## 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-IMAD-M205-M-5

## Economic Leightweight Design (M, 3.0 LP)

## Module Identification

| Module Number | Module Name | CP (Effort) |
|---|---|---|
| **MV-IMAD-M205-M-5** | *Economic Leightweight Design* | 3.0 CP (90 h) |

## Basedata

| | |
|---|---|
| **CP, Effort** | 3.0 CP = 90 h |
| **Position of the semester** | 1 Sem. in SuSe |
| **Level** | [5] Master (Entry Level) |
| **Language** | [DE] German |
| **Module Manager** | Stephan, Nicole, Dr.-Ing. (WMA \| DEPT: MV) (/staff/279/)<br>Teutsch, Roman, Prof. Dr.-Ing. (PROF \| DEPT: MV, GS) (/staff/327/) |
| **Lecturers** | Krüsemann, Rolf, Dr. (EXT \| DEPT: MV) (/staff/244/) |
| **Area of study** | [MV-iMAD] Mechanical and Automotive Design |
| **Reference course of study** | [MV-88.B78-SG] M.Sc. Production Engineering in Mechanical Engineering (/mhb/FB-MV/cos-578/) |
| **Livecycle-State** | [NORM] Active |

## Courses

| Type/SWS | Course Number | Choice in Module-Part | SL | PL | CP | Sem. |
|---|---|---|---|---|---|---|
| 2V | **MV-IMAD-86257-K-5** (/mhb/courses/MV-IMAD-86257-K-5/) | P | - | PL1 | 3.0 | SuSe |

- About **[MV-IMAD-86257-K-5]**: Title: "Economic Leightweight Design"; Presence-Time: 28 h; Self-Study: 62 h

## Examination achievement PL1

- Form of examination: **written or oral examination**
- Examination Frequency: each semester

Oral (30-45 minutes) or written (60-90 minutes) examination

## Evaluation of grades

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

## Contents

**From [MV-IMAD-86257-K-5] Economic Leightweight Design** (/mhb/courses/MV-IMAD-86257-K-5/)**:**

- What does lightweight design mean and how does it work? -> Methodical approach in the product development process
- What is the added value of lightweight design? -> Challenges, evaluation options
- Tools for lightweight design, e.g. topology optimization
- Materials and joining techniques
- Significance of modularization, interfaces and tolerance concepts
- Resource efficiency, CO2 footprint (ecology, economy)
- References and examples to automotive engineering, especially electromobility

## Competencies / intended learning achievements

**From [MV-IMAD-86257-K-5] Economic Leightweight Design** (/mhb/courses/MV-IMAD-86257-K-5/)**:**

Students will be able to

- explain different lightweight design principles and their added value
- describe the approach in the product development process
- select suitable tools, materials and joining techniques
- evaluate the potential and limits of lightweight applications in automotive engineering.

## Literature

**From [MV-IMAD-86257-K-5] Economic Leightweight Design** (/mhb/courses/MV-IMAD-86257-K-5/)**:**

Literature will be announced at the beginning of the course.

## Requirements for attendance (informal)

None

## Requirements for attendance (formal)

None

## References to Module / Module Number [MV-IMAD-M205-M-5]

| 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 |
| [MV-MatWerk-MPOOL-6 (/mhb/modulepools/MV-MatWerk-MPOOL-6/)] | Wahlpflichtmodule Materialwissenschaften und Werkstofftechnik |
| [MV-PE-MPOOL-6 (/mhb/modulepools/MV-PE-MPOOL-6/)] | Wahlpflichtmodule Produktentwicklung im Maschinenbau |