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New announcement of the subject-specific annex 6.4 Master Management & Engineering to the framework examination regulations for the Master programs at the Graduate School of Leuphana University of

The Presidential Board of Leuphana University of Lüneburg publishes below the wording of the subject-specific annex no. 6.4 Master Management & Engineering of February 13, 2019 (Leuphana Gazette no. 9/19 of March 27, 2019) in the version now in force, taking into account the

— first amendment dated April 13, 2022 (Leuphana Gazette 47/2022 dated May 09, 2022)
— second amendment dated November 09, 2022 (Leuphana Gazette 118/2022 dated December 21, 2022)
— third amendment dated November 06, 2024 (Leuphana Gazette 12 /2025 dated January 27 2025

known.

SECTION I

The regulations of the Framework Examination Regulations for the Master's programs at the Graduate School of Leuphana University of Lüneburg are supplemented as follows:

to § 2, Aims of the study program, purpose of the examination:

The Master's degree program in Management and Engineering provides students with a first degree in engineering or economics with theoretical and methodological knowledge and skills in the field of modern production systems and production technology. During the course of their studies, students with a first degree in economics initially acquire a broad basic knowledge of engineering sciences in order to gain a holistic understanding of production systems. Students with a technical first degree acquire in-depth specialist knowledge in the field of production technology. Through the targeted combination of specialist scientific knowledge with interdisciplinary educational content, the degree programme prepares students to solve complex interdisciplinary problems and for management tasks in the research and production environment in the context of global transformation processes and digitalization. Graduates develop a holistic and responsible understanding of the innovative design and management of production in industrial and technology companies on the basis of specialist engineering and information technology knowledge and additional skills in the areas of production management, production technology, modelling and simulation and digitization of production ("Industry 4.0").

Re § 3 para. 6, details on the structure and content of the Master's degree:

Module overview Master Management & Engineering

(see also subject-specific Annex 6.1 Management Studies and subject-specific Annex 8 Complementary Studies)

4.	Master Forum (Ma-Eng-11) (5 CP)	Master thesis (Ma-Eng-12) (25 CP)				
3.	Management Studies (Ma-MS-3) (5 CP)	Elective module (5 CP)	Elective module (5 CP)	Teaching research project (Ma-Eng-21) (5 CP)	Digital production (Ma-Eng-22) (5 CP)	Complementary study (Ma-K-3) (5 CP)
2.	Management Studies (Ma-MS-2) (5 CP)	Profile module 5 (CP)	Materials & Engineering (Ma-Eng-17) (5 CP)	Production simulation (Ma-Eng-18) (5 CP)	Production management (Ma-Eng-13) (5 CP)	Complementary study (Ma-K-2) (5 CP)
1.	Management Studies (Ma-MS-1) (5 CP)	Profile module (5 CP)	Profile module (5 CP)	Profile module (5CP)	Production logistics (Ma-Eng-19) (5 CP)	Complementary study (Ma-K-1) (5 CP)

One of the following profiles must be selected for the Master's in Management & Engineering:

1. *Production systems* for students with a non-technical and economics first degree
2. *Production engineering* for students with a technical first degree

Students are enrolled for one of the two profiles upon enrolment. The responsible examination board decides on subsequent profile changes.

The following modules must be completed in the **Production Systems** profile:
in the 1st semester: Engineering Mathematics (5 CP) (Ma-Eng-14a); Engineering Mechanics (5 CP) (Ma-Eng-15a) and Production Engineering (5 CP) (Ma-Eng-16a).
in the 2nd semester: Electrical and Automation Engineering (5 CP) (Ma-Eng-20a).

The following modules must be completed in the **Production Engineering** profile:
in the 1st semester: Measurement and sensor systems (5 CP) (Ma-Eng-14b) ; AI-supported product development (5 CP) (Ma-Eng-15b) and robotics and handling technology (5 CP) (Ma-Eng-16b).
in the 2nd semester: Numerical Methods (5 CP) (Ma-Eng-20b).

In addition, the following **compulsory modules must** be completed regardless of the profile:
in the 1st semester: Production Logistics (5 CP) (Ma-Eng-19)
in the 2nd semester: Materials & Engineering (5 CP) (Ma-Eng-17); Production Simulation (5 CP) (Ma-Eng-18) and Production Management (5 CP) (Ma-Eng-13)
in the 3rd semester: Teaching research project (5 CP) (Ma-Eng-21) and digital production (5 CP) (Ma-Eng-22)

In the **3rd semester**, two of the following profile-independent elective modules must be selected and completed:
- Information Technology Aspects in Engineering Sciences (5 CP) (Ma-Eng-23)
- Recent Developments in Production Engineering (5 CP) (Ma-Eng-24)
- Modeling and Simulation in Engineering Sciences (5 CP) (Ma-Eng-25)
- Production Networks (5 CP) (Ma-Eng-26)

Alternatively, a maximum of one of the two elective modules to be completed from the elective modules of the other Master's degree programs in Management (Management & Data Science, Management & Sustainable Accounting and Finance and Management & Entrepreneurship; see subject-specific Annex 6.3, 6.9 and 6.10) can be completed if the program director of the Management & Engineering degree program approves the respective selection. Approval must be submitted to Student Services by the registration deadline. Particular attention must be paid to the contribution of these modules to the achievement of the overall qualification objective of the students (according to the accreditation documents).

Re § 5, Determination of the academic degree
Master of Science

on § 7 para. 1, examination performance in the Master's forum (colloquium)
The examination in the Master Forum (Colloquium) (5 CP) (Ma-Eng-11) of the Master Management & Engineering is not graded and is therefore assessed as "passed" or "failed".

Re § 8, Master's thesis
The processing time for the Master's thesis (25 CP) (Ma-Eng-12) is twenty weeks.

to § 8 para. 8, Oral examination
The Master's thesis (25 CP) (Ma-Eng-12) in Master's Management & Engineering is supplemented by an oral examination. The grade for the oral examination is to be included in the overall grade of the Master's thesis (25 CP) (Ma-Eng-12) with a proportion of one fifth.

Modules of the 1st semester in the Master Management & Engineering

Modules	*Content*	*Types of components (type and number of courses, CH)*	*Type and amount of Examination (§ 7 RPO)*	*CP*	*Commentary*
Compulsory modules					
Production Logistics (Ma-Eng-19)	The module aims at a deep understanding of the interactions within a factory with the focus on material and information flows in the internal supply chain. Students are provided with tools to evaluate and efficiently design logistic processes. The module focuses on principles of lean production and approaches to factory planning.	1 lecture (3 SWS)	1 written scientific paper under supervision (90 min) or 1 combined scientific paper	5	
Engineering Mathematics (Ma-Eng-14a)	The module deals with the basics of engineering mathematics such as differential equations (linear and nonlinear) and their application in engineering.	1 lecture (3 SWS)	1 written scientific paper under supervision (90 min) or 1 combined scientific paper	5	Profile: Production systems
Technical Mechanics (Ma-Eng-15a)	The module deals with the relevant basics for engineers in the field of mechanics and engineering design. This includes in particular topics of statics, materials mechanics, kinematics and dynamics.	1 lecture (3 SWS)	1 written scientific paper under supervision (90 min) or 1 combined scientific paper	5	*Profile: Production systems*
Manufacturing technology (Ma-Eng-16a)	The module focuses on the breadth of classical manufacturing processes and also the current developments as well as the challenges in the manufacturing technology. This includes molding, forming, machining and joining technologies. The complex interaction between the manufacturing process and the resulting component properties is also dealt with.	1 lecture (3 SWS)	1 written scientific paper under supervision (90 min) or 1 combined scientific work	5	*Profile: Production systems*
Measurement and sensor systems (Ma-Eng-14b)	The module deals with sensors and their physical and chemical effects for the generation of electrical quantities. Various measurement methods in which these sensors are used are also discussed. In addition, signal amplification and transmission will be discussed in order to enable further processing of the measured quantities - especially in sensor systems.	1 lecture (2 SWS)	*1* written scientific paper under supervision (90 min) or 1 combined scientific paper	5	Profile: Production technology

Continuation of modules from the 1st semester in the Master Management &

Modules	*Content*	*Types of components (type and number of courses, CH)*	*Type and amount of Examination (§ 7 RPO)*	*CP*	*Commentary*
AI-Supported Product Development (Ma-Eng-15b)	First, the general process for developing technical products and systems according to VDI Guideline 2221 is introduced. Subsequently, suitable methods of Artificial Intelligence (AI) are presented and applied in a practical manner to support the individual activities in the process flow. A key focus is placed on large language models for all text-based activities. In the area of design activities, concepts of supervised and unsupervised learning are presented and discussed.	1 lecture (3 SWS)	1 written scientific paper under supervision (90 min) or 1 combined scientific paper	5	Profile: Production technology
Robotics & Handling technology (Ma-Eng-16b)	This course is concerned with fundamentals of robotics, including kinematics, dynamics, motion planning, and in particular control. The goal is to provide an introduction to the most important concepts in these subjects as applied to robots and manipulators. Particular emphasis is given to the Cartesian and Mobile Robots which represent crucial aspects in production systems	1 lecture (2 SWS)	1 written scientific paper under supervision (90 min) or 1 combined scientific paper	5	Profile: Production technology

Module table 2nd semester modules in the Master Management & Engineering

Modules	*Content*	*Types of components (type and number of courses, CH)*	*Type and amount of Examination (§ 7 RPO)*	*CP*	*Commentary*
Compulsory modules					
Materials & Engineering (Ma-Eng-17)	The module teaches the interrelations between materials, their properties and possible applications, as well as the relevant manufacturing technologies. It provides an introduction to atomic structures, microstructures, phase transitions and the resulting mechanical, electrical or magnetic properties, especially with regard to their use and the connection to different manufacturing processes. A special focus is on material characterization methods, which are dealt with both in theory and in the laboratory.	1 lecture (3 SWS)	1 written scientific paper under supervision (90 min) or 1 combined scientific paper	5	

Continuation of module table Modules of the 2nd semester in the Master Management & Engineering

Modules	*Content*	*Types of components (type and number of courses, CH)*	*Type and amount of Examination (§ 7 RPO)*	*CP*	*Commentary*
Production Simulation (Ma-Eng-18)	The module provides an overview of the various application areas and deepens these for special applications in production technology. The basic problems and the necessity of simulations are presented. Process behavior of different production processes are discussed as examples. Optimization approaches for such processes are developed by means of modelling approaches and simulations. Basic methodological knowledge as well as the application of modern software tools will be imparted.	1 lecture (3 SWS)	1 written scientific paper under supervision (120 min) or 1 combined scientific paper	5	
Production Management (Ma-Eng-13)	The module imparts a deep understanding of the elementary logistic processes in the internal supply chain. This includes work processes, warehouse processes and convergence points in the material flow. The module provides a set of tools to evaluate the logistical performance of these elementary processes and to derive improvement measures. These measures are often implemented within the framework of production planning and control.	1 lecture (3 SWS)	1 written scientific paper under supervision (90 min) or 1 combined scientific paper	5	
Profile modules					
Electrical and Automation engineering (Ma-Eng-20a)	The module deals with selected basics from the fields of electrical engineering, measurement and regulation technology, sensor technology and actuator technology. The students learn basic knowledge regarding these subjects (basic terms, relevant methods, components and areas of application) and their automation applications.	1 lecture (3 SWS)	1 written scientific paper under supervision (90 min) or 1 combined scientific paper	5	Profile: Production systems
Numerical Methods (Ma-Eng-20b)	The module provides in-depth knowledge of methods for the numerical solution of partial differential equations. Different numerical simulation methods (e.g. finite element method) are derived and independently implemented or applied by the students within the module.	1 lecture (2 SWS)	1 written scientific paper under supervision (90 min) or 1 combined scientific paper	5	Profile: Production technology

Module table for modules in the 3rd semester of the Master's in Management & Engineering

Modules	*Content*	*Types of components (type and number of courses, CH)*	*Type and amount of Examination ($ 7 RPO)*	*CP*	*Commentary*
Profile modules					
Teaching research project (Ma-Eng-21)	Under guidance, students pursue a research question or a practical question. Teaching research projects are related to the content of the Major and/or the selected profile.	1 seminar (2 SWS)	1 written scientific paper without supervision or 1 combined scientific paper	5	
Digital production (Ma-Eng-22)	The students gain a basic understanding of the digitalization of production. Current developments in the industry are examined on the basis of USE cases. These include aspects of production management (lean and industry 4.0), cyber-physical systems and real-time capability, continuous and discontinuous conveyors (e.g. autonomous transport systems), discreet and cloud control.	1 lecture (2 SWS)	1 written scientific paper under supervision (90 min) or 1 combined scientific paper	5	
Information technology aspects in the field of engineering (Ma-Eng-23)	The module provides in-depth knowledge on topics related to digitization trends in production. This also includes selected in-depth discussions on topics of industry 4.0, such as Cyber-Physical Production Systems (CPPS), Smart Factory and other methods, e.g. from data mining. Further topics of this module are IT strategies, for example for the management of sensor data (Internet Of Things) and networked production. The module highlights selected examples of digitization and explains the resulting opportunities and risks for future engineering.	1 seminar (2 SWS)	1 written scientific paper under supervision (90 min) or 1 combined scientific paper	5	
Recent developments in production technology (Ma-Eng-24)	The model explores in depth specific innovative and modern manufacturing processes such as laser material processing, joining, additive and similar procedures. Students will discuss examples from medical technology, lightweight construction and the automotive and aircraft industries..	1 seminar (2 SWS)	1 written scientific paper under supervision (90 min) or 1 combined scientific paper	5	

Continuation of module table Modules of the 3rd semester in the Master Management & Engineering

Modules	*Content*	*Types of components (type and number of courses, CH)*	*Type and amount of Examination ($ 7 RPO)*	*CP*	*Commentary*
Modeling and Simulation in Engineering (Ma-Eng-25)	The module covers specific aspects of mathematical modeling and numerical simulation in engineering. This includes modelling in a range of engineering disciplines and numerical preparation of models for computer resolution. Various different analytical and numerical processes are used to find the optimal solution for a range of models. The models examined in the various fields will be illustrated on practical examples.	1 seminar (2 SWS)	1 written scientific paper under supervision (90 min) or 1 combined scientific paper	5	
Production networks (Ma-Eng-26)	The module imparts advanced knowledge about the design of global production networks. The topics covered include the development of globalization, the evaluation of production sites, the management of production networks and the design of efficient supply chains.	1 seminar (2 SWS)	1 written scientific paper under supervision (90 min) or 1 combined scientific paper	5	

Module table Modules of the 4th semester in the Master Management & Engineering

Modules	*Content*	*Types of components (type and number of courses, CH)*	*Type and amount of Examination ($ 7 RPO)*	*CP*	*Commentary*
Compulsory modules					
Master Forum (Ma-Eng-11)	The Masters Forum is a platform to discuss the Masters dissertation regarding its scientific approaches and methodology.	1 colloquium (1 SWS)	1 written scientific paper without supervision or 1 combined scientific paper (passed / failed)	5	
Masters dissertation (Ma-Eng-12)	Master's dissertation: composing a scientific final dissertation by each student	no event	1 's thesis and 1 oral examination	25	

SECTION II

Entry into force

This subject-specific annex shall enter into force after its approval by the Executive Board of Leuphana University of Lüneburg following its publication in the official bulletin of Leuphana University of Lüneburg for the winter semester 2025/26.

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