

**Appendix 1: English-language degree program Foundations in Data Science with the degree Bachelor of Science
CURRICULUM**

Modules	1. semester	2. semester	3. semester	4. semester	5. semester	6. semester	Effort in Work Hours (AS) / Total credit points (LP)
1. Basic Modules (Compulsory Modules)							
220000-701 Mathematics for Science and Engineering I	300 AS 8 LVS (V4/Ü2/P2) PVL Task complex PL Exam						300 AS / 10 LP
220000-702 Mathematics for Science and Engineering II		300 AS 8 LVS (V4/Ü2/P2) PVL Task complex PL Exam					300 AS / 10 LP
220000-703 Mathematics for Science and Engineering III			300 AS 8 LVS (V4/Ü2/P2) PVL Task complex PL Exam				300 AS / 10 LP
220000-704 Mathematics for Science and Engineering IV				300 AS 8 LVS (V4/Ü2/P2) PVL Task complex PL Exam			300 AS / 10 LP
220000-140 Mathematical Training I	150 AS 4 LVS (Ü4) PL Exercises						150 AS / 5 LP
220000-141 Mathematical Training II		150 AS 4 LVS (Ü4) PL Exercises					150 AS / 5 LP
220000-142	150 AS						150 AS / 5 LP

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Computational Machine Learning	4 LVS (S2/Ü2) PVL Program- ming proofs PL Exam						
220000-110 Scientific Programming		150 AS 4 LVS (V2/Ü2) PL Exam					150 AS / 5 LP
220000-120 Mathematical Modeling in Economics			300 AS 6 LVS (V4/Ü2) PVL Proof of Ex- ercises PL oral examina- tion				300 AS / 10 LP
220000-705 Applied Optimization			150 AS 4 LVS (V2/Ü2) PL oral examina- tion				150 AS / 5 LP
220000-113 Numerical Methods				300 AS 6 LVS (V4/Ü2) PVL Proof of Ex- ercises PL Exam			300 AS / 10 LP
220000-143 Statistical Modeling				150 AS 3 LVS (V2/Ü1) PL oral examina- tion			150 AS / 5 LP
243033-015 Digital Systems	150 AS 5 LVS (V2/Ü3) PL Exam						150 AS / 5 LP
243031-010		150 AS 5 LVS (V1/Ü2/S2)					150 AS / 5 LP

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Mikroprozessortechnik / Microprocessor Technology		PL Exam					
2. Specialization Modules							
220000-151 Proseminar Mathematik (Introductory Seminar Mathematics) (Compulsory Module)					150 AS 2 LVS (S2) PL Presentation with written paper		150 AS / 5 LP
Modules with a total of 30 CP must be selected from the following specialisation modules (compulsory elective modules).							
220000-106 Maß- und Integrationstheorie (Measurement and Integration Theory)					300 AS 6 LVS (V4/Ü2) PL oral examination		300 AS / 10 LP
220000-107 Vektoranalysis und Gewöhnliche Differentialgleichungen (Vector Analysis and Ordinary Differential Equations)						300 AS 6 LVS (V4/Ü2) PL oral examination	300 AS / 10 LP
220000-112 Grundlagen der Optimierung (Fundamentals of Optimization)					300 AS 6 LVS (V4/Ü2) PVL Proof of Exercises PL oral examination		300 AS / 10 LP
220000-114 Wahrscheinlichkeitstheorie (Probability theory)						300 AS 6 LVS (V4/Ü2) PVL Proof of Exercises PL oral examination	300 AS / 10 LP

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CURRICULUM**

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220000-115 Algebra					300 AS 6 LVS (V4/Ü2) PVL Proof of Exercises PL oral examination		300 AS / 10 LP
220000-116 Einführung in die Diskrete Mathematik (Introduction to Discrete Mathematics)						300 AS 6 LVS (V4/Ü2) PL oral examination	300 AS / 10 LP
220000-117 Funktionentheorie (Function theory)					300 AS 6 LVS (V4/Ü2) PL oral examination		300 AS / 10 LP
220000-118 Mathematische Statistik (Mathematical Statistics)					300 AS 6 LVS (V4/Ü2) PL oral examination		300 AS / 10 LP
220000-160 Forschungsmodul Mathematik A (groß) (Research Module Mathematics A (large))					300 AS 6 LVS (V6) PL oral examination	or: 300 AS 6 LVS (V6) PL oral examination	300 AS / 10 LP
220000-161 Forschungsmodul Mathematik A (klein) (Research Module Mathematics A (small))					150 AS 3 LVS (V3) PL oral examination	or: 150 AS 3 LVS (V3) PL oral examination	150 AS / 5 LP
220000-162 Forschungsmodul Mathematik B (groß)					300 AS	or: 300 AS	300 AS / 10 LP

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CURRICULUM**

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(Research Module Mathematics B (large))					6 LVS (V6) PL oral examination	6 LVS (V6) PL oral examination	
220000-163 Forschungsmodul Mathematik B (klein) (Research Module Mathematics B (small))					150 AS 3 LVS (V3) PL oral examination	or: 150 AS 3 LVS (V3) PL oral examination	150 AS / 5 LP
220000-164 Forschungsmodul Mathematik C (groß) (Research Module Mathematics c (large))					300 AS 6 LVS (V6) PL oral examination	or: 300 AS 6 LVS (V6) PL oral examination	300 AS / 10 LP
220000-165 Forschungsmodul Mathematik C (klein) (Research Module Mathematics C (small))					150 AS 3 LVS (V3) PL oral examination	or: 150 AS 3 LVS (V3) PL oral examination	150 AS / 5 LP
3. Language and supplementary modules (compulsory elective modules) Depending on the student's native language and German language level (within the meaning of the Common European Framework of Reference for Languages (CEFR)), modules with a total volume of 30 credit points must be selected from the following language and supplementary modules as well as the specialisation modules not taken under 2. Language modules in one's own mother tongue may not be chosen.							
Students whose mother tongue is not German and who do not provide proof of language level A1 of the Common European Framework of Reference for Languages must take the following module:							
136004-005 Deutsch als Fremdsprache I (Niveau A1) (German as a Foreign Language I (Level A1))	150 AS 4 LVS (Ü4) ASL Exam						150 AS / 5 LP

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CURRICULUM**

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Students whose mother tongue is not German and who do not provide proof of language level A2 of the Common European Framework of Reference for Languages must take the following module:							
136004-006 Deutsch als Fremdsprache II (Niveau A2) German as a Foreign Language II (Level A2)	150 AS 4 LVS (Ü4) ASL Exam	or: 150 AS 4 LVS (Ü4) ASL Exam					150 AS / 5 LP
Students whose mother tongue is not German and who do not provide proof of language level B1 of the Common European Framework of Reference for Languages must take the following two modules:							
136004-007 Deutsch als Fremdsprache III (Niveau B1) German as a Foreign Language III (Level B1)	150 AS 4 LVS (Ü4) ASL Exam	or: 150 AS 4 LVS (Ü4) ASL Exam	or: 150 AS 4 LVS (Ü4) ASL Exam				150 AS / 5 LP
136004-016 Deutsch für Ingenieure (Niveau B1+) (German for Engineers (Level B1+))		150 AS 6 LVS (Ü6) 2 ASL Exam, oral examination	or: 150 AS 6 LVS (Ü6) 2 ASL Exam oral examination	or: 150 AS 6 LVS (Ü6) 2 ASL Exam, oral examination			150 AS / 5 LP
220000-180 Auslandsstudium (Semester abroad)					600 AS Courses amounting to 20 LP PL oral examination		600 AS / 20 LP
136004-008 Deutsch als Fremdsprache IV (Niveau B2) (German as a Foreign Language IV (Level B2))	150 AS 4 LVS (Ü4) ASL Exam	or: 150 AS 4 LVS (Ü4) ASL Exam	or: 150 AS 4 LVS (Ü4) ASL Exam	or: 150 AS 4 LVS (Ü4) ASL Exam	or: 150 AS 4 LVS (Ü4) ASL Exam	or: 150 AS 4 LVS (Ü4) ASL Exam	150 AS / 5 LP

Appendix 1: English-language degree program Foundations in Data Science with the degree Bachelor of Science
CURRICULUM

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136004-009 Deutsch als Fremdsprache V (Niveau C1) (German as a Foreign Language V (Level C1))	150 AS 4 LVS (Ü4) ASL Exam	or: 150 AS 4 LVS (Ü4) ASL Exam	or: 150 AS 4 LVS (Ü4) ASL Exam	or: 150 AS 4 LVS (Ü4) ASL Exam	or: 150 AS 4 LVS (Ü4) ASL Exam	or: 150 AS 4 LVS (Ü4) ASL Exam	150 AS / 5 LP
136004-001 Deutsch als Fremdsprache – Fachkommunikation I (Niveau C1) (German as a Foreign Language – Specialist Communication I (Level C1))	150 AS 4 LVS (Ü4) ASL Exam	or: 150 AS 4 LVS (Ü4) ASL Exam	or: 150 AS 4 LVS (Ü4) ASL Exam	or: 150 AS 4 LVS (Ü4) ASL Exam	or: 150 AS 4 LVS (Ü4) ASL Exam	or: 150 AS 4 LVS (Ü4) ASL Exam	150 AS / 5 LP
136004-002 Deutsch als Fremdsprache – Fachkommunikation II (Niveau C1) (German as a Foreign Language – Specialist Communication II (Level C1))	150 AS 5 LVS (Ü4/T1) 2 ASL Exam, Presentation	or: 150 AS 5 LVS (Ü4/T1) 2 ASL Exam, Presentation	or: 150 AS 5 LVS (Ü4/T1) 2 ASL Exam, Presentation	or: 150 AS 5 LVS (Ü4/T1) 2 ASL Exam, Presentation	or: 150 AS 5 LVS (Ü4/T1) 2 ASL Exam, Presentation	or: 150 AS 5 LVS (Ü4/T1) 2 ASL Exam, Presentation	150 AS / 5 LP
136001-004 Englisch in Studien- und Fachkommunikation III (Niveau C1) (English in Study and Subject Communication III (Level C1))	150 AS 4 LVS (Ü4) 2 ASL Exam, oral examination	or: 150 AS 4 LVS (Ü4) 2 ASL Exam, oral examination	or: 150 AS 4 LVS (Ü4) 2 ASL Exam, oral examination	or: 150 AS 4 LVS (Ü4) 2 ASL Exam, oral examination	or: 150 AS 4 LVS (Ü4) 2 ASL Exam, oral examination	or: 150 AS 4 LVS (Ü4) 2 ASL Exam, oral examination	150 AS / 5 LP
136001-005 Englisch in Studien- und Fachkommunikation IV (Niveau C1) (English in Study and Subject Communication IV (Level C1))	150 AS 4 LVS (Ü4) 2 ASL Exam, oral examination	150 AS 4 LVS (Ü4) PVL Scientific work ASL oral group discussion					300 AS / 10 LP
		or:					

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		150 AS 4 LVS (Ü4) 2 ASL Exam, oral examination	150 AS 4 LVS (Ü4) PVL Scientific work ASL oral group discussion				
			or: 150 AS 4 LVS (Ü4) 2 ASL Exam, oral examination	150 AS 4 LVS (Ü4) PVL Scientific work ASL oral group discussion			
				or: 150 AS 4 LVS (Ü4) 2 ASL Exam, oral examination	150 AS 4 LVS (Ü4) PVL Scientific work ASL oral group discussion		
					or: 150 AS 4 LVS (Ü4) 2 ASL Exam, oral examination	150 AS 4 LVS (Ü4) PVL Scientific work ASL oral group discussion	
						or: 150 AS 4 LVS (Ü4) 2 ASL Exam, oral examination	150 AS 4 LVS (Ü4) PVL Scientific work ASL oral group discussion
136001-006	150 AS	or: 150 AS	or: 150 AS	or: 150 AS	or: 150 AS	or: 150 AS	150 AS / 5 LP

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Englisch in Studien- und Fachkommunikation V (Niveau C1) (English in Study and Subject Communication V (Level C1))	4 LVS (Ü4) 2 ASL written elaboration, oral group discussion	4 LVS (Ü4) 2 ASL written elaboration, oral group discussion	4 LVS (Ü4) 2 ASL written elaboration, oral group discussion	4 LVS (Ü4) 2 ASL written elaboration, oral group discussion	4 LVS (Ü4) 2 ASL written elaboration, oral group discussion	4 LVS (Ü4) 2 ASL written elaboration, oral group discussion	
136001-007 Englisch in Studien- und Fachkommunikation VI (Niveau C1) (English in Study and Subject Communication VI (Level C1))	150 AS 4 LVS (T4) ASL oral summary and discussion	or: 150 AS 4 LVS (T4) ASL oral summary and discussion	or: 150 AS 4 LVS (T4) PL ASL oral summary and discussion	or: 150 AS 4 LVS (T4) PL oral summary and discussion	or: 150 AS 4 LVS (T4) ASL oral summary and discussion	or: 150 AS 4 LVS (T4) ASL oral summary and discussion	150 AS / 5 LP
136000-011 Business English 4 (BE4)	150 AS 4 LVS (Ü4) 2 PVL glossary, written summary PL Exam ASL oral group examination	or: 150 AS 4 LVS (Ü4) 2 PVL glossary, written summary PL Exam ASL oral group examination	or: 150 AS 4 LVS (Ü4) 2 PVL glossary, written summary PL Exam ASL oral group examination	or: 150 AS 4 LVS (Ü4) 2 PVL glossary, written summary PL Exam ASL oral group examination	or: 150 AS 4 LVS (Ü4) 2 PVL glossary, written summary PL Exam ASL oral group examination	or: 150 AS 4 LVS (Ü4) 2 PVL glossary, written summary PL Exam ASL oral group examination	150 AS / 5 LP
4. Module Bachelor's Thesis							
220000-190 Bachelor-Arbeit (Bachelor's Thesis)						450 AS 2 LVS (K2) 2 PL Bachelor's Thesis, oral examination	450 AS / 15 LP
Total LVS	25 LVS	25 LVS	22 LVS	23 LVS	18 LVS	12 LVS	125 LVS
Total AS	900 AS	900 AS	900 AS	900 AS	900 AS	900 AS	5400 AS / 180 LP

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<p>The overall LVS and AS are exemplary if the following specialisation or language modules are chosen:</p> <p>136004-005 German as a Foreign Language I (Level A1) (1st semester)</p> <p>136004-006 German as a Foreign Language II (Level A2) (2nd semester)</p> <p>136004-007 German as a Foreign Language III (Level B1) (3rd semester)</p> <p>136004-016 German for Engineers (Level B1+) (4th semester)</p> <p>136001-005 English in Study and Subject Communication IV (Level C1) (5th and 6th semester)</p> <p>220000-106 Theory of Measure and Integration (5th semester)</p> <p>220000-112 Fundamentals of Optimization (5th semester)</p> <p>220000-116 Introduction to Discrete Mathematics (6th semester)</p>							

PL	Examination (Prüfungsleistung)
PVL	Preliminary examination (Prüfungsvorleistung)
ASL	Creditable Credits (Anrechenbare Studienleistung)
LVS	Course Hours (Lehrveranstaltungsstunden), 1 LVS equals 45 minutes
AS	Work Hours (Arbeitsstunden)
LP	Credit Points (Leistungspunkte)
V	Lecture (Vorlesung)
S	Seminar

Ü	Practice Course (Übung)
T	Tutorial (Tutorium)
P	Internship (Praktikum)
PS	Simulation Game (Planspiel)
E	Excursion (Exkursion)
K	Colloquium (Kolloquium)
PR	Project (Projekt)