

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 / 1.2 First Name

**Mustermann, Hans**

### 1.3 Date, Place, Country of Birth

**1974-06-23, Musterhausen**

### 1.4 Student ID Number or Code

**8121**

## 2. QUALIFICATION

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

**Bachelor of Engineering (B.Eng.)**

Title Conferred (full, abbreviated; in original language)

**Does not apply**

### 2.2 Main Field(s) of Study

**Engineering and Management with the specializations:**

- **Operations Research**
- **Industrial Safety and Environmental Protection**
- **Controlling**
- **B2B Management**
- **Change Management**
- **Logistics Management**

### 2.3 Institution Awarding the Qualification (in original language)

**Hochschule Harz - Hochschule für angewandte Wissenschaften (FH)**

Status (Type / Control)

**University of Applied Sciences / State University**

### 2.4 Institution Administering Studies (in original language)

**Hochschule Harz - Hochschule für angewandte Wissenschaften (FH)**

Status (Type / Control)

**University of Applied Sciences / State University**

### 2.5 Language(s) of Instruction/Examination

**German and English**

### 3. LEVEL OF THE QUALIFICATION

#### 3.1 Level

**graduate/first professional qualifying degree with degree thesis**

#### 3.2 Official Length of Programme

**3.5 years with 7 semesters**

#### 3.3 Access Requirements

**Before beginning the studies, one of the following conditions for admission must be fulfilled:**

- **General Higher Education Entrance Qualification**
- **Specialised Higher Education Entrance Qualification**
- **General Higher Education Entrance Qualification for Universities of Applied Science**
- **University Administered Entrance Exam**
- **A qualification for entrance to higher education deemed equivalent by the Land Saxony-Anhalt.**

### 4. CONTENTS AND RESULTS GAINED

#### 4.1 Mode of Study

**Full-time, on-campus programme**

#### 4.2 Programme Requirements/Qualification Profile of the Graduate

**The Bachelor's programme "Engineering and Management" qualifies graduates to support management in interdisciplinary tasks of business and technology issues. These include e. g. product and production planning, logistics, marketing and sales and the implementation of management systems. Graduates have the following qualifications:**

**Graduates acquired the following knowledge:**

- **broad overview and solid background in the science basics (mathematics, physics), in the electrical and automation engineering related subjects as well as in the essential business areas (including knowledge of essential tasks of corporate functions as well as processes and their mutual interactions).**
- **broad overview and solid background in selected integrated courses which cover economic, technical and socio-ethical aspects and processes.**

**Graduates are able to:**

- **identify, analyse and structure technical and economic tasks and solve them in a team,**
- **develop and implement application-oriented solutions on the basis of process and data analyses, as well as critically question existing solutions and optimize them,**
- **thereby select and apply appropriate technical and managerial methods.**

**Graduates have the following skills:**

- **They understand the economic, political, social, ethical and legal framework of economy and society, and incorporate them into their decision making.**
- **They recognize complex tasks in a technical and economic context and solve them interdisciplinarily, holistically and methodically.**
- **They are able to express themselves logically in oral as well as written communication. They do this convincingly and reasonably on both general and professional issues.**
- **They can cooperate interdisciplinarily and positively with people and teams on domestic and international markets, including project management tasks.**
- **They utilize modern information technology effectively.**
- **They learn independently and will continue their education in the future.**

**Operations Research:**

**The graduate comprehends various methods for solving optimization problems. He / she knows to apply the simplex algorithm to linear optimization problems and is able to model practical problems as linear optimization problems. Using algorithms from graph theory, the graduate is proficient to solve problems such as finding shortest paths,**

maximum flows and optimal network plans, as he / she implements the real world issues in mathematical optimization problems.

**Industrial Safety and Environmental Protection:**

The graduate considers aspects of environmental protection, occupational safety, health and safety in planning, analysis and optimization of processes, as well as operational processes and positions. He / she has a general idea of the related legislation and normative standards as part of the professional field orientation. He / She identifies the technical, technological and organizational possibilities in both areas and decides on appropriate approaches. The graduate knows to apply this knowledge in the interdisciplinary collaboration on integrated management systems (quality, environment, occupational health and safety).

**Controlling:**

The graduate possesses basic knowledge of controlling. He/she is able to create budgets, conduct deviation analysis, introduce appropriate countermeasures, develop a controlling system in small and medium-sized companies and work with the instruments of ecological controlling.

He/she has learned to recognize and formulate the basic conditions for economic success as well as to make decisions in complex situations marked by uncertainty, develop and realize targets and strategies in an economic-ecological environment, keep perspective in difficult situations, practice efficient communication through visualisation, apply the basics of marketing, perform cost, profitability, budget, controlling and product calculations, to think and act beyond the boundaries of controlling, to develop capabilities to structure and solve problems, convert figures into practical knowledge and decisions, make decisions in a team and with the use of PC-supported planning models.

**B2B Management:**

Based on the fundamentals of B2B-marketing, advanced theories relating to purchasing behaviour, strategic planning as well as operative and international marketing are taught.

Applying strategic and operative instruments, the graduate can develop sales as well as procurement concepts while thereby taking into consideration the particularities of B2B-management. He/she is able to use SAP/R3 for the purpose of analysis.

**Change Management:**

The graduate has acquired practical knowledge and applicable skills. He/she knows the theoretical fundamentals of modern organisational development (champion management, information management, iceberg management, participation management, process management, conflict management) as employee-oriented approaches of change management and, under the selection of selected tools, can steer operational change processes in a result-oriented manner.

He/she is able to apply selected techniques (e.g. SWOT-analysis, cross-impact analysis, workshops, interviews, communication) to control change processes.

**Logistics Management:**

The graduate knows the business oriented analysis, planning, management and control of the cross-section function, logistics, as well as the functions of related fields.

He/she possesses knowledge in regard to the classification of procurement objects, the operational procurement process, the procedures for need assessment, averaging, and exponential smoothing. He/she can apply the methods of order planning as well as warehouse and stock management.

He/she has methodological competence in regard to the quantity planning, capacity and schedule planning, order release, order control and the typology of production. He/she can work out and realise the concepts of production planning and control. He/she possesses practical experience in the use of SAP/R3.

He/she meets the requirements that are presently placed on the employees of manufacturing enterprises.

During their studies, graduates have been assessed based on the following forms of

**examinations: written tests, written housework, presentation, software draft (incl. written and oral presentation and practical realisation), oral test, bachelor thesis and colloquium.**

#### 4.3 Programme Details

Courses Taken	Grade	Performance Appraisal	ECTS-Credits	ECTS-Grade
Mathematics I	3,7	sufficient	5	*
Fundamentals in Physics and Engineering	3,5	satisfactory	5	*
Fundamentals of Computer Science	1,4	very good	5	*
General Economic Principles	1,3	very good	5	*
Financial Accounting	1,2	very good	5	*
English I	1,7	good	5	*
Mathematics II	1,7	good	5	*
Fundamentals of Electrical Engineering	1,2	very good	5	*
Programming	2,8	satisfactory	5	*
Cost Accounting	2,5	good	5	*
Business Finance	1,9	good	5	*
Logistic Management	2,8	satisfactory	5	*
Marketing	1	very good	5	*
English II	2,4	good	5	*
CAD and CAE	1,2	very good	5	*
Quality Management	2,6	satisfactory	5	*
Measurement, Sensors and Actuators	2,7	satisfactory	5	*
Project Management	3,7	sufficient	5	*
Industrial Control	2,5	good	5	*
Manufacturing Technology and CAM	1,7	good	5	*
Introduction to Database Systems	4	sufficient	5	*
Controlling, Organisation and Human Resource Management	2	good	5	*
Law and Taxation	2,4	good	5	*
Automatic Control	3,8	sufficient		*
Team Project	2,3	good	5	*
Design Methodology	3,3	satisfactory	5	*
Electives	1,4	very good	10	*
Specialisation: Operations Research	1,7	good		*
Industrial Safety and Environmental Protection	3,4	satisfactory		*
Specialisation: Environment, Health and Safety	1,2	very good		*
Operations Research	1,7	good		*
Professional Field Orientation: Controlling	1,1	very good		*
Professional Field Orientation: Change Management	1,7	good		*
Professional Field Orientation: Business-to-Business Management	2,2	good		*
Professional Field Orientation: Logistic Management	3,1	satisfactory		*
PPS and SAP	2,8	satisfactory	5	*
Power Electronics and Electrical Drives	3,7	sufficient	5	*
Process and Production Control and Engineering	3,4	satisfactory	10	*

Project Week	3,2	satisfactory		*
Work Placement	3,9	sufficient	15	*
Colloquium	1,8	good	3	*
Bachelor Thesis	1,9	good	12	*
Theme:	Hier steht dann der Titel der Bachelor- bzw. Masterarbeit in englisch, soweit vorhanden, sonst in deutsch			

\* Not calculated due to an inadequate number of cases.

#### 4.4 Grading Scheme

HS Harz Grade	Performance appraisal
1,0 - 1,3	Very good
1,7 - 2,0 - 2,3	Good
2,7 - 3,0 - 3,3	Satisfactory
3,7 - 4,0	Sufficient
5,0	Non-sufficient/Fail

The calculation of the ECTS-grade results from an examination cohort of the three preceding semesters. In order to be calculated, the ECTS-grade requires at least 20 examination events in the examination cohort.

See below section 8.6

#### 4.5 Overall Classification (in original language)

2,2 (good)

ECTS-Grade: C

### 5. FUNCTION OF THE QUALIFICATION

#### 5.1 Access to Further Study

**EQF Level 6: Qualifies to apply for admission for master degree**  
**Prerequisite: depends on the requirements of the accepting university.**

#### 5.2 Professional Status

**Does not apply.**

### 6. ADDITIONAL INFORMATION

#### 6.1 Additional Information

**The graduate has proved extracurricular achievements.**

#### 6.2 Further Information Sources

**On the institution: [www.hs-harz.de](http://www.hs-harz.de)**  
**On the department: [www.hs-harz.de/ai.html](http://www.hs-harz.de/ai.html)**  
**For national information sources cf. Sect. 8**

## 7. CERTIFICATION

This Diploma Supplement refers to the following original documents:

**Document of the granting of the degree dated 2014-02-17**

Urkunde über die Verleihung des Grades vom 17.02.2014

**Examination Certificate dated 2014-02-17**

Zeugnis vom 17.02.2014

**Transcript of Records dated 2014-02-17**

Transcript of Records vom 17.02.2014

**Certification Date: 2014-02-17**

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Chairman Examination Committee

University Seal

## 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 SYSTEM<sup>1</sup>**

**8.1 Types of Institutions and Institutional Status**

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

- *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.

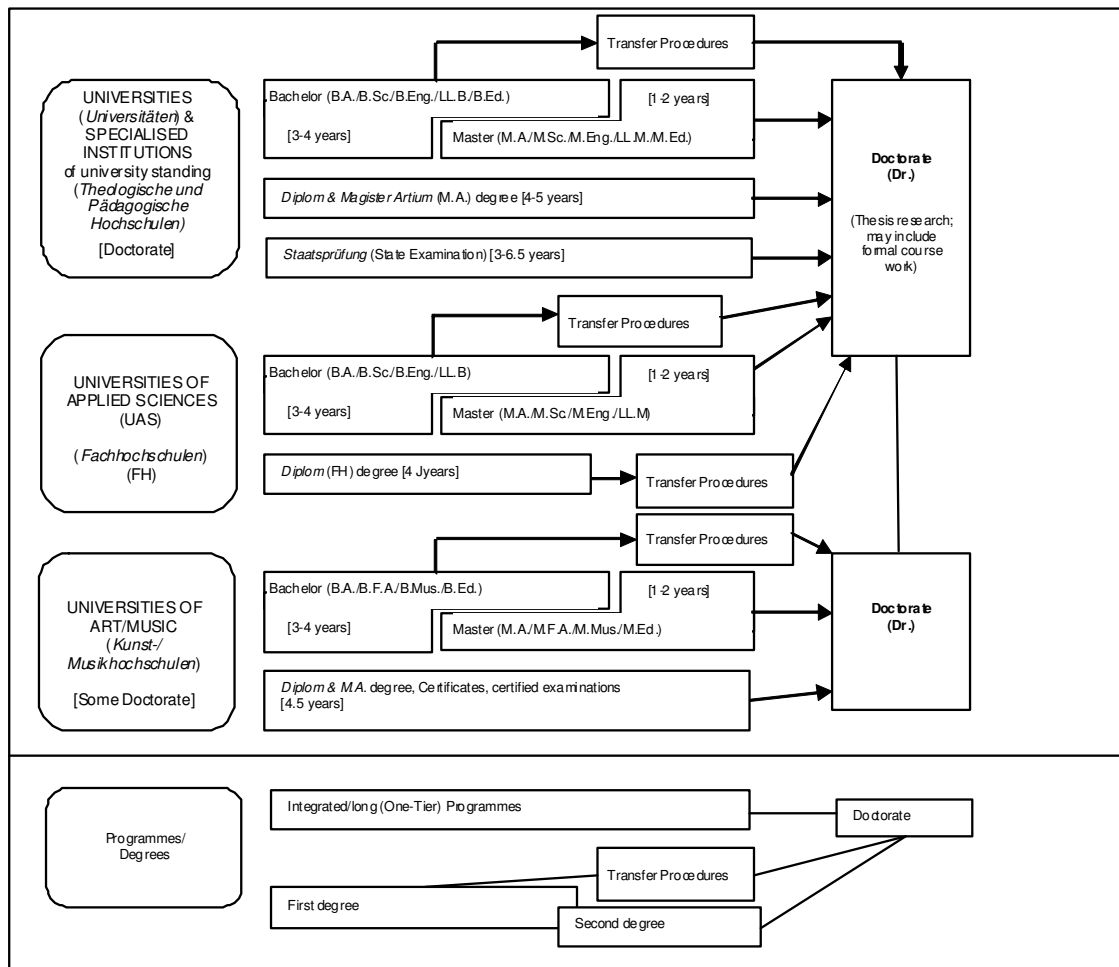
The German Qualification Framework for Higher Education Degree<sup>3</sup> describes the degrees of the German Higher Education System. It contains the classification of the qualification levels as well as the resulting qualifications and competencies of the graduates.

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).<sup>4</sup> 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.<sup>5</sup>

**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.<sup>6</sup>

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 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.<sup>7</sup>

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).

##### 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. 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- 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 partly already use an ECTS grading scheme.

#### 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 EUR YDICE-Unit, providing the national dossier on the education system (<http://www.kmk.org/dokumentation/zusammenarbeit-auf-europaeischer-ebene-im-eurydice-informationsnetz.html>); E-Mail: eurydice@kmk.org
- Hochschulrektorenkonferenz (HRK) [German Rectors' Conference]; Ahnrstrasse 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](http://www.higher-education-compass.de))

- 1 The information covers only aspects directly relevant to purposes of the Diploma Supplement. All information as of 1 July 2010.
- 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 21.04.2005).
- 4 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).
- 5 "Law establishing a Foundation 'Foundation for the Accreditation of Study Programmes in Germany'", entered into force as from 26.2.2005, G.V. 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).
- 6 See note No. 5.
- 7 See note No. 5.