

IDENTIFICATION

Course code : E3B65QE1
ECTS : 2

DURATION

Lectures : 3
Tutorial classes : 9
Labs : 8
Total : 20

Project :
Personnal work :

ASSESSMENT

1 project grade + 1 continuous assessment grade

TEACHING MATERIALS

Handout

LANGUAGE

English

CONTACT

Mathieu DAVID
mathieu.david@univ-reunion.fr

Modifié le : 3 août 2026

UE : UE6.2-QEB

COURSE : Dynamic Thermal Simulation 1

SCOPE OF THE COURSE

OBJECTIVES

Master the aspects of Dynamic Thermal Simulation (DTS), i.e., know how to input the entire set of boundary and initial conditions and analyse the results and represent them

COMPETENCE AND SKILLS

After this course, students should be able to conduct an energy simulation of a multi-zone building using the EnergyPlus calculation code. They should also be able to present the results obtained in a report, including regulatory or incentive aspects (label).

PROGRAM

Multi-zone simulation and natural ventilation

- Multi-zone modelling (inter-zone and simplifying assumptions).
- Review of parameters influencing mass transfers at openings.
- Nodal models and natural ventilation models.
- Modelling natural ventilation : from simple to detailed models.
- Critical analysis of results.

Simulation and texts (regulations and labels)

- Complementarity between regulation and simulation.
- Examples with the PERENE framework.

Project

- Architectural optimization of a multi-zone building by applying a regulation or a label.
- Realistic simulation of user behaviour and systems to obtain an estimated consumption ratio for the building.
- Writing an study report.

BIBLIOGRAPHY

Energy simulation in building design. J.A. Clarke. Second Edition, Butterworth-Heinemann, Oxford, 2001.

REQUIREMENTS