

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

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### 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 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) ([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) ([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) ([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) ([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) ([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) ([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-LTD-M213-M-4

ChemCar project (M, 6.0 LP)

### Module Identification

Module Number	Module Name	CP (Effort)
MV-LTD-M213-M-4	<i>ChemCar project</i>	6.0 CP (180 h)

### Basedata

CP, Effort	6.0 CP = 180 h
Position of the semester	2 Sem. from WiSe
Level	[4] Bachelor (Specialization)
Language	[DE/EN] German or English as required
Module Manager	Hasse, Hans, Prof. Dr.-Ing. (PROF   DEPT: MV) (/staff/314/)
Lecturers	Hasse, Hans, Prof. Dr.-Ing. (PROF   DEPT: MV) (/staff/314/)
Area of study	[MV-LTD] Engineering Thermodynamics
Reference course of study	[MV-88.B10-SG] M.Sc. Energy and Process Engineering (/mhb/FB-MV/cos-573/)
Lifecycle-State	[NORM] Active

## Courses

Type/SWS	Course Number	Choice in Module-Part	SL	PL	CP	Sem.
1S	<b>MV-LTD-86063-K-4</b> (/mhb/courses/MV-LTD-86063-K-4/)	P	-	PL1	2.0	WiSe
2S	<b>MV-LTD-86064-K-4</b> (/mhb/courses/MV-LTD-86064-K-4/)	P	-	PL2	4.0	SuSe

- About **[MV-LTD-86063-K-4]**: Title: "ChemCar 1: Konzeptentwicklung und Vorversuche"; Presence-Time: 14 h; Self-Study: 46 h
- About **[MV-LTD-86064-K-4]**: Title: "ChemCar 2: Konstruktion und Erprobung"; Presence-Time: 28 h; Self-Study: 92 h

### Examination achievement PL1

- Form of examination: **term paper**
- Examination Frequency: Examination only within the course

The concept report counts for 20% of the final grade.

### Examination achievement PL2

- Form of examination: **presentation**
- Examination Frequency: Examination only within the course

Presentation and poster each count for 40% of the final grade.

## Evaluation of grades

All partial module examinations have to be passed. The module grade is the weighted average of the partial examination grades according to the following weights:

To determine the grade, the supervisor will calculate an overall grade with a weighting of 20%:40%:40% in the order stated from the grades of the partial performances: concept report, poster and presentation. The grade also includes the presentation at the subject conference, as well as the degree of commitment and cooperation of the individual student within the group.

### Contents

The aim of the ChemCar competition is the construction of a model car in a team of 4 to 6 students that is driven and controlled by one or more (bio-) chemical reactions. The car must then very accurately drive a specific distance with a specific

extra weight (up to 30% of the empty weight of the car), both of which are drawn right before the race. The module consists of two parts.

**From [MV-LTD-86063-K-4] ChemCar 1: Konzeptentwicklung und Vorversuche (/mhb/courses/MV-LTD-86063-K-4/):**

In the phase of concept development, a safe, feasible, and innovative way to drive and control the car is to be found.

**From [MV-LTD-86064-K-4] ChemCar 2: Konstruktion und Erprobung (/mhb/courses/MV-LTD-86064-K-4/):**

In the phase of construction and testing, the developed concept must be converted into a real car, which has to withstand rigorous practical testing. After submitting the written concept, the team has 6 months at hand to build the car and make a poster, both of which will be presented to a jury at an expert conference.

The final solution will be assessed according to professional correctness, creativity, taking into account ecological, environmental, and safety aspects, as well as style and language of the written report.

A supervisor is available to the students, which can be consulted, especially for safety issues.

## Competencies / intended learning achievements

Building on the knowledge acquired so far in their studies, the students are to develop a creative solution to a practical design problem. The focus is on the independent work on the problem by the group and the cooperation of the individual students within the group. The students deepen their theoretical knowledge and gain extensive practical experience. The presentation of results within the team as well as to the jury are essential to the project.

## Literature

Will be announced by the supervisor.

Official link to the ChemCar homepage of the VDI: <https://www.vdi.de/tg-fachgesellschaften/vdi-gesellschaft-verfahrenstechnik-und-chemieingenieurwesen/chemcar> (<https://www.vdi.de/tg-fachgesellschaften/vdi-gesellschaft-verfahrenstechnik-und-chemieingenieurwesen/chemcar>)

## Materials

Computer-aided design of the ChemCar, experiments in a chemical laboratory, construction of the ChemCar in a workshop

## Registration

The time schedule regarding the registration deadline and the publication of the assignment varies from year to year and can be requested from the supervisors of the chair.

## Requirements for attendance (informal)

Broad basic knowledge (the basic lectures of the Bachelor's programme should be completed as far as possible. In the Master's programme, participation is possible at any time).

## Requirements for attendance (formal)

None

## References to Module / Module Number [MV-LTD-M213-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-EVT-MPOOL-6 (/mhb/modulepools/MV-EVT-MPOOL-6/)]	Wahlpflichtmodule Energie- und Verfahrenstechnik