



THERMODYNAMICS AND HEAT TRANSFER

Prof. Dr.-Ing. Tobias FIEBACK

Work load: 45h Theory (lectures), 90h Self-studies.

Number of credits: 4 ECTS

Course code: THT. MA. Nr. / Examination number: 41215

► *Course contents:*

Seminar:

- Fundamentals of thermodynamics (equations of state, reversible processes, system boundaries)
- First and second law of thermodynamics
- Thermodynamic properties of pure fluid substances
- Thermodynamic investigation of cycle processes (carnot, clausiusrankine, ...)
- Thermodynamics of simple mixtures (humid air)
- Basic introductions to heat and mass transfer processes.

► *Intended Learning Outcomes:*

- Knowledge of basic thermodynamic principles
- Applying of those principles to beginner level thermodynamic processes
- Getting a brief understanding of heat and mass transfer processes.

► *Planned learning activities and teaching methods:*

S1 (WS): Lecture / Lectures (1 SWS)

S1 (WS): Exercise / Exercises (2 SWS)

► *Mode of delivery (face-to-face; distance-learning):*

- Theoretical courses are given by modules of 2 hours.
- Face-to-face discussions with young researchers in the field. Supportive learning during practical lessons by working on datasets both in group and individually.

► *Recommended or required readings:*

The Laws of Thermodynamics: A Very Short Introduction; Peter W. Atkins (just for getting started)



Thermodynamik: Grundlagen und technische Anwendungen; H.D. Baehr / S. Kabelac (German)

VDI-Wärmeatlas (Thermodynamic Properties in German)

► *Assessment methods and criteria:*

For the award of credit points it is necessary to pass the module exam.

The module exam contains: MP/KA (KA if 10 students or more) [MP minimum 40 min / KA 120 min]

The Grade is generated from the examination result(s) with the following weights (w):

MP/KA [w: 1]

► *Contribution to EIT's Overarching Learning Outcomes:*

(EIT OLO6): the understanding of heat and mass transfer processes as well as applying thermodynamic principles in thermodynamic processes.