TECHNISCHE UNIVERSITÄT KAISERSLAUTERN

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

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-MEGT-110-M-4

Gear Technology (M, 5.0 LP)

Module Identification

Module Number	Module Name	CP (Effort)
MV-MEGT-110-M-4	*Gear Technology*	5.0 CP (150 h)

Basedata

CP, Effort	5.0 CP = 150 h
Position of the semester	1 Sem. in WiSe
Level	[4] Bachelor (Specialization)
Language	[DE] German
Module Manager	Sauer, Bernd, Prof. Dr.-Ing. (PROF | DEPT: MV) (/staff/323/)
Lecturers	Sauer, Bernd, Prof. Dr.-Ing. (PROF | DEPT: MV) (/staff/323/) Simo Kamga, Lionel, M. Sc. (WMA | DEPT: MV) (/staff/638/)
Area of study	[MV-MEGT] Machine Elements, Gears, and Transmissions
Reference course of study	[MV-82.103-SG] B.Sc. Mechanical Engineering (/mhb/FB-MV/cos-508/)
Livecycle-State	[NORM] Active

Courses

Type/SWS	Course Number	Choice in Module-Part	SL	PL	CP	Sem.
3V+1U	**MV-MEGT-86203-K-4** (/mhb/courses/MV-MEGT-86203-K-4/)	P	-	PL1	5.0	WiSe

- About **[MV-MEGT-86203-K-4]**: Title: "Gear Technology"; Presence-Time: 56 h; Self-Study: 94 h

Examination achievement PL1

- Form of examination: **written exam (Klausur) (180 Min.)**
- Examination Frequency: each semester
- Examination number: 10203 ("Gears")

Evaluation of grades

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

Contents

From [MV-MEGT-86203-K-4] Gear Technology (/mhb/courses/MV-MEGT-86203-K-4/):

- Gear systematics: systematic subdivision of gear units on the basis of various criteria
- Gear analysis: determination of kinematic and dynamic quantities in plane coupling gears by graphical methods
- Basic principles and designs as well as graphical and analytical methods for determining the speed ratios of planetary gear units
- Design, mode of operation and procedures for the design of stepped gearboxes
- Basics of cam and piston gears

Competencies / intended learning achievements

From [MV-MEGT-86203-K-4] Gear Technology (/mhb/courses/MV-MEGT-86203-K-4/):

1. Lecture

The students are able to

- reproduce the basic concepts of gear technology

- classify gearboxes in terms of structure and application
- analyze the gearbox efficiency with the help of Grübler's equation
- determine different positions of a plane coupling drive using graphical methods
- determine the kinematic parameters, such as velocities and accelerations, by applying various graphical methods
- name and describe the basic types of planetary gears and to carry out an analytical and graphical analysis of the transmission ratios with the aid of the Willis equation and the Kutzbach diagram.
- describe and determine the relevant characteristics of stepped gearboxes and design a stepped gearbox using various methods
- describe the structure of cam and crank gears

2. Exercise

The students are able to apply the methods discussed in the lecture to

- the analysis and description of gears,
- the execution of kinematic analyses for the determination of relevant parameters on plane coupling gears,
- the graphical and analytical determination of transmission ratios and speeds on planetary gearboxes
- the description and design of stepped gearboxes on the basis of examples presented.

Literature

From [MV-MEGT-86203-K-4] Gear Technology (/mhb/courses/MV-MEGT-86203-K-4/)**:**

- Steinhilper et al.: Ebene Mechanismen und Getriebe
- Kraemer: Getriebelehre
- Volmer et al.: Lehrbuch Getriebetechnik
- Luck/Modler: Getriebetechnik
- Kerle et al: Einführung in die Getriebelehre
- Müller: Umlaufgetriebe
- Dubbel: Taschenbuch für den Maschinenbau
- Steinhilper/Sauer: Konstruktionselemente des Maschinenbaus 2, Springer Verlag

Requirements for attendance (informal)

Modules:

- [MV-MEGT-13-M-4] Mechanical Design I (M, 9.0 LP) (/mhb/modules/MV-MEGT-13-M-4/)
- [MV-MEGT-14-M-4] Mechanical Design II (M, 9.0 LP) (/mhb/modules/MV-MEGT-14-M-4/)
- [MV-TM-7-M-1] Applied Mechanics I (M, 5.0 LP) (/mhb/modules/MV-TM-7-M-1/)
- [MV-TM-8-M-4] Applied Mechanics II (M, 5.0 LP) (/mhb/modules/MV-TM-8-M-4/)
- [MV-TM-9-M-4] Engineering Mechanics III (M, 5.0 LP) (/mhb/modules/MV-TM-9-M-4/)

Requirements for attendance (formal)

None

References to Module / Module Number [MV-MEGT-110-M-4]

Course of Study	Section	Choice/Obligation
[MV-82.103-SG] B.Sc. Mechanical Engineering (/mhb/FB-MV/cos-508/)	Product Development in Mechanical Engineering (if chosen)	[P] Compulsory

Module-Pool	Name
[MV-ALL-MPOOL-6 (/mhb/modulepools/MV-ALL-MPOOL-6/)]	Wahlpflichtmodule allgemein
[MV-FT-MPOOL-6 (/mhb/modulepools/MV-FT-MPOOL-6/)]	Wahlpflichtmodule Fahrzeugtechnik