

**Module: Heat Transfer**

<b>Level</b>	Bachelor	<b>Short Name</b>	HT
<b>Responsible Lecturers</b>	Müller-Menzel, Thomas, Prof. Dr.-Ing.		
<b>Department, Facility</b>	Mechanical Engineering and Business Administration		
<b>Course of Studies</b>	Mechanical Engineering, Bachelor		
<b>Compulsory/elective</b>	Compulsory	<b>ECTS Credit Points</b>	4
<b>Semester of Studies</b>	6	<b>Semester Hours per Week</b>	4
<b>Length (semesters)</b>	1	<b>Workload (hours)</b>	120
<b>Frequency</b>	SuSe	<b>Presence Hours</b>	60
<b>Teaching Language</b>	English	<b>Self-Study Hours</b>	60

The following section is filled only if there is **exactly one** module-concluding exam.

<b>Exam Type</b>	Written Exam	<b>Exam Language</b>	English
<b>Exam Length (minutes)</b>	120	<b>Exam Grading System</b>	One-third Grades
<b>Learning Outcomes</b>	Upon successful completion of this course, the student will <ul style="list-style-type: none"> <li>• know the fundamentals of conduction, convection and radiation heat transfer mechanisms,</li> <li>• solve transient heat transfer problems,</li> <li>• have the ability to solve heat transfer problems,</li> <li>• be able to design and rate heat exchangers,</li> <li>• be able to work with HEX design software.</li> </ul>		
<b>Participation Prerequisites</b>	To write the exam the practical training has to be passed (lab and lab reports).  Recommended are <ul style="list-style-type: none"> <li>• understanding of the energy balance,</li> <li>• understanding of the basics of fluid flow,</li> <li>• basic thermodynamics.</li> </ul>		

The previous section is filled only if there is **exactly one** module-concluding exam.

<b>Consideration of Gender and Diversity Issues</b>	✓ Use of gender-neutral language (THL standard) ✓ Target group specific adjustment of didactic methods ✗ Making subject diversity visible (female researchers, cultures etc.)
<b>Applicability</b>	
<b>Remarks</b>	

## Module Course: Heat Transfer (lecture)

(of Module: Heat Transfer)

<b>Course Type</b>	Lecture	<b>Form of Learning</b>	Presence
<b>Mandatory Attendance</b>	no	<b>ECTS Credit Points</b>	3
<b>Participation Limit</b>		<b>Semester Hours per Week</b>	3
<b>Group Size</b>		<b>Workload (hours)</b>	90
<b>Teaching Language</b>	English	<b>Presence Hours</b>	45
<b>Study Achievements ("Studienleistung", SL)</b>		<b>Self-Study Hours</b>	45
<b>SL Length (minutes)</b>		<b>SL Grading System</b>	

The following section is filled only if there is a course-specific exam.

<b>Exam Type</b>		<b>Exam Language</b>	
<b>Exam Length (minutes)</b>		<b>Exam Grading System</b>	
<b>Learning Outcomes</b>			
<b>Participation Prerequisites</b>			

The previous section is filled only if there is a course-specific exam.

<b>Contents</b>	<ul style="list-style-type: none"> <li>• introduction to heat transfer mechanisms and solution methodology,</li> <li>• conduction,</li> <li>• convection,</li> <li>• transient heat transfer,</li> <li>• extended surfaces,</li> <li>• heat exchangers</li> <li>• radiation heat transfer.</li> </ul>
<b>Literature</b>	<ul style="list-style-type: none"> <li>• handouts to lecture, to exercises and to labs,</li> <li>• Introduction to Heat Transfer, Incropera and DeWitt, Wiley,</li> <li>• additional literature according to the list given out in class.</li> </ul>
<b>Remarks</b>	

## Module Course: Heat Transfer (Practical Training)

(of Module: Heat Transfer)

<b>Course Type</b>	Practical Training	<b>Form of Learning</b>	Presence
<b>Mandatory Attendance</b>	yes	<b>ECTS Credit Points</b>	1
<b>Participation Limit</b>		<b>Semester Hours per Week</b>	1
<b>Group Size</b>	6	<b>Workload (hours)</b>	30
<b>Teaching Language</b>	English	<b>Presence Hours</b>	15
<b>Study Achievements ("Studienleistung", SL)</b>	(Flexible)	<b>Self-Study Hours</b>	15
<b>SL Length (minutes)</b>		<b>SL Grading System</b>	Pass

The following section is filled only if there is a course-specific exam.

<b>Exam Type</b>		<b>Exam Language</b>	
<b>Exam Length (minutes)</b>		<b>Exam Grading System</b>	
<b>Learning Outcomes</b>			
<b>Participation Prerequisites</b>			

The previous section is filled only if there is a course-specific exam.

<b>Contents</b>	<ul style="list-style-type: none"> <li>• structure of heat exchanger design software,</li> <li>• heat exchanger design,</li> <li>• heat exchanger operation measurements,</li> <li>• heat exchanger performance evaluation.</li> </ul>
<b>Literature</b>	Notes to the lab experiments.
<b>Remarks</b>	Lab reports have to be handed in. If the reports to all lab experiments are on an acceptable level with respect to content and format the practical training is passed.