HAWK
HOCHSCHULE
FÜR ANGEWANDTE WISSENSCHAFT UND KUNST
Hildesheim/Holzminden/Göttingen
University of Applied Sciences and Arts

Prüfungsordnung für die konsekutiven Masterstudiengänge Elektrotechnik/Informationstechnik, Laser- und Plasmatechnik, Präzisionsmaschinenbau (Besonderer Teil)

Fakultät Naturwissenschaften und Technik

Der Fakultätsrat der Fakultät Naturwissenschaften und Technik der HAWK Hochschule für angewandte Wissenschaft und Kunst Hildesheim/Holzminden/Göttingen hat am 29. Januar 2019 die nachfolgende Änderung der Ordnung über den Besonderen Teil der Prüfungsordnung für die konsekutiven Masterstudiengänge Elektrotechnik/Informationstechnik, Laser- und Plasmatechnik sowie Präzisionsmaschinenbau beschlossen. Die Ordnung wurde am 25. Februar 2019 vom Präsidium der Hochschule gemäß § 37 Absatz 1 Satz 3 Ziffer 5b) NHG genehmigt. Die hochschulöffentliche Bekanntmachung erfolgte am 12. März 2019.

Inhaltsübersicht

§ 1 Bezeichnung und Abschlüsse der Studiengänge

Die Studiengänge schließen mit der Masterprüfung ab. Nach bestandener Masterprüfung verleiht die Hochschule den Hochschulgrad „Master of Engineering“ (abgekürzt: „M.Eng.“) für die Studiengänge Elektrotechnik/Informationstechnik und Präzisionsmaschinenbau sowie den Hochschulgrad „Master of Science“ (abgekürzt: „M.Sc.“) für den Studiengang Laser- und Plasmatechnik. Darüber stellt die Hochschule eine Urkunde nach Anlage 1 mit dem Datum des Zeugnisses nach Anlage 2 aus. Gleichzeitig mit dem Zeugnis wird der/dem Studierenden ein Diploma Supplement (Anlage 4) ausgehändigt.

§ 2 Dauer und Verlauf des Studiums

(1) Das Studium beginnt im Winter- oder im Sommersemester. Der Studienablauf ist der Anlage 3 festgelegt.

(2) Das Studium kann als viersemestriges Vollzeitstudium oder als Teilzeitstudium durchgeführt werden. Im Rahmen des Teilzeitstudienmodells ist es möglich, entweder ein Studienjahr, zwei Studienjahre oder das vollständige Studium in Teilzeit zu absolvieren. Einzelheiten zum Teilzeitstudium regelt die hochschulweit gültige Ordnung zum Teilzeitstudium. Für den Studiengang dieser Prüfungsordnung wird eine Empfehlung zur Gestaltung des Teilzeitstudiums gegeben.

(3) Der Gesamtumfang beträgt 120 Leistungspunkte (Credits). Der Anteil der Pflichtmodule am Gesamtumfang beträgt 108 Credits.

§ 3 Prüfungs- und Studienleistungen

(1) In der Anlage 3 sind die zu erbringenden Prüfungs- und Studienleistungen festgelegt.

(2) Die Bearbeitungszeit einer Studienleistung legt die/der Prüfer/in fest, bei Nichtfestlegung gilt eine Bearbeitungsdauer von 13 Wochen.

(3) Studienleistungen sind erbracht, wenn sie mit „bestanden“ bewertet worden sind; eine Benotung erfolgt nicht.

(4) Die Prüfungsanforderungen ergeben sich aus den Ausbildungszielen und Inhalten der jeweiligen Modulbeschreibung (siehe Modulhandbücher).

(5) Nicht benotete, jedoch mit Credits ausgewiesene extern erbrachte Studien- oder Prüfungsleistungen an anderen Hochschulen können nach Prüfung der Gleichwertigkeit mit der Durchschnittsnote des Moduls anerkannt werden, auf das die extern erbrachte Leistung übertragen werden soll.

(6) Die Teilnehmerzahl für bestimmte Lehrveranstaltungen kann beschränkt werden, wenn dies im Hinblick auf einen geordneten Studienbetrieb erforderlich ist.

(7) Bei der Teilnahme an Lehrveranstaltungen haben die Studierenden, für deren Semester die Lehrveranstaltungen vorgesehen sind, und die Wiederholer Vorrang.

§ 4 Muster der Zeugnisse

Muster der Zeugnisse über die Masterprüfung enthält Anlage 2.

§ 5 Wahlmodulauswahl, Wahl des Studienschwerpunktes

(1) Die Prüfungskommission legt die Auswahl der Wahlmodule fest. Die angebotenen Wahlmodule werden im Prüfungsamt per Aushang sowie elektronisch veröffentlicht. Dabei dürfen Module mit vergleichbaren Prüfungsinhalten nicht mehrfach belegt werden. Module, die an anderen Fakultäten oder Hochschulen erfolgreich absolviert wurden, können auf Antrag anerkannt werden.

(2) Wahlmodule können durch maximal zwei Studienarbeiten im Umfang von jeweils drei Credits ersetzt werden.

(3) Die Studierenden des Masterstudiengangs Elektrotechnik/Informationstechnik haben gemäß Anlage 3 die Möglichkeit, wahlweise einen Studienschwerpunkt Mess- und Automatisierungstechnik oder einen Studienschwerpunkt Ingenieurinformatik zu bilden. Dabei müssen die jeweiligen Wahlpflichtmodule gemäß Anlage 3 im ersten und zweiten Semester belegt werden. Die Entscheidung hat die/der Studierende bis zum Ablauf der vierten Woche nach Studienbeginn dem Prüfungsamt schriftlich mitzuteilen, damit diese Schwerpunktbildung anerkannt und in der Masterurkunde gemäß Anlage 2 ausgewiesen werden kann. Sollte kein Studienschwerpunkt gewählt werden, muss die/der Studierende zwei von vier Wahlpflichtmodule belegen und es wird der allgemeine Studienabschluss des Studiengangs in der Masterurkunde gemäß Anlage 2 ausgewiesen.

§ 6 Art und Umfang der Masterprüfung, Zulassungsvoraussetzungen

(1) Die Modulprüfungen sowie Art und Anzahl der ihnen zugeordneten Prüfungsleistungen, der Prüfungsvorleistungen und die Credits der einzelnen Module sind in der Anlage 3 festgelegt.

(2) Das Zulassungsverfahren erfolgt getrennt für die Modulprüfungen und die Masterabschlussarbeit.

(3) Die Zulassung zu den Prüfungsleistungen setzt neben den Voraussetzungen gemäß des Allgemeinen Teils der Prüfungsordnung § 7 Absatz 2 die erbrachten Prüfungsvorleistungen voraus.

(4) Die Zulassung zur Masterabschlussarbeit setzt voraus, dass mindestens 72 Credits erreicht und alle Studienleistungen erbracht sind. Ist diese Bedingung nicht erfüllt, kann die Prüfungskommission im Einzelfall auf begründeten Antrag eine mit Auflagen verbundene Zulassung zur Masterabschlussarbeit aussprechen.
Dem Antrag auf Zulassung zur Masterabschlussarbeit ist ein Vorschlag für den Themenbereich, dem das Thema der Masterabschlussarbeit entnommen werden soll, beizufügen. Die Zeit von der Ausgabe des Themas bis zur Ablieferung der Arbeit beträgt vier Monate.

§ 7 Masterabschlussarbeit

(1) Erstprüfer/in ist ein/e Professor/in der Fakultät Naturwissenschaften und Technik.

(2) Die Masterabschlussarbeit kann in deutscher oder englischer Sprache verfasst werden.

(3) Weist die/der Kandidat/in zum Abgabezeitpunkt die Annahme eines Manuskriptes als Erstautor/in zur Veröffentlichung bei einer referierten wissenschaftlichen Zeitschrift nach, so können Erst- und Zweitprüfer/in gemeinsam dieses auf Antrag des Studierenden als Masterabschlussarbeit gelten lassen.

§ 8 Art und Dauer des Kolloquiums

Das Kolloquium wird gemeinsam von den Prüfenden der Masterabschlussarbeit als Einzel- oder Gruppenprüfung durchgeführt. Die Dauer des Kolloquiums beträgt in der Regel für jede/n zu Prüfende/n 40 bis 60

Minuten; 20 Minuten davon stehen für einen Vortrag der oder des zu Prüfenden zu den Ergebnissen der Masterabschlussarbeit zur Verfügung.

§ 9 Gesamtergebnis der Masterprüfung

Benotete Module gehen mit dem Gewicht der Credits in die Gesamtnote ein.

§ 10 Inkrafttreten

(1) Diese Prüfungsordnung tritt am Tag nach ihrer hochschulöffentlichen Bekanntmachung in Kraft.

(2) Sie gilt erstmalig für die Studierenden, die sich zum Wintersemester 2018/19 immatrikuliert haben.

(3) Die nach der Prüfungsordnung 2011 begonnenen Prüfungsverfahren werden unter Wahrung des Vertrauensschutzes von vier Semestern in diese Ordnung überführt.

Anlage 1: Masterurkunde

MASTERURKUNDE

Die HAWK
Hochschule für angewandte Wissenschaft und Kunst
Hildesheim/Holzminden/Göttingen
Fakultät Naturwissenschaften und Technik

verleiht mit dieser Urkunde

Frau **«Vorname» «Nachname»**
geboren am «Datum» in «Ort»

den Hochschulgrad **Master of Engineering/Science**
abgekürzt M.Eng./M.Sc.,
nachdem sie die Abschlussprüfung im Studiengang

« Studiengang »

bestanden hat.

Göttingen, den « Datum »

«Dekan/in»
Dekan/in

«Studiendekan/in»
Studiendekan/in

Anlage 2: Zeugnis über die Masterprüfung

MASTERZEUGNIS

HAWK Hochschule für angewandte Wissenschaft und Kunst
Hildesheim/Holzminden/Göttingen
Fakultät Naturwissenschaften und Technik

Frau/Herr **«Vorname» «Nachname»**
geboren am «GebDatum» in «GebOrt»

hat die Masterprüfung im Studiengang

«Studiengang»

bestanden.

Thema der Masterabschlussarbeit:

«Arb1Thema»

	Credits	**Einzelnote**
Masterabschlussarbeit mit Kolloquium	«Credits»	«Note»
Pflichtmodule	«Credits»	«Note»
Wahlpflichtmodule	«Credits»	«Note»
Wahlmodule	«Credits»	«Note»
Gesamtnote	**«Credits»**	**«GesNote»**

Göttingen, den «PruefDatum»

«Studiendekan/in»
Studiendekan/in

Notenstufen: 1,0 bis 1,5 = Sehr Gut; 1,6 bis 2,5 = Gut; 2,6 bis 3,5 = Befriedigend; 3,6 bis 4,0 = Ausreichend

Anlage 3: Studienprogramme

(1) Masterstudiengang Elektrotechnik/Informationstechnik

		Prüfungsart			Credits/Semester			
Modul-Nr.	**Modulname**	**PL**	**SL**	**VL**	**1**	**2**	**3**	**4**
Ma 1 – 011	Vertiefung Mathematik	K2			6			
Ma 1 – 021	Simulation	EA	LS		6			
Ma 1 – 043	Übertragungstechnik	K2			6			
Ma 1 – 053	Vertiefung der Regelungstechnik	M	LS		6			
Studienschwerpunkt Mess- und Automatisierungstechnik								
Ma 1 – 034	Wahlpflichtmodul: Vertiefung Antriebs- und Automatisierungstechnik	K2			6			
Studienschwerpunkt Ingenieurinformatik								
Ma 1 – 033	Wahlpflichtmodul: Machine Learning & Big Data	PA			6			
Ma 2 – 043	Software Engineering	BÜ				6		
Ma 2 – 051	Signal- und Bildverarbeitung	K2				6		
Ma 2 – 1yy	Wahlmodule					6		
Ma 2 – 011	Masterpraxisprojekt	S				6		
Studienschwerpunkt Mess- und Automatisierungstechnik								
Ma 2 – 034	Wahlpflichtmodul: Messelektronik	K2	LS			6		
Studienschwerpunkt Ingenieurinformatik								
Ma 2 – 033	Wahlpflichtmodul: Kommunikationssysteme	K2				6		
Ma 3 – 053	Sensorsysteme	K2					6	
Ma 3 – 042	Webtechnologien	BÜ					6	
Ma 3 – 021	Ringvorlesung Qualitätsmanagement	K1, R					6	
Ma 3 – 1yy	Wahlmodule						6	
Ma 2 – 011	Masterpraxisprojekt	S					6	
Ma 4 – 011	Masterabschlussarbeit	A, R						28
Ma 4 – 011	Kolloquium	Kq						2
	Summe				**30**	**30**	**30**	**30**

Erläuterungen/Abkürzungen siehe Seite 10.

(2) Masterstudiengang Laser- und Plasmatechnik

		Prüfungsart			Credits/Semester			
Modul-Nr.	**Modulname**	**PL**	**SL**	**VL**	**1**	**2**	**3**	**4**
Ma 1 – 011	Vertiefung Mathematik	K2			6			
Ma 1 – 021	Simulation	EA	LS		6			
Ma 1 – 031	Analytische Messmethoden und Mikroskopie	K2			6			
Ma 1 – 041	Theoretische Optik	K2			6			
Ma 1 – 051	Laser und Plasmen in der Produktion	K1, EA			6			
Ma 2 – 051	Signal- und Bildverarbeitung	K2				6		
Ma 2 – 041	Quantenmechanik	K2				6		
Ma 2 – 031	Laser- und Plasmawechselwirkungen	K2				6		
Ma 2 – 1yy	Wahlmodule					6		
Ma 2 – 011	Masterpraxisprojekt	S				6		
Ma 3 – 051	Design Optischer Systeme	K2					6	
Ma 3 – 041	Vertiefung Fertigungsmesstechnik	BÜ	LS				6	
Ma 3 – 021	Ringvorlesung Qualitätsmanagement	K1, R					6	
Ma 3 – 1yy	Wahlmodule						6	
Ma 2 – 011	Masterpraxisprojekt	S					6	
Ma 4 – 011	Masterabschlussarbeit	A, R						28
Ma 4 – 011	Kolloquium	Kq						2
	Summe				**30**	**30**	**30**	**30**

Erläuterungen/Abkürzungen siehe Seite 10.

(3) Masterstudiengang Präzisionsmaschinenbau

		Prüfungsart			Credits/Semester			
Modul-Nr.	**Modulname**	**PL**	**SL**	**VL**	**1**	**2**	**3**	**4**
Ma 1 – 011	Vertiefung Mathematik	K2			6			
Ma 1 – 021	Simulation	EA	LS		6			
Ma 1 – 032	Höhere Maschinenelemente	K2			6			
Ma 1 – 042	Werkstofftechnik	K2, EA			6			
Ma 1 – 052	Vertiefung Technische Mechanik	K2			6			
Ma 2 – 032	Höhere Konstruktionslehre	K1	PA			6		
Ma 2 – 042	Vertiefung Strömungslehre u. Thermodynamik	P, EP				6		
Ma 2 – 052	Fertigungsorganisation	PA, R				6		
Ma 2 – 1yy	Wahlmodule					6		
Ma 2 – 011	Masterpraxisprojekt	S				6		
Ma 3 – 052	Fertigungstechnologien – Optik	BÜ					6	
Ma 3 – 041	Vertiefung Fertigungsmesstechnik	BÜ	LS				6	
Ma 3 – 021	Ringvorlesung Qualitätsmanagement	K1, R					6	
Ma 3 – 1yy	Wahlmodule						6	
Ma 2 – 011	Masterpraxisprojekt	S					6	
Ma 4 – 011	Masterabschlussarbeit	A, R						28
Ma 4 – 011	Kolloquium	Kq						2
	Summe				**30**	**30**	**30**	**30**

Erläuterungen/Abkürzungen siehe Seite 10.

(4) Erläuterungen/Abkürzungen

Abkürzung	Bezeichnung	Erläuterungen
Ma	Master	
PL	Prüfungsleistung	
SL	Studienleistung	
VL	Vorleistung	
K	Klausur	Zahl = Bearbeitungszeit in Zeitstunden
BÜ	Berufspraktische Übungen	Zahl = Bearbeitungszeit in Zeitstunden
EA	Experimentelle Arbeit	
ED	Erstellung und Dokumentation von Rechnerprogrammen	
EP	Elektronische Prüfung	
SE	Systementwurf	Zahl = Bearbeitungszeit in Zeitstunden
M	Mündliche Prüfung	
S	Studienarbeit	
A	Abschlussarbeit	
Kq	Kolloquium	
E	Entwurf	
LS	Laborschein	
P	Präsentation	
PA	Projektarbeit	
R	Referat	

Die Modulprüfungen können von der Prüfungskommission durch andere Prüfungsarten ersetzt werden.

Anlage 4: Diploma Supplements

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.

1. Holder of the Qualification

1.1	Family Name	**Nachname**
1.2	First Name	**Vorname**
1.3	Date, Place, Country of Birth	**oo.oo.oooo, Geburtsort, Land**
1.4	Student ID Number or Code	**oooooo**

2. Qualification

2.1 Name of Qualification (full – abbreviated, in original language)
Master of Engineering – M.Eng.

2.2 Main Field(s) of Study
Elektrotechnik / Informationstechnik

2.3 Institution Awarding the Qualification (in original language)
HAWK Hochschule für angewandte Wissenschaft und Kunst
Hildesheim/Holzminden/Göttingen
Fakultät Naturwissenschaften und Technik
Status (Type / Control)
University of Applied Sciences and Arts / State Institution

2.4 Institution Administering Studies (in original language)
[as above]
Status (Type / Control)
[as above]

2.5 Language(s) of Instruction/Examination
German

3. Level of the Qualification

3.1 Level of Qualification
Master programme, graduate study programme, second degree

3.2 Official Length of Programme
Two years, 4 semesters, 120 ECTS

3.3 Access Requirement(s)
Bachelor degree in engineering or related fields (three years, with 180 ECTS credits), or foreign equivalent.

4. Contents and Results gained

4.1 Mode of Study

Full Time Study

In the event of part-time study (individual application required), the official length of the programme will be extended accordingly.

4.2 Programme Requirements

The master program offers an advanced scientific and application-oriented education in the fields of electrical engineering and information technology. Its courses can be assigned to three groups. The first contains courses which are mandatory for all our master of engineering/science students. These are advanced mathematics, numerical simulation and quality management. The second includes mandatory advanced electrical engineering and information technology courses such as transmission and high frequency technology, control technology, signal and image processing, software engineering, sensor systems and web technology. These courses add scientific and application-oriented competences. The third group allows for specialisation. Depending on the chosen elective modules an emphasis on e.g. "Mess- und Automatisierungstechnik" which requires advanced automation technology and measurement electronics or "Ingenieurinformatik" which requires machine learning, big data and mobile communication technology can be laid. The selection of advanced elective technical modules allows for a personal focus on specialised technical fields. In addition non-technical subjects are offered in elective courses on e.g. business administration or project management. To improve the student's skills in teamwork and scientific work a mandatory master project is conducted concurrently to other courses. Finally, in the master thesis a scientific project is accomplished in order to prove scientific and application-oriented knowledge and skills.

4.3 Programme Details

Please refer to the Final Examination Certificate (Masterzeugnis) for a list of courses and grades.

4.4 Grading Scheme

Absolute grading scheme: "Sehr Gut" (1,0; 1,3) = Very Good; "Gut" (1,7; 2,0; 2,3) = Good; "Befriedigend" (2,7; 3,0; 3,3) = Satisfactory; "Ausreichend" (3,7; 4,0) = Pass; "Nicht ausreichend" (5,0) = Fail

Statistical distribution of grades: **grading table**

4.5 Overall Classification **0,0**

The final grade is based on the grades awarded during the study programme and that of the final thesis (with oral component). Please refer to the Final Examination Certificate (Masterzeugnis).

5. Function of the Qualification

5.1 Access to Further Study

The degree entitles its holder to apply for admission for a doctoral thesis according to the regulations covering doctoral programmes, respectively.

5.2 Professional Status

The degree entitles its holder to the legally protected professional title "Ingenieur" and to exercise professional work in in the field(s) of engineering for which the degree was awarded. The master degree is certified for the professional entry to the higher grade civil service (Laufbahngruppe 2, zweites Einstiegsamt) in Germany.

6. Additional Information

6.1 Additional Information

See "Masterzeugnis" (final examination certificate) for major field of study.

Depending on the choice of modules the addition "Mess- und Automatisierungstechnik" covering the major field of study in measurement and automation technology or "Ingenieurinformatik" covering the major field of computer engineering is assigned.
Non-academic acquired competencies were credited in an amount of **oo** credits in the following modules: **...**

6.2 Additional Information Sources
www.hawk.de

7. Certification

This Diploma Supplement refers to the following original documents:

Masterurkunde (Degree Certificate) dated from	**oo.oo.oooo**
Masterzeugnis (Final Examination Certificate) dated from	**oo.oo.oooo**
Transcript of Records dated from	**oo.oo.oooo**

Certification Date: **Ort**, **oo.oo.oooo**

(Official Seal/Stamp)

Chairman Examination Committee

8. Information on the German Higher Education System
(siehe Seite 20)

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1. Holder of the Qualification

1.1	Family Name	**Nachname**
1.2	First Name	**Vorname**
1.3	Date, Place, Country of Birth	**oo.oo.oooo, Geburtsort, Land**
1.4	Student ID Number or Code	**oooooo**

2. Qualification

2.1 Name of Qualification (full – abbreviated, in original language)
Master of Science – M.Sc.

2.2 Main Field(s) of Study
Laser- und Plasmatechnik

2.3 Institution Awarding the Qualification (in original language)
HAWK Hochschule für angewandte Wissenschaft und Kunst
Hildesheim/Holzminden/Göttingen
Fakultät Naturwissenschaften und Technik
Status (Type / Control)
University of Applied Sciences and Arts / State Institution

2.4 Institution Administering Studies (in original language)
[as above]
Status (Type / Control)
[as above]

2.5 Language(s) of Instruction/Examination
German

3. Level of the Qualification

3.1 Level of Qualification
Master programme, graduate study programme, second degree

3.2 Official Length of Programme
Two years, 4 semesters, 120 ECTS

3.3 Access Requirement(s)
Bachelor degree in engineering or related fields (three years, with 180 ECTS credits), or foreign equivalent.

4. Contents and Results gained

4.1 Mode of Study

Full Time Study

In the event of part-time study (individual application required), the official length of the programme will be extended accordingly.

4.2 Programme Requirements

The program offers profound scientific and practically–orientated education in the field of optical engineering and photonics. The program is strongly related to research and development.

Mandatory courses include Photonics, Optical System Design, Image Processing, Material Science and Plasma Technology. The mandatory courses Advanced Mathematics, Quantum Mechanics and Theoretical Optics cover a profound theoretical background. Mandatory courses with special topics in Laser Treatment, Microscopy and Spectroscopy allow the students to extend their knowledge and skills in some particular aspects of optical technology. The selection of elective courses allows the students to build up a personal emphasis on special subjects related to optical technologies. It also allows the students to choose from some interdisciplinary subjects. Optional compulsory courses on offer include non-technical subjects like Rhetoric. The practical use of the knowledge gained in the courses is an essential part of the educational program. During an integrated project and the final master thesis the students have to prove their ability to solve a certain problem on their own.

4.3 Programme Details

Please refer to the Final Examination Certificate (Masterzeugnis) for a list of courses and grades.

4.4 Grading Scheme

Absolute grading scheme: “Sehr Gut” (1,0; 1,3) = Very Good; “Gut” (1,7; 2,0; 2,3) = Good; “Befriedigend” (2,7; 3,0; 3,3) = Satisfactory; “Ausreichend” (3,7; 4,0) = Pass; “Nicht ausreichend” (5,0) = Fail

Statistical distribution of grades: **grading table**

4.5 Overall Classification **0,0**

The final grade is based on the grades awarded during the study programme and that of the final thesis (with oral component). Please refer to the Final Examination Certificate (Masterzeugnis).

5. Function of the Qualification

5.1 Access to Further Study

The degree entitles its holder to apply for admission for a doctoral thesis according to the regulations covering doctoral programmes, respectively.

5.2 Professional Status

The degree entitles its holder to the legally protected professional title "Ingenieur" and to exercise professional work in in the field(s) of engineering for which the degree was awarded. The master degree is certified for the professional entry to the higher grade civil service (Laufbahngruppe 2, zweites Einstiegsamt) in Germany.

6. Additional Information

6.1 Additional Information

See "Masterzeugnis" (final examination certificate) for major field of study.

Non-academic acquired competencies were credited in an amount of **00** credits in the following modules: **...**

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Masterzeugnis (Final Examination Certificate) dated from	**00.00.0000**
Transcript of Records dated from	**00.00.0000**

Certification Date: **Ort, 00.00.0000**

(Official Seal/Stamp)

Chairman Examination Committee

8. Information on the German Higher Education System

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1. Holder of the Qualification

1.1	Family Name	**Nachname**
1.2	First Name	**Vorname**
1.3	Date, Place, Country of Birth	**00.00.0000, Geburtsort, Land**
1.4	Student ID Number or Code	**000000**

2. Qualification

2.1 Name of Qualification (full – abbreviated, in original language)
Master of Engineering – M.Eng.

2.2 Main Field(s) of Study
Elektrotechnik/Informationstechnik

2.3 Institution Awarding the Qualification (in original language)
HAWK Hochschule für angewandte Wissenschaft und Kunst
Hildesheim/Holzminden/Göttingen
Fakultät Naturwissenschaften und Technik
Status (Type / Control)
University of Applied Sciences and Arts / State Institution

2.4 Institution Administering Studies (in original language)
[as above]
Status (Type / Control)
[as above]

2.5 Language(s) of Instruction/Examination
German

3. Level of the Qualification

3.1 Level of Qualification
Master programme, graduate study programme, second degree

3.2 Official Length of Programme
Two years, 4 semesters, 120 ECTS

3.3 Access Requirement(s)
Bachelor degree in engineering or related fields (three years, with 180 ECTS credits), or foreign equivalent.

4. Contents and Results gained

4.1 Mode of Study

Full Time Study
In the event of part-time study (individual application required), the official length of the programme will be extended accordingly.

4.2 Programme Requirements
The program contains an advanced scientific and application-oriented education of Mechanical Engineering in the fields of Mechanics and Optics, especially Mechanical Engineering and Precision Manufacturing. In a first part the students obtain advanced knowledge in Mathematics, Physics, Mechanics, Mechanical Engineering, and Design as well as in Electronics, Electrical Engineering, and Control Engineering. In the second part of studies there are advanced courses in Computer Aided Technologies like CAD/CAM/CAQ/CIM and FEM, Materials Science, and Production Engineering as well as in Mechanical Design and Development, Control Engineering, Quality Control, and Advanced Laser Treatment. Precision Machine Construction and Optical and Mechanical Assembly are specialized on a scientific level. Moreover the students earn interdisciplinary and non-technical knowledge in Business Management and other skills like Presentation Techniques as well as Leadership and Negotiation Methodology. Scientific principles are applied to real problems usually arising from research activities of the department or from industrial partners. Scientific solution strategies are developed and applied to hands-on problems. The application of acquired knowledge is an emphasis of the whole program. During an integrated practical period in the industry and the final application-oriented Master Thesis the students have to prove their capabilities to solve selected problems on their own.

4.3 Programme Details
Please refer to the Final Examination Certificate (Masterzeugnis) for a list of courses and grades.

4.4 Grading Scheme
Absolute grading scheme: “Sehr Gut” (1,0; 1,3) = Very Good; “Gut” (1,7; 2,0; 2,3) = Good; “Befriedigend” (2,7; 3,0; 3,3) = Satisfactory; “Ausreichend” (3,7; 4,0) = Pass; “Nicht ausreichend” (5,0) = Fail
Statistical distribution of grades: **grading table**

4.5 Overall Classification **0,0**
The final grade is based on the grades awarded during the study programme and that of the final thesis (with oral component). Please refer to the Final Examination Certificate (Masterzeugnis).

5. Function of the Qualification

5.1 Access to Further Study
The degree entitles its holder to apply for admission for a doctoral thesis according to the regulations covering doctoral programmes, respectively.

5.2 Professional Status
The degree entitles its holder to the legally protected professional title "Ingenieur" and to exercise professional work in in the field(s) of engineering for which the degree was awarded. The master degree is certified for the professional entry to the higher grade civil service (Laufbahngruppe 2, zweites Einstiegsamt) in Germany.

6. Additional Information

6.1 Additional Information
See "Masterzeugnis" (final examination certificate) for major field of study.
Non-academic acquired competencies were credited in an amount of **00** credits in the following modules: **...**

6.2 Additional Information Sources
www.hawk.de

7. Certification

This Diploma Supplement refers to the following original documents:

Masterurkunde (Degree Certificate) dated from	**00.00.0000**
Masterzeugnis (Final Examination Certificate) dated from	**00.00.0000**
Transcript of Records dated from	**00.00.0000**

Certification Date: **Ort, 00.00.0000**

(Official Seal / Stamp)

Chairman Examination Committee

8. Information on the German Higher Education System

(siehe Seite 20)

8. Information on the German Higher Education System[i]

8.1 Types of Institutions and Institutional Status

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

- *Universitäten* (Universities) including various specialized 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* (Universities of Applied Sciences) 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-recognized institutions. In their operations, including the organization 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).

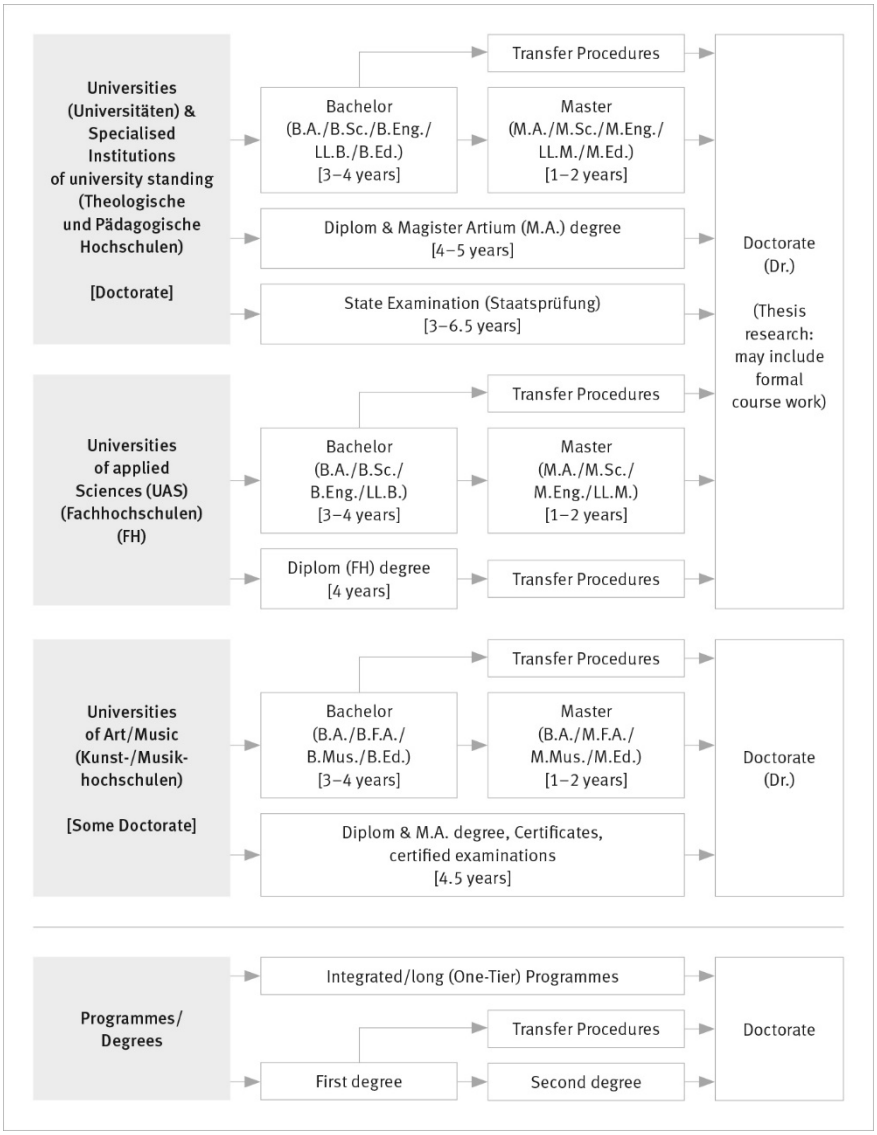
Within the framework of the Bologna-Process one-tier study programmes are successively being replaced by a two-tier study system. Since 1998, two-tier degrees (Bachelor and Master) have been introduced in almost all study programmes. This change is designed to provide enlarged variety and flexibility to students in planning and pursuing educational objectives, they also enhance international compatibility of studies.

The German Qualifications Framework for Higher Education Degrees[iii], the German Qualifications Framework for Lifelong Learning[iv] and the European Qualifications Framework for Lifelong Learning[v] describe the degrees of the German Higher Education System. They contain the classification of the qualification levels as well as the resulting qualifications and competencies of the graduates.

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 organization 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).[vi] In 1999, a system of accreditation for programmes of study has become operational under the control of an Accreditation Council at national level. All new programmes have to be accredited under this scheme; after a successful accreditation they receive the quality-label of the Accreditation Council.[vii]



8.4 Organization and Structure of Studies

The following programmes apply to all three types of institutions. Bachelor's and Master's study courses 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 organization 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 degree study programmes lay the academic foundations, provide methodological skills and lead to qualifications related to the professional field. The Bachelor degree is awarded after 3 to 4 years. The Bachelor degree programme includes a thesis requirement. Study courses leading to the Bachelor degree must be accredited according to the Law establishing a Foundation for the Accreditation of Study Programmes in Germany.[viii] 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 degree corresponds to level 6 of the German Qualifications Framework/ European Qualifications Framework.

8.4.2 Master

Master is the second degree after another 1 to 2 years. Master study programmes may be differentiated by the profile types "practice-oriented" and "research-oriented". Higher Education Institutions define the profile. The Master degree study programme includes a thesis requirement. Study programmes leading to the Master degree must be accredited according to the Law establishing a Foundation for the Accreditation of Study Programmes in Germany.[ix] 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 study programmes which are designed for continuing education may carry other designations (e.g. MBA).

The Master 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 specializations. 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 level.

- Integrated studies at *Universitäten (U)* last 4 to 5 years (*Diplom* degree, *Magister Artium*) or 3 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)*/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.

While the *FH*/UAS are non-doctorate granting institutions, qualified graduates may apply for admission to doctoral studies at doctorate-granting institutions, cf. Sec. 8.5.

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

8.5 Doctorate

Universities as well as specialized institutions of university standing and some Universities of Art/Music are doctorate-granting institutions. Formal prerequisite for admission to doctoral work is a qualified Master (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 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. Specialized variants (*Fachgebundende Hochschulreife*) allow for admission at Fachhochschulen (UAS), universities and equivalent higher education institutions, but only in particular disciplines. Access to study programmes at *Fachhochschulen* (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 vocational qualification 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 und HWK), staatlich geprüfte/r Betriebswirt/in, staatliche geprüfte/r Gestalter/in, staatlich geprüfte/r Erzieher/in*). Vocationally qualified applicants can obtain a *Fachgebundende 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.[x]

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;
  Fax: +49[0]228/501-777; Phone: +49[0]228/501-0
- 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]; Ahrstrasse 39, D-53175 Bonn; Fax: +49[0]228/887-110; Phone: +49[0]228/887-0; 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)

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[i] The information covers only aspects directly relevant to purposes of the Diploma Supplement.

[ii] *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 recognized as an academic degree if they are accredited by a German accreditation agency.

[iii] 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).

[iv] 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

[v] Recommendation of the European Parliament and the European Council on the establishment of a European Qualifications Framework for Lifelong Learning of 23 April 2008 (2008/C 111/01 – European Qualifications Framework for Lifelong Learning – EQF).

[vi] Common structural guidelines of the *Länder* for the accreditation of Bachelor's and Master's study courses (Resolution of the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* in the Federal Republic of Germany of 10.10.2003, as amended on 04.02.2010).

[vii] "Law establishing a Foundation 'Foundation for the Accreditation of Study Programmes in Germany'", entered into force as from 26 February 2005, GV. NRW. 2005, No. 5, p. 45 in connection with the Declaration of the *Länder* to the Foundation "Foundation: Foundation for the Accreditation of Study Programmes in Germany" (Resolution of the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* in the Federal Republic of Germany of 16 December 2004).

[viii] See note No. 7.

[ix] See note No. 7.

[x] 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).