PEES8AB BOUNDARY LAYER FLOW AND RADIATION

PEES8AB Boundary layer flow and radiation	ECTS Credits : 2 Duration : 21 hours	Semester : S8

Person(s) in charge :

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Keywords : Boundary layer flow, radiation

Prerequisites : "Transport Phenomena" and "Fluid dynamics and turbulence"

Objective : Initial concepts of heat and mass transport.

Educational objectives
Heat and matter exchange phenomena occupy a key place in understanding heat transfer and matter transformation. This course completes the "Transport Phenomena" course by explaining the boundary conditions required to completely calculate global and differential balances.
In this course, we focus on the two major ways heat and matter are transferred : convective transfer through a boundary layer (in the continuity of the "Fluid dynamics and turbulence" course) and thermal radiation. A case-study of heat exchangers class is part of the course.

Contents - Program

- Thermal boundary layers and matter in laminar flow
- Thermal boundary layers and matter in turbulent flow
- Case-study of heat exchangers (comparing exchange efficiency for different heat exchanger installations)
- Thermal radiation:
  - Introduction and revision of the initial phenomenological concepts and thermal radiation laws
  - Radiation between black then grey bodies
  - Introduction to semi-transparent environments
  - Thermal measures : flash method, measuring high temperatures and infrared thermography

Evaluation
Written test and written reports of class activities

Abilities :

Level	Description and operational verbs
Know	
Understand	
Apply	
Analyse	
Summarise	
Assess	

Evaluation :

☑ Written test	☑ Continuous Control	☐ Oral report	☐ Project	☐ Written report