

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-IMAD-B107-M-4

Automotive Engineering (M, 5.0 LP)

Module Identification

Module Number	Module Name	CP (Effort)
MV-IMAD-B107-M-4	<i>Automotive Engineering</i>	5.0 CP (150 h)
MV-VKM-B107-M-4	<i>Automotive Engineering</i>	5.0 CP (150 h)
MV-MEMT-9-M-6	<i>Fahrzeugtechnik</i>	5.0 CP (150 h)

Hint concerning Module Number MV-MEMT-9-M-6:

Number, Name and level for Master's degree in metal technology for vocational schools

Basedata

CP, Effort	5.0 CP = 150 h
Position of the semester	2 Sem. from SuSe
Level	[4] Bachelor (Specialization)
Language	[DE] German
Module Manager	Stephan, Nicole, Dr.-Ing. (WMA DEPT: MV) Teutsch, Roman, Prof. Dr.-Ing. (PROF DEPT: MV, GS)
Lecturers	Engel, Hans G., Prof. Dr.-Ing. (EXT DEPT: MV)
Area of study	[MV-iMAD] Mechanical and Automotive Design
Reference course of study	[MV-82.103-SG] B.Sc. Mechanical Engineering
Lifecycle-State	[NORM] Active

Courses

Type/SWS	Course Number	Choice in Module-Part	SL	PL	CP	Sem.
2V	MV-IMAD-86327-K-4	P	-	PL1	2.5	SuSe
2V	MV-IMAD-86328-K-4	P	-	PL1	2.5	WiSe

- About **[MV-IMAD-86327-K-4]**: Title: "Automotive Engineering I"; Presence-Time: 28 h; Self-Study: 47 h
- About **[MV-IMAD-86328-K-4]**: Title: "Automotive Engineering II"; Presence-Time: 28 h; Self-Study: 47 h

Examination achievement PL1

- Form of examination: **written exam (Klausur) (120 Min.)**
- Examination Frequency: each semester
- Examination number: 10329 ("Automotive Engineering")

Evaluation of grades

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

Contents

From **[MV-IMAD-86327-K-4] Automotive Engineering I:**

- longitudinal dynamics of vehicles
- power requirements
- powertrain
- torque and speed converter
- axle/final drives
- tires
- driving performance
- brakes (structure, function, design issues)
- vehicle safety

From [MV-IMAD-86328-K-4] Automotive Engineering II:

- transverse dynamics of vehicles
- instantaneous center of rotation
- braking process
- stationary cornering
- dynamic steering behavior
- impacting the self-steering behavior
- suspension and damping

Competencies / intended learning achievements

Students will be able to

- describe and reproduce general concepts and relationships of the longitudinal dynamics of vehicles
- determine the power requirements of vehicles and describe individual demands of the components
- explain different drive systems as well as their properties and characteristics
- describe torque and speed converters and characterize their operation and necessity.
- describe the structure, design and properties of a tire in the context of the overall vehicle system
- characterize and interpret driving performances
- reproduce the structure, requirements and design of brakes and their properties
- describe general aspects of vehicle safety and discuss concrete examples in connection with vehicles
- describe and reproduce general concepts and relationships of the transverse dynamics of vehicles
- determine and adjust the instantaneous center of rotation
- characterize braking maneuvers and explain the related vehicle behavior
- explain basic concepts and relationships of stationary cornering
- describe the meaning as well as concepts of dynamic steering behavior of vehicles
- describe the possibilities and significance of impacting the self-steering behavior
- reproduce and discuss the terms and relations of suspension and damping

For Bachelor's degree teaching profession for vocational schools in metal technology:

Students will be able to understand the general principles of automotive engineering and their application in technology, especially in areas important to vocational schools.

Literature

- Skriptum zu den Vorlesungen
- Braess, Seifert: Handbuch Kraftfahrzeugtechnik, Vieweg Verlag, ISBN 3-528-33114-3
- Heißing, Ersoy: Fahrwerkhandbuch, Vieweg Verlag, ISBN 3-8348-0105-0

Requirements for attendance of the module (informal)

None

- Notice: Some Courses have informal requirements for attendance:
 - #A: [MV-IMAD-86328-K-4] Automotive Engineering II (2V, 2.5 LP) (P: Obligatory)

Requirements for attendance of the module (formal)

None

References to Module / Module Number [MV-IMAD-B107-M-4]

Course of Study	Section	Choice/Obligation
[MV-82.103-SG] B.Sc. Mechanical Engineering	[Specialisation] Vehicle Engineering (if chosen)	[P] Compulsory
[MV-82.103b-SG#2022] B.Sc. Maschinenbau 2022 [2022]	[Specialisation] Wahlpflichtbereich / Kompetenzfelder	[WP] Compulsory Elective
Module-Pool	Name	
[MV-MB-2022-MPOOL-4]	Wahlpflichtmodule Bachelor Maschinenbau	

References to Module / Module Number [MV-MEMT-9-M-6]

Course of Study	Section	Choice/Obligation
[MV-66.108-SG] M.Ed. LaBBS Metals Technology	[Core Modules (non specialised)] Maschinen- und Fahrzeugtechnik	[P] Compulsory

References to Module / Module Number [MV-VKM-B107-M-4]

Course of Study	Section	Choice/Obligation
[WIW-82.789-SG#2009] B.Sc. Business Studies with Technical Qualifications (2009) [2009]	[Fundamentals] Field of study: Mechanical Engineering	[WP] Compulsory Elective
[WIW-82.?-SG#2021] B.Sc. Business Studies with Technical Qualifications (2021) [2021]	[Core Modules (non specialised)] Technical Profile Area	[WP] Compulsory Elective