

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)
- 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-FBK-M112-M-4

Manufacturing Systems Engineering I/II (M, 6.0 LP)

Module Identification

Module Number	Module Name	CP (Effort)
MV-FBK-M112-M-4	<i>Manufacturing Systems Engineering I/II</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] German
Module Manager	Aurich, Jan, Prof. Dr.-Ing. (PROF DEPT: MV) (/staff/301/)
Lecturers	Aurich, Jan, Prof. Dr.-Ing. (PROF DEPT: MV) (/staff/301/ Kölsch, Patrick (WMA DEPT: MV) (/staff/328/)
Area of study	[MV-FBK] Manufacturing Technology and Production Systems
Reference course of study	[MV-88.202-SG] M.Sc. Production Engineering (/mhb/FB-MV/cos-546/)
Lifecycle-State	[NORM] Active

Courses

Type/SWS	Course Number	Choice in Module-Part	SL	PL	CP	Sem.
2V	MV-FBK-86502-K-4 (/mhb/courses/MV-FBK-86502-K-4/)	P	-	PL1	3.0	WiSe
2V	MV-FBK-86503-K-4 (/mhb/courses/MV-FBK-86503-K-4/)	P	-	PL1	3.0	SuSe

- About **[MV-FBK-86502-K-4]**: Title: "Manufacturing Systems Engineering I"; Presence-Time: 28 h; Self-Study: 62 h
- About **[MV-FBK-86503-K-4]**: Title: "Manufacturing Systems Engineering II"; Presence-Time: 28 h; Self-Study: 62 h

Examination achievement PL1

- Form of examination: **written exam (Klausur) (120-150 Min.)**
- Examination Frequency: each semester
- Examination number: 10516 ("Manufacturing Systems Engineering I and II")

Evaluation of grades

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

Contents

From [MV-FBK-86502-K-4] Manufacturing Systems Engineering I (/mhb/courses/MV-FBK-86502-K-4/):

- Introduction into Manufacturing Systems Engineering
- Manufacturing system structures
- Work planning
- Production planning and control
- Integrated design of product and process
- Manufacturing Systems planning
- Energy efficiency in production

From [MV-FBK-86503-K-4] Manufacturing Systems Engineering II (/mhb/courses/MV-FBK-86503-K-4/):

- Fundamentals of lean production systems
- Continuous improvement

- Employee orientation
- Workplace and working methods
- Production organization and control strategies
- Problem identification and elimination
- Block event CIP workshop

Competencies / intended learning achievements

The students are able to

- Describe general manufacturing systems
- Characterize manufacturing system structures for manufacturing and assembly and select appropriate ones
- Explain the task of work planning and develop work plans
- Know the tasks and procedures of production planning and control
- Select and evaluate appropriate methods of production planning and control
- Describe the developments and methods of simultaneous engineering
- Reproduce the fundamentals of project management and derive scheduling
- Reproduce the elements of the factory planning process
- Develop and evaluate factory layout plans based on the flow of materials
- Characterize the methods of energy efficient production
- Describe the fundamentals and structure of process-oriented lean production systems
- Demonstrate the relationships between continuous improvement process and minimization of the 7 types of waste
- Describe the principle of employee orientation
- Explain workplace and work methods
- Calculate overall equipment effectiveness (OEE)
- Select appropriate production organizations and control strategies
- Calculate cycle times and derive the number of workstations for specific production systems
- Describe production-specific methods for problem identification and elimination
- Develop and analyze specific value stream designs

Literature

From [MV-FBK-86502-K-4] **Manufacturing Systems Engineering I** (/mhb/courses/MV-FBK-86502-K-4/):

- W. Eversheim, Organisation in der Produktionstechnik, Bd. 1 -4, Springer VDI-Verlag
- W. Eversheim, G. Schuh, Gestaltung von Produktionssystemen, Springer VDI-Verlag
- B. Aggteleky, Fabrikplanung, Bd. 1 -3, Hanser Verlag

From [MV-FBK-86503-K-4] **Manufacturing Systems Engineering II** (/mhb/courses/MV-FBK-86503-K-4/):

- H. Takeda, Das synchrone Produktionssystem, Verlag Moderne Industrie;
- M. Imai, Gemba-Kaizen, Verlag Langen / Müller;
- G. Geiger, Kanban, Hanser Verlag;
- VDI-Richtlinie 2860, Ganzheitliche Produktionssysteme, Grundlagen, Einführung und Bewertung, Beuth Verlag
- M. Rother, Sehen lernen: Mit Wertstromdesign die Wertschöpfung erhöhen und Verschwendung beseitigen, Lean Management Institut

Requirements for attendance (informal)

None

Requirements for attendance (formal)

None

References to Module / Module Number [MV-FBK-M112-M-4]

Course of Study	Section	Choice/Obligation
[MV-88.202-SG] M.Sc. Production Engineering (/mhb/FB-MV/cos-546/)	Pflichtmodule	[P] Compulsory
[MV-88.814-SG] M.Sc. Mechanical Engineering with a minor in Economics (/mhb/FB-MV/cos-560/)	Pflichtmodule	[P] Compulsory
Module-Pool	Name	
[MV-ALL-MPOOL-6 (/mhb/modulepools/MV-ALL-MPOOL-6/)]	Wahlpflichtmodule allgemein	