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 wuden 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-WKK-198-M-4

Laboratory "Material Testing" (M, 3.0 LP)

Module Identification

Module Number	Module Name	CP (Effort)
MV-WKK-198-M-4	*Laboratory "Material Testing"*	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	Beck, Tilmann, Prof. Dr.-Ing. (PROF | DEPT: MV) (/staff/303/)
Lecturers	Beck, Tilmann, Prof. Dr.-Ing. (PROF | DEPT: MV) (/staff/303/) Smaga, Marek, Dr.-Ing. (WMA | DEPT: MV) (/staff/277/)
Area of study	[MV-WKK] Materials Science and Engineering
Reference course of study	[MV-88.B73-SG] M.Sc. Materials Science and Engineering (/mhb/FB-MV/cos-577/)
Livecycle-State	[NORM] Active

Courses

Type/SWS	Course Number	Choice in Module-Part	SL	PL	CP	Sem.
2L	**MV-WKK-86170-K-4** (/mhb/courses/MV-WKK-86170-K-4/)	P	L-Schein	no	3.0	WiSe

- About **[MV-WKK-86170-K-4]**: Title: "Laboratory "Material Testing""; Presence-Time: 28 h; Self-Study: 62 h
- About **[MV-WKK-86170-K-4]**: The study achievement **[L-Schein] proof of successful participation in the practical course / lab** must be obtained.
- About **[MV-WKK-86170-K-4]**:

  Depending on the examination regulations, the course work can/must be submitted as graded examination work. In this case the repetition rules of the examination regulations for practical laboratory work apply.

Contents

From [MV-WKK-86170-K-4] Laboratory "Material Testing" (/mhb/courses/MV-WKK-86170-K-4/)**:**

- Investigating the influence of different heat treatments on material properties
- Determination of the quasi-static deformation behavior
- Hardness testing
- Characterization of microstructure by light optical and scanning electron microscopy
- Software-supported quantitative microstructure analysis
- Fracture surface analysis
- Cyclic deformation behavior and hysteresis measurements

Competencies / intended learning achievements

From [MV-WKK-86170-K-4] Laboratory "Material Testing" (/mhb/courses/MV-WKK-86170-K-4/)**:**

The students are able to

- explain the influence of different heat treatments on the resulting material properties
- recognize the heat treatment state of a metallic material by characterizing the microstructure with light optical and scanning electron microscopy and to this to the deformation behavior
- assign fracture surfaces to the respective heat treatment condition
- determine quantitatively the different parts of microstructure
- carry out and evaluate macro hardness measurements

- characterize the cyclic deformation behavior by means of hysteresis measurements
- name the characteristic values of the stress-strain hysteresis
- structure and present the research results in an evaluative manner

Literature

From [MV-WKK-86170-K-4] Laboratory "Material Testing" (/mhb/courses/MV-WKK-86170-K-4/)**:**

- E. Macherauch: Praktikum in Werkstoffkunde, F. Vieweg, Braunschweig
- H. Schumann: Metallographie, Deutscher Verlag für Grundstoffindustrie, Leipzig
- H. Blumenauer: Werkstoffprüfung, Deutscher Verlag für Grundstoffindustrie, Leipzig, Stuttgart
- E. Ross: Werkstoffkunde für Ingenieure, Springer-Verlag, Berlin

Requirements for attendance (informal)

Modules:

- [MV-AWP-253-M-4] Materials Science I for Students of other faculties (M, 3.0 LP) (/mhb/modules/MV-AWP-253-M-4/)
- [MV-AWP-254-M-4] Materials Science I for Students of other faculties (M, 3.0 LP) (/mhb/modules/MV-AWP-254-M-4/)
- [MV-WKK-B100-M-4] Materials Science (M, 11.0 LP) (/mhb/modules/MV-WKK-B100-M-4/)

Requirements for attendance (formal)

None

References to Module / Module Number [MV-WKK-198-M-4]

Module-Pool	Name
[MV-ALL-MPOOL-6 (/mhb/modulepools/MV-ALL-MPOOL-6/)]	Wahlpflichtmodule allgemein
[MV-BioVT-MPOOL-6 (/mhb/modulepools/MV-BioVT-MPOOL-6/)]	Wahlpflichtmodule Bioverfahrenstechnik
[MV-MatWerk-MPOOL-6 (/mhb/modulepools/MV-MatWerk-MPOOL-6/)]	Wahlpflichtmodule Materialwissenschaften und Werkstofftechnik