

Module name	Heat Exchange
Module number	EuI-RES-C-WÜ
Lecturer in charge	Prof. Dr.-Ing. M. Beckmann michael.beckmann@tu-dresden.de
Objectives	After completing the module, students understand the basic mechanisms of heat transfer and can apply the associated transport equations. Students are familiar with stationary processes of heat conduction, heat transfer by convection and radiation for various problems of ideal and real processes in practice. They are able to derive solution methods for the treatment of transient heat transfer and can apply the solution methods to various problems of ideal and real processes in practice. Students are able to balance heat exchangers. They are familiar with practical examples of heat transfer and can derive, understand and analyze ideal and real processes in practice.
Contents	The contents of the module are the basic relationships for the application of the conservation laws of mass, energy and momentum in connection with the transport laws for thermal energy in conduction, convection and radiation for ideal and real processes as well as the phenomenological description of the mechanisms of heat transfer. Further focal points are stationary and transient problems of heat conduction, heat transfer on ribs, the heat transfer of multi-layered bodies such as plates, cylinders or spheres, the calculation of heat exchangers and the optimization of heat transfer processes.
Modes of teaching and learning	2 hours per week lectures, 2 hours per week exercises and self-study.
Prerequisites	The skills to be acquired in the module Introduction to Analysis and Algebra, Calculus for Functions with Several Variables, Physics and Thermodynamics Basics are required.
Usability	The module is a compulsory module in the basic studies of the degree programme Renewable Energy Systems. It creates the prerequisites for the modules that list that module in the "Prerequisites" field.
Requirements for the award of credit points	The credit points are awarded when the module assessment is passed. The module assessment consists of a written exam of 120 minutes.
Credit points and grades	5 credit points can be obtained by the module. The module grade is the grade of the examination.
Frequency	The module is offered every summer semester.
Workload	The total effort is 150 hours.
Duration	The module takes one semester.