

URKUNDE

RUHR
UNIVERSITÄT
BOCHUM

RUB

DAS INSTITUT FÜR NEUROINFORMATIK

verleiht aufgrund der bestandenen Prüfungsleistungen an

Herrn

ABDULLAH SAHIN

geboren am 16.07.1995 in Bochum

mit dieser Urkunde den akademischen Grad

BACHELOR OF SCIENCE (B.Sc.)

im wissenschaftlichen Studiengang

Angewandte Informatik

Der Absolvent ist nach geltenden deutschen Ingenieurgesetzen berechtigt, die geschützte Berufsbezeichnung Ingenieur zu führen.

Das Bachelorstudium wurde am 03.09.2019 erfolgreich abgeschlossen.

Bochum, den 02.12.2019



Der Studiendekan des
Studiengangs Angewandte Informatik

DAS INSTITUT FÜR NEUROINFORMATIK
bestätigt nach der geltenden Prüfungsordnung

Herrn
ABDULLAH SAHIN
geboren am 16.07.1995 in Bochum

mit diesem Zeugnis die bestandene Bachelorprüfung im Studiengang

ANGEWANDTE INFORMATIK

Thema der Bachelorarbeit

Pose Estimation in Gebäuden anhand von Convolutional Neural Networks und simulierten 3D-Daten

GESAMTNOTE

sehr gut (88)

Das Bachelorstudium wurde am 03.09.2019 erfolgreich abgeschlossen.

Bochum, den 02.12.2019



Der Vorsitzende des Prüfungsausschusses

	LP	Notenbezeichnung	Note
Pflichtmodule Informatik			
Betriebssysteme	5,0	ausgezeichnet	100
Computernetze	5,0	ausgezeichnet	98
Datenbanksysteme	9,0	sehr gut	93
Datenschutz	4,0	gut	73
Datenstrukturen	9,0	sehr gut	84
Informatik I	5,0	sehr gut	94
Informatik II	5,0	gut	81
Objektorientierte Modellierung	5,0	befriedigend	68
Programmieren in C	3,0	sehr gut	85
Rechnerarchitektur	5,0	ausreichend	58
Software-Engineering	5,0	gut	82
Theoretische Informatik	9,0	gut	75
Web-Engineering	5,0	ausgezeichnet	100
Pflichtmodule Mathematik			
Diskrete Mathematik I	9,0	gut	75
Höhere Mathematik I	9,0	sehr gut	87
Höhere Mathematik II	9,0	ausgezeichnet	100
Statistik und Wahrscheinlichkeitsrechnung	5,0	befriedigend	66
Pflichtmodule Betriebswirtschaftslehre			
Einführung Management Science	6,0	befriedigend	66
Wirtschaftlichkeitsanalyse	5,0	gut	76
Praktische Fächer			
Programmierpraktikum	4,0	ausgezeichnet	100
Studienprojekt	10,0	ausgezeichnet	98
Nichttechnische Wahlfächer			
Wissenschaftlicher Textsatz mit LaTeX	5,0	bestanden	-
Vertiefungsmodule			
Anwendungsprogrammierung in C++	4,0	ausgezeichnet	100
Digitale Bildverarbeitung	5,0	ausgezeichnet	99
Einführung in die Kryptographie I	5,0	sehr gut	84
Geometrische Modellierung und Visualisierung	6,0	sehr gut	94
Sehen in Mensch und Maschine	5,0	ausgezeichnet	100
Spieleentwicklung in C#	4,0	ausgezeichnet	100
Umwelthinformatik	3,0	sehr gut	89
Vertiefungsseminare	3,0	ausgezeichnet	100
Bachelorarbeit und Kolloquium	12,0	ausgezeichnet	95
Gesamtergebnis	183,0	sehr gut	88

Bochum, den 02.12.2019



Der Vorsitzende des Prüfungsausschusses

Abkürzung: LP = Leistungspunkte

Notensystem in Prozentpunkten: 95-100 = ausgezeichnet; 84-94 = sehr gut; 73-83 = gut; 62-72 = befriedigend; 50-61 = ausreichend

TRANSCRIPT OF RECORDS

Institut für Neuroinformatik

Studiengang: Bachelor of Science Angewandte Informatik

RUHR
UNIVERSITÄT
BOCHUM**RUB****ABDULLAH SAHIN**

geboren am 16.07.1995 in Bochum

Matrikelnummer: 108 016 202 304

	Datum	Note	Notenbezeichnung	LP
Pflichtmodule Informatik				
Betriebssysteme	31.07.2018	100	ausgezeichnet	5,0
Computernetze	01.09.2017	98	ausgezeichnet	5,0
Datenbanksysteme	26.03.2019	93	sehr gut	9,0
Datenschutz	06.02.2018	73	gut	4,0
Datenstrukturen	27.07.2018	84	sehr gut	9,0
Informatik I	10.03.2017	94	sehr gut	5,0
Informatik II	14.08.2017	81	gut	5,0
Objektorientierte Modellierung	17.08.2017	68	befriedigend	5,0
Programmieren in C	24.02.2017	85	sehr gut	3,0
Rechnerarchitektur	06.03.2018	58	ausreichend	5,0
Software-Engineering	07.08.2018	82	gut	5,0
Theoretische Informatik	26.03.2018	75	gut	9,0
Web-Engineering	09.08.2018	100	ausgezeichnet	5,0
Pflichtmodule Mathematik				
Diskrete Mathematik I	21.02.2018	75	gut	9,0
Höhere Mathematik I	28.02.2017	87	sehr gut	9,0
Höhere Mathematik II	20.09.2017	100	ausgezeichnet	9,0
Statistik und Wahrscheinlichkeitsrechnung	06.03.2017	66	befriedigend	5,0
Pflichtmodule Betriebswirtschaftslehre				
Einführung Management Science	29.08.2017	66	befriedigend	6,0
Wirtschaftlichkeitsanalyse	25.01.2017	76	gut	5,0
Praktische Fächer				
Programmierpraktikum	12.03.2018	100	ausgezeichnet	4,0
Studienprojekt	08.02.2019	98	ausgezeichnet	10,0
Nichttechnische Wahlfächer				
Wissenschaftlicher Textsatz mit LaTeX	20.03.2019	-	bestanden	5,0
Vertiefungsmodule				
Anwendungsprogrammierung in C++	23.03.2018	100	ausgezeichnet	4,0
Digitale Bildverarbeitung	13.08.2018	99	ausgezeichnet	5,0
Einführung in die Kryptographie I	09.03.2018	84	sehr gut	5,0
Geometrische Modellierung und Visualisierung	26.02.2019	94	sehr gut	6,0
Sehen in Mensch und Maschine	04.09.2018	100	ausgezeichnet	5,0
Spieleentwicklung in C#	22.02.2019	100	ausgezeichnet	4,0
Umweltinformatik	19.02.2019	89	sehr gut	3,0
Vertiefungsseminare	28.02.2019	100	ausgezeichnet	3,0
Bachelorarbeit und Kolloquium				
Pose Estimation in Gebäuden anhand von Convolutional Neural Networks und simulierten 3D-Daten	03.09.2019	95	ausgezeichnet	12,0
Abschlussdatum		Gesamtnote	Notenbezeichnung	LP
03.09.2019		88	sehr gut	183,0

Bochum, den 02.12.2019




Der Vorsitzende des Prüfungsausschusses

Abkürzung: LP = Leistungspunkte

Freiwillige Zusatzleistungen/Ersatzleistungen: Leistungen gehen nicht in die Gesamtbewertung ein

Notensystem in Prozentpunkten: 95-100 = ausgezeichnet; 84-94 = sehr gut; 73-83 = gut; 62-72 = befriedigend; 50-61 = ausreichend

ABDULLAH SAHIN

1. Holder of the Qualification

Family Name, First Name	Sahin, Abdullah
Date, Place, Country of Birth	16 th July 1995, Bochum
Student Identification Number	108 016 202 304

2. Qualification and Institution Awarding the Qualification

Qualification	Bachelor of Science - B.Sc.
Subjects of Study <i>(also in original language)</i>	Applied Computer Science <i>(Angewandte Informatik)</i>
Institution <i>(also in original language)</i>	Ruhr-University Bochum Institute for Neural Computation <i>(Ruhr-Universität Bochum Institut für Neuroinformatik)</i>
Status (Type / Control)	University / State Institution
Language of Instruction / Examination	German

3. Level of the Qualification

Level	First degree with thesis
Official Length of Programme	Three Years, 180 ECTS-Credits
Entrance Requirements	General Higher Education Entrance Qualification (Allgemeine Hochschulreife, Abitur) after 12 to 13 years of schooling; or foreign equivalent

4. Contents and Results Gained

Mode of Study	Full-time
Programme Requirements	<p>The program in Applied Computer Science completed at first degree level with the B.Sc. in Applied Computer Science provides comprehensive education towards multidisciplinary career goals. The program has two main foci. Firstly, the acquisition of basic knowledge and skills (covering relevant concepts and techniques in computer science, mathematics and economics). Secondly, the acquisition of techniques that enable a structured, systematic and professional handling of specific tasks.</p> <p>Basic knowledge and skills are provided in core modules that are mandatory for all students during the first five terms. As to the preparation for professional handling of specific tasks (within the field of applied computer science), the program offers a specialization phase (starting from the third term). Possible focal points within the specialization are: engineering computer science (applications between computer science and electrical engineering, mechanical engineering or civil engineering), neuroinformatics, computer linguistics, bioinformatics as well as programming and simulation techniques.</p> <p>The final term is a combination of a student project (accompanied by a project management course) and the bachelor thesis.</p> <p>In order to graduate, a student must successfully pass all mandatory modules, sufficiently many compulsory elective subjects and an optional choice module (to acquire a total of 180 credit points). A special feature of the program is its foundation in several disciplines. In addition to the Institute of Neuroinformatics, which is responsible for organising the study programm, the following teaching units are also involved in the course offerings:</p>

Faculty of Mathematics, Faculty of Electrical Engineering and Information Technology, Faculty of Management and Economics, Faculty of Civil and Environmental Engineering, Faculty of Mechanical Engineering, Faculty of Philology, Faculty of Biology and Biotechnology and the Institute of Work Science. This offers the opportunity to acquire key concepts and skills in Applied Computer Science without restriction to a single narrow field of application.

Programme Details	See Transcript of Records and Final Examination Certificate (Zeugnis) for subjects offered and title of thesis.
Grading Scheme	Grading scheme used for this programme: 95-100 % = excellent, 84-94 % = very good, 73-83 % = good, 62-72 % = satisfactory, 50-61 % = sufficient, 0-49 % = fail ECTS grading scheme used for academic year 2019/2020: A = 91-100% (the best 10%), B = 82-90% (the next 25%), C = 75-81% (the next 30%), D = 65-74% (the next 25%), E = 50-64% (the next 10%)
Related to	The ECTS grade is given when at least 50 students have graduated. It is calculated on basis of the results of the last six semesters at most, not including the final semester.
Overall Classification	For overall grade (Gesamtnote) see Final Examination Certificate (Zeugnis). The grade is calculated on the basis of the total sum of weighted grades received during the study programme plus the final thesis.

5. Function of the Qualification

Professional Status	Qualifies to apply for admission to second degree studies (Master of Science) in the same or other appropriate field.
Access to Further Study	The degree Bachelor of Science entitles its holder to conduct professional work in the field of applied computer science.

6. Additional Information

Additional Information	The Bachelor's degree program has been accredited by the German Accreditation Agency AQAS (Bonn) in May 2014 and received the quality label of the Accreditation Council.
Further Information Sources	Ruhr-University Bochum: http://www.ruhr-uni-bochum.de Department: http://www.ai.rub.de Further Information on the study contents: http://www.ai.rub.de/studierende/index.html

7. Certification

This Diploma Supplement refers to the following original documents, all from 2nd December 2019:

- Urkunde über die Verleihung des Bachelor-Grades
- Zeugnis
- Transcript of Records

Bochum, 2nd December 2019



President of the examination board



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 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.

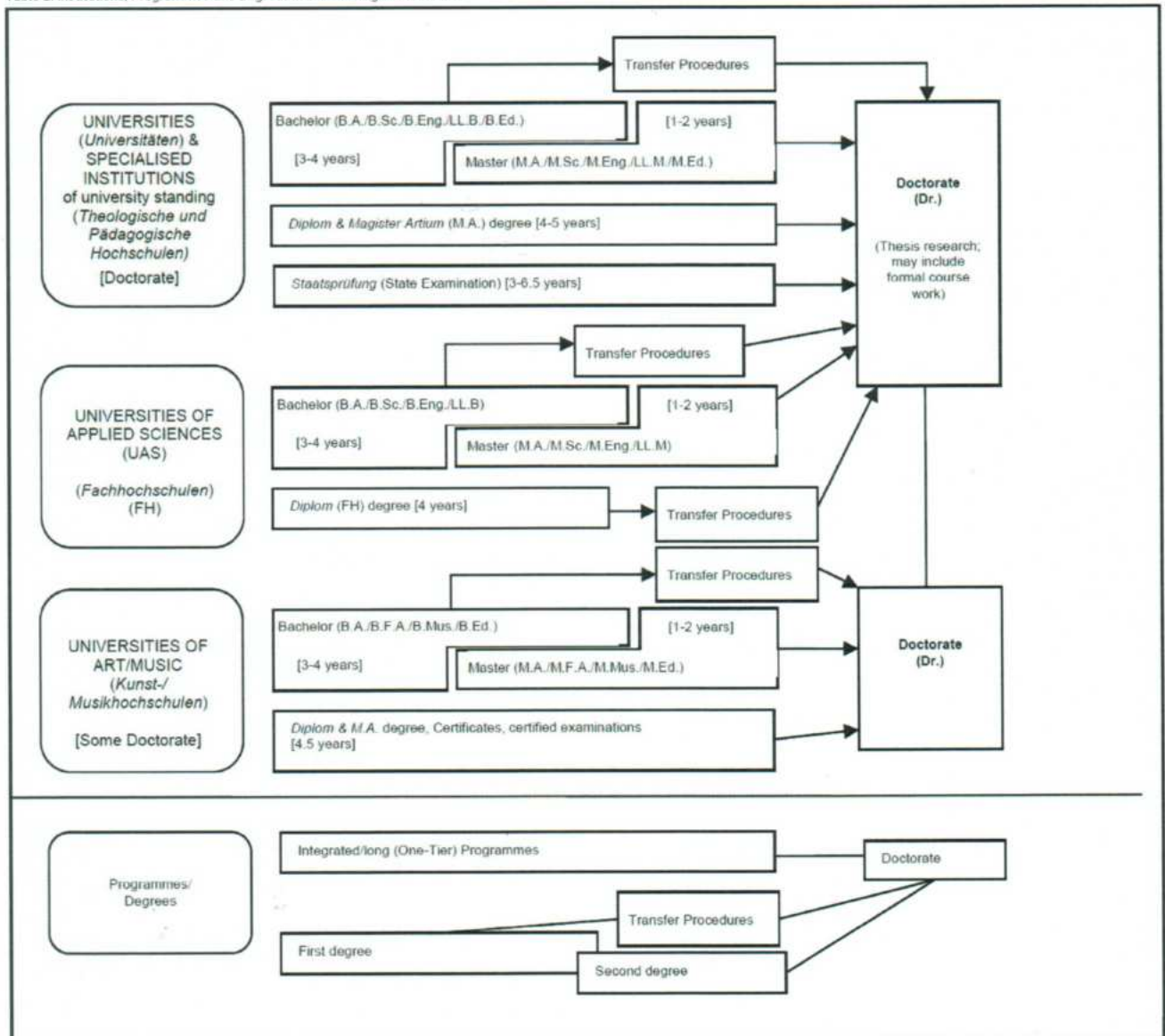
The German Qualifications Framework for Higher Education Degrees³, the German Qualifications Framework for Lifelong Learning⁴ and the European Qualifications Framework for Lifelong Learning⁵ describe the degrees of the German Higher Education System. They contain the classification of the qualification 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).⁶ 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.⁷

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



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.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 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.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 (LL.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- und 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 (*Fachgebundene 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 *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; 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)

- 1 The information covers only aspects directly relevant to purposes of the Diploma Supplement. All information as of January 2015.
- 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 recognized as an academic degree if they are accredited by a German accreditation agency.
- 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 21 April 2005).
- 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 a European Qualifications Framework for Lifelong Learning of 23 April 2008 (2008/C 111/01 – European Qualifications Framework for Lifelong Learning – EQF).
- 6 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).
- 7 "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).
- 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).