Module Description, available in: EN

Heat Transfer

General Information

Number of ECTS Credits

3

Module code

TSM_Heat

Valid for academic year

2026-27

Last modification

2019-09-07

Coordinator of the module

Heinrich Manz (HSLU, heinrich.manz@hslu.ch)

Explanations regarding the language definitions for each location:

- Instruction is given in the language specified for each location and module execution.
- Documentation is available in the language(s) listed for each location and module execution. If the documentation is in multiple languages, the percentage distributed is indicated (100% = all documentation provided).
- The examination, including both questions and answers, is provided entirely (100%) in the language(s) specified for each location and module execution. The exams are on-site.

	Lausanne			Lugano	Zurich		
Instruction					**X** E 100%		
Documentation					**X** E 100%		
Examination					**X** E 100%		

Module Category

TSM Technical scientific module

Lessons

2 lecture periods and 1 tutorial period per week

Entry level competences

Prerequisites, previous knowledge

Basic knowledge of thermodynamics and fluid dynamics.

Brief course description of module objectives and content

The basic theories of heat transfer by conduction, convection and thermal radiation are presented. However, this study-unit focuses on solving practical heat transfer problems in different fields of engineering such as architectural and HVAC engineering, mechanical and process engineering, electrical as well as environmental engineering.

Aims, content, methods

Learning objectives and competencies to be acquired

Students shall learn how to solve engineering problems in the field of heat transfer.

Module content with weighting of different components

- Overview of Heat Transfer Modes
- Introduction to Conduction
- One-Dimensional, Steady-State Conduction
- Two-Dimensional, Steady-State Conduction
- Transient Conduction
- Introduction to Convection
- External Flow
- Internal Flow
- Free Convection
- Introduction to Radiation
- Radiation: Processes and Properties
- Radiation: Exchange Between Surfaces

Teaching and learning methods

Presentation of theory and practical examples of heat transfer problems, problem solving

Literature

F. Incropera, D. DeWitt, T. L. Bergman, A. S. Lavine. Incropera's Principles of Heat and Mass Transfer: Global Edition. Wiley, 2017-11-01.

Assessment

Additional performance assessment during the semester

The module does not contain an additional performance assessment during the semester

Basic principle for exams

As a rule, all standard final exams are conducted in written form. For resit exams, lecturers will communicate the exam format (written/oral) together with the exam schedule.

Standard final exam for a module and written resit exam

Kind of exam

Written exam

Duration of exam

120 minutes

Permissible aids

Aids permitted as specified below:

Permissible electronic aids

Pocket calculator

Other permissible aids

- Lecture notes
- Personal summary
- Course textbook (F. Incropera, D. DeWitt, T. L. Bergman, A. S. Lavine. Incropera's Principles of Heat and Mass Transfer: Global Edition. Wiley, 2017-11-01)

Exception: In case of an electronic Moodle exam, adjustments to the permissible aids may occur. Lecturers will announce the final permissible aids prior to the exam session.

Special case: Resit exam as oral exam

Kind of exam

Oral exam

Duration of exam

30 minutes

Permissible aids

No aids permitted