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**Examination Regulations of the Doctoral Degree Programme
“Computing in Medicine and Life Sciences”
Graduate School for Computing in Medicine and Life Sciences
University of Lübeck**

Approved on January 14, 2009 (NBI. MWV Schl.-H. 2009, S.13) Revised on May 23, 2013 (NBI. HS MBW Schl.-H. 2013, S. 56)

§ 1 – Aim of the Doctoral Degree Programme

- (1) The doctorate degree programme “Computing in Medicine and Life Sciences” at the Graduate School with the same name is aimed at training PhD students towards the degree Dr.rer.nat. or Dr.-Ing. through a structured teaching and research programme with intensive social and personal support.
- (2) The doctoral degree programme includes:
 - (a) the successful completion of the individually-designed curriculum by attending lectures/ seminars and passing examinations,
 - (b) the successful completion of the doctoral examination procedure in accordance with the latest valid version of the doctoral degree granting regulations of the Departments of Computer Science/Engineering and Natural Sciences of the University of Lübeck.

§ 2 – Admission Requirements

- (1) It is required that applicants have a Diploma degree from a university or a higher education institution with equal level in the scope of the Framework Act of Higher Education in Germany; or a Master degree in science which is accredited as research-oriented in accordance with the accreditation guidelines in Germany. Applicants for the degree Dr.rer.nat. should have a Diploma or master degree in natural sciences, computer science or engineering. Applicants for the degree Dr.-Ing. should have a Diploma or master degree in computer science or engineering.
- (2) Applicants with a Diploma or master degree in natural sciences, computer science or engineering from a university or a higher education institution outside Germany can be admitted, if it is asserted that the degree has the equivalence to one of the required degrees mentioned in § 2 section 1.
- (3) Likewise the following persons can be admitted:
 - (a) graduates of a human medicine study programme who already have acquired the degree Dr.med.,

- (b) applicants with an excellent bachelor's degree who have studied at least three years in natural sciences, computer science or engineering acquiring an amount of 180 ECTS points or its equivalence,
- (c) applicants with a master's degree which is accredited as application-oriented in accordance with the accreditation guidelines in Germany,
- (d) applicants with a Diplom degree from a university of applied sciences or a higher education institution with equal level in the scope of the Framework Act of Higher Education in Germany,

if the applicants have successfully completed the additional qualifications required in Appendix A or if they can show that they have acquired the equivalent knowledge in other study programmes. If the applicants cannot provide proof of the additional qualifications or the degree Dr. med., admission is only possible on the condition that they acquire the necessary knowledge within 12 months or the degree Dr. med. within 6 months from the date of application. The limited period, however, can be extended only once for a maximum of 6 months upon justified application to the Examination Board.

- (4) A further admission requirement is the assignment of PhD project from the research areas of the Graduate School. The PhD project must be assigned by one of the members of the Department Computer Science/Engineering and Natural Science who are eligible to supervise PhD students in accordance with § 3 section 1 of the doctoral degree regulations of the Department Computer Science/Engineering and Natural Science.
- (5) According to § 5, the Examination Board is responsible to assess the excellence of degrees stated in § 2 section 3 clause b and d. The letter of admission or rejection are signed by the Academic Director and sent by post to the applicant together with information on legal remedies attached.

§ 3 – Aims, Structure and Duration of the Doctoral Degree Programme

- (1) There is an individually-designed curriculum for each student. The curriculum will be fixed in a Supervision Agreement between the Graduate School represented by the Academic Direction, the mentor group of the student assigned by § 15 section 1 and the student. The framework of the curriculum is regulated by § 3 section 2 to 4 as well as Appendix A. It is possible to apply for recognition of other academic achievements at the Examination Board.
- (2) For students admitted according to § 2 section 3, the curriculum must be approved by the Examination Board and guarantee that after completion of the additional qualifications they will have reached the same level of knowledge as a graduate student of a master course in natural sciences or engineering accredited as research-oriented in Germany. The curriculum will be fixed in the Supervision Agreement between the student and the Graduate School represented by the Academic Direction.
- (3) For students admitted according to § 2 section 1 and 2, the curriculum must be designed in such a way that all the examinations can be completed within 3 years. The programme includes compulsory courses and compulsory elective courses with the total amount of 20 to 40 credits (Appendix A).

- (4) For students admitted according to § 2 section 3, the curriculum must be designed in such a way that all the examinations can be completed within 4 years. The programme includes courses with at least 60 credits and at most 100 credits depending on the requirement in the Supervision Agreement.
- (5) Courses are taught either in German or English.

§ 4 – Organisation and Scale of Examinations, Examination Deadline

- (1) The examinations of the Graduate School are composed of module examinations in accordance with § 8 and Appendix A.
- (2) The School will offer two types of certificates after the completion of courses. Certificate A indicates that the grade of a course will be taken into consideration in the calculation of the final grade for the doctoral degree. Certificate B indicates that a course is not graded but the attendance is necessary in order to pass the final examination of the doctoral degree.
- (3) In a module examination, the content of a teaching module will be examined. A teaching module is composed of one or more courses.
- (4) Module examinations must be taken directly after the course. The examination date will be fixed by the respective lecturer and will be announced with at least four weeks' notice. The date will be announced with at least one week's notice on the notice board of the Graduate School.

§ 5 – Examination Board

- (1) An Examination Board will be formed in order to deal with the organisation of the module examinations and other tasks assigned in the Examination Regulations. The term of non-student members of the Examination Board is three years, the term of student members is one year. An extension of the term is possible. Should a member leave the Graduate School before the end of a term, it is possible to appoint another member for the remaining term.
- (2) The Examination Board is composed of:
 - (a) the chairperson, normally the Academic Director of the Graduate School,
 - (b) two other members of the Graduate School, normally members of the Steering Committee of the Graduate School,
 - (c) one member from the research staff of the Department of Computer Science/Engineering and Natural Sciences,
 - (d) one member from the students of the Graduate School,
 - (e) one chairperson of the Examination Board for the master course Computer Science, Medical Engineering, Computational Life Science or Molecular Life Science,
 - (f) the chairperson of the Senate Committee from the Department of Medicine,

- (g) the chairperson of the Senate Committee from the Department of Computer Science/Engineering and Natural Sciences.

The members under clause (a) to (e) are appointed by the Graduation Board of the Departments of Computer Science/Engineering and Natural Science. It is necessary to appoint a deputy for each member. It is impossible to have multiple memberships with different functions in the Board. There should be at least three lecturers or assistant professors (PD in Germany) from the computer science department represented in the Examination Board. At least one of them should have the degree Dr. rer.nat and at least one of them should have the degree Dr.-Ing.

- (3) The Examination Board is quorate when at least two lecturers or assistant professors (PD in Germany) and another member who is entitled to vote are present in the meeting besides the chairperson or the deputy chairperson. The Examination Board decides on an issue with a simple majority. If the result is a tie vote the proposal is regarded as rejected. The ongoing work of the Examination Board is realized by the chairperson or in the absence of the chairperson by the deputy chairperson.
- (4) The Examination Board should ensure that the clauses of the Examination Regulations are observed. The Examination Board will regularly submit a report on the examinations and the attendance of courses as well as the distribution of Certificates A to the Departments of Computer Science/Engineering and Natural Sciences and the Steering Committee of the Graduate School. The report can be viewed by the members of the University of Lübeck in the office of the Managing Director.
- (5) The members of the Examination Board have the right to attend an examination inspection.
- (6) The members of the Examination Board and their deputies are subject to confidentiality in civil service. Provided that they are not engaged in civil service, they will be obliged to observe confidentiality by the chairperson.

§ 6 – Examiners and Observers

- (1) The Examination Board appoints the examiners and observers for the module examinations. The appointment can be transferred to the chairperson. Lecturers or assistant professors (PD in Germany) can be appointed as examiners provided that they are practicing or have practiced teaching in the same subject area as the examination, unless there is a compelling reason that a deviation from the subject area of the examination is necessary. Normally, the lecturer of the teaching module will be appointed as the examiner of this teaching module. Only scientific staff who have a degree higher than Master or Diplom, or licensed medical doctor can be appointed as observers.
- (2) The names of the examiners should be announced in due time before the examinations.
- (3) § 5 section 6 applies to the examiners and observers accordingly.

§ 7 – Admission to Module Examinations

- (1) Module examinations are composed of one or more assessed assignments in accordance with § 8 section 1.
- (2) Admission to module examinations is only possible when:
 - (a) the person is registered as PhD student with the Graduate School,
 - (b) the person has fulfilled the admission requirements of the respective module examination.
- (3) The admission requirements for each module examination are set by the lecturer of this teaching module according to the best judgement. The participants of the doctoral degree programme should be informed of the admission requirements in due time, if possible at the beginning of the preceding teaching module.

§ 8 – Types of Assessed Assignments

- (1) Assessed Assignments with Certificate A are:

- (a) oral examinations (§9),
- (b) written examinations or other written assignments (§10)
- (c) reports,

assignments with Certificate B are:

- (d) presentations,
- (e) protocols,
- (f) seminars,
- (g) exercises,
- (h) experimental internships.

- (2) The candidates should be informed in due time, if possible, at the beginning of the lecture period of each semester of the types of assessed assignments, and if applicable, the duration, the registration process as well as the allowed auxiliary tools for the assignments.
- (3) If a candidate is not able to take the examination wholly or partly in the specified form due to suffering from continuing or constant physical impairment which is proved by a credible medical report, the chairperson of the Examination Board should allow the candidate to complete the equivalent assessed assignments in another form.
- (4) For each teaching module which offers a Certificate A, there will be course-related module examinations available once a year.
- (5) The assessed assignments are normally performed in English.

§ 9 – Oral Examinations

- (1) In the oral examinations the candidate should demonstrate that he or she is capable of identifying the context of the examination topic and sorting out the specific questions in this context. Through the oral examinations it should be assessed whether the candidate has a command of the necessary basic knowledge in the respective subject.
- (2) Normally, oral examinations are performed by the examiners in the presence of a competent observer. Before the grades are decided, the examiners will ask the opinion of the observer.
- (3) The duration of the oral examinations for each candidate is at least 15 minutes and at most 40 minutes.
- (4) The essential matters and results of the oral examinations will be recorded in a report. The candidate will be informed of the evaluation results regarding the oral examination.
- (5) With the approval of the examiner and the student who takes the oral exam, it is possible to attend the exam as a listener provided that this person herself/himself has not registered for the oral exam of this teaching module. The allowance, however, does not extend to the discussion session and the announcement of the exam results of the candidate.

§10 – Paper Examinations and other Written Examinations

- (1) In the paper examinations and other written examinations, the candidate should demonstrate that he / she can recognize a problem with the commonly used methods in the subject and find a solution in a limited period of time with limited auxiliary tools.
- (2) The total duration of the paper exam of each module examination is 60 minutes to 180 minutes.
- (3) The review process should not exceed four weeks.

§ 11 – Review of Assessed Assignments

- (1) The grades for each assessed assignment which are linked with the acquisition of Certificate A are determined by the respective examiner.
- (2) The grades 1 to 5 are used for reviewing the assessed assignments, in which a differentiation of 0,3 point increase or decrease is allowed. The grades 0,7, 4,3, 4,7 and 5,3 are excluded. The final grade is calculated on the basis of all assessed assignments. The achievements in correspondence with the grades are shown in the table below:

1,0	excellent	outstanding achievements
2,0	good	above the average required achievements
3,0	satisfactory	average achievements
4,0	pass	minimum required achievements
5,0	fail	not sufficient achievements

§ 12 – Fail, Withdrawal, Fraud, Breach of Regulations

- (1) An assignment will be assessed as “fail” (5,0) if the candidate is absent from the exam without good reason or if the candidate withdraws from the exam after the exam has begun without good reason. The same applies to the situation when the candidate tries to finish the written assignment exceeding the allowed examination time.
- (2) The reasons which lead to the absence or withdrawal must be shown credibly to the Examination Board without delay in writing. In case of illness of the candidate or the candidate’s own child, a medical report or a certified medical report (in case of doubt) can be demanded. If the reasons given are accepted, a new date will be set down for the exam. The already performed exam results will be taken into consideration.
- (3) Should the candidate try to influence his or her exam results by the means of fraud or not-allowed auxiliary tools, the respective assignment will be assessed as “fail” (5,0). If a candidate disrupts the proper order of the exam, the responsible examiner or observer can bar him or her from continuing sitting the exam; in this case the respective assignment is assessed as “fail” (5,0). In severe cases the Examination Board can bar the candidate from completing other assignments.
- (4) The candidate can demand within one week that the decisions which are mentioned in §12 section 3 be verified by the Examination Board. The candidate will be informed of the incriminating decisions without delay in writing, be given reasons for the decisions, and be provided with information on legal remedies.

§ 13 – Pass, Fail, Certificate

- (1) A module exam is passed when all of its assignments are assessed as at least “pass” (4,0).
- (2) The PhD programme is passed when all the module exams listed in the supervision agreement (§ 3 section 1) are passed. The PhD programme is successfully completed when the additional doctoral exam at the Departments Computer Science/Engineering and Natural Sciences is passed.
- (3) If the candidate finally fails the PhD programme, the chairperson of the Examination Board will issue a written notification to the candidate with an attachment of information on legal remedies.
- (4) If the candidate fails the PhD programme or if the final grade is assessed as “fail”, the Examination Board will issue a written notification on request to the candidate stating and recognising the assessed assignments and their grades as well as the missing assignments, and declare according to § 16 the PhD programme graduation is unsuccessful.

§ 14 – Retake of Examinations

- (1) Module examinations which are assessed as “fail” can be repeated at most for two times. The number of times to retake the examination in another higher education institution in Germany or abroad will be deducted from the allowed two times. The re-take must be carried out on the next available examination date. The repeat of a passed examination is not allowed.
- (2) A retake of the module examinations (§ 8) should be offered before the end of the first month in the new semester. The repeat must be offered before the end of the new semester.
- (3) If the second repeat of a module examination fails, this examination is assessed finally “fail” in the PhD programme of the Graduate School. The right to take part in further assessments expires.
- (4) Before the student undertakes the second repeat of examination, he or she must provide evidence of an advisory talk with the respective mentor group.

§ 15 – Counselling

- (1) Each student admitted to the PhD programme will be assigned a group of mentors by the Steering Committee of the Graduate School. The group includes at least three people and normally consists of the supervisor of the doctoral thesis (§ 3 of the doctoral degree regulations of the Departments Computer Science/Engineering and Natural Sciences), the interdisciplinary supervisor of the PhD project and another member of the lecturer from the Departments Computer Science/Engineering and Natural Sciences.
- (2) The group of mentors should meet with the student at regular intervals, at least once a semester, to discuss and advise on the progress of the PhD study.

§ 16 – Graduation from the PhD Programme, Documents, Certificates and Diploma Supplement

- (1) After having acquired all the necessary certificates, the candidate will receive
 - (a) a transcript of grades achieved in the module examinations and the average grade from these examinations and
 - (b) a diploma supplement listing the successfully completed teaching modules with a short description of their content and the credits they contain.
- (2) After having passed the doctoral examination, the candidate will receive in addition a signed doctoral degree certificate from the President of the Universität zu Lübeck, in which the sentence “This doctoral examination has been conducted within the framework of the PhD programme of the Graduate School for Computing in Medicine and Life Sciences.” is added and in which the grades of the doctoral examination and the module examinations are stated.
- (3) The degree certificate, the transcript of grades and the diploma supplement will be issued in German and English.

- (4) The final grade of the module examinations is calculated from the average of the assessed assignments with Certificate A. The grades will be weighted according to their respective credits. The average value is calculated in such a way that only the first decimal place behind the comma is considered; all the other decimal places are deleted without rounding.

The final grade of the module examinations are:

with an average value of or below 1,2	excellent
with an average value from 1,3 to 1,5	very good
with an average value from 1,6 to 2,5	good
with an average value from 2,6 to 3,5	satisfactory
with an average value from 3,6 to 4,0	pass

- (5) The transcript of grades and the diploma supplement bear the date on which the last assignment was completed. The degree certificate bears the date on which the oral exam for the doctoral degree was passed. All the documents should be signed by the chairperson of the Examination Board as well as the President of the Universität zu Lübeck.

§ 17 – Invalidity of the Graduation from the PhD programme

- (1) If the candidate has influenced his or her examination results by the means of fraud and this fact is only discovered after the delivery of the transcript, the Examination Board can amend the grade accordingly declaring the examination as totally or partially “fail”.
- (2) If the candidate has not fulfilled the prerequisites for the admission to an examination without him or her knowing it, and the fact is only discovered after the delivery of transcript, this fault can be remedied by passing the examination. The Examination Board will decide on the proceedings if the candidate has done wrong in the admission to the examination.
- (3) Before the decision, the candidate will be offered an opportunity to make a statement.
- (4) The incorrect transcript, degree certificate and diploma supplement are to be collected and if necessary to be newly issued. A decision according to § 17 section 1 and 2 is impossible after five years from the date on the transcript of grades.
- (5) The degree certificates, transcript and diploma supplement are likewise to be collected if the candidate is deprived of the doctoral degree.

§ 18 – Inspection of Examination Records

- (1) Within one year after the completion of the examination process, upon request, the candidate will be allowed to inspect his or her written examination papers and the related expert opinion.
- (2) The request for inspection of the examination records is to be made to the Examination Board. The Board will decide on the date and place of the inspection.

§ 19 – Process of Appeal, Information on Legal Remedies

- (1) The information on legal remedies will be attached to the decisions of the Examination Board.
- (2) Within one month after receiving the written notification, the candidate can bring a charge in writing against the decision made by the Examination Board. The Board will decide on the appeal.
- (3) Within one month after the decision on the appeal made by the Examination Board, the candidate can bring a charge against the decision to the Administration Court of Schleswig-Holstein (Brockdorff-Rantzau-Str. 13, 24837 Schleswig),. The appeal must be made in writing to the attention of the registrar of the Administration Court.

§ 20 – Legal Validity

(Information: This version of Exam Regulations applies to those students who register for the PhD programme since summer semester 2013. All other students can apply for revising their curriculum according to the revised Exam Regulations. The application is to be made to the Academic Director of the Graduate School.)

**Appendix A to the Examination Regulations of the Doctoral Degree Programme
“Computing in Medicine and Life Sciences”
Graduate School for Computing in Medicine and Life Sciences
University of Lübeck**

1. In the PhD programme there are several courses offered in the areas “Disciplinary Courses” (DC), “Interdisciplinary Courses” (IC), “Academic Soft Skills” (ASS), and “Generic Soft Skills” (GSS).

In the framework of the individual student’s curriculum, credits can be awarded for participating in these courses. If ECTS credits are awarded for a specific course within the framework of a Bachelor or Master Programme, the same ECTS credits will be awarded for the PhD programme.

2. Courses from the DC area are:

- 2.1. project-related modules from the study programmes of the Departments of Computer Science/Engineering and Natural Sciences,

- 2.2. project-related modules from the medicine programme and

- 2.3. project-related modules from the Graduate School, such as

- (a) doctoral seminars,
- (b) journal clubs,
- (c) block courses, such as summer schools.

A doctoral seminar includes 2 teaching hours per week for one semester and is about project-related presentations, in particular, progress reports from the PhD students. In order to be awarded a Certificate B with 2 credits, the student must participate in a doctoral seminar regularly for one semester and make one presentation by himself or herself.

A journal club includes 2 teaching hours per week for one semester and is about the presentation of scientific articles related to the project of the PhD student. In order to be awarded a Certificate B with 2 credits, the student must participate in a journal club regularly for one semester and make one presentation by himself or herself.

For a block course which is related to the project topic, the student can be awarded a Certificate B. If the student can show evidence that he or she has been at the block course for at least 30 teaching hours, 4 credits will be awarded.

- 2.4. The Examination Board can also recognise the participation in an Oberseminar which includes 2 teaching hours per week for one semester as equivalent to a doctoral seminar or a journal club.

3. Courses from the IC area are:

- 3.1. modules from the study programmes of the Departments of Computer Science/Engineering and Natural Sciences which are not directly related to the academic background of the student,

3.2. courses from the medicine study programmes which are not directly related to the academic background of the student

3.3. interdisciplinary workshops from the Graduate School.

Interdisciplinary workshops are about the individual presentation of the research topic to a large audience, e.g. by means of a poster or a lecture. The student will be awarded a Certificate B with 2 credits if he or she has made a poster or a lecture.

4. Courses from the ASS area

4.1. Certificates B will be awarded for activities in the Area ASS. Examples of such courses are

- (a) supervision of students regarding their bachelor, master or diploma thesis,
- (b) publishing of a peer-reviewed article in a journal or in the proceedings of a conference where the student is the first author,
- (c) supervision of a seminar, a tutorial, an internship or an exercise or
- (d) successful grant proposals.

For the supervision of a thesis, publishing of an article or supervision of a seminar, 2 credits will be awarded. For a successful grant proposal, 4 credits will be awarded.

5. Courses from the GSS area

5.1. Certificates B will be awarded for courses from the Area GSS. Examples of such courses are

- (a) suitable modules and courses from the study programmes of the University of Lübeck,
- (b) suitable courses from the further training offers of the University of Lübeck and the University of Applied Sciences Lübeck,
- (c) specific courses from the Graduate School or the organisation of a summer school or a conference.

5.2. Suitable topics of the modules and courses are for example:

- (a) modern leadership methods
- (b) moderation of team meetings
- (c) management and motivation of human resources
- (d) communication and collaboration
- (e) media and press relations
- (f) intellectual property and innovation transfer
- (g) risk capital and establishment of start-up companies
- (h) scientific ethics

5.3. For the suitable courses in 5.1. (a) or (b), 1 credit point will be awarded for 10 hours of participation. For the organisation of an event in 5.1. (c), 2 credits will be awarded. In all cases, the student must show evidence of his or her participation.

6. For the successful completion of an internship at a company or at a research institute (university) abroad with the duration from at least 3 and at most 6 months, a Certificate B with 6 credits will be awarded. The internship must be approved by the respective mentor group of the student and must be applied for in writing at the Academic Director. After the internship, the student is required to submit a report.
7. The PhD study programme includes 20 to 40 credits, meanwhile the student must acquire
 - (a) 10 credits from the Area MC, in which at least 4 credits from module examinations with Certificate A, at least 4 credits from doctoral seminars, and at least 2 credits from journal clubs,
 - (b) 6 credits from the Area IC, in which at least 4 credits from module examinations with Certificate A, and at least 2 credits from interdisciplinary workshops,
 - (c) 4 credits from the Area ASS, in which at least 2 credits from a published peer-reviewed scientific paper.

A shortfall in the amount required under a) and b) of credits from professional examinations with performance certificate A is possible in individual cases, but requires a detailed justification, which must demonstrate that the student possesses all the necessary knowledge from his or her master's degree and there are no more course offers relevant for the development of the candidate.

8. The students who are admitted according to § 2 section 3 clause (a) must acquire additionally at least 40 credits with Certificate A from a master programme of the Departments of Computer Science/Engineering and Natural Sciences. The credits which are listed above in section 7 can be waived by at most 20 credits if the mentor group suggest it as suitable. If the student has finished certain assessed assignments outside the mandatory curriculum of the medicine study programme, these achievements can be recognised by applying to the Examination Board.
9. The students who are admitted according to § 2 section 3 clause (b) must acquire additionally at least 60 credits with Certificate A from a master programme of the Departments of Computer Science/Engineering and Natural Sciences. The credits which are listed above in section 7 can be waived by at most 20 credits if the mentor group suggest it as suitable. If the student has finished certain assessed assignments with the level of a master study programme or within the framework of other study programmes, these achievements can be recognised by applying to the Examination Board. However, in such a case, the required 40 credits from the PhD study programme cannot be waived.
10. In the case of those students who are admitted according to § 2 section 3 clause (c) and (d), if the mentor group think it necessary, the Examination Board can demand, with approval of the mentor group, that the student acquire certain credits within the range of 20 to 40 with Certificate A from a master programme of the Departments of Computer Science/Engineering and Natural Sciences in addition to the credits which are listed above in section 7.