

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	Mustermann
1.2	First Name	Michael
1.3	Date, Place of Birth	July 01, 1982, Tübingen
1.4	Student Registration No.	600234

2. QUALIFICATION

2.1	Name of Qualification (in original language) Title conferred (in original language)	Bachelor of Engineering in Mechatronik n.a.
2.2	Main field(s) of Study	Electrical Engineering, Computer Science, Mechanical Eng., Automation
2.3	Institution Awarding the Qualification (in original language) Status (Type/Control)	Hochschule Reutlingen – Reutlingen University School of Engineering University of Applied Sciences, State/Public Institution
2.4	Institution Administering Studies (in original language) Status (Type/Control)	same same
2.5	Language(s) of Instruction/Examination	German

3. LEVEL OF THE QUALIFICATION

3.1	Level	Undergraduate/first degree with thesis
3.2	Official Length of Programme	3.5 years = 7 semesters
3.3	Access Requirements	General Higher Education Entrance Qualification (12 or 13 Years) or specialized Higher Education Entrance Qualification (12 Years). Restricted admission and selection via Numerus Clausus or Entrance Test

4. CONTENTS AND RESULTS GAINED

4.1	Mode of Study	Full-time; one internship (praktisches Studiensemester)
4.2	Programme Requirements	The mechatronics bachelor's programme enables students to solve engineering tasks, related to the design and realisation of mechatronic systems, e.g. automation systems or electronic control units in cars. It combines expertise in mathematics, physics, electronics, computer science and basics of mechanical engineering. Throughout the programme lectures are complemented by lab exercises where students develop skills in requirements engineering, hard- and software-design and programming of PCs and microcontrollers as well as key qualifications such as the ability to cooperate in teams, to present results etc. The programme comprises 7 semesters including an internship in industry or a practical training at an international partner university. During the last semester the students solve an engineering task on their own in their bachelor's thesis including a presentation of their work.

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Michael Mustermann, Student Registration No. 600234

- 4.3 Programme Details See appendix A for list of modules and weight of modules
A detailed description of each individual module (Modulhandbuch) is available in German language at www.me.reutlingen-university.de
- 4.4 Grading Scale Local grade: 1.0 – 1.5 sehr gut; 1.6 – 2.5 gut; 2.6 – 3.5 befriedigend; 3.6 – 4.0 ausreichend; 4.1 – 5.0 nicht ausreichend.
ECTS grade: As soon as sufficient data will have been collected comprising at least two years of graduation, relative ECTS-grades according to section 8.6 (last sentence) will be provided.
- 4.5 Overall Qualification **gut (1.7) local grade**
Based on the accumulation of grades received during the study programme and the final thesis (Transcript of Records)

5. FUNCTION OF THE QUALIFICATION

- 5.1 Access to further Study Qualifies to apply for admission to a Master programme. Highly qualified graduates may pursue doctoral work at doctorate-granting institution.
- 5.2 Professional Status The Bachelor degree entitles its holders to exercise professional work in the fields of Mechatronics

6. ADDITIONAL INFORMATION

- 6.1 Additional Information Study programme qualifies in all fields of Mechatronics, in particular in Electrical Engineering, Computer Science and Automation. Many of the students will work in multinational companies, some of them in foreign countries.
- 6.2 Further Information Sources On the institution: <http://www.reutlingen-university.de>
On the study programme: <http://www.me.reutlingen-university.de>
Further national information sources: see Section 8.8

7. CERTIFICATION

This Diploma Supplement refers to the following original documents:
Certificate/Bachelorurkunde February 15, 2008
Final Examination Certificate/Bachelorzeugnis February 15, 2008
Final Transcript of Records, February 15, 2008

Reutlingen, February 15, 2008

Signature: _____
Examinations Officer

Seal:

8. INFORMATION ON THE GERMAN HIGHER EDUCATION SYSTEM¹

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.

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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.

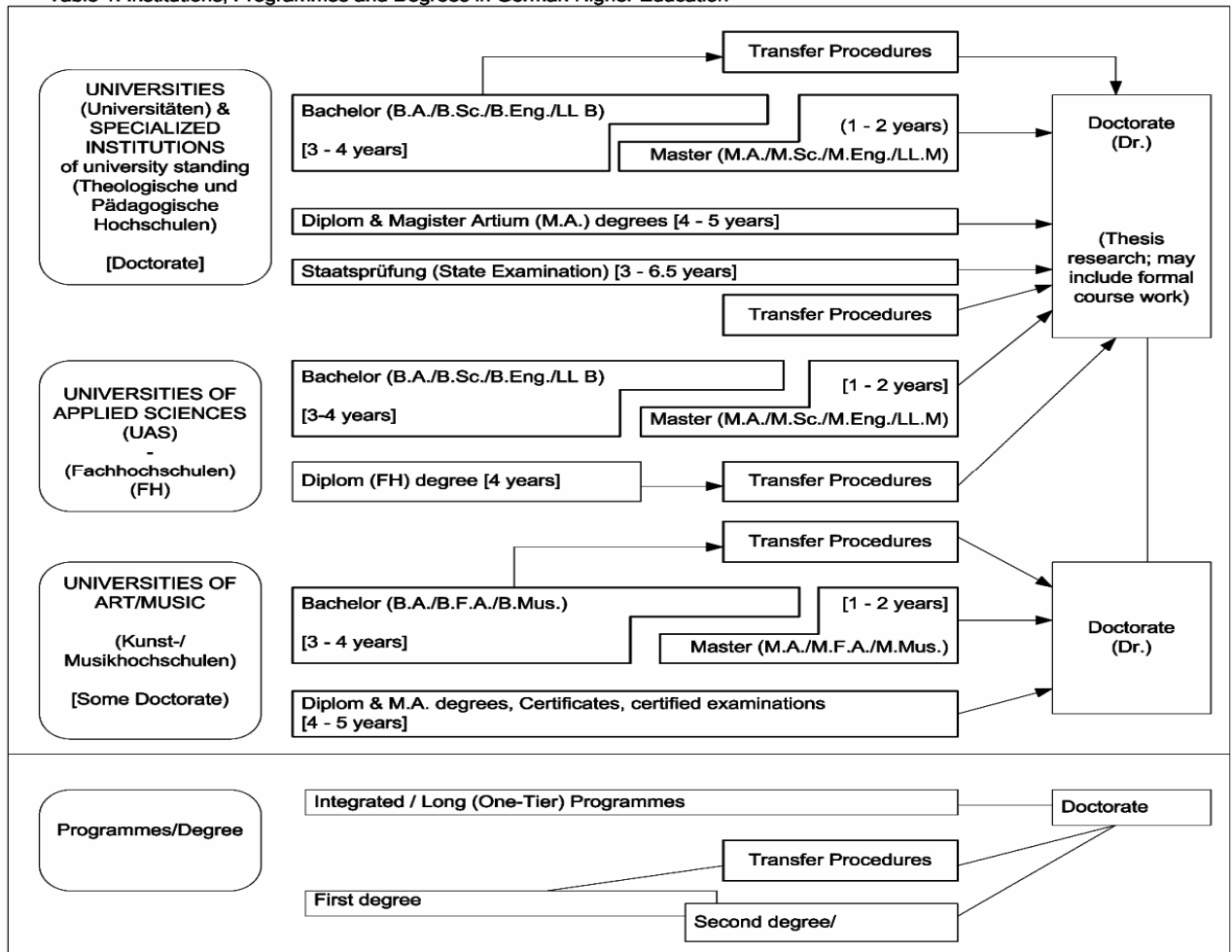
8.2 Types of Programmes and Degrees Awarded

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.

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

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



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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)³. 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.⁴

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.⁵

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.) or Bachelor of Music (B.Mus.).

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.⁶

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.) or Master of Music (M.Mus.). 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) 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- 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. 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]; Ahrstrasse 39, D-53175 Bonn; Fax: +49[0]228/887-110; Phone: +49[0]228/887-0; www.hrk.de; E-Mail: sekr@hrk.de
- "Higher Education Compass" of the German Rectors' Conference features comprehensive information on institutions, programmes of study, etc. (www.higher-education-compass.de)

APPENDIX A: LIST OF MODULES

Module	ECTS credits	Weight of Module
Mathematics 1	7	5
Core Skills in Natural Science	7	4
Electrical Engineering	12	8
Computer Science 1	7	4
Mechanics	6	4
Material Science for Mechatronics	3	2
Mathematics 2	8	5
Digital Electronics	7	4
Computer Science 2	5	3
E-CAE 1	4	4
Electronics	7	7
Signals and Systems	4	4
Computer Science 3	5	5
Control Systems	5	5
Sensor Technology	4	4
Microcontrollers	7	7

Measurement Technology	4	4
Mechanical Technology	4	4
E-CAE 2	4	4
Digital Signal Processing	5	5
Feedback Control Systems	9	9
Business English	2	2
Internship	30	0
Communication Systems	4	4
Operating Systems and Real-time	3	3
Power Electronics	5	5
Robotics	7	7
Creativity and System Design	3	3
Law and Economics	4	4
Electrical Drives	4	4
Software Engineering	4	4
Electives	6	6
Bachelor Thesis	12	20
Presentation Bachelor Thesis	2	3

¹ The information covers only aspects directly relevant to purposes of the Diploma Supplement. All information as of July 01 2005.

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 Common structural guidelines of the *Länder* as set out in Article 9 Clause 2 of the Framework Act for Higher Education (HRG) 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 21.4.2005).

⁴ "Law establishing a Foundation 'Foundation for the Accreditation of Study Programmes in Germany'", entered into force as from 26.2.2005, 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 16.12.2004).

⁵ See note No. 4.

⁶ See note No. 4.