

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-VPE-M219-M-7

Smart Product and Service Engineering (M, 3.0 LP)

Module Identification

Module Number	Module Name	CP (Effort)
MV-VPE-M219-M-7	<i>Smart Product and Service Engineering</i>	3.0 CP (90 h)

Basedata

CP, Effort	3.0 CP = 90 h
Position of the semester	1 Sem. in WiSe
Level	[7] Master (Advanced)
Language	[DE] German
Module Manager	Göbel, Jens-Christian, Prof. Dr.-Ing. (PROF DEPT: MV)
Lecturers	Göbel, Jens-Christian, Prof. Dr.-Ing. (PROF DEPT: MV)
Area of study	[MV-VPE] Virtual Product Engineering
Reference course of study	[MV-88.B78-SG] M.Sc. Production Engineering in Mechanical Engineering
Lifecycle-State	[NORM] Active

Courses

Type/SWS	Course Number	Choice in Module-Part	SL	PL	CP	Sem.
2V	MV-VPE-86708-K-7	P	-	PL1	3.0	WiSe

- About [MV-VPE-86708-K-7]: Title: "Smart Product and Service Engineering"; Presence-Time: 28 h; Self-Study: 62 h

Examination achievement PL1

- Form of examination: **written exam (Klausur) (90 Min.)**
- Examination Frequency: each semester
- Examination number: 10323 ("Smart Product and Service Engineering")

Evaluation of grades

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

Contents

From [MV-VPE-86708-K-7] Smart Product and Service Engineering:

The lecture will focus on smart products and product systems with integrated, internet-based services and their specific engineering and lifecycle processes. Related disciplines (e.g. business model development) and product lifecycle phases (e.g. product use) are referenced. In detail, the following topics are covered:

- Basic understanding and specifications of smart products and services
- Application areas and potential benefits of smart products and services
- Implications of smart products and services for the development of new products
- Engineering of integrated product-service systems and smart services
- Digital product twins
- Connectivity with platforms and surrounding components
- Reconfiguration during product use
- Data-driven products, development and business models

Competencies / intended learning achievements

From [MV-VPE-86708-K-7] Smart Product and Service Engineering:

The students are able to:

- name, characterize and compare methods, concepts and IT tools that belong in the domain of engineering smart products and product systems,
- classify methods and concepts in context of smart product and service engineering as an essential tool with regard to their area of application and assess them with regard to their potential use,
- establish and reflect links to related disciplines (e.g. business model development) and product lifecycle phases (e.g. production).

Literature

From [MV-VPE-86708-K-7] Smart Product and Service Engineering:

- Aurich, J. C.; Koch, W.; Kölsch, P.; Herder, C.: Entwicklung datenbasierter Produkt-Service Systeme, Springer, Berlin/Heidelberg, 2019
- Eigner, M., Roubanov, D., Zafirov, Radoslav.: Modellbasierte virtuelle Produktentwicklung, Springer, Berlin/Heidelberg, 2014
- Thomas, O.; Nüttgens, M.; Fellmann, M.: Smart Service Engineering, Springer, Wiesbaden, 2017
- Abramovici, M.; Göbel, J.; Savarino, P.: Reconfiguration of smart products during their use phase based on virtual product twins, CIRP Annals, 2017
- Haberfellner, R., Weck, O., Fricke, E., Vössner, S.: Systems Engineering: Grundlagen und Anwendung, Orell Füssli, Zürich, 2018
- Meier, H., Uhlmann, E.: Industrielle Produkt-Service Systeme - Entwicklung, Betrieb und Management, Springer, Berlin/Heidelberg, 2017
- Tomiyama, T, Lutters, E., Stark, R., Abramovici, M.: Development Capabilities for Smart Products, CIRP Annals, 2019

Requirements for attendance of the module (informal)

None

Requirements for attendance of the module (formal)

None

References to Module / Module Number [MV-VPE-M219-M-7]

Module-Pool	Name
[MV-ALLG-2022-MPOOL-6]	Wahlpflichtmodule Master allgemein 2022
[MV-ALL-MPOOL-6]	Wahlpflichtmodule allgemein
[MV-MBBWL-MPOOL-6]	Wahlpflichtmodule Maschinenbau mit Betriebswirtschaftslehre
[MV-MB-INF-2022-MPOOL-6]	Wahlpflichtmodule M.Sc. Maschinenbau mit angewandter Informatik 2022
[MV-MBINFO-MPOOL-6]	Wahlpflichtmodule Maschinenbau mit angewandter Informatik
[MV-PE-2022-MPOOL-6]	Wahlpflichtmodule M.Sc. Produktentwicklung 2022
[MV-PE-MPOOL-6]	Wahlpflichtmodule Produktentwicklung im Maschinenbau