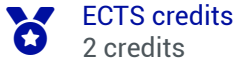


Energy efficiency



In brief

➤ **Course language:** English

Presentation

Prerequisites

Thermodynamics, mass balance, energy balance.

Learning objectives

- Evaluate and calculate the energy efficiency of various engineering systems, including furnaces, reactors, heat engines, and refrigeration systems
- Analyze and apply methods for improving energy efficiency in these systems based on thermodynamic and process considerations.
- Understand heat transfer mechanisms and heat exchanger design principles, and assess strategies for enhancing their energy performance.

Description of the programme

This course provides a comprehensive introduction to energy efficiency in engineering systems, with a focus on thermodynamic analysis and practical improvement strategies. It covers the evaluation of energy performance in key industrial processes, including furnaces, reactors, heat engines, and refrigeration systems.

Fundamental heat transfer mechanisms are reviewed, followed by an introduction to heat exchanger design and performance analysis. Strategies for improving heat exchanger efficiency, including design modifications and operational considerations, are also discussed.

Through analytical examples and practical case studies, the course aims to develop the ability to assess, analyse, and improve energy efficiency in real-world engineering applications.

Bibliography

- "Introduction to Chemical Engineering Thermodynamics" by J. M. Smith et al.
- "Process Heat Transfer" by Donald Q. Kern

Teaching team

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Total des heures		12h
CM	Master class	8h
TD	Directed work	4h