ESIROI
ÉCOLE D'INGÉNIEURS
UNIVERSITÉ DE LA RÉUNION

DEPARTMENT : *BE*
SEMESTER : *S6*

IDENTIFICATION

Course code : E3BE6ST4
ECTS : 1

DURATION

Lectures :	0
Tutorial classes :	10
Labs :	0
Total :	10

Project :
Personnal work :

ASSESSMENT

At least two continuous assessments.

TEACHING MATERIALS

Slides and guided-work handouts.

LANGUAGE

English

CONTACT

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Modifié le : 3 août 2026

UE : UE6.1-STRUC

COURSE : LV2 or intensive English

SCOPE OF THE COURSE

OBJECTIVES

This course aims to develop students' linguistic, cultural, and communicative competencies in their second foreign language (Chinese or Spanish). It focuses on acquiring language fundamentals, oral and written fluency, and exploring associated cultures, to prepare students for interactions in personal, professional, or academic contexts.

COMPETENCE AND SKILLS

— Communicate with the various stakeholders involved (clients, management, users, IT managers, bodies – CNIL, ANSSI) in writing and orally
— Ensure appropriate communication with stakeholders, including clients, public authorities, citizens, and civil society

PROGRAM

1. **Language initiation**
   — Basic grammatical constructions : present indicative, adjectives, pronouns.
2. **Oral communication**
   — Techniques to improve pronunciation and oral fluency.
3. **Written comprehension and expression**
   — Writing simple letters or emails (personal presentation, request for information).
4. **Linguistic and intercultural deepening**
   — Study of songs, poems, or literary excerpts adapted to the level.
5. **Practical project and continuous assessment**
   — Regular oral and written assessments to monitor progress.

BIBLIOGRAPHY

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- **Course title:** Thermodynamics and Heat Transfer
- **Course code:** UE PHY 301
- **Number of credits:** 4 ECTS
- **Year/Semester:** 3rd year / 1st semester
- **Category:** Core course
- **Prerequisites:** PHY 201, MAT 201
- **Instructor(s):** [Name(s)]
- **Contact:** [Email]
- **Course description:**
  This course covers fundamental principles of thermodynamics and heat tr
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  - The first and second laws of thermodynamics
  - Thermodynamic properties of pure substances
  - Heat transfer mechanisms (conduction, convection, radiation)
  - Steady-state and transient heat conduction
  - Heat exchangers and thermal insulation
  - Applications in engineering systems

- **Learning outcomes:**
  By the end of this course, students will be able to:
  1. Apply thermodynamic principles to analyze energy systems.
  2. Solve problems involving heat transfer in engineering contexts.
  3. Design and evaluate thermal systems using relevant tools and methods

- **Assessment methods:**
  - Continuous assessment: 40%
    - Practical work: 20%
    - Mid-term exam: 20%
  - Final exam: 60%

- **Course content:**
Week	Topic	Activities
1	Introduction to Thermodynamics	Lecture, exercises
2	First Law of Thermodynamics	Lecture, problem-solving
3	Second Law of Thermodynamics	Lecture, case studies
4	Thermodynamic Properties of Pure Substances	Lab work
5	Heat Transfer Mechanisms	Lecture, demonstrations
6	Steady-State Heat Conduction	Problem-solving, lab work
7	Transient Heat Conduction	Lecture, simulations
8	Heat Exchangers	Design project
9	Thermal Insulation	Lecture, case studies
10	Applications in Engineering Systems	Guest lecture, group discu
11	Review and Problem-Solving	Tutorial session
12	Final Exam Preparation	Review session

- **Recommended readings:**
  - Cengel, Y. A., & Boles, M. A. (2019). *Thermodynamics: An Engineering
  - Incropera, F. P., & DeWitt, D. P. (2002). *Fundamentals of Heat and M

- **Additional resources:**
  - [Course Moodle page](#)
  - [Thermodynamics simulation software](#)

REQUIREMENTS

- **Programme & Learning Outcomes**
  - **UE 3.1.2 - Food Process Engineering**
    - **ECTS Credits**: 5
    - **Hours**: 50 h (20 h Lectures, 15 h Tutorials, 15 h Practical Work
    - **Teacher(s)**: [Name]
    - **Year/Semester**: 3A S5
    - **Prerequisites**: UE 2.1.1 (Thermodynamics), UE 2.2.1 (Fluid Mecha
    - **Description**:
      This course covers the fundamental principles of food process engin

  - Thermal processing (pasteurization, sterilization)
  - Drying and dehydration
  - Separation processes (filtration, centrifugation)
  - Mixing and emulsification
  - Hygiene and safety standards (HACCP, ISO 22000)
  - Sustainable process design and energy efficiency
- **Assessment**:
  - Continuous assessment (40%): Practical work reports, quizzes
  - Final exam (60%): Written exam (2 h)
- **Learning Outcomes**:
  - **LO1**: Apply heat and mass transfer principles to food processi
  - **LO2**: Design and optimize unit operations for food production.
  - **LO3**: Ensure compliance with hygiene and safety standards (HAC
  - **LO4**: Evaluate the environmental impact of food processes and
- **Teaching Methods**:
  - Lectures with interactive problem-solving
  - Tutorials: Exercises and case studies
  - Practical work: Laboratory experiments and simulations
- **Recommended Reading**:
  - [Author]. *Title*. Publisher, Year.
  - [Author]. *Title*. Publisher, Year.
- **Additional Resources**:
  - [Link to online resources]
  - [Software tools: e.g., COMSOL, Aspen Plus]