

Urkunde

Die Hochschule Emden/Leer,
Fachbereich Technik,
verleiht mit dieser Urkunde

Herrn **Lucas Bernd Bierhaus**
geboren am 09. März 1999 in Ahaus

den Hochschulgrad

Bachelor of Engineering
(abgekürzt: BEng)



nachdem er die **Bachelorprüfung** im
Studiengang **Internationaler Studiengang
Wirtschaftsingenieurwesen (Industrial and
Business Systems)**

Emden, 29. Juli 2022

am 29. Juli 2022 bestanden und insgesamt
210 Kreditpunkte (ECTS) erworben hat.



Dekan
Prof. Dr.-Ing. D. Rabe



Vorsitz der Prüfungskommission
Prof. Dr.-Ing. O. Böcker



University of Applied Sciences

HOCHSCHULE
EMDEN•LEER

Faculty of Technology

Translation

Bachelor Certificate

With this certificate the Hochschule
Emden/Leer, University of Applied Sciences,
Faculty of Technology,
confers upon

Mr. Lucas Bierhaus

born on 09th March, 1999 in Ahaus

the academic degree of

Bachelor of Engineering
(abbreviated: BEng)

as he passed the final exam in the course of
studies of **Business Administration and
Engineering (Industrial & Business Systems)**

on 29th July, 2022 and acquired a total of 210
credits.



Emden, 29th July, 2022

Signature of Administration

Zeugnis

über die Bachelorprüfung (Bachelor of Engineering)

In den einzelnen Modulen wurden folgende Beurteilungen erzielt:

Herr
Lucas Bernd Bierhaus

geboren am 09. März 1999
in Ahaus

hat 210 Kreditpunkte (ECTS)
erworben und damit die
Bachelorprüfung im Studiengang
**Internationaler Studiengang
Wirtschaftsingenieurwesen
(Industrial and Business Systems)**

mit der Gesamtnote
„**g u t**“ * (1 , 6 2) bestanden.

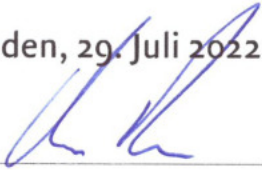
Erster Studienabschnitt	Beurteilungen*	Kreditpunkte
Mathematik 1	gut	5
Mathematik 2	gut	5
Fertigungstechnik	gut	5
Produktionsorganisation	gut	4
Technische Mechanik	befriedigend	5
Werkstoffkunde	sehr gut	2,5
Konstruktionslehre	befriedigend	5
Maschinenelemente	ausreichend	5
Thermodynamik	befriedigend	5
Elektrotechnik	befriedigend	2,5
Datenverarbeitung	gut	5
Finanz- und Rechnungswesen	gut	5
Volkswirtschaftslehre	gut	5
Zivil- und Handelsrecht	sehr gut	5
Controlling	sehr gut	5
Englisch	sehr gut	10
Spanisch	sehr gut	10
Mentorenprojekt	bestanden	1
Zweiter Studienabschnitt		
Production Management Systems	sehr gut	5
System Engineering & Automation	sehr gut	5
Quality Management & Quality Assurance	gut	5
Soft Skills	sehr gut	5
Logistik- und Supply-Chain-Management	gut	5
Project Management	gut	5
Marketing	gut	5
Organisation und Personal	gut	5
Spezialisierung und Bachelorarbeit		
Technische Wahlpflichtmodule		
Werkzeugmaschinen	sehr gut	5

* Notenstufen: sehr gut, gut, befriedigend, ausreichend; bei der Gesamtnote wird die Note zusätzlich als Zahl mit zwei Nachkommastellen ausgewiesen.

	Beurteilungen*	Kreditpunkte
Wertstromgestaltung und -entwicklung	befriedigend	5
Wirtschaftswissenschaftliche Wahlpflichtmodule		
Operational Excellence/Lean Management	befriedigend	5
Beschaffungsmanagement	gut	5
Praktikum	bestanden	18
Auslandssemester	sehr gut	30
Auslandssemester an der Hochschule: Universitat Politècnica de Catalunya, Barcelona, Spanien		
Erfolgreich absolvierte Module des Auslandssemesters		
Plug-In Hybrid Electric Vehicles. Concept, design and project of electric propulsion systems		
Introduction to rockets		
Introduction to reverse engineering		
Innovation and creativity: tools for engineering		
Ecodesign		
Decision criteria - engineer as employee or engineer as entrepreneur		
Characterization techniques for metallic alloys		
Air pollution and treatment technologies		
Bachelorarbeit mit Kolloquium über das Thema		
Analyse der Methodik zur Generierung von Wirkungsgradkennfeldern des elektrischen Fahrzeugantriebs und Untersuchung des Energiebedarfs von Elektrofahrzeugen in Abhängigkeit des Fahrzyklus und der Fahrzeugkonfiguration		
	sehr gut	12



Emden, 29. Juli 2022


Vorsitz der Prüfungskommission
Prof. Dr.-Ing. O. Böcker

* Notenstufen: sehr gut, gut, befriedigend, ausreichend; bei der Gesamtnote wird die Note zusätzlich als Zahl mit zwei Nachkommastellen ausgewiesen.

Translation

Mr.
Lucas Bierhaus

born on 09th March, 1999
 in Ahaus

has acquired a total of 210 credits
 (ECTS) and passed the final
 examination in the course of studies
 of **Business Administration and
 Engineering (Industrial & Business
 Systems)**

with the aggregate grade
„good“* (1,62).

Final Examination Certificate

Bachelor of Engineering

In the individual subjects the following grades were achieved:

Modules	Grades*	Credits
First Phase		
Mathematics 1	good	5
Mathematics 2	good	5
Production Technologies	good	5
Production Organization	good	4
Engineering Mechanics	satisfactory	5
Material Science	very good	2,5
Design Theory	satisfactory	5
Machine Elements	sufficient	5
Thermodynamics	satisfactory	5
Electrical Engineering	satisfactory	2,5
Data Processing	good	5
Finance & Accounting	good	5
Macroeconomics	good	5
Civil & Commercial Law	very good	5
Controlling	very good	5
English	very good	10
Spanish	very good	10
Mentoring Project	passed	1
Second Phase		
Production Management Systems	very good	5
System Engineering & Automation	very good	5
Quality Management & Quality Assurance	good	5
Soft Skills	very good	5
Logistic & Supply Chain Management	good	5
Project Management	good	5
Marketing	good	5
Organisation und Personal	good	5
Specialization and Bachelor Thesis		
Technical elective modules:		
Value Stream Design and Development	satisfactory	5
Machine Tools	very good	5
Procurement Management	good	5
Logistics in the Sector Comparison	satisfactory	5

*Grades: very good, good, satisfactory, sufficient; the aggregate grade is rounded to two decimal places.

Continuation of grades* for Mr. Lucas Bierhaus

	Grades*	Credits
Internship	passed	18
Foreign semester	very good	30
Travel Semester at the university:		
Universitat Politècnica de Catalunya, Barcelona, Spain		
Successfully completed Modules of the Travel Semester		
Plug-In Hybrid Electric Vehicles.		
Concept, design and project of electric propulsion systems		
Introduction to rockets		
Introduction to reverse engineering		
Innovation and creativity: tools for engineering		
Ecodesign		
Decision criteria - engineer as employee or engineer as entrepreneur		
Characterization techniques for metallic alloys		
Air pollution and treatment technologies		
Bachelor Thesis and Colloquium on the Topic		
Methodology analysis of generating efficiency maps of electric vehicle powertrains and investigation of the energy demand of electric vehicles depending on the driving cycle and vehicle configuration		
	very good	12



Emden, 29th July, 2022

[Handwritten Signature]

Signature of Administration

*Grades: very good, good, satisfactory, sufficient; the aggregate grade is rounded to two decimal places.

HS Emden/Leer • Constantiaplatz 4 • 26723 Emden

Herrn
Lucas Bierhaus
Mergelstraße 13
48683 Ahaus

Studienort Emden

Tel.: (04921) 807-1396
Fax: (04921) 807-1395

Emden, 07.12.2023

Matr.-Nr.: 7013443
Geburtsdatum: 09.03.1999
Geburtsort: Ahaus

Leistungsnachweise im internationaler Studiengang Wirtschaftsingenieurwesen (Industrial and Business Systems) (Bachelor)

Prüfung	Art	Note	Status	Vers.	Vermerk	Sem.	Credits
110 Mathematik 1	MO	2,30	BE	1		WS 18/19	5
111 Mathematik 1 (IBS)	PL	2,30	BE	1		WS 18/19	5
120 Technische Mechanik	MO	2,70	BE	1		WS 18/19	5
121 Technische Mechanik 1	PL	2,70	BE	2		WS 18/19	5
130 Konstruktionslehre	MO	2,80	BE	1		WS 18/19	5
131 Konstruktionslehre (IBS)	PL	2,00	BE	1		WS 18/19	3
132 2D-Konstruktion (IBS)	PL	4,00	BE	1		WS 18/19	2
140 Zivil- und Handelsrecht	MO	1,30	BE	1		WS 18/19	5
141 Zivil- und Handelsrecht	PL	1,30	BE	1		WS 18/19	5
150 Finanz- und Rechnungswesen	MO	2,30	BE	1		WS 18/19	5
151 Finanz- und Rechnungswesen	PL	2,30	BE	1		WS 18/19	5
160 Mentorenprojekt	MO		BE	1		WS 18/19	1
161 Mentorenprojekt	SL		BE	1	+	WS 18/19	1
170 Englisch	MO	1,00	BE	1		SS 19	10
171 Englisch 1 – B1	PL	1,00	BE	1		WS 18/19	5
172 Englisch 2 – B2	PL	1,00	BE	1		SS 19	5
180 Mathematik 2	MO	1,70	BE	1		SS 19	5
181 Mathematik 2 (IBS)	PL	1,70	BE	1		SS 19	5
190 Thermodynamik	MO	2,70	BE	1		SS 19	5
191 Thermodynamik	PL	2,70	BE	1		SS 19	5
200 Fertigungstechnik	MO	2,30	BE	1		SS 19	5
201 Fertigungstechnik	PL	2,30	BE	1		SS 19	3
202 Labor Fertigungstechnik	SL		BE	1	+	SS 19	2
210 Produktionsorganisation	MO	2,30	BE	1		SS 19	4
211 Produktionsorganisation	PL	2,30	BE	1		SS 19	4
220 Datenverarbeitung	MO	2,00	BE	1		WS 19/20	5
221 Datenverarbeitung (IBS/EE)	PL	2,00	BE	1		WS 19/20	3
222 Labor Datenverarbeitung (IBS/EE)	SL		BE	1	+	WS 19/20	2
230 Elektrotechnik	MO	2,70	BE	1		WS 19/20	2,5
231 Elektrotechnik (IBS)	PL	2,70	BE	1		WS 19/20	2,5

Prüfung	Art	Note	Status	Vers.	Vermerk	Sem.	Credits
240 Werkstoffkunde	MO	1,30	BE	1		WS 19/20	2,5
241 Werkstoffkunde (IBS)	PL	1,30	BE	1		WS 19/20	2,5
250 Maschinenelemente	MO	3,70	BE	1		WS 19/20	5
251 Maschinenelemente (IBS)	PL	3,70	BE	1		WS 19/20	5
260 Volkswirtschaftslehre	MO	2,00	BE	1		WS 19/20	5
261 Volkswirtschaftslehre	PL	2,00	BE	1		WS 19/20	5
270 Controlling	MO	1,00	BE	1		WS 19/20	5
271 Controlling	PL	1,00	BE	1		WS 19/20	5
500 Zweite Fremdsprache	KO		BE	1		WS 19/20	10
530 Spanisch	MO	1,00	BE	1		WS 19/20	10
531 Spanisch 1	PL	1,00	BE	1		SS 19	5
532 Spanisch 2	PL	1,00	BE	1		WS 19/20	5
2020 System Engineering & Automation	MO	1,00	BE	1		WS 20/21	5
2021 System Engineering & Automation	PL	1,00	BE	1		WS 20/21	5
2030 Soft Skills	MO	1,00	BE	1		WS 20/21	5
2031 Soft Skills	PL	1,00	BE	1		WS 20/21	5
2040 Logistik- und Supply-Chain-Management	MO	1,70	BE	1		WS 20/21	5
2041 Logistik- und Supply-Chain-Management	PL	1,70	BE	1		WS 20/21	5
2050 Project Management	MO	1,70	BE	1		WS 20/21	5
2051 Project Management (IBS)	PL	1,70	BE	1		WS 20/21	5
2060 Marketing	MO	2,00	BE	1		WS 20/21	5
2061 Marketing	PL	2,00	BE	1		WS 20/21	5
2070 Production Management Systems	MO	1,30	BE	1		WS 20/21	5
2071 Production Management Systems	PL	1,30	BE	1		WS 20/21	3
2072 Labor Production Management Systems	SL		BE	1	+	WS 20/21	2
2080 Quality Management & Quality Assurance	MO	2,00	BE	1		WS 20/21	5
2081 Quality Management & Quality Assurance	PL	2,00	BE	1		WS 20/21	5
2090 Organisation und Personal	MO	1,70	BE	1		SS 20	5
2091 Organisation und Personal	PL	1,70	BE	1		SS 20	5
3000 Wahlpflichtmodule Technik	KO		BE	1		SS 20	10
3020 Wertstromgestaltung und -entwicklung	MO	2,70	BE	1		SS 20	5
3021 Wertstromgestaltung und -entwicklung	PL	2,70	BE	1		SS 20	5
3030 Werkzeugmaschinen	MO	1,00	BE	1		SS 20	5
3031 Werkzeugmaschinen	PL	1,00	BE	1		SS 20	5
4000 Wahlpflichtmodule Wirtschaft	KO		BE	1		SS 20	10
4270 Beschaffungsmanagement	MO	1,70	BE	1		SS 20	5
4271 Beschaffungsmanagement	PL	1,70	BE	1		SS 20	5
4302 Operational Excellence/Lean Management	MO	2,70	BE	1		SS 20	5
4303 Operational Excellence/Lean Management	PL	2,70	BE	1		SS 20	5
5000 Auslandssemester	KO	1,28	BE	1		SS 21	30
5001 Auslandssemester	PL	1,28	BE*	1		SS 21	30
5002 Auslandssemesterprüfung 1	SL		BE	1		SS 21	0
5003 Auslandssemesterprüfung 2	SL		BE	1		SS 21	0
5004 Auslandssemesterprüfung 3	SL		BE	1		SS 21	0
5005 Auslandssemesterprüfung 4	SL		BE	1		SS 21	0
5006 Auslandssemesterprüfung 5	SL		BE	1		SS 21	0
5007 Auslandssemesterprüfung 6	SL		BE	1		SS 21	0
5008 Auslandssemesterprüfung 7	SL		BE	1		SS 21	0
5009 Auslandssemesterprüfung 8	SL		BE	1		SS 21	0
8992 Abschlussphase	KO		BE	1		SS 22	30

Prüfung	Art	Note	Status	Vers.	Vermerk	Sem.	Credits
8995 Praktikum	SL		BE	1	+	WS 21/22	18
8998 Bachelorarbeit mit Kolloquium	BA	1,30	BE	1		SS 22	12
9000 Bachelornote	B	1,62	BE	1		SS 22	210

Im Auftrag

Handwritten signature: J. Riemann
Hochschule Emden/Leer
Der Präsident
Constantiaplatz 4
26723 Emden
 Riemann

*** anerkannte Leistungen**

+	bestanden	FVB	Freiversuch verbessert	NT	Nichttechnisches Wahlpflichtfach	SL	Studienleistung
AN	angemeldet	GE	Generierte Fachnote	NZ	Nicht zugelassen	SP	Schwerpunkt
BE	bestanden	KO	Konto	PA	Pflichtanmeldung	SÜ	Übung
EN	endgültig nicht bestanden	KR	Krankmeldung	PFV	Potentieller Freiversuch	TE	Technisches Wahlpflichtfach
FBE	Freiversuch bestanden	LA	Labor	PL	Prüfungsleistung	TF	Teilfachprüfung
FBN	Freiversuch nicht bestanden	MEP	Mündliche Ergänzungsprüfung	PR	Praktikum	TL	Teilleistung
FNE	Freiversuchsverlust durch Nichterscheinen	MM	Metamodul	PV	Prüfung(en) vorhanden	VL	Vorleistung
FNV	Freiversuch nicht verbessert	MO	Modul	PVB	Potentieller Freiversuch zur Notenverbesserung	WA	Wahlfach
FP	Fachprüfung	NB	nicht bestanden			WP	Wahlpflichtfach
		NE	Nicht erschienen	RR/RT	Rücktritt	ZU	Zusatzfach

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Mr.
Lucas Bierhaus
Mergelstraße 13
48683 Ahaus

place of study Emden

tel.: ++49 (04921) 807-1396
fax: ++49 (04921) 807-1395

Emden, 10/13/2023

matriculation number: 7013443

date of birth: 03/09/1999

place of birth: Ahaus

Transcript of records in the study programme Business Administration and Engineering (Industrial & Business Systems)

examination	form	grade		status	term	credits
110 Mathematics 1	MO	good	(2.30)	BE	WS 18/19	5
111 Mathematics 1 (IBS)	PL	good	(2.30)	BE	WS 18/19	5
120 Engineering Mechanics	MO	satisfactory	(2.70)	BE	WS 18/19	5
121 Engineering Mechanics 1	PL	satisfactory	(2.70)	BE	WS 18/19	5
130 Design Theory	MO	satisfactory	(2.80)	BE	WS 18/19	5
131 Design Theory (IBS)	PL	good	(2.00)	BE	WS 18/19	3
132 Engineering Drawing (IBS)	PL	sufficient	(4.00)	BE	WS 18/19	2
140 Civil & Commercial Law	MO	very good	(1.30)	BE	WS 18/19	5
141 Civil & Commercial Law	PL	very good	(1.30)	BE	WS 18/19	5
150 Finance & Accounting	MO	good	(2.30)	BE	WS 18/19	5
151 Finance & Accounting	PL	good	(2.30)	BE	WS 18/19	5
160 Mentoring Project	MO			BE	WS 18/19	1
161 Mentoring Project	SL			BE	WS 18/19	1
170 English	MO	very good	(1.00)	BE	SS 19	10
171 English 1 - B1	PL	very good	(1.00)	BE	WS 18/19	5
172 English 2 - B2	PL	very good	(1.00)	BE	SS 19	5
180 Mathematics 2	MO	good	(1.70)	BE	SS 19	5
181 Mathematics 2 (IBS)	PL	good	(1.70)	BE	SS 19	5
190 Thermodynamics	MO	satisfactory	(2.70)	BE	SS 19	5
191 Thermodynamics	PL	satisfactory	(2.70)	BE	SS 19	5
200 Production Technologies	MO	good	(2.30)	BE	SS 19	5
201 Production Technologies	PL	good	(2.30)	BE	SS 19	3
202 Laboratory Production Technologies	SL			BE	SS 19	2
210 Production Organization	MO	good	(2.30)	BE	SS 19	4
211 Production Organization	PL	good	(2.30)	BE	SS 19	4
220 Data Processing	MO	good	(2.00)	BE	WS 19/20	5
221 Data Processing (IBS/EE)	PL	good	(2.00)	BE	WS 19/20	3
222 Laboratory Data Processing (IBS/EE)	SL			BE	WS 19/20	2
230 Electrical Engineering	MO	satisfactory	(2.70)	BE	WS 19/20	2,5
231 Electrical Engineering (IBS)	PL	satisfactory	(2.70)	BE	WS 19/20	2,5

examination	form	grade		status	term	credits
240 Material Science	MO	very good	(1.30)	BE	WS 19/20	2,5
241 Material Science (IBS)	PL	very good	(1.30)	BE	WS 19/20	2,5
250 Machine Elements	MO	sufficient	(3.70)	BE	WS 19/20	5
251 Machine Elements (IBS)	PL	sufficient	(3.70)	BE	WS 19/20	5
260 Macroeconomics	MO	good	(2.00)	BE	WS 19/20	5
261 Macroeconomics	PL	good	(2.00)	BE	WS 19/20	5
270 Controlling	MO	very good	(1.00)	BE	WS 19/20	5
271 Controlling	PL	very good	(1.00)	BE	WS 19/20	5
500 2nd Foreign Language	KO			BE	WS 19/20	10
530 Spanish	MO	very good	(1.00)	BE	WS 19/20	10
531 Spanish 1	PL	very good	(1.00)	BE	SS 19	5
532 Spanish 2	PL	very good	(1.00)	BE	WS 19/20	5
2020 System Engineering & Automation	MO	very good	(1.00)	BE	WS 20/21	5
2021 System Engineering & Automation	PL	very good	(1.00)	BE	WS 20/21	5
2030 Soft Skills	MO	very good	(1.00)	BE	WS 20/21	5
2031 Soft Skills	PL	very good	(1.00)	BE	WS 20/21	5
2040 Logistic & Supply Chain Management	MO	good	(1.70)	BE	WS 20/21	5
2041 Logistic & Supply Chain Management	PL	good	(1.70)	BE	WS 20/21	5
2050 Project Management	MO	good	(1.70)	BE	WS 20/21	5
2051 Project Management (IBS)	PL	good	(1.70)	BE	WS 20/21	5
2060 Marketing	MO	good	(2.00)	BE	WS 20/21	5
2061 Marketing	PL	good	(2.00)	BE	WS 20/21	5
2070 Production Management Systems	MO	very good	(1.30)	BE	WS 20/21	5
2071 Production Management Systems	PL	very good	(1.30)	BE	WS 20/21	3
2072 Laboratory Production Management Systems	SL			BE	WS 20/21	2
2080 Quality Management & Quality Assurance	MO	good	(2.00)	BE	WS 20/21	5
2081 Quality Management & Quality Assurance	PL	good	(2.00)	BE	WS 20/21	5
2090 Organisation und Personal	MO	good	(1.70)	BE	SS 20	5
2091 Organisation & Personnel	PL	good	(1.70)	BE	SS 20	5
3000 Technical Elective Modules	KO			BE	SS 20	10
3020 Value Stream Design and Development	MO	satisfactory	(2.70)	BE	SS 20	5
3021 Value Stream Design and Development	PL	satisfactory	(2.70)	BE	SS 20	5
3030 Machine Tools	MO	very good	(1.00)	BE	SS 20	5
3031 Machine Tools	PL	very good	(1.00)	BE	SS 20	5
4000 Elective Module Economy	KO			BE	SS 20	10
4270 Procurement Management	MO	good	(1.70)	BE	SS 20	5
4271 Procurement Management	PL	good	(1.70)	BE	SS 20	5
4302 Logistics in the Sector Comparison	MO	satisfactory	(2.70)	BE	SS 20	5
4303 Operational Excellence/Lean Management	PL	satisfactory	(2.70)	BE	SS 20	5
5000 Foreign semester	KO	very good	(1.28)	BE	SS 21	30
5001 Foreign semester	PL	very good	(1.28)	BE*	SS 21	30
5002 Semester abroad Exam 1	SL			BE	SS 21	0
5003 Semester abroad Exam 2	SL			BE	SS 21	0
5004 Semester abroad Exam 3	SL			BE	SS 21	0
5005 Semester abroad Exam 4	SL			BE	SS 21	0
5006 Semester abroad Exam 5	SL			BE	SS 21	0
5007 Semester abroad Exam 6	SL			BE	SS 21	0
5008 Semester abroad Exam 7	SL			BE	SS 21	0
5009 Semester abroad Exam 8	SL			BE	SS 21	0

examination	form	grade		status	term	credits
8992 Final degree section	KO			BE	SS 22	30
8995 Internship	SL			BE	WS 21/22	18
8998 Bachelor thesis	BA	very good	(1.30)	BE	SS 22	12
9000 Bachelor grade	B	good	(1.62)	BE	SS 22	210

On behalf of the University of Applied Sciences Emden-Leer


Riemann

Hochschule Emden/Leer
Der Präsident
Constantiaplatz 4
26723 Emden

PV = examination advance achievement WS = winter term
PL = examination achievement SS = summer term
ZU = extra performance BE = passed GE = average
SL = ungraded test MM = metamodule KO = ledger
MO = module WA = optional subject

* recognition of study and exam achievements



University of Applied Sciences

HOCHSCHULE
EMDEN•LEER

Diploma Supplement

This Diploma Supplement model was developed by the European Commission, Council of Europe and UNESCO/CEPES. The purpose of the supplement is to provide sufficient independent data to improve the international 'transparency' and fair academic and professional recognition of qualifications (diplomas, degrees, certificates etc.). It is designed to provide a description of the nature, level, context, content and status of the studies that were pursued and successfully completed by the individual named on the original qualification to which this supplement is appended. It should be free from any value judgements, equivalence statements or suggestions about recognition. Information in all eight sections should be provided. Where information is not provided, an explanation should give the reason why.

Diploma Supplement

1. HOLDER OF THE QUALIFICATION

1.1 Family Name / 1.2 First Name

Bierhaus, Lucas Bernd

1.3 Date of Birth

09.03.1999

1.4 Student ID Number or Code

7013443

2. QUALIFICATION

2.1 Name of Qualification (full, abbreviated; in original language)

Internationaler Studiengang Wirtschaftsingenieurwesen (Industrial & Business Systems, IBS)

Title Conferred (full, abbreviated; in original language)

Bachelor of Engineering (BEng)

2.2 Main Field(s) of Study

Industrial & Business Systems, Integrated studies on Technology, Natural Sciences, Computer Sciences, Economy, Management, Languages and Soft Skills

2.3 Institution Awarding the Qualification (in original language)

Hochschule Emden/Leer

Fachbereich Technik

Status (Type / Control)

University of Applied Sciences/state institution

2.4 Institution Administering Studies (in original language)

Hochschule Emden/Leer

Fachbereich Technik

Status (Type / Control)

University of Applied Sciences/state institution

2.5 Language(s) of Instruction/Examination

German (partly English)

3. LEVEL OF THE QUALIFICATION

3.1 Level

First degree (3.5 years) with thesis including internship

3.2 Official Length of Programme

3.5 years

3.3 Access Requirements

General/specialized higher education entrance qualification (German Abitur), foreign equivalents

4. CONTENTS AND RESULTS GAINED

4.1 Mode of Study

Full-time

4.2 Programme Requirements/Qualification Profile of the Graduate

The programme integrates studies in technology, economics with languages and soft skills. At least one semester at a university abroad and an industrial placement of five month during the studies is mandatory. About half of the course is taught in English.

The students are qualified to work at the interfaces of technology and economy, such as production, marketing, industrial sales and purchase, supply chain management, logistics etc., both in industry and administration.

4.3 Programme Details

See "Zeugnis über die Bachelorprüfung" (Final Examination Certificate) for subjects offered in the final examination (written and oral) and topic of thesis, including evaluations.

4.4 General Grading System

The Hochschule Emden/Leer, University of Applied Sciences offers the following grades:
very good, good, satisfactory, pass, fail.

Additionally to the overall grade in the certificate, an "ECTS grading table" according to the ECTS User's Guide will be shown on the Diploma Supplement. Therefore, in each Bachelor course the grade of the previous two study-years will be recorded, and their absolute and relative distribution will be shown in the ECTS grading table. Should less than 100 students have graduated within the previous two study years, the distribution of the department or faculty will be shown instead.

4.5 Overall Classification (in original language)

gut (1,62)

Gesamtnote: „sehr gut“, „gut“, „befriedigend“, „ausreichend“, based on weighted average of grades in examination fields.

5. FUNCTION OF THE QUALIFICATION

5.1 Access to Further Study

Qualifies to apply for admission to Magister/Master Programmes, corresponding to local admission requirements.

5.2 Professional Status

The bachelor degree in this discipline entitles its holder to the academic degree "Bachelor of Engineering".

6. ADDITIONAL INFORMATION

6.1 Additional Information

General part of the examination regulations for all bachelor courses at the Hochschule Emden/Leer, University of Applied Sciences (part A BPO) of 28.06.2016 (announcement No. 39/2016, 21.07.2016).

Specific part (B) of the examination regulations for the bachelor course Industrial Business Administration and Engineering (Industrial & Business Systems, IBS), of 25.10.2017 (announcement No. 54/2017, 06.11.2017).

6.2 Further Information Sources

- On the institution and programme: www.hs-emden-leer.de
- For national information sources, see section 8.

7. CERTIFICATION

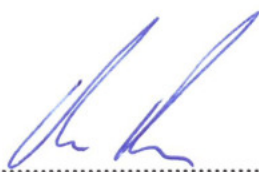
This Diploma Supplement refers to the following original documents:

- Bachelor Certificate (Bachelorurkunde), date of issue 29.07.2022
- Final Examination Certificate (Zeugnis über die Bachelorprüfung), date of issue 29.07.2022

Certification date: 29.07.2022

(Official Stamp/Seal)




.....
(Signature of Administration)

8. NATIONAL HIGHER EDUCATION SYSTEM

The information on the national higher education system on the following pages provides a context for the qualification and the type of higher education that awarded it. (DSDoc01/03.00)

8. INFORMATION ON THE GERMAN HIGHER EDUCATION SYSTEM¹

8.1 Types of Institutions and Institutional Status

Higher education (HE) studies in Germany are offered at three types of Higher Education Institutions (HEI).²

- **Universitäten (Universities)** including various specialised institutions, offer the whole range of academic disciplines. In the German tradition, universities focus in particular on basic research so that advanced stages of study have mainly theoretical orientation and research-oriented components.
- **Fachhochschulen (FH)/Hochschulen für Angewandte Wissenschaften (HAW)** (Universities of Applied Sciences, UAS) concentrate their study programmes in engineering and other technical disciplines, business-related studies, social work, and design areas. The common mission of applied research and development implies an application-oriented focus of studies, which includes integrated and supervised work assignments in industry, enterprises or other relevant institutions.
- **Kunst- und Musikhochschulen (Universities of Art/Music)** offer studies for artistic careers in fine arts, performing arts and music; in such fields as directing, production, writing in theatre, film, and other media; and in a variety of design areas, architecture, media and communication.

Higher Education Institutions are either state or state-recognised institutions. In their operations, including the organisation of studies and the designation and award of degrees, they are both subject to higher education legislation.

8.2 Types of Programmes and Degrees Awarded

Studies in all three types of institutions have traditionally been offered in integrated „long“ (one-tier) programmes leading to *Diplom-* or *Magister Artium* degrees or completed by a *Staatsprüfung* (State Examination). Within the framework of the Bologna-Process one-tier study programmes are successively being replaced by a two-tier study system. Since 1998, two-tier degrees (Bachelor's and Master's) have been introduced in almost all study programmes. This change is designed to enlarge variety and flexibility for students in planning and pursuing educational objectives; it also enhances international compatibility of studies.

The German Qualifications Framework for Higher Education Qualifications (HQR)³ describes the qualification levels as well as the resulting qualifications

and competences of the graduates. The three levels of the HQR correspond to the levels 6, 7 and 8 of the German Qualifications Framework for Lifelong Learning⁴ and the European Qualifications Framework for Lifelong Learning⁵.

For details cf. Sec. 8.4.1, 8.4.2, and 8.4.3 respectively. Table 1 provides a synoptic summary.

8.3 Approval/Accreditation of Programmes and Degrees

To ensure quality and comparability of qualifications, the organisation of studies and general degree requirements have to conform to principles and regulations established by the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany (KMK).⁶ In 1999, a system of accreditation for Bachelor's and Master's programmes has become operational. All new programmes have to be accredited under this scheme; after a successful accreditation they receive the seal of the Accreditation Council.⁷

8.4 Organisation and Structure of Studies

The following programmes apply to all three types of institutions. Bachelor's and Master's study programmes may be studied consecutively, at various higher education institutions, at different types of higher education institutions and with phases of professional work between the first and the second qualification. The organisation of the study programmes makes use of modular components and of the European Credit Transfer and Accumulation System (ECTS) with 30 credits corresponding to one semester.

8.4.1 Bachelor

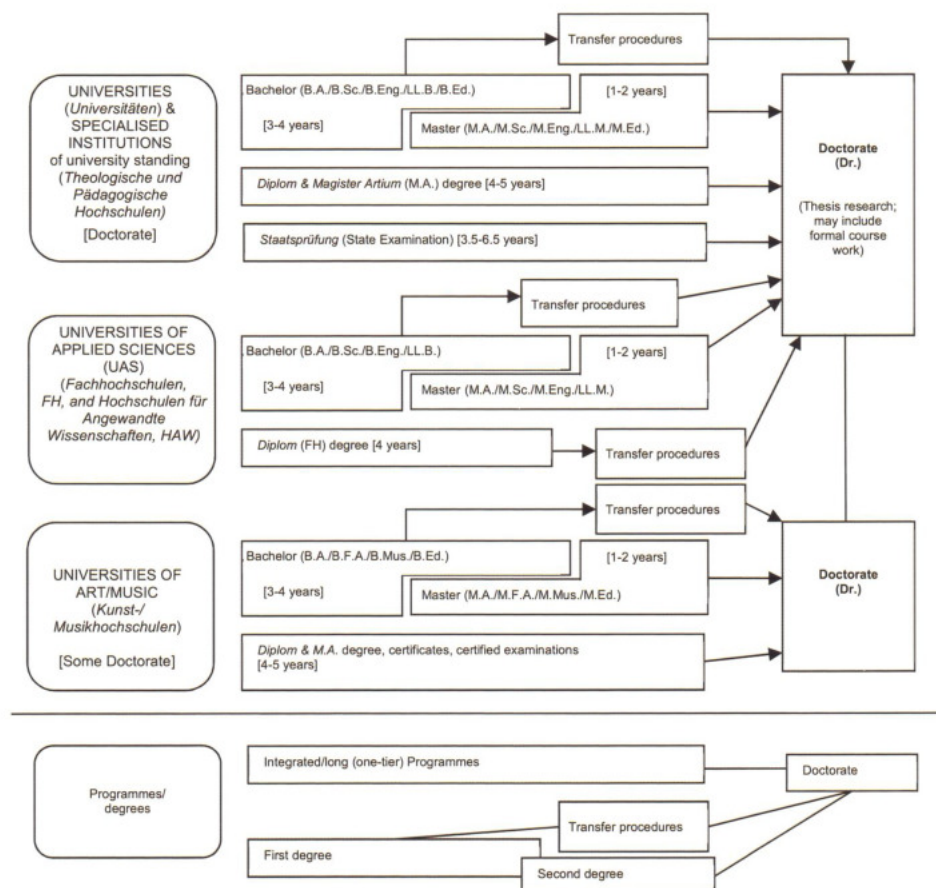
Bachelor's degree programmes lay the academic foundations, provide methodological competences and include skills related to the professional field. The Bachelor's degree is awarded after 3 to 4 years.

The Bachelor's degree programme includes a thesis requirement. Study programmes leading to the Bachelor's degree must be accredited according to the Interstate study accreditation treaty.⁸

First degree programmes (Bachelor) lead to Bachelor of Arts (B.A.), Bachelor of Science (B.Sc.), Bachelor of Engineering (B.Eng.), Bachelor of Laws (LL.B.), Bachelor of Fine Arts (B.F.A.), Bachelor of Music (B.Mus.) or Bachelor of Education (B.Ed.).

The Bachelor's degree corresponds to level 6 of the German Qualifications Framework/ European Qualifications Framework.

Table 1: Institutions, Programmes and Degrees in German Higher Education



8.4.2 Master

Master is the second degree after another 1 to 2 years. Master's programmes may be differentiated by the profile types "practice-oriented" and "research-oriented". Higher Education Institutions define the profile. The Master's degree programme includes a thesis requirement. Study programmes leading to the Master's degree must be accredited according to the Interstate study accreditation treaty.⁹

Second degree programmes (Master) lead to Master of Arts (M.A.), Master of Science (M.Sc.), Master of Engineering (M.Eng.), Master of Laws (L.L.M.), Master of Fine Arts (M.F.A.), Master of Music (M.Mus.) or Master of Education (M.Ed.). Master's programmes which are designed for continuing education may carry other designations (e.g. MBA).

The Master's degree corresponds to level 7 of the German Qualifications Framework/ European Qualifications Framework.

8.4.3 Integrated „Long“ Programmes (One-Tier):

Diplom degrees, Magister Artium, Staatsprüfung

An integrated study programme is either mono-disciplinary (Diplom degrees, most programmes completed by a Staatsprüfung) or comprises a combination of either two major or one major and two minor fields (Magister Artium). The first stage (1.5 to 2 years) focuses on broad orientations and foundations of the field(s) of study. An Intermediate Examination (Diplom-Vorprüfung for Diplom degrees; Zwischenprüfung or credit requirements for the Magister Artium) is prerequisite to enter the second stage of advanced studies and specialisations. Degree requirements include submission of a thesis (up to 6 months duration) and comprehensive final written and oral examinations. Similar regulations apply to studies leading to a Staatsprüfung. The level of qualification is equivalent to the Master's level.

- Integrated studies at Universitäten (U) last 4 to 5 years (Diplom degree, Magister Artium) or 3.5 to 6.5 years (Staatsprüfung). The Diplom degree is awarded in engineering disciplines, the natural sciences as well as economics and business. In the humanities, the corresponding degree is usually the Magister Artium (M.A.). In the social sciences, the practice varies as a matter of institutional traditions. Studies preparing for the legal, medical and pharmaceutical professions are completed by a Staatsprüfung. This applies also to studies preparing for teaching professions of some Länder. The three qualifications (Diplom, Magister Artium and Staatsprüfung) are academically equivalent and correspond to level 7 of the German Qualifications Framework/European Qualifications Framework. They qualify to apply for admission to doctoral studies. Further prerequisites for admission may be defined by the Higher Education Institution, cf. Sec. 8.5.

- Integrated studies at Fachhochschulen (FH)/Hochschulen für Angewandte Wissenschaften (HAW) (Universities of Applied Sciences, UAS) last 4 years and lead to a Diplom (FH) degree which corresponds to level 6 of the German Qualifications Framework/European Qualifications Framework. Qualified graduates of FH/HAW/UAS may apply for admission to doctoral studies at doctorate-granting institutions, cf. Sec. 8.5.

- Studies at Kunst- und Musikhochschulen (Universities of Art/Music etc.) are more diverse in their organisation, depending on the field and individual objectives. In addition to Diplom/Magister degrees, the integrated study programme awards include certificates and certified examinations for specialised areas and professional purposes.

8.5 Doctorate

Universities as well as specialised institutions of university standing, some of the FH/HAW/UAS and some Universities of Art/Music are doctorate-granting institutions. Formal prerequisite for admission to doctoral work is a qualified Master's degree (UAS and U), a Magister degree, a Diplom, a Staatsprüfung, or a foreign equivalent. Comparable degrees from universities of art and music can in exceptional cases (study programmes such as music theory, musicology, pedagogy of arts and music, media studies) also formally qualify for doctoral work. Particularly qualified holders of a Bachelor's degree or a Diplom (FH) degree may also be admitted to doctoral studies without acquisition of a further degree by means of a procedure to determine their aptitude. The universities respectively the doctorate-granting institutions regulate entry to a doctorate as well as the structure of the procedure to determine aptitude. Admission further requires the acceptance of the Dissertation research project by a professor as a supervisor. The doctoral degree corresponds to level 8 of the German Qualifications Framework/European Qualifications Framework.

8.6 Grading Scheme

The grading scheme in Germany usually comprises five levels (with numerical equivalents; intermediate grades may be given): "Sehr Gut" (1) = Very Good; "Gut" (2) = Good; "Befriedigend" (3) = Satisfactory; "Ausreichend" (4) = Sufficient; "Nicht ausreichend" (5) = Non-Sufficient/Fail. The minimum passing grade is "Ausreichend" (4). Verbal designations of grades may vary in some cases and for doctoral degrees. In addition, grade distribution tables as described in the ECTS Users' Guide are used to indicate the relative distribution of grades within a reference group.

8.7 Access to Higher Education

The General Higher Education Entrance Qualification (Allgemeine Hochschulreife, Abitur) after 12 to 13 years of schooling allows for admission to all higher educational studies. Specialised variants (Fachgebundene Hochschulreife) allow for admission at Fachhochschulen (FH)/Hochschulen für Angewandte Wissenschaften (HAW) (UAS), universities and equivalent higher education institutions, but only in particular disciplines. Access to study programmes at Fachhochschulen (FH)/Hochschulen für Angewandte Wissenschaften (HAW) (UAS) is also possible with a Fachhochschulreife, which can usually be acquired after 12 years of schooling. Admission to study programmes at Universities of Art/Music and comparable study programmes at other higher education institutions as well as admission to a study programme in sports may be based on other or additional evidence demonstrating individual aptitude.

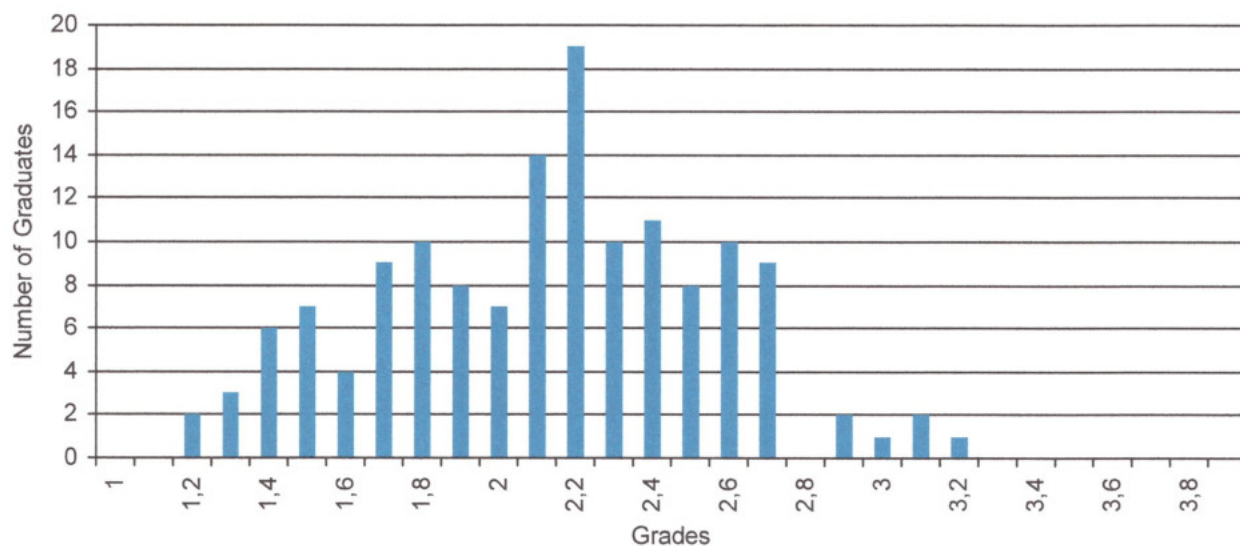
Applicants with a qualification in vocational education and training but without a school-based higher education entrance qualification are entitled to a general higher education entrance qualification and thus to access to all study programmes, provided they have obtained advanced further training certificates in particular state-regulated vocational fields (e.g. Meister/Meisterin im Handwerk, Industriemeister/in, Fachwirt/in (IHK), Betriebswirt/in (IHK) und (HWK), staatlich geprüfte/r Techniker/in, staatlich geprüfte/r Betriebswirt/in, staatlich geprüfte/r Gestalter/in, staatlich geprüfte/r Erzieher/in). Vocationally qualified applicants can obtain a Fachgebundene Hochschulreife after completing a state-regulated vocational education of at least two years' duration plus professional practice of normally at least three years' duration, after having successfully passed an aptitude test at a higher education institution or other state institution; the aptitude test may be replaced by successfully completed trial studies of at least one year's duration.¹⁰ Higher Education Institutions may in certain cases apply additional admission procedures.

8.8 National Sources of Information

- Kultusministerkonferenz (KMK) [Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany]; Graurheindorfer Str. 157, D-53117 Bonn; Phone: +49[0]228/501-0; www.kmk.org; E-Mail: hochschulen@kmk.org
- Central Office for Foreign Education (ZAB) as German NARIC; www.kmk.org; E-Mail: zab@kmk.org
- German information office of the Länder in the EURYDICE Network, providing the national dossier on the education system; www.kmk.org; E-Mail: Eurydice@kmk.org
- Hochschulrektorenkonferenz (HRK) [German Rectors' Conference]; Leipziger Platz 11, D-10117 Berlin, Phone: +49 30 206292-11; www.hrk.de; E-Mail: post@hrk.de
- "Higher Education Compass" of the German Rectors' Conference features comprehensive information on institutions, programmes of study, etc. (www.higher-education-compass.de)

1. The information covers only aspects directly relevant to purposes of the Diploma Supplement.
2. Berufsakademien are not considered as Higher Education Institutions, they only exist in some of the Länder. They offer educational programmes in close cooperation with private companies. Students receive a formal degree and carry out an apprenticeship at the company. Some Berufsakademien offer Bachelor courses which are recognised as an academic degree if they are accredited by the Accreditation Council.
3. German Qualifications Framework for Higher Education Degrees. (Resolution of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany of 16 February 2017).
4. German Qualifications Framework for Lifelong Learning (DQR). Joint resolution of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany, the German Federal Ministry of Education and Research, the German Conference of Economics Ministers and the German Federal Ministry of Economics and Technology (Resolution of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany of 15 November 2012). More information at www.dqr.de
5. Recommendation of the European Parliament and the European Council on the establishment of the European Qualifications Framework for Lifelong Learning of 23 April 2008 (2008/C 111/01 – European Qualifications Framework for Lifelong Learning – EQF).
6. Specimen decree pursuant to Article 4, paragraphs 1–4 of the interstate study accreditation treaty. (Resolution of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany of 7 December 2017).
7. Interstate Treaty on the organization of a joint accreditation system to ensure the quality of teaching and learning at German higher education institutions (Interstate study accreditation treaty) (Decision of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany of 8 December 2016), Enacted on 1 January 2018.
8. See note No. 7.
9. See note No. 7.
10. Access to higher education for applicants with a vocational qualification, but without a school-based higher education entrance qualification (Resolution of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany of 6 March 2009).

The following data serves as a basis for comparisons of graduates of Bachelor courses in the Faculty of Technology, Department of Mechanical Engineering, at the Hochschule Emden/Leer, who graduated between April 1, 2022 and September 30, 2022. The data shown relates to the period of March 1, 2020 to February 28, 2022 and shows the distribution of Bachelor grades within the Department of Mechanical Engineering of the Faculty of Technology.



Grades	Amount	Cumulative	Percent	Cumulated
1,0 (1,00 - 1,09)	0	0	0,0	0,0
1,1 (1,10 - 1,19)	0	0	0,0	0,0
1,2 (1,20 - 1,29)	2	2	1,4	1,4
1,3 (1,30 - 1,39)	3	5	2,1	3,5
1,4 (1,40 - 1,49)	6	11	4,2	7,7
1,5 (1,50 - 1,59)	7	18	4,9	12,6
1,6 (1,60 - 1,69)	4	22	2,8	15,4
1,7 (1,70 - 1,79)	9	31	6,3	21,7
1,8 (1,80 - 1,89)	10	41	7,0	28,7
1,9 (1,90 - 1,99)	8	49	5,6	34,3
2,0 (2,00 - 2,09)	7	56	4,9	39,2
2,1 (2,10 - 2,19)	14	70	9,8	49,0
2,2 (2,20 - 2,29)	19	89	13,3	62,2
2,3 (2,30 - 2,39)	10	99	7,0	69,2
2,4 (2,40 - 2,49)	11	110	7,7	76,9
2,5 (2,50 - 2,59)	8	118	5,6	82,5
2,6 (2,60 - 2,69)	10	128	7,0	89,5
2,7 (2,70 - 2,79)	9	137	6,3	95,8
2,8 (2,80 - 2,89)	0	137	0,0	95,8
2,9 (2,90 - 2,99)	2	139	1,4	97,2
3,0 (3,00 - 3,09)	1	140	0,7	97,9
3,1 (3,10 - 3,19)	2	142	1,4	99,3
3,2 (3,20 - 3,29)	1	143	0,7	100,0
3,3 (3,30 - 3,39)	0	143	0,0	100,0
3,4 (3,40 - 3,49)	0	143	0,0	100,0
3,5 (3,50 - 3,59)	0	143	0,0	100,0
3,6 (3,60 - 3,69)	0	143	0,0	100,0
3,7 (3,70 - 3,79)	0	143	0,0	100,0
3,8 (3,80 - 3,89)	0	143	0,0	100,0
3,9 (3,90 - 4,00)	0	143	0,0	100,0

Annex to the Diploma Supplement for study abroad periods
Anhang zum Diploma Supplement für Auslandsstudienaufenthalte

Second name - <i>Nachname</i> Bierhaus	First name - <i>Vorname</i> Lucas Bernd
Date of birth - <i>Geburtsdatum</i> 09.03.1999	Matriculation number - <i>Matrikelnummer</i> 7013443
Sending institution - <i>Entsendeeinrichtung</i> Hochschule Emden/Leer	Degree course - <i>Studiengang</i> Industrial and Business Systems (IBS)
Host institution - <i>Gasthochschule</i> Universitat Politècnica de Catalunya - ESEIAAT	Country - <i>Land</i> Spanien
Start date of the study period - <i>Startdatum des Studienzeitraums</i> 10.02.2021	End date of the study period - <i>Enddatum des Studienzeitraums</i> 23.06.2021

Recognition outcomes at the sending institution - *Anerkannte Ergebnisse an der Entsendeeinrichtung*

Component code (if any) <i>Komponenten-code (sofern vorhanden)</i>	Title of recognised component (as indicated in the course catalogue) at the sending institution (see Table B and B2 of learning agreement) <i>Titel der anerkannten Komponente (laut Vorlesungsverzeichnis) an der Entsendeeinrichtung (siehe Table B und B2 des Learning Agreements)</i>	Number of ECTS credits which are fully credited <i>Voll anerkannte ECTS</i>	Number of ECTS credits which do not count towards the degree <i>ECTS, die nicht zum Abschluss zählen*</i>	Sending institution grade, if applicable <i>Note der Entsendeeinrichtung, sofern zutreffend</i>
	MOBILITY WINDOW:	30		1,28
320071	Air pollution and treatment technologies			
220071	Characterization techniques for metallic alloys			
220134	Decision criteria - engineer as employee or engineer as entrepreneur			
320175	Ecodesign			
220136	Innovation and creativity: tools for engineering			
220063	Introduction to reverse engineering			
205203	Introduction to rockets			
220045	Plug-in hybrid electric vehicles. Concept, design and project of electric propulsion 			

Component code (if any) <i>Komponenten-code</i> (sofern vorhanden)	Title of recognised component (as indicated in the course catalogue) at the sending institution (see Table B and B2 of learning agreement) <i>Titel der anerkannten Komponente (laut Vorlesungsverzeichnis) an der Entsendeeinrichtung (siehe Table B und B2 des Learning Agreements)</i>	Number of ECTS credits which are fully credited <i>Voll anerkannte ECTS</i>	Number of ECTS credits which do not count towards the degree <i>ECTS, die nicht zum Abschluss zählen*</i>	Sending institution grade, if applicable <i>Note der Entsendeeinrichtung, sofern zutreffend</i>
Total number of ECTS <i>Summe ECTS:</i>		30		

26.7.2021 

Signature of responsible person in sending institution, date and stamp
Unterschrift der zuständigen Person an der Entsendeeinrichtung, Datum und Stempel

Hochschule Emden/Leer
University of Applied Sciences
International Office
Constantiaplatz 4 / 26723 Emden
Germany