

Please note: This is a courtesy translation. The sole legally binding document remains the currently valid version of the original German Statute!

Study and examination regulations for the Bachelor's degree program Mechanical Engineering at Aalen University - Technology, Business and Health (BA-TB-EME-34)

dated June 5, 2025

Based on § 8 para. 5 in conjunction with §§ 19 para. 1 sentence 2 no. 9, 32 para. 3 sentence 1 of the Law on Universities in the State of Baden-Württemberg (Landeshochschulgesetz LHG) in the version of January 1, 2005 (GBl. p.1), last amended by Article 24 of the Law of December 17, 2024 (GBl. 2024 No. 114), the Senate of Aalen University of Applied Sciences - Technology, Business and Health adopted the following statutes on May 21, 2025.

Table of Contents

Table of contents	2
§ 1 General information	3
§ 2 Qualification objectives	3
§ 3 Course structure and scope of studies	5

§ 1 General

The regulations of the General Part of the Study and Examination Regulations for Bachelor's Degree Programs at Aalen University - Engineering, Business and Health dated April 14, 2025 (BA-AT) in the currently valid version apply in addition to these statutes. In the event of any contradictions, these regulations take precedence.

§ 2 Qualification goals

After successfully completing the degree program, graduates are able to work independently on value-added processes in mechanical engineering. In particular, they are qualified for a responsible position in the mechanical engineering industry. To this end, they acquire the following skills and abilities:

- Graduates can apply digital design and simulation tools and interpret the results obtained. By transferring the solution strategies they have learned, they can create comprehensive and interdisciplinary design tasks with simulation studies and evaluate and interpret the solutions.
- Graduates are able to analyse and synthesize mechanical engineering systems and processes. Based on this understanding, they are able to develop mechanical engineering products taking into account market requirements and value-added processes and to document and present the results obtained in accordance with current standards.
- Graduates are able to explain the structure, essential properties and typical handling of materials established in mechanical engineering. They are able to select a suitable material for a design task and can make predictions about subsequent component behavior.
- Graduates will be able to use established and innovative production processes to manufacture innovative products. They are able to use generative processes to produce prototypes and select and dimension optimal production methods for subsequent series production.
- Graduates will be able to reproduce the fundamentals of modern digital systems in mechanical engineering and describe their application, for example in the vehicle or production sector. They are thus able to explain the behavior of systems (e.g. control or regulation systems), understand interrelationships and apply them to new issues.
- Graduates are able to carry out complex development projects and participate in the innovation process. In conjunction with gaining further industrial experience, they are able to take on specialist management functions.
- Graduates are able to independently identify tasks, obtain the information required to solve them, assess the quality they contain and select suitable methods in order to work on their further development and contribute to value creation.
- Graduates are able to reflect on the methods and courses of action used and adapt them to changing conditions in order to optimize their own approach to and adapt the work results to technical, social, economic and ethical conditions.
- Graduates are able to work on technical issues in intercultural teams in English.
- Graduates are able to work together as a team in group and project work, communicate with each other in a solution-oriented manner and support each other.

- Graduates are able to deal constructively with their own and others' views, present and communicate the results of their work in a comprehensible form and defend them.
- By working on and preparing laboratory reports, project work and the Bachelor's thesis, graduates are able to independently work on a technical-scientific issue, present it in report form and justify the decisions they have made.
- Graduates are able to discuss current and historical topics, critically reflect on social processes, develop an understanding of different points of view and help shape social processes with a sense of responsibility and a democratic sense of community. They will be able to use soft skills and interdisciplinary competencies in their later professional life. These skills shape their personal development as well as their future involvement in civil society and their political and cultural role.

Graduates are qualified for the activities of an engineer in mechanical engineering. This includes the mechanical engineering, automotive industry and its suppliers, toolmaking, large-scale and special machine construction, plant construction, electromobility, aerospace, renewable energies, medical technology, energy storage/converters incl. battery technology, recycling, testing technology. The qualification is typically for the job profiles of development engineers, project engineers, laboratory engineers and test engineers.

§ 3 Course structure and scope of studies

- (1) The course comprises a total of seven semesters, divided into six semesters of study and a practical semester in the 5th semester. The language of instruction and examination is English.
- (2) The practical semester (placement semester/internship) comprises one semester with at least 110 attendance days. The aim of the placement semester is to familiarize students with technical projects and to enable them to work as independently and responsibly as possible in an engineering capacity, taking into account operational circumstances. In particular, economic, ecological, safety and ethical aspects should also be taken into account. Training content includes working on and solving specific tasks in at least one, but no more than three of the areas of development, design, production planning and control, quality assurance, production and assembly, test field, project planning and technical sales.
- (3) A total of 4 elective modules must be chosen from the field of Engineering/Future Technology, two of which must be taken in semester 6 and two in semester 7. In good time before the start of each semester, the degree program publishes a list of the modules offered in the compulsory elective area.
- (4) Participation in at least three excursions during the course of study is compulsory.
- (5) Upon application, students have the opportunity to complete coursework abroad in the 6th semester. The application must be submitted to the examination board of the degree program. The application must be approved if the student can provide suitable evidence that the stay abroad is organized in a way that is conducive to their studies. As part of the approval process, the examination board ensures that the competence objectives of the 6th semester can be achieved through the activities abroad.

The Head of the Recognition Office decides on the recognition of these examinations taken abroad after consultation with the responsible lecturer at Aalen University of Applied Sciences - Engineering, Business and Health. A Learning Agreement must be agreed for the work to be completed abroad before the start of the stay abroad. If agreements exist with foreign universities on the mutual recognition of coursework and examinations, decisions will be made on the basis of these agreements. § Section 35 BA-AT remains unaffected.

Failed credits are to be taken from the credits of the 7th semester.

- (6) The duration and structure of the degree program, modules and partial credits with semester hours per week as well as the corresponding allocation of CP can be found in the following table. The type and scope of the individual module contents and examinations are specified in the module handbook.

Curriculum

No.	Module / Courses	Type	Semester hours per week / semester							CP
			1.	2.	3.	4.	5.	6.	7.	
87001	Mathematics 1									5
87101	Mathematics 1	V,Ü	6							5
87002	Materials Science									5
87102	Materials Science	V	4							5
88001	Engineering Mechanics 1									5
88101	Engineering Mechanics 1	V	4							5
87003	German as a Foreign Language 1¹ or Technical English 1²									5
87103	German as a Foreign Language 1	Ü,S	4							5
87104	Technical English 1	Ü,S	2							5
87004	Computer Science 1									5
87105	Computer Science 1	V,Ü	4							5
88002	3D-CAX									5
88102	CAD/CAE/CAM	V	2							5
88103	3D-CAD	L,Ü	2							5
87005	Mathematics 2									5
87201	Mathematics 2	V, Ü		6						5
88003	Electrical Engineering									5
88201	Electrical Engineering	V,L,Ü		4						5
88004	Engineering Mechanics 2									5
88202	Engineering Mechanics 2	V, L		4						5
87006	German as a Foreign Language 2³ or Technical English 2⁴									5
87202	German as a Foreign Language 2	Ü, S		4						5
87203	Technical English 2	Ü, S		2						5
87007	Computer Science 2									5
87204	Computer Science 2	V, Ü,		4						5
88005	Physics									5
88203	Physics	V,Ü,L		4						5

¹ Compulsory module for international students at A1.1 level

² Compulsory module for domestic students at B2.2 level

³ Compulsory module for international students at A1.2 level

⁴ Compulsory module for domestic students at B2.2 level

No.	Module / Courses	Type	Semester hours per week / semester							CP
			1.	2.	3.	4.	5.	6.	7.	
88006	Statistics						Placement Semester / Internship			5
88301	Statistics	V,Ü			4					5
87010	Sensors and Data Acquisition									5
87303	Sensors and Data Acquisition	V,Ü			5					5
88007	Engineering Mechanics 3									5
88302	Engineering Mechanics 3	V,Ü			6					5
88008	Machine Elements 1									5
88303	Introduction to Machine Elements	V,L,Ü			5					5
88307	Technical Drawing	V,Ü			1					
88009	Thermodynamics and Fluid Mechanics									5
88304	Thermodynamics and Fluid Mechanics	V,Ü,L			6					5
88010	Manufacturing and Production Systems									5
88305	Manufacturing and Production Systems	V			4					5
88306	Manufacturing and Production Systems-Lab	L			1					
88023	Machine Elements 2									5
88410	Applied Machine Elements	V,Ü,L				6				5
88011	Finite Elements, FEM									5
88401	Finite Elements, FEM	V,L				4				5
88013	Dynamics of Machinery									5
88403	Dynamics of Machinery	V				2				5
88404	Laboratory Multibody Simulation	L				2				
88014	Process Automation and Control									5
88405	Process Automation and Control	V				4				5
88406	Process Automation and Control - Lab	L				1				
88015	Polymer Materials and Plastics Processing									5
88407	Polymer Materials	V,L				2				5
88408	Plastics Processing	V,L				2				
88016	Product Development									5
88409	Product Development	V,Ü,P				4				5

No.	Module / Courses	Type	Semester hours per week / semester							CP
			1.	2.	3.	4.	5.	6.	7.	
88555	Placement Semester / Internship						X			30
88018	Light Weight Design									5
88602	Light Weight Design	P,L						2		5
88019	System Simulation									5
88603	System Simulation	V,P						2		5
88012	Additive Manufacturing									5
88402	Additive Manufacturing	V,L						4		5
88020	Engineering Design									5
88604	Engineering Design	P,Ü						4		5
88021	Elective Module 1									5
88605	Elective Module 1							X		5
88022	Elective Module 2									5
88606	Elective Module 2							X		5
International semester										
88880	International EME 1									5
88607	International EME 1							4		5
88881	International EME 2									5
88608	International EME 2							4		5
88882	International EME 3									5
88609	International EME 3							4		5
88883	International EME 4									5
88610	International EME 4							4		5
88884	International EME 5									5
88611	International EME 5							4		5
88885	International EME 6									5
88612	International EME 6							4		5

No.	Module / Courses	Type	Semester hours per week / semester							CP
			1.	2.	3.	4.	5.	6.	7.	
88017	Project						Placement Semester / Internship			5
88601	Project	P							2	5
88024	Elective Module 3									5
88702	Elective Module 3								X	5
88025	Elective Module 4									5
88703	Elective Module 4								X	5
88999	General Studies								X	3
9999	Bachelor Thesis									12
9999	Bachelor Thesis	P							X	12
	Total SWS		24/ 26	24/ 26	32	27		12+ 2 EM³ /24 (Int) 4	2 + 2 EM³ + SG¹ + BA²	
	Total CP		30	30	30	30	30	30	30	
	Total examinations		6	6	6	6		6	3 + SG¹ + BA²	

¹SG=Studium Generale, ²BA = Bachelor's examination, ³EM = Elective Module, ⁽⁴⁾(Int) = International semester

§ 4 Entry into force

These regulations come into force on the day after their announcement and apply for the first time for the winter semester 2025/26. At the same time, the study and examination regulations for the Bachelor's degree program Mechanical Engineering at Aalen University (BA-TB-EME-34) dated 31 October 2024 expire.

Aalen, June 5, 2025

Prof. Dr. Harald Riegel

Rector

Part BA-BT-ME 34 (Mechanical Engineering degree program)