

Regulations for the degree programme

Logistics and Supply Chain Management

Master of Science (M.Sc.)

Implementation provisions
with appendices

I: Study and examination plan

II. Competence descriptions

III: Module handbook (*only published electronically*)

of 31.10.2019



TECHNISCHE
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Resolution of the Departmental Council on 31.10.2019

Entry into force of the regulation on 01.10.2020

The implementation provisions of department law and economics of 31.10.2019 for the General Examination Regulations of Technical University of Darmstadt (APB) for the degree programme Logistics and Supply Chain Management (M.Sc.) are published based on the approval of the Executive Board of Technical University of Darmstadt on 12.03.2020 (Ref.: 651-2-5).

Darmstadt, 12 March 2020

The President of Technical University of Darmstadt
Prof. Dr. Tanja Brühl

*The English translation is for information purposes only.
The legally binding document is the German version.*

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1. Implementation provisions

For Section 2(1): Degree

The degree programme M.Sc. Logistics and Supply Chain Management is maintained by the department of Law and Economics at Technical University of Darmstadt. Technical University of Darmstadt awards the degree Master of Science once the total of 120 credit points (CP) required for the degree programme has been achieved.

For Section 5(2)–(3): Modules, components and type of examination

Appendix I to these implementation provisions, the study and examination plan, specifies the type (subject examination, study credit), scope, number and form (oral, written or special form and specification) of the examination components as well as the weighting with which these are included in the overall grade for the module.

Examinations that are taken in other departments are governed by the regulations of the departments offering them.

For Section 11(4)–(5): General admission requirements – language of instruction

The language of instruction for the degree programme is English.

Individual courses/modules can be offered in German. This is indicated in the module description. It should be assumed that the module will also involve reading and working with academic literature in German.

For Section 17a(1): Entry requirements and entry competencies for Master's degree programmes

The entry requirements for the Master's degree programme Logistics and Supply Chain Management and, in particular, the previous knowledge and qualifications (entry competencies) required from the applicants are defined below.

For Section 17a(2): Entry competencies for a consecutive Master's degree programme

The entry competencies for the consecutive Master's degree programme Logistics and Supply Chain Management result from the competence profile for the Bachelor's degree programmes Business Administration/Industrial Engineering – specialising in Civil Engineering, Electrical Engineering and Information Technology, Mechanical Engineering and Business Information Systems at Technical University of Darmstadt entitling admission to the Master's degree programme as reference degree programmes.

Details of the entry competencies are specified in the competence description in Appendix II. The entry requirement for the Master's degree programme Logistics and Supply Chain Management is a Bachelor's degree in one of the reference degree programmes at Technical University of Darmstadt or a degree in a degree programme that teaches competencies that are not substantially different from those taught in one of the reference degree programmes (comparable programme). This includes programmes in economics and mathematical economics.

For Section 17a(4)(a)–(b): Formal entrance assessment

During the formal entrance assessment, the proof of the required entry competencies is verified on the basis of the written documents to be submitted by the applicants. The following documents must be submitted: the transcript for the first degree and the Diploma Supplement or comparable documents for the degree programme leading to the first degree.

In addition Candidates can submit the following additional documents:

- Admission and aptitude tests of other universities or private providers (e.g. Graduate Management Admission Test GMAT)

For Section 17a(4)(c): Material entrance assessment

If the entry competencies could not be clarified positively or negatively during the formal entrance assessment, a material entrance assessment is then conducted.

The entrance assessment cannot be repeated in this application procedure.

The following is carried out as part of the material entrance assessment

- an oral examination of 30 min on the premises of Technical University of Darmstadt.
- or
- an oral examination of 30 min via Internet-based video telephony that is unobjectionable under data protection law, with the identity of the applicant determined by a trustee on site (in particular, employees of cooperating universities or DAAD). The trustee also ensures that the examination procedure is carried out lawfully on site.

If it becomes evident that more than 10 candidates need to take a material entrance assessment or that video telephony cannot be used properly, the Examinations Board can decide to assess the candidates' qualification in a 90-minute written examination on the premises of Technical University of Darmstadt or via a written examination procedure using an online test.

The Examinations Board can also ask a trustee on site (particularly employees of cooperating universities or DAAD) to administer an oral or written examination in accordance with these regulations; however, the decision of the Examinations Board remains unaffected.

The Examinations Board determines the form and time of the material entrance assessment and names the examiners. The examiners decide upon the content of the examination to ascertain the candidate's qualification for the M.Sc. Logistics and Supply Chain Management degree programme at Technical University of Darmstadt.

The Examinations Board can exempt a candidate from a material entrance assessment if the required standards have been verified in an admission or aptitude test of another university or a private provider (such as the Graduate Management Admission Test GMAT). In such a case, it can be expected that the candidate will have the entry competencies required for the M.Sc. Logistics and Supply Chain Management degree programme.

For Section 17a(8): Admission subject to conditions

If, after an entrance assessment, it is found that the applicant lacks entry competencies that can be compensated for by completing credits amounting to no more than 30 CP, admission may be granted subject to conditions. The letter of admission lists the modules or subject examinations that are required. The conditions must be met by the end of the second subject-related semester.

The conditions are governed by the General Examination Regulations of Technical University of Darmstadt with the exception of the second repeat examination in accordance with Section 31 APB and the oral supplementary examination in accordance with Section 32 APB, i.e. only two attempts per condition are permitted.

For Section 18: Admission requirements

The admission requirements for examinations or modules, if any, are specified in Appendix I to these implementation provisions, the study and examination plan, and in Appendix III, the module descriptions.

For Section 22(2): Conducting of examinations – duration of the oral examination

The duration of the oral examination (at least 15 min. per candidate and examination) is specified in Appendix I to these implementation provisions, the study and examination plan.

For Section 22(5): Conducting of examinations – duration of proctored examinations

The duration of the proctored examinations (at least 45 min.) is specified in Appendix I to these implementation provisions, the study and examination plan.

For Section 23 (4): Final dissertation – supervision and assessment

The topic of the Master's thesis is assigned by the Institute of Management and Logistics, the Institute of Production and Supply Chain Management or the Institute of Management Science and Operations Research of the Department of Law and Economics. The Master's thesis may be produced with the approval of the Chairperson of the Examinations Board at one of the institutes at the Department of Law and Economics or another department at Technical University of Darmstadt.

For Section 23(5): Final dissertation – preparation time

The final dissertation includes a workload of 30 CP (900 hours) and must be completed and submitted within 26 weeks.

For Section 25(3): Formation and weighting of grades

The assessment system for each examination component is specified in Appendix I to these implementation provisions, the study and examination plan. The study and examination plan also specifies the weighting of the grades for the subject examinations and study credits in the weighting of the module grade. Unless otherwise specified, the grades of the examination components within the module are included in the module grade according to the credit points assigned to the credits.

For Section 28(3): Overall grade

Appendix I to these implementation provisions, the study and examination plan, specifies the weighting of the module grades in the overall grade. Unless otherwise specified in Appendix I, the module grades are included in the overall grade according to the credit points earned in the modules.

For Section 31(1): Second repetition

The second repeat examination can take place orally with the agreement of the examiners and candidates. The candidate's application must be submitted at least four weeks ahead of the examination.

For Section 38a: Entry into force

These implementation provisions enter into force on 01.10.2020. They are published in the appendix to the statutes of Technical University of Darmstadt.

Appendix I Study and examination plan

Appendix II Competence descriptions

Appendix III Module descriptions

Darmstadt, 13 February 2020

The Chairperson of the Department of Law and Economics
of Technical University of Darmstadt

1.1. Appendix I: Study and examination plan

Masterstudiengang Logistics and Supply Chain Management (M.Sc.)



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Study and examination plan (Appendix I)

Key	Examination components	Course		Semester															
		Subject examinations	Study credits	Form of examination	Duration (min.)	Weighting for module grade (%)	Weighting for overall grade (Faktor)	Contact hours per week (SWS)	Status	Form of teaching	Total CPs	W1.	S2.	W3.	S4.				
Grading system:	St=standard (graded), bnb=passed/not passed																		
Forms of examination:	A = submission, B = report, E = essay, H = research assignment, HÜ = homework, worksheets, K = written exam, Kq = colloquium, M = oral examination as specified in module description, mP = oral examination, M/S = oral/written examination as specified in module description, P = log, Pt = presentation, R = seminar paper, S = written examination as specified in module description, SF = special form, Th = thesis																		
Status:	o=compulsory, f=optional																		
Forms of teaching:	VL=lecture, S=seminar, Ü=tutorial, VU=lecture and tutorial, PJ=project,																		
CPs	Credit points																		
TUCaN number and assignment of CPs to module elements are informative in nature. The CPs are given once the module is completed.												Examinations are assigned to semesters for guidance only.							
Logistics and Supply Chain Management Core Area (CP: min. 48/max. 60)												o				48-60			
Elective Courses (Modul: min. 7/max. 9 CP: min. 42/max. 54), Bereich nach § 30 (5) APB												o				42-54			
01-12-0M04/6	Logistics Management	St	M/S	67	1	4	f				6								
	Logistics Management / Practice		St	M/S	33														
	Strategic Logistics Management							2		VL		x			x				
	Logistics and Transport in Practice							2		VU		x	x		x				
01-12-0M05/6	Transport Management	St	M/S	67	1	4	f				6								
	Transport Management / Practice		St	M/S	33														
	Intermodal Transport Services							2		VL			x						
	Logistics and Transport in Practice							2		VU		x	x		x				
01-12-0M07/6	Simulation of Supply Chains	St	M/S	50	1	4	f				6								
	SimuLoVe		St	M/S	50														
	Simulation in Production and Logistics							1		VL			x						
	Simulation in Logistics and Traffic							3		VU			x						
01-13-0M01/6	Logistics Scheduling	St	M/S		1	4	f				6								
	Heuristic Optimization							2		VU			x						
	Quantitative Logistics							2		VU			x						
01-13-0M02/6	Model Building and Analysis	St	M/S	67	1	4	f				6								
	Model Building and Analysis		St	HÜ	33														
	Model Building and Analysis							2		VL				x					
	Model Building and Analysis							2		Ü				x					
01-23-0M02/6	Strategic and Tactical Production Management	St	M/S		1	4	f				6								
	Strategic Production Management							2		VU			x						
	Supply Chain Planning							2		VU			x						
01-23-0M03/6	Materials Management, Production and Logistics	St	M/S		1	4	f				6								
	Operational Production Management							2		VU		x			x				
	Supply Chain Management							2		VU		x			x				
and other modules (catalogue)																			
Master Seminar (Modul: min./max. 1)												o				6			
01-01-0M05	Master Seminar	St	H+Pt		1	2	o				6								
	Master Seminar							2	f	S		x	x	x					
Elective Area (CP: min. 24/max. 36), Bereich nach § 30 (5) APB												o				24-36			
Professional and Methodological Courses (CP: min. 24)												o				24-36			
01-16-0M02/6	Fundamental of Finance II	St	M/S		1	4	f				6								
	Corporate Finance II							2		VU			x						
	Corporate Finance III							2		VU			x						
01-15-0M03/6	Digital Transformation	St	M/S	50	1	4	f				6								
	Digital Transformation							2		VU		x			x				
	Digital Transformation		St	Pt	50			2		Ü			x						
01-15-0M07/6	Künstliche Intelligenz: Algorithmen und Anwendung	St	M/S	60	1	4	f				6								
	Künstliche Intelligenz: Algorithmen und Anwendung (Projekt)		St	B+Pt	40														
	Künstliche Intelligenz: Grundlagen von Algorithmen und Anwendungen							1		VL		x							
	Künstliche Intelligenz: Grundlagen von Algorithmen und Anwendungen		St					1		Ü		x							
	Künstliche Intelligenz: Algorithmen und Anwendungen für Fortgeschrittene							1		VL			x						
	Künstliche Intelligenz: Algorithmen und Anwendungen für Fortgeschrittene		St					1		Ü			x						
01-19-1350/6	Project Management	St	M/S		1	4	f				6								
	Project Management I							2		VU		x			x				
	Project Management II							2		VU		x			x				
01-62-0M02/6	International Trade and Investment / Economics of Entrepreneurship	St	M/S		1	4	f				6								
	International Trade and Investment							2		VU			x						
	Economics of Entrepreneurship							2		VU			x						
01-64-2M01/6	Microdata Analysis	St	M/S		1	4	f				6								
	Microeconometrics							2		VU		x			x				
	Productivity and Efficiency Analysis							2		VU		x			x				
01-01-0M05	Master Seminar	St	H+Pt		1	2	f				6								
	Master Seminar							2		S		x	x	x					
and other modules (catalogue)																			
Engineering and Natural Sciences Courses (CP: max. 12) - in coordination with other departments of TU Darmstadt												f				0-12			
	Module (N.N.)	St			1														
and other modules (catalogue)																			
Interdisciplinary Area (CP: min. 6), Bereich nach § 30 (6) APB												o				6			
Studium Generale																			
	Gesamtkatalog of all modules of TU Darmstadt	St						0		f									
	Gesamtkatalog of all modules of TU Darmstadt	bnb						0		f									
	Language Resource Centre and others (except FB 01)																		
External Project Work																			
01-00-0M02/6	External Project Work	bnb	SF		0					f		6							
	External Project Work																		
Recognition of Courses completed at other Higher Education Institutions (without Equivalent)																			
	Module (N.N.)	bnb						0		f									

Master Thesis																1	o	30									
Master Thesis Logistics and Supply Chain Management	St	Th											f						x								
Total																120		30	30	30	30						

korr. 19.02.2020 (FB 01: FBR 11.07.2019 / 31.10.2019)

1.2. Appendix II: Competence descriptions

1.2.1. Entry competencies

The following lists a selection of competencies that can be acquired at Technical University of Darmstadt within the reference degree programmes stated in Section 17a(2) and that are required for a M.Sc. Logistics and Supply Chain Management.

These competencies are key requirements for the Master's degree programme and are, therefore, important prerequisites for continuing your studies in the Master's degree programme based on a Bachelor. Every graduate of this Bachelor degree programme has acquired the following know-how in addition to further competencies: Graduates are very well trained in working as independently as possible on defined tasks or problems based on the contents of mandatory courses of the reference study programmes. Graduates are trained in organising their work independently following differing time scales within tight general conditions (which can span up to several semesters) in the course of organising their own studies.

The following definitions are used:

- *very well*, the know-how has not just been acquired selectively (i.e. in dedicated courses to this end), but has been acquired throughout their entire academic studies, though not necessarily to the same degree in all courses;
- *independent(ly)*, any counselling and advice given is designed to clarify and introduce a task or problem that has to be worked on by the students either by themselves or in a team depending on specific requirements.

These tasks are usually defined as transfer tasks and require creativity and the ability of abstract thinking to solve them. The level of abilities is defined more specifically below:

- **Mathematics:** the ability to understand typical proofs taken from proof-oriented studies of Mathematics and to conduct these proofs correctly and independently in elementary cases analogous to the lecture.
- **General Business Administration:** the ability to manage value-adding networks and to apply relevant decision-making theories and techniques in real life based on the respective basic and theoretical knowledge acquired; to know and apply concepts on how to manage a business or business segment strategically; to understand and compare different models of how to structure and organise operational processes in a business; to understand and apply workflows preceding preparations for annual financial accounts; to analyse accounting valuation issues according to the HGB (the German commercial code); to understand and make investment and financing decisions; to understand the basics of strategic marketing; to give a detailed overview of the key marketing-mix instruments.
- **Logistics and Supply Chain Management:** the ability to understand the importance of logistics and transport systems and what impact they have on a business; to describe the flow of materials and goods from a holistic perspective; to develop an understanding for specific requirements by businesses to plan, check and control logistics processes and to design logistics strategies within an intra-business and cross-business context; to assess various options of cooperation and work distribution between suppliers, customers and logistics providers; to describe decision-making issues in a structured way based on mathematical optimisation models; to master fundamental mathematical methods to solve such optimisation models; to apply fundamental methods to solve problems of production management and logistical planning independently.
- **Information Systems:** the ability to explain the types of software and the software development process; to know the basic terminology of programming; to solve simple tasks and problems algorithmically; to know and apply the basics of object-oriented programming and advanced

concepts in object orientation; to read and write simple software programs; to model programs with UML diagrams.

- **Economics:** the ability to analyse economic problems independently based on the analytic instruments of micro and macro-economic theory and to correctly assess their importance and meaning for business decisions. Added to this is the ability to use econometric methods with ease and advanced insight to produce, evaluate and interpret multiple regression analyses and to apply modern methods of specification testing.
- **Statistics:** the ability to use statistical methods independently, to both interpret their results and assess their significance correctly for use in operational decisions.
- **Law:** the ability to work on and to evaluate the content of cases independently; to broadly apply the stylistic requirements of a legal opinion; to analyse and evaluate international trade agreements; to deal with current legal developments in the field of company law; to understand and evaluate various types of companies and groups with a focus on German company law including their founding, pros and cons and relevance in real life; to understand and apply how best to adapt company funding based on company type and its financial conditions; to understand and evaluate the basic legal conditions and the functioning of the capital market.

Project work: the ability to understand and work on an interdisciplinary task or problem in a team; to moderate team processes; to plan, organise and carry out process steps independently; to discuss potential solutions and to go through a decision process based on specific criteria; to approach various problems regarding a task analytically by acquiring the necessary methodological skills.

Coursework and Bachelor's thesis: the ability to work independently on a limited topic taken from one of the areas mentioned above (mathematics, general business administration, logistics and supply chain management, information systems, economics, statistics and law) using scientific methods. The topic must be worked on in a limited period of time and under the following constraints that require:

- Formulating and answering a research question according to the current state of research;
- Researching scientific publications extensively and independently based on sources reflecting the current state of research. This should also include a substantial number of English-language publications;
- Including a creative part produced by the students themselves when working on the topic, such as an analysis, programming or systematisation of material based on independently developed criteria;
- Delivering and defending their findings in an oral presentation in the course.

Competencies to be demonstrated to meet admission criteria for the M.Sc. Logistics and Supply Chain Management degree programme

The know-how described above is essential to successfully finish the M.Sc. Logistics and Supply Chain Management degree programme. Sufficient know-how regarding the contents of basic courses in the field of economics and mathematics is particularly important. The requirements are defined in more detail below. They are necessary without reservation to successfully complete the Master's degree programme:

1. To be admitted to the Master's degree programme, the know-how defined above must be documented for courses in the field of economics totalling at least 45 credit points (CPs), in mathematics and statistics totalling 20 CPs, in law at least 9 CPs plus an independently produced course paper (6 CPs) and the Bachelor's thesis (12 CPs).
2. In compliance with item 1: Should the Bachelor's degree programme of the applicant provide the general know-how described above, but not cover all essential contents of economics for the chosen Master's degree programme, admission to the programme is only possible if the final grade and the CP-weighted average of the individual module grades for lectures and tutorials and comparable types of courses in the field of economics is minimum 3.0 and every individual module grade in this field is better than 4.0. In this case, the respective students are required to pass successfully a selection of courses totalling a maximum of 30 CPs within their first year to confirm their admission.
3. In case of a Bachelor's degree programme that does not meet the requirements defined above regarding the type of tasks and problems handled and independently worked on, it can still be assumed that the personal abilities of the applicants will be able to outweigh this, provided the applicants can document sufficiently good grades in the field of economics. In this case, admission to the programme is only possible if the final grade and the CP-weighted average of the individual module grades for lectures and tutorials and comparable types of courses in the field of economics is better than 2.0 and in addition every individual module grade in this field is minimum 3.0.
4. Know-how acquired differently (such as on the job or via professional development) will be considered during an admission assessment procedure for the Master's degree programme, provided this know-how corresponds with the know-how described above regarding contents and the level of difficulty and complexity of the tasks and problems to be handled independently. In addition, these competencies must have been acquired and assessed according to the common quality standards of universities.

1.2.2. Qualification objectives

In the M.Sc. Logistics and Supply Chain Management degree programme at Technical University of Darmstadt, the students extend their competencies acquired during their Bachelor's degree programme within and across disciplines. These competencies are key requirements for the Master's degree programme and are, therefore, important prerequisites for later post-graduate studies. The graduates' ability to work across disciplines makes them eligible for many different positions. With a Master's degree, the graduates can take on scientific, economic, and administrative positions in various areas and fields.

Once students have graduated successfully from their Master's degree programme, they will be able:

- to work independently on complex problems and tasks due to their improved methodological skills, particularly in the field of logistics and supply chain management using scientific methods to evaluate different solutions;
- to apply their broader, more detailed, critical and up-to-date knowledge and understanding in applications and research while working on interdisciplinary topics;
- to also implement these competencies in new and unfamiliar situations with insufficient information by thinking in system-based interrelationships;

-
- to solve tasks and problems requiring high skills of abstraction and an eye for complex interrelations;
 - to recognise and consider appropriately future problems, innovative technologies and scientific developments in their work;
 - to communicate their analyses and/or developed solutions with foreign-language experts and people outside their field of expertise;
 - to organise, work on and manage complex projects efficiently by setting up and leading dedicated teams;
 - to manage solution processes adequately based on the situation by acting constructively and well planned in advance;
 - to develop a professional self-portrait that is based on objectives and standards of acting professionally in scientific, economic and administrative fields of work;
 - to assess and critically reflect the social and ethical responsibilities and implications of their work;
 - to further their professional development independently and to work scientifically on their own as much as possible.

In conclusion, the main differences between the Master's degree programme and the preceding Bachelor's degree programme lie in the greater focus on solving complex problems with insufficient information requiring higher degrees of abstraction and complex thinking in system-based interrelationships. Another main focus is enhancing the ability to critically read, understand and work with current research publications, to develop the necessary skills for working scientifically in a field of specialisation selected by the students themselves and to solve current problems independently.

1.3. Appendix III: Module descriptions

The module descriptions are published electronically as a module handbook in accordance with Section 1(1) of the *Technical University of Darmstadt statute to regulate the publication of statutes of Technical University of Darmstadt* of 18 March 2010.