

This is a translation of the regulatory text as promulgated in the Official Announcements No. 56 dated December 13, 2010. Only those regulations published by the Georg-August-Universität Göttingen in its Official Announcements are legally binding. Any claims to rights or titles resulting from the English translation of these regulations are expressly excluded.



DRAFT

for the REVISED VERSION of the Regulations Governing the Requirements for Admission to the Jointly Offered Consecutive Master's Degree Programme in "Internet Technologies and Information Systems" at the Technical University of Braunschweig, the Technical University of Clausthal, the Georg-August-University of Göttingen and the Gottfried Wilhelm Leibniz University of Hannover

I. Scope

Regulation 1

Scope

- (1) These Regulations shall govern admission to the Master's degree programme in "Internet Technologies and Information Systems".
- (2) Subject to the terms of the following provisions, the Universities – Technical University of Braunschweig, Technical University of Clausthal, Georg-August-University of Göttingen and Gottfried Wilhelm Leibniz University of Hannover – shall carry out a procedure for determining compliance with the admission requirements in order to allocate all available university places in the degree programme "Internet Technologies and Information Systems".
- (3) ¹Whenever the number of applicants fulfilling the admission requirements exceeds the available number of places, the participating Universities shall allot those places in the order of the outcome achieved within the selection procedure (Regulation 5). ²The selection decision is made according to the applicant's particular qualification for the degree programme selected. ³If the number of applicants fulfilling the admission requirements falls short of the number of places available, a selection procedure will not take place.

II. Admission Qualification

Regulation 2

Admission Requirements

(1) ¹As a requirement for admission to the Master's degree programme, the applicant must have completed at least a six-semester degree programme with conferral of a Bachelor's degree in the degree programme in "Computer Science" or in a closely related discipline [fachlich eng verwandte Fachrichtung] described in paragraph 4 comprising at least 180 ECTS credits [Anrechnungspunkte] or conferral of an equivalent degree earned in a degree programme completed at a German university or a university situated in one of the Bologna signatory states. Moreover, the applicant must be particularly qualified for the degree programme as described in paragraph 3. ³For final examinations that have been successfully completed in a country outside the Bologna signatory states, recognition of equivalence with the degrees mentioned in sentence 1 is required, whilst account shall be taken of the proposals made by the Central Office for Foreign Education (ZAB)¹ affiliated with the secretariat of the Standing Conference of the Ministers of Education and Cultural Affairs of the Federal States of the Federal Republic Germany (KMK)² for the recognition and evaluation of proof of academic qualifications acquired in a foreign country. ⁴These proposals are posted at the URL www.anabin.de. The grades achieved on academic qualifications in foreign countries must be converted to the German grading system.

(2) ¹In derogation from paragraph 1, any student shall be generally entitled to admission who has not yet completed a degree programme by the application date, but has already successfully earned at least 150 ECTS credits in a related Bachelor's degree programme or an equivalent degree programme. ²In lieu of the grade earned for the Bachelor's or the grade earned for an equivalent academic qualification, the average grade determined from the previous examination-related achievements shall also be taken into account during both the process of determining whether the admission requirements set down in paragraph 3 have been fulfilled and during the selection procedure, irrespective of whether a student achieves different results in the Bachelor's examination.

(3) ¹Anyone holding a particular qualification as demonstrated by a Bachelor's degree or equivalent degree conferred with a grade of 2.3³ or better.

(4)¹The Selection Committee shall decide whether past academic achievements [Vorstudium] can be defined as covering a "closely related" discipline (subject-related

¹ Zentralstelle für ausländisches Bildungswesen, ZAB

² Konferenz der Kultusminister der Länder in der Bundesrepublik Deutschland, KMK

³ According to the German grading system

relevance [fachliche Einschlägigkeit]) as described in paragraphs 1 and 2. ²As prerequisite for the appropriateness of past academic achievements, proof of at least the following competencies (as defined in the appendix) must be furnished:

Subject where credits were earned	Minimum number of credits
Basics of Computer Science	35 ECTS credits
Computer Science of Systems	50 ECTS credits
Mathematics	25 ECTS credits
Minor subject/application subject	16 ECTS credits

³The Selection Committee may make determination of the subject-related relevance contingent upon the requirement that achievements not yet obtained pursuant to sentence 2 be earned within two semesters; in this case, determination of subject-related relevance and admission shall be subject to the condition subsequent that admission shall be granted up to the date that proof of the missing achievements is furnished which the University must receive within two semesters following enrolment (exclusion period). ⁴If proof of the missing credits is not furnished within the deadline, the determination of subject-related relevance and a letter of admission based thereon shall become invalid. ⁵Determination of subject-related relevance shall be excluded if the total of credits not been earned in accordance with sentence 2 exceeds 15 credits.

(5) ¹Applicants whose mother tongue is not English must have proficiency in the English language. ²Adequate knowledge of the English language must be demonstrated by the minimum performance levels in the following internationally accepted tests or equivalent tests:

English test	Minimum score
Common European Framework	B2 certificate
Paper-based TOEFL	500 points
Computer-based TOEFL	173 points
New Internet-based TOEFL	61 points
International English Language Testing System (IELTS)	Level 5
Cambridge Main Suite	First Certificate in English (FCE), minimum grade "B" or Certificate in Advanced English (CAE), minimum grade "C"

³The test may not be taken later than two years prior to submission of the application for admission to the Master's degree programme (date received). Applicants who spent at least two years' studying or working in an English-speaking country during the last three years prior to the submission of the admissions application (date received) shall be exempt from this requirement. ⁵Similar exceptions can be petitioned for by applicants who have within the

last three years successfully completed a minimum of two years an exclusively English-speaking course of study.

(6) Applicants do not need to demonstrate knowledge of the German language.

(7) ¹Otherwise, all provisions generally applicable to enrolment stipulated in the Enrolment Regulations at the participating universities shall remain unaffected. Enrolment of applicants deemed generally entitled to admission under paragraph 2 shall be subject to the condition subsequent that they furnish proof of successful completion of their Bachelor's studies or any equivalent degree. ³If enrolment is for the winter semester, said proof must be furnished before or on November 15; if enrolment is for the summer semester, said proof must be furnished before or on May 15.

III. Selection Procedure

Regulation 3

Start of the Degree Programme, Admissions Application, Preclusive Time Limit

(1) ¹The Master's degree programme begins in the winter and the summer semesters, respectively. ²Applicants shall start by submitting their admissions application through an online portal; the Technical University of Braunschweig, Technical University - Clausthal, University of Göttingen and University of Hannover shall announce the further particulars within a reasonable period of time before expiration of the application deadline. ³Applicants must submit their written admissions application for the Master's Degree Programme on the form downloadable from the online portal with the application documents stipulated under paragraph 2; said documents must have been received by the Universities by January 15 (preclusive time limit) for the winter semester and by July 15 (preclusive time limit) for the summer semester. ⁴Such an application is valid only for the allocation of university places available for the respective admissions date. ⁵The participating Universities have no ex officio obligation to verify the information provided by applicants.

(2) The following documents must be included with the personally signed admissions application:

a) The applicant's degree certificate(s) presented as certified copies or certified German or English translations whenever the originals have not been drawn up in the English or German language; whenever a degree certificate is not yet available, the applicant must submit a record of their achievements, credits and grade point average [Durchschnittsnote] earned;

b) A curriculum vitae in tabular form written in English with a comprehensive presentation of the applicant's educational history.

c) Proof of proficiency in the English language in accordance with Regulation 2 paragraph 5;

- d) A statement written in English of whether the applicant has completed a Master's Degree Programme in a closely related subject thus far successfully, unsuccessfully or not yet;
- e) A statement declaring which course of studies the applicant intends to take based on their previous education.

(3) ¹Applications that are not complete or not submitted within the deadline shall be excluded from further processing ²If an application received within the deadline is incomplete or not in the proper form, the Selection Committee (Regulation 4) may grant a grace period of up to two weeks during which the problem must be remedied. ³If the application continues to be deficient after the grace period, it will be excluded from the rest of the ongoing procedure. ⁴Submitted documents shall remain with the university.

(4) If an applicant credibly demonstrates that he or she has been discriminated against in the application process because of a handicap, the Selection Committee must grant appropriate compensation for disadvantages when petitioned.

Regulation 4

Selection Committee for the Master's Degree Programme

(1) The participating faculties, i.e. the Carl-Friedrich Gauss Department of the Technical University of Braunschweig, the Faculty for Mathematics and Computer Science and Engineering at the Technical University of Clausthal, the Faculty Electrical Engineering and Computer Science at the University of Hannover and the Faculty of Mathematics and Computer Science at the University of Göttingen, shall set up a Selection Committee to prepare for decision-making with respect to the selection of applicants for the degree programme.

(2) ¹The Selection Committee shall comprise four members of the full-time academic staff⁴ or professors group⁵, and one member of the students' group; the students' group member⁶ shall have an advisory vote. ²At least one member must belong to the professors group [Professorengruppe]. ³Members shall be appointed by the faculty councils of the participating faculties. ⁴The members shall serve a two-year term; the student representative shall serve for one year. ⁵The members may be reappointed. ⁶The Selection Committee shall constitute a quorum if at least two members with voting rights are present. ⁷In the case a member of the Selection Committee should resign from before their term has expired, a successor must be determined by the participating faculties.

(3) The tasks of the Selection Committee are to:

- a) Check the formal correctness of submitted admissions applications

⁴hauptberufliches wissenschaftliches Personal

⁵Hochschullehrergruppe

⁶Studierendengruppe

- b) Verify and appraise admission requirements
- c) Conduct selection interviews pursuant to Regulation 7
- e) Decide on the admission or rejection of applicants, including their allocation to one of the four participating universities.

After completion of the placement procedure, the Selection Committee shall report to the Faculty Councils of all the participating faculties on the experience gathered and, where appropriate, submit proposals for the further progress of the placement procedure.

Regulation 5 Selection Procedure

- (1) Selection procedures shall cover the allocation of university places available for each respective admissions date.
- (2)¹Decisions regarding the admissions application shall be taken within the main part of the procedure and, if required, within a deferred-status procedure. ²The university places will be allotted on the basis of a ranking that results from short-listing of applicants.
- (3) The Selection Committee may overbook due to the fact that presumably not all allocated university places will be taken.
- (4)¹Otherwise, all provisions generally applicable to enrolment stipulated in the Enrolment Regulations at the participating universities shall remain unaffected. ²Enrolment of applicants who are considered to be generally entitled to admission under Regulation 2 paragraph 2 shall be subject to the condition subsequent that they furnish proof of successful completion of their Bachelor's degree or any equivalent degree. ³If enrolment is for the winter semester, said proof must be furnished before or on November 15; if enrolment is for the summer semester, said proof must be furnished before or on May 15.

Regulation 6 Selection of Applicants

- (1) Selection shall be based on a combination of the following criteria:
 - a) The grade earned for the Bachelor's or the grade earned for an equivalent academic qualification
 - b) A selection interview with the applicant.
- (2) According to paragraph 3, the Selection Committee shall make a shortlist of the applications received and then select among the shortlisted applicants based on the selection criteria listed in paragraph 1 and 4.

(3) ¹To limit the number of applicants participating in the selection interview, a preselection of the applications received shall be narrowed down to double the number of study places to be awarded according to the selection procedure. ²For this purpose, the applicants shall be ranked according to the final grade awarded for their Bachelor's degree or any equivalent degree. ³In the event of equal ranking, all applicants with the highest ranking shall be admitted to the selection interview.

(4) ¹The selection shall be based on a ranking generated as follows:

a) Depending on the particular qualification determined in the selection interview, one of the following grades will be awarded:

The applicant is

Highly qualified	1
Well qualified	2
Qualified	3
Adequately qualified	4
Poorly qualified	5.

With a view to a more sophisticated evaluation, it is possible to form interim values by decreasing or increasing a grade by 0.3; grades such as 0.7, 4.3, 4.7 and 5.3 shall not be permitted.

b) The grade of the Bachelor's degree or an equivalent degree is multiplied by 60 and the grade at the interview by 40.

²The numbers resulting from the respective multiplications are added up, and then divided by one hundred. ³The resulting number is computed to two decimal places. ⁴There is no rounding off.

(5) ¹If the applicants are ranked equally on the ranking list, the ranking order shall be determined according to the final grade awarded for the Bachelor's degree or any equivalent degree. ²Otherwise, equivalent rankings shall be decided by drawing lots.

Regulation 7 Selection Interview

(1) ¹The purpose of the selection interview is to determine whether the applicant is particularly qualified for their chosen degree programme. ²The interview must be conducted in consideration of the following principles:

a) As a rule, the selection interviews shall be held in the period from February 15 to March 31 for the winter semester and from August 15 to September 31 for the summer semester. The exact dates and the place shall be announced by the participating Universities within a reasonable period prior to the start of the selection interviews. The participating Universities shall invite applicants to the selection interview in a timely manner. In case of applicants living abroad and in well-founded exceptions, the selection interview is also allowed to be

held as a video conference or on the phone provided that the applicant's identity can be established without a doubt. In these cases, the Selection Committee shall determine the details of the procedure.

b) The Selection Committee shall interview each applicant for approximately 15 minutes. A total of up to four applicants can be interviewed for selection at the same time.

c) The essential questions and answers of the interview shall be taken down for the record, which is to be signed by the members of the Selection Committee. The record must indicate the date and place of the interview, the names of the Committee members, the name of the applicant and the assessment made.

(2) The selection interview shall cover the applicant's motivation and concentrate on the following qualifying traits:

a) Ability to work according to scientific methods, principles or a specific methodology,

b) Previous experience and sound knowledge of scientific principles in the field/on the subject of Computer Science, which the candidate acquired as part of a course of studies in Computer Science or a closely of related degree programme and as proven by documents such as attainment of a formal specialisation in a relevant subject.

(3) After the conclusion of the selection interview, the members of the Selection Committee shall rate the applicant's particular qualification for the chosen degree programme on the scale set down in Regulation 6 paragraph 4 letter a).

(4) ¹An applicant who misses the selection interview without good cause shall be excluded from further proceedings. ²If good cause is given, the Selection Committee shall schedule a new appointment for the selection interview, if so requested. ³Proof of good cause and the request for a new appointment must be submitted to the Selection Committee without delay, but no later than within two days of the originally scheduled date. ⁴An excluded applicant shall be entitled to participate in the next possible selection procedure another time.

Regulation 8 Letter of Admission, Letter of Rejection, and Deferred-status Procedure

(1) ¹Applicants eligible for admission shall receive a written letter of admission that the chairperson of the Selection committee shall issue on behalf of the participating universities.

²This letter of admission shall set a deadline within which the applicant has to enrol or declare in writing whether they accept the university place offered them or not. ³Applicants must register at the latest within two weeks of expiration of the deadline set down in sentence (preclusive time limit), unless already registered according to sentence 2. ⁴The letter of admission shall become invalid if

a) enrolment described in sentence 2 or

b) the statement described in sentence 2 and enrolment according to sentence 3

are not submitted in the proper form or within the deadline. ⁵The letter of admission shall point to this legal consequence.

(2) ¹Applicants not eligible for admission shall receive a letter of rejection stating their personal ranking and the ranking of the last admitted applicant and that the chairperson of the Selection committee shall issue on behalf of the participating universities. ²The letter of rejection must include information on legal remedies. ³At the same time, the rejected applicants shall be requested to declare in writing within a specified deadline whether they wish to be included in the deferred-status procedure. ⁴If an applicant does not submit such a statement in the proper form and within the deadline, they shall be excluded from the deferred-status procedure. ⁵This legal consequence must be pointed out in the letter.

(3) ¹The deferred-status procedure shall be based on the ranking determined in accordance with Regulation 6 paragraph 4 and 5. ²If the ranking described in sentence 1 has been used to exhaustion, applicants shall then be ranked according to result of their Bachelor's or equivalent degree and the deferred-status procedure shall be carried out based on this ranking.

(4) ¹The admissions procedures shall be closed no later than November 15 for the winter semester and May 15 for the summer semester. ²After this time and by informal request, any places that are still available can then be awarded to eligible applicants by drawing lots. ³The application period for this shall start two weeks before the lectures of the semester of intended admission begin and shall end upon conclusion of the selection procedure. ⁴The allocation of university places by drawing lots will be concluded at the latest on November 30 for a winter semester and on May 31 for a summer semester since the university will already be in session.

Regulation 9 Admission to Advanced Semesters

(1) The free university places in a higher semester to which admission is restricted will be awarded in the following order to applicants:

- a) Who are or were enrolled in the same or a comparable degree programme;
 - aa) Who are or were enrolled at another German university
 - bb) Who are German nationals or have an equal status to that of German nationals under the legal terms of the admissions regulations and are or were enrolled at a foreign university,
- b) For whom refusal of admission would mean a particular hardship for reasons relating to their personal situation, and,
- c) Who claim other reasons.

(2) Within each of the three groups of cases defined under paragraph 1, the final grade awarded for the Bachelor's or an equivalent examination shall be the decisive factor,

immediately followed by social, and especially family and economic reasons principally impacting the choice of location, whereas cases continuing to be similar after this shall ultimately be decided by drawing lots.

IV. Final Provisions

Regulation 10 Steering Committee

The faculty councils of the participating faculties may resolve by consensus that the duties to be performed by the faculty council under these regulations may be performed by a steering committee.

Regulation 11 Effective Date; Transitional Provisions

(1) ¹These Regulations shall become effective on the day after their promulgation in the Official Announcements of all participating universities. ²The first placement procedure they govern shall be that of summer semester 2012. Concurrently, the Regulations Governing the Requirements for Admission to the Master's Degree Programme in "Internet Technologies and Information Systems" as promulgated the version dated December 13, 2010 (Official Announcements No. 56/10 page 6204) shall become invalid. In derogation from sentence 3, the Regulations Governing the Requirements for Admission to the Master's Degree Programme in "Internet Technologies and Information Systems" as promulgated the version dated December 13, 2010 (Official Announcements No. 56/10 page 6204) shall become applicable for placement procedures taking place prior to the summer semester 2012.

Appendix

Basics of Computer Science (at least 35 credits)

Compulsory Subjects

Competencies in each of the areas listed below must be demonstrated:

Automation Theory, Formal Languages and Complexity	Grammar systems and automation models, Chomsky hierarchy, algorithm definition, predictability, and decidability, complexity, NP-complete problems
Logic	Propositional logic, resolution, finite set, predicate logic, models, indecision and incompleteness, basics of logic programming
Formal Systems	Induction and recursion, graphs and trees, algebras and abstract data types, rewriting systems, networks
Modelling	Principles, entity-relationship models, state transition, control flow and data flow models, UML, Petri nets, meta-modelling, model transformations
Programming	Basic elements and concepts of imperative and object-oriented languages
Programming Paradigms	Object-oriented, functional, logic and parallel programming concepts
Data Structures and Algorithms	Basic data structures, sorting and searching, search trees, hashing, simple graph and geometric algorithms, algorithmic principles, verification and performance analysis of algorithms

Computer Science of Systems (Totalling at Least 50 credits in Compulsory and Elective Subjects)

Compulsory Subjects

Competencies in each of the areas listed below must be demonstrated:

Basics of Operating Systems	Role and structure, UNIX, processes, concurrency, synchronization and communication, files, protection layers mechanisms, system calls, shells, utilities
Basics of Software Engineering	Software process models, project management, requirements analysis, design methods, specifications, implementation techniques, testing, integrating, maintaining, documenting, CASE, quality assurance, configuration management, reengineering
Database Systems	Establishment of database systems, entity-relationship model, relational model, normal forms, relational algebra, SQL, query calculi, implementation techniques, query processing and optimization, transactions, synchronization and data backup
Computer Networks and Distributed Systems	Services and protocols, communication architectures, OSI reference model, Internet protocols, network management, wide-traffic networks, local networks
Digital Technical Information	Boolean algebra, combinatorial and sequential logic,

	switching networks, derailleur, minimization, basic components and function blocks, implementation of logic functions, validation
Computer Systems	Number representation and computer arithmetic, assembly language programming and its application in the realization of higher programming languages, development of computing machines, micro-architecture of a processor, command interpretation, control production line, memory hierarchies, input / output
Security	Reliability of computer science systems, risks, security problems, attack scenarios. Cryptography: Techniques, protocols, software, hardware, infrastructure, access protection, information flow, models and mechanisms. Security policies, security management, data protection

Elective Subjects

Competencies in at least one of the fields listed below must be demonstrated:

Artificial Intelligence	Knowledge representation, search algorithms, non-classical logics, theorem proving, learning and planning, fuzzy knowledge, robotics, natural language processing, multi-agent systems
Compiler Construction	Syntax, semantics, lexical analysis, parsing, context checking, code generation, code optimisation, generators, program analysis
Man-machine interfaces	Software ergonomics, user interfaces, usability engineering, design of work processes
Simulation	Equation-based modelling vs. agent-based modelling, simulation of continuous, discrete and hybrid processes, event-simulation results-oriented units, agent-based simulation, simulation of evolutionary and learning processes, genetic algorithms, algorithms, neural networks, applications of simulation in the natural and social sciences
Computer Graphics	Fundamentals of rastering, scan conversion algorithms and the clipping, 3D transformations, camera transformation, orthographic and perspective projection, lighting simulation, parametric curves
Computer Vision	Methods of pattern recognition, image processing, projective geometry, camera models, classifier design
Computer Science and Society	Structural change to the "information society": Globalization, new business models, mobile and globally networked communication; control and regulatory issues: access, competence ("Digital Divide"), data protection, property rights to content, tools and products; application key areas: eCommerce, eGovernment, ePrivacy
Basic Electronic Engineering	DC and AC circuits, reactive systems, basic principles of systems theory (time and frequency domain sampling theorem, z-transform), basic principles of communications technology, semiconductors, transistors, integrated circuits
System Software	Machine-oriented programming, assembler programming, procedure calls, stack and heap management, garbage collection, processes, interrupts, synchronization, Memory management, I/O system, compiler/binder loader, runtime system, communication networks,

	ISO/OSI layers, TCP/IP protocols
Embedded Systems	Specification of embedded systems, hardware platforms, real-time operating systems, real-time scheduling, hardware/software codesign, validation of embedded systems, performance evaluation, energy efficiency, simulation, digital signal processing, communication protocols, machine vision, robotics, mobile computing

Mathematics (Totalling at least 25 credits in Compulsory and Elective Subjects)

Compulsory Subjects

Competencies in each of the areas listed below must be demonstrated:

Mathematical Analysis I	Rational, real, complex numbers; sequences, series, convergence, continuity, functions of one variable, differentiation, integration, asymptotic, iterations, fixed points
Mathematical Analysis II	Differential and integral calculus of several variables, Fourier series, elementary vector analysis
Mathematics – Linear Algebra	Linear equations, vector spaces, basis, dimension, linear maps, matrices, determinants, Eigen values
Mathematics – Discrete Structures	Sets, relations, graphs, terms, groups, rings, fields, finite combinatorics, basic concepts of number theory

Elective Subjects

Competencies in at least one of the fields listed below must be demonstrated:

Mathematics – Probability Theory	Probability spaces, Laplace experiments, conditional probability and independence, random variables and their distributions, central limit theorem, random numbers
Statistics/Stochastics	Probability distribution function, important distributions (uniform distribution, normal distribution, χ^2 , exponential distribution, beta distribution, Erlang distribution), dissecting the random-sampling theory, basic theory test (error of first and the second type, level of significance), stochastic processes, Markov property
Numerical Algorithms	Floating point arithmetic, rounding, endurance, stability, interpolation and quadrature (polynomials, splines, FFT), linear equation systems, iterative methods (linear and nonlinear) ordinary differential equations (e.g. Euler, Runge-Kutta)