

Module Handbook

TUK MODHB Homepage

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, bzw. am 13.01.2021 verabschiedet.

Ausnahmen:

- BEd. Lehramt Metalltechnik (Stand WS 19/20): https://www.mv.uni-kl.de/fileadmin/mv/Studium_Lehre/Modulhandbuecher/MHB_Bachelor_Lehramt_Metalltechnik.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
- 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
- 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

Module MV-TVT-59-M-4

Thermal Separation Processes I (M, 6.0 LP)

Module Identification

Module Number	Module Name	CP (Effort)
MV-TVT-59-M-4	<i>Thermal Separation Processes I</i>	6.0 CP (180 h)

Basedata

CP, Effort	6.0 CP = 180 h
Position of the semester	1 Sem. in WiSe
Level	[4] Bachelor (Specialization)
Language	[DE] German
Module Manager	von Harbou, Erik, Prof. Dr.-Ing. (PROF DEPT: MV)
Lecturers	von Harbou, Erik, Prof. Dr.-Ing. (PROF DEPT: MV)
Area of study	[MV-LRF] Separation Science and Technology
Reference course of study	[MV-82.B10-SG] B.Sc. Energy and Process Engineering
Lifecycle-State	[NORM] Active

Courses

Type/SWS	Course Number	Choice in Module-Part	SL	PL	CP	Sem.
3V+1U	MV-TVT-86400-K-4	P	-	PL1	6.0	WiSe

- About [MV-TVT-86400-K-4]: Title: "Thermal Separation Processes I"; Presence-Time: 56 h; Self-Study: 124 h

Examination achievement PL1

- Form of examination: **written exam (Klausur) (240 Min.)**
- Examination Frequency: each semester
- Examination number: 10400 ("Thermal Separation Processes I")

Evaluation of grades

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

Contents

From [MV-TVT-86400-K-4] Thermal Separation Processes I:

1. Introduction
2. Basics
3. Equilibrium stage model for separation processes
4. Rate based model for separation processes
5. Evaporation and Condensation
6. Distillation
7. Absorption and Desorption
8. Extraction

Competencies / intended learning achievements

From [MV-TVT-86400-K-4] Thermal Separation Processes I:

1. Lecture

The students are able to

- reproduce and describe the basic concepts and procedures of thermal process engineering.
- solve and analyze fluid process separation tasks.
- relate separation technology to economic issues
- draw up balance sheets
- Application of the different modeling approaches (equilibrium step model and mass transfer model) to describe thermal separation processes..
- Basic understanding of the variables influencing the separation processes
- Basic evaluation of the separation processes with regard to energy demand and equipment design

2. Exercise

The students are able to

- set up balances and calculate phase equilibria of ideal mixtures
- model basic processes of thermal process engineering

Literature

From [MV-TVT-86400-K-4] Thermal Separation Processes I:

- Sattler: Thermische Trennverfahren
- Mersmann: Thermische Verfahrenstechnik
- Seader, Henry: Separation Process Principles
- Grassmann: Einführung in die thermische Verfahrenstechnik
- Perry, Chilton: Chemical Engineers Handbook
- Thurner: Verdampfung, Kristallisation, Trocknung
- Onken, Leschonski: Grundzüge der Verfahrenstechnik und Reaktionskinetik
- Walas: Chem. Process Equipment.

Requirements for attendance of the module (informal)

Recommended:

Modules:

- [MV-TD-18-M-4] Thermodynamics I (M, 5.0 LP)
- [MV-TD-19-M-4] Thermodynamics II (M, 4.0 LP)

Requirements for attendance of the module (formal)

None

References to Module / Module Number [MV-TVT-59-M-4]

Course of Study	Section	Choice/Obligation
[WIW-82.175-SG#2009] B.Sc. Business Administration and Engineering specialising in Environmental and Process Engineering (2009) [2009]	[Fundamentals] Field of study: Environmental and Process Engineering	[P] Compulsory
[WIW-82.789-SG#2009] B.Sc. Business Studies with Technical Qualifications (2009) [2009]	[Fundamentals] Field of study: Process Engineering	[P] Compulsory
[MV-82.A29-SG] B.Sc. Biological and Chemical Engineering	[Fundamentals] Ingenieurwissenschaftliche Grundlagen	[P] Compulsory
[MV-82.B10-SG] B.Sc. Energy and Process Engineering	[Core Modules (non specialised)] Ingenieurwissenschaftliche Grundlagen II	[P] Compulsory
[WIW-88.177-SG#2009] M.Sc. Business Administration and Engineering specialising in Chemistry (2009) [2009]	[Specialisation] Business Administration and Engineering: Engineering Field of Specialization	[P] Compulsory
[WIW-82.-SG#2021] B.Sc. Business Studies with Technical Qualifications (2021) [2021]	[Core Modules (non specialised)] Technical Profile Area	[P] Compulsory
[WIW-82.-SG#2021] B.Sc. Business Administration and Engineering specialising in Energy and Process Engineering (2021) [2021]	[Specialisation] Field of Study: Energy and Process Engineering	[P] Compulsory
[WIW-88.-SG#2022] M.Sc. Business Administration and Engineering specialising in Chemistry (2022) [2022]	[Specialisation] Field of Study: Chemistry	[P] Compulsory
[MV-66.-SG#2022] M.Ed. LaBBS MV-Chemietechnik (affines Zweitfach) [2022]	[Compulsory Modules] Verfahrenstechnik	[P] Compulsory