

Module Handbook (<https://modhb.uni-kl.de/>)

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Notes on the module handbook of the department Mechanical and Process Engineering

Die hier dargestellten veröffentlichten Studiengang-, Modul- und Kursdaten des Fachbereichs Maschinenbau und Verfahrenstechnik ersetzen die Modulbeschreibungen im KIS und wurden mit Ausnahme folgender Studiengänge am 28.10.2020 verabschiedet.

Ausnahmen:

- BSc. Bio- und Chemieingenieurwissenschaften (Stand WS 20/21): https://www.mv.uni-kl.de/fileadmin/mv/Studium_Lehre/Modulhandbuecher/MH_BSc_BCI.pdf (https://www.mv.uni-kl.de/fileadmin/mv/Studium_Lehre/Modulhandbuecher/MH_BSc_BCI.pdf)
- BEd. Lehramt Metalltechnik (Stand WS 19/20): https://www.mv.uni-kl.de/fileadmin/mv/Studium_Lehre/Modulhandbuecher/MHB_Bachelor_Lehramt_Metalltechnik.pdf (https://www.mv.uni-kl.de/fileadmin/mv/Studium_Lehre/Modulhandbuecher/MHB_Bachelor_Lehramt_Metalltechnik.pdf)
- MSc. Bio- und Chemieingenieurwissenschaften (Stand WS 20/21): https://www.mv.uni-kl.de/fileadmin/mv/Studium_Lehre/Modulhandbuecher/MH_Msc_BCI.pdf (https://www.mv.uni-kl.de/fileadmin/mv/Studium_Lehre/Modulhandbuecher/MH_Msc_BCI.pdf)
- MEd. Lehramt Metalltechnik Werkstoffe und Fertigung (Stand WS 19/20): https://www.mv.uni-kl.de/fileadmin/mv/Studium_Lehre/Modulhandbuecher/MHB_Master_Lehramt_Metalltechnik_-_Werkstoffe_und_Fertigung.pdf (https://www.mv.uni-kl.de/fileadmin/mv/Studium_Lehre/Modulhandbuecher/MHB_Master_Lehramt_Metalltechnik_-_Werkstoffe_und_Fertigung.pdf)
- MEd. Lehramt Metalltechnik Maschinen- und Fahrzeugtechnik (Stand WS 19/20): https://www.mv.uni-kl.de/fileadmin/mv/Studium_Lehre/Modulhandbuecher/MHB_Master_Lehramt_Metalltechnik_-_Fahrzeugtechnik.pdf (https://www.mv.uni-kl.de/fileadmin/mv/Studium_Lehre/Modulhandbuecher/MHB_Master_Lehramt_Metalltechnik_-_Fahrzeugtechnik.pdf)
- MEd. Lehramt Metalltechnik Verfahrenstechnik (Stand WS 19/20): https://www.mv.uni-kl.de/fileadmin/mv/Studium_Lehre/Modulhandbuecher/MHB_Master_Lehramt_Metalltechnik_-_Verfahrenstechnik.pdf (https://www.mv.uni-kl.de/fileadmin/mv/Studium_Lehre/Modulhandbuecher/MHB_Master_Lehramt_Metalltechnik_-_Verfahrenstechnik.pdf)

Module MV-LTD-B130-M-4

Energy process and systems engineering (M, 3.0 LP)

Module Identification

Module Number	Module Name	CP (Effort)
MV-LTD-B130-M-4	<i>Energy process and systems engineering</i>	3.0 CP (90 h)

Basedata

CP, Effort	3.0 CP = 90 h
Position of the semester	1 Sem. in WiSe
Level	[4] Bachelor (Specialization)
Language	[DE] German
Module Manager	Hasse, Hans, Prof. Dr.-Ing. (PROF DEPT: MV) (/staff/314/) Jirasek, Fabian, Jun. Prof. Dr.-Ing. (PROF DEPT: MV) (/staff/652/)
Lecturers	Jirasek, Fabian, Jun. Prof. Dr.-Ing. (PROF DEPT: MV) (/staff/652/)
Area of study	[MV-LTD] Engineering Thermodynamics
Reference course of study	[MV-82.B10-SG] B.Sc. Energy and Process Engineering (/mhb/FB-MV/cos-528/)
Lifecycle-State	[NORM] Active

Courses

Type/SWS	Course Number	Choice in Module-Part	SL	PL	CP	Sem.
2V	MV-LTD-86417-K-4 (/mhb/courses/MV-LTD-86417-K-4/)	P	-	PL1	3.0	WiSe

- About **[MV-LTD-86417-K-4]**: Title: "Energy process and systems engineering"; Presence-Time: 28 h; Self-Study: 62 h

Examination achievement PL1

- Form of examination: **oral examination with written preparation (50-65 Min.)**
- Examination Frequency: each semester
- Examination number: 10417 ("Energy process and systems engineering")

Evaluation of grades

The grade of the module examination is also the module grade.

Contents

From **[MV-LTD-86417-K-4] Energy process and systems engineering** (/mhb/courses/MV-LTD-86417-K-4/):

- Thermodynamic fundamentals of combustion (technical combustion)
- Chemical fundamentals of combustion and the formation of pollutants
- Process engineering for waste gas treatment (incineration plants, CO₂-free power plants)
- Exergy analysis

Competencies / intended learning achievements

From **[MV-LTD-86417-K-4] Energy process and systems engineering** (/mhb/courses/MV-LTD-86417-K-4/):

Students will be able to

- explain energy resources, energy storage, and energy conversion chains,
- evaluate the basics of process engineering for flue gas treatment,
- analyze energy processes using principles of thermodynamics,
- relate the fundamentals of combustion to the formation of pollutants,
- create, assess, and consult Matlab programs in groups.

Literature

From [MV-LTD-86417-K-4] Energy process and systems engineering (/mhb/courses/MV-LTD-86417-K-4/):

- H. D. Baehr, S. Kabelac: Thermodynamik, 13. Auflage, Springer, Berlin, 2006;
- K. Kugeler: Energietechnik, Springer Vieweg; 3. Auflage. 2014;
- R. Zahoransky: Energietechnik: Systeme zur Energieumwandlung, Springer Vieweg; 6. Auflage 2012

Requirements for attendance (informal)

Modules:

- [MV-CHE-01-M-1] Chemistry for engineers (M, 5.0 LP) (/mhb/modules/MV-CHE-01-M-1/)
- [MV-TD-18-M-4] Thermodynamics I (M, 5.0 LP) (/mhb/modules/MV-TD-18-M-4/)
- [MV-TD-19-M-4] Thermodynamics II (M, 4.0 LP) (/mhb/modules/MV-TD-19-M-4/)

Requirements for attendance (formal)

None

References to Module / Module Number [MV-LTD-B130-M-4]

Course of Study	Section	Choice/Obligation
[MV-82.B10-SG] B.Sc. Energy and Process Engineering (/mhb/FB-MV/cos-528/)	Ingenieurwissenschaftliche Grundlagen II	[P] Compulsory
[MV-88.A29-SG] M.Sc. Biological and Chemical Engineering (/mhb/FB-MV/cos-567/)	Studienschwerpunkt II	[WP] Compulsory Elective
[WIW-82.?-SG#2021] B.Sc. Business Administration and Engineering specialising in Energy and Process Engineering [2021] (/mhb/FB-WIW/cos-689/)	Energy and Process Engineering	[WP] Compulsory Elective