic mathematical laws used to describes these different modes
Know the parameters or the basic physical properties linked to these equations and know their order of magnitude.
Capacity
Be able to identify the different heat transfer modes in a real application
Be able to draw a nodal scheme of a combined heat transfer problem
Be able to write an energy balance equation from a nodal scheme and calculate a temperature field and/or a heat transfer field.
Be able to analyze the relevance of the numerical results

CONTENT

Introduction to heat transfer
Physical mechanisms of the different modes of heat transfer (Conduction, convection, radiation and phase change)
Basic laws and related parameters
Combined heat transfer, electrical analogy, nodal methods and numerical resolution.