

Diploma Supplement

Bachelor Informatik

Computer Science

Matrikelnummer

This Diploma Supplement follows the model 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 is free from any value judgements, equivalence statements or suggestions about recognition. Information in all eight sections is provided. Where information is not provided, an explanation gives the reason why.

1. Holder of the Qualification

1.1	Family Name	XXX
1.2	First Name	XXX
1.3	Date, Place, Country of Birth	XXX XXX XXX
1.4	Student ID Number or Code	XXX

2. Qualification

2.1	Name of Qualification	
	full	Bachelor of Science
	abbreviated	B.Sc.
	in original language	Bachelor of Science
	Title Conferred	
	full	n.a.
	abbreviated	n.a.
	in original language	n.a.
2.2	Main Field(s) of Study	Computer Science
2.3	Institution Awarding the Qualification (in original language)	Westfälische Hochschule Fachbereich Informatik und Kommunikation
	Status (Type / Control)	University of Applied Sciences / State Institution
2.4	Institution Administering Studies	Westfälische Hochschule Department of Computer Science and Communications
	Status (Type / Control)	University of Applied Science / State Institution
2.5	Language(s) of Instruction/ Examination	German

Certification Date: XXX

3. Level of the Qualification

3.1	Level	First Degree (three years, 180 credits): compulsory core subjects (20 credits), subject (50 credits) and general studies (100 credits) with internship (5 credits) and thesis (15 credits)
3.2	Official Length of Programme	Three years (180 credits)
3.3	Access Requirements	Higher Education Entrance Qualification (HEEQ) cf. Sec. 8.7. after 12 or 13 years

4. Contents and Results Gained

4.1 Mode of Study Full-time

4.2 Programme Requirements

The bachelor programme „Informatik / Computer Science“ aims at enabling students to build complex and challenging software systems. Graduates have profound skills and problem solving capacities that qualify them for a crucial and goal-oriented participation in all phases of the software engineering lifecycle including requirements analysis, design, implementation, testing, documentation, and maintenance. In accordance with different requirements arising from general software applications and applications in a technical environment the programme offers two major specialisations, namely Practical Informatics and Computer Engineering. The specialisation **Practical Informatics** puts focus on concepts and methods for developing complex software applications on modern and widely-used platforms, i.e. desktop and distributed applications, internet applications, and mobile applications. Important aspects are architecture, data structures, algorithms, efficiency, reliability, and quality. The specialisation **Computer Engineering** conveys particular knowledge for the development and realisation of computer based automation systems, autonomic systems, and real time applications. Graduates have profound knowledge in the area of embedded systems, hard- and software development, closed loop control, robotics and sensor systems.

For both specialisations, the courses of the first three semesters are dedicated to laying a sound methodological foundation in theoretical and technical essentials of computer science as well as in practical issues of implementing software systems. In the second part of the curriculum students become specifically acquainted with modern technologies, methods, and tools to identify and analyse problems, develop adequate strategies and economic solutions for problems in the fields of their chosen specialisation. The curriculum schedules numerous practical exercises which help to strengthen self-employment, self-organisation, as well as the ability to work in a team and to present and discuss working results. A practical training of twelve weeks in a business company is also part of the programme.

4.3 Programme Details See Transcript for list of courses and grades
See “Prüfungszeugnis” (Final Examination Certificate)
for subjects offered in final examinations and
topic of thesis, including evaluations.

4.4 Grading Scheme General grading scheme cf. Sec. 8.6.
ECTS Grade: X

4.5 Overall Classification
(in original language) **Note**

Grade is calculated as the mean value of the sum of all examination grades weighted with the amount of credit points designated for each module including BA thesis.

Diploma Supplement

Bachelor Informatik

Computer Science

Matrikelnummer

5 Function of the Qualification

- | | | |
|-----|-------------------------|---|
| 5.1 | Access to Further Study | Qualifies to apply for admission to postgraduate programmes. |
| 5.2 | Professional Status | There is no professional status entitled with a bachelor degree in Germany. |

6. Additional Information

- | | | |
|-----|-----------------------------|--|
| 6.1 | Additional Information | The study programme Bachelor of Science has been accredited by the Akkreditierungsagentur für Studiengänge der Ingenieurwissenschaften, der Informatik, der Naturwissenschaften und der Mathematik e.V. (ASIIN) in 2005. |
| 6.2 | Further Information Sources | on the institution: http://www.w-hs.de
for national information sources cf. Sec. 8. |

7. Certification

This Diploma Supplement refers to the following original documents:

- Urkunde über die Verleihung des Bachelor of Science XXX
- Prüfungszeugnis XXX

Certification Date: XXX

[Official Stamp/Seal]

Prof. Dr. Marcel Luis
Head of the Examination Board

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.

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 a distinct application-oriented focus and professional character of studies, which include 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, a scheme of first- and second-level degree programmes (Bachelor and Master) was introduced to be offered parallel to or instead of integrated "long" programmes. These programmes are designed to provide enlarged variety and flexibility to students in planning and pursuing educational objectives, they also enhance international compatibility of studies.

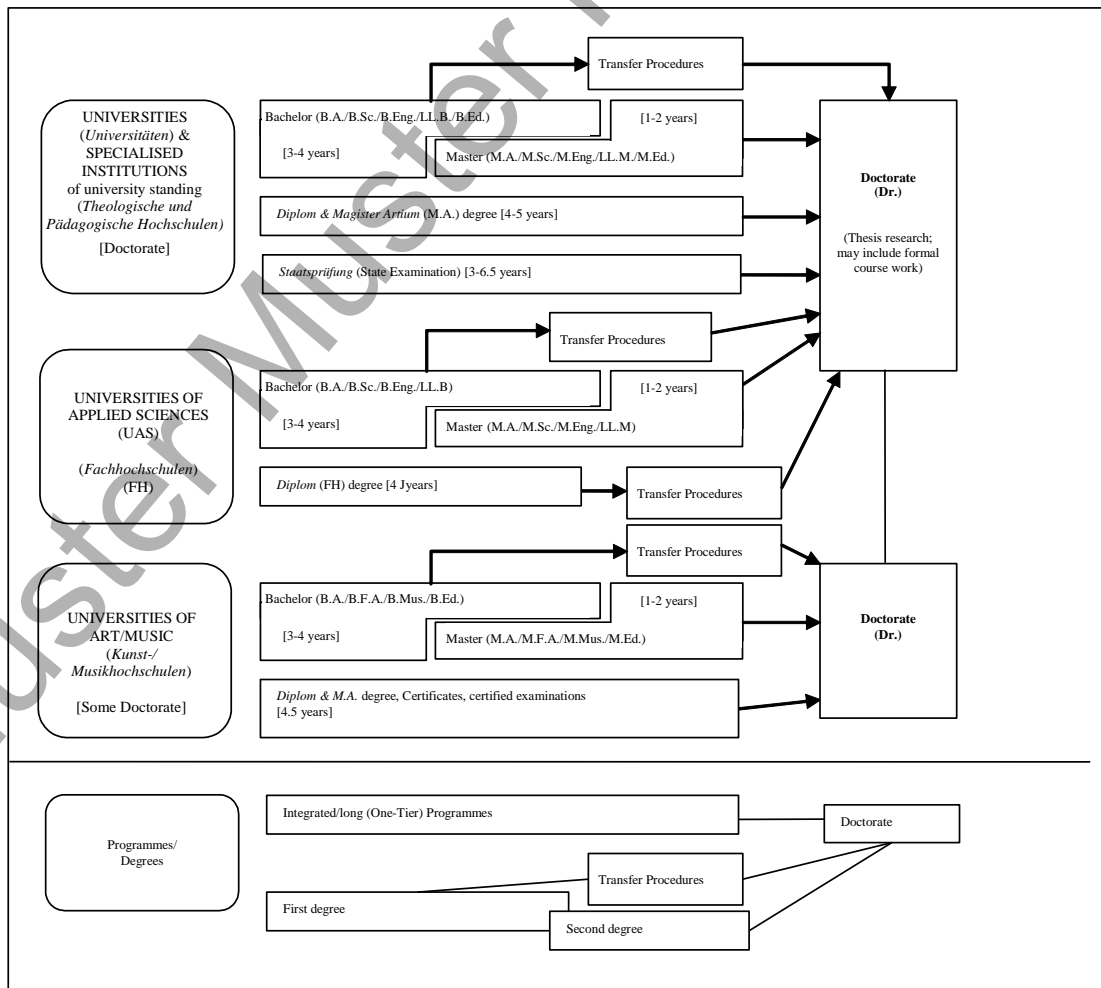
The German Qualification Framework for Higher Education Degrees³ describes the degrees of the German Higher Education System. It contains the classification of the qualification levels as well as the resulting qualifications and competencies of the graduates.

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).⁴ 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.⁵

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.⁶ 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.).

8.4.2 Master

Master is the second degree after another 1 to 2 years. Master study programmes must be differentiated by the profile types "more practice-oriented" and "more research-oriented". Higher Education Institutions define the profile of each Master study programme.

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.⁷

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 or which do not build on the preceding Bachelor study programmes in terms of their content, may carry other designations (e.g. MBA).

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, pharmaceutical and teaching professions are completed by a *Staatsprüfung*. The three qualifications (*Diplom*, *Magister Artium* and *Staatsprüfung*) are academically equivalent. 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. 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. 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.

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 institutions may already use the ECTS grading scheme, which operates with the levels A (best 10 %), B (next 25 %), C (next 30 %), D (next 25 %), and E (next 10 %).

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 to particular disciplines. Access to *Fachhochschulen* (UAS) is also possible with a *Fachhochschulreife*, which can usually be acquired after 12 years of schooling. Admission to Universities of Art/Music may be based on other or require additional evidence demonstrating individual aptitude.

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]; Lennéstrasse 6, D-53113 Bonn; Fax: +49[0]228/501-229; Phone: +49[0]228/501-0

- Central Office for Foreign Education (ZaB) as German NARIC; www.kmk.org; E-Mail: zab@kmk.org

- "Documentation and Educational Information Service" as German EURYDICE-Unit, providing the national dossier on the education system (www.kmk.org/doku/bildungswesen.htm; E-Mail: eurydice@kmk.org)

- *Hochschulrektorenkonferenz (HRK)* [German Rectors' Conference]; Ahhrstrasse 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)

Clause 2 of the Framework Act for Higher Education (HRG) on 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 October 2003, as amended on 18 September 2008).

⁵ "Law establishing a Foundation "Foundation for the Accreditation of Study Programmes in Germany", entered into force as from 26 February 2005, GV. NRW. 2005, nr. 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 16.2.2004.

⁶ See note No. 5.

⁷ See note No. 5.

¹ The information covers only aspects directly relevant to purposes of the Diploma Supplement. All information as of 1 December 2008.

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 Qualification 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 Common structural guidelines of the *Länder* as set out in Article 9