



**Department for Electrical Engineering and Information Technology**

# **Examination Regulations**

**for the master program**

**Medical Systems Engineering**

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**!!!This document is only for information.  
The German version is legally binding!!!**

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## **I. General Part**

### **§ 1 area of application**

(1) Based on the examination regulations, the present examination regulations specify the aim, the content and the structure of the master study course

#### *Medical Systems Engineering*

in the Department for Electrical Engineering and Information Technology (FEIT) of the Otto-von-Guericke-University Magdeburg in cooperation with the Department for Mechanical Engineering, the Department for Informatics, the Department for Chemical Engineering and Systems Engineering, the Department for Mathematics, the Department for Natural Sciences, the Medical Department as well as the Leibniz Institute for Neurobiology.

(2) This master study course is a consecutive course of the profile type "more research oriented". There are strong links to applications in this course.

(3) The study course is accomplished as a full-time and on-campus program.

### **§ 2 duration and structure of the study**

(1) The regular period of study amounts to 4 semesters including the master thesis. The master degree consists of course-related module examinations and the master thesis with the colloquium.

(2) The study is modularly structured. Modules can consist of partial modules. At least one exam has to be taken for each module. If a module consists of partial modules, one exam has to be taken in each partial module. Module examinations consist of one or more examination achievements. Examination achievements are to be made course-related during or at the end of the particular module or partial module.

For each successfully finished module/partial module, a certain number of credit points according to the European Credit Transfer System (ECTS) is assigned.

(3) The study effort of the student(s) for this period of time equates to 120 credit points. Therefore it is necessary to finish the compulsory modules as well as the elective modules successfully. The completion of additional modules of someone's own choice is also possible. The modules, the examination achievements and the classification of the credit points of the individual modules can be seen in the examination schedule attached.

(4) The study is created in such a way that it can be finished successfully within the regular period of study. If the candidate exceeds the regular period of study for more than four terms because of reasons the candidate is responsible for, then the candidate definitely failed the master degree.

(5) The examination achievements of the compulsory modules of the first term of the regular study's schedule have to be fulfilled after two terms the latest according to the study regulations. If the candidate exceeds this deadline for more than two terms because of reasons the candidate is responsible for, then the candidate definitely failed the master degree.

(6) The module examinations can be taken before the semester, as defined in the examination schedule, ends – that is, if all the attainments necessary for the exam permit have been proven.

### **§ 3 degree**

After successfully passed exams the Otto-von-Guericke-University awards the degree  
**“Master of Science”** abbreviated: **“M. Sc.”**

### **§ 4 acceptance for the course of study**

(1) The prerequisite for admission to examination for this master study course is the proof of one of the following degrees within the area of application of the Framework Act for Higher Education:

A bachelor degree, master degree or diploma degree acquired at a university or technical university in electrical engineering, information technology, informatics, mechanical engineering, chemical engineering (or comparable degrees) with a grade of at least “good”. The previous degree has to show that the candidate is trained in established theoretically ways and has also completed a section of subjects which provides him / her with sufficient knowledge for training in the Master of Medical Systems Engineering. The decision whether the previous degree meets these criteria, will be made by the audit committee in individual cases.

(2) The examination board decides after the verification of the singular case about the acceptance to study in case of comparable degrees according to paragraph 1 or degrees which are not acquired within the area of application of the Framework Act for Higher Education or in case of grades deviant of paragraph 1.

(3) language skills

- Courses are conducted in English. The students are therefore expected to have sufficient knowledge of English.
- Applicants have to prove sufficient knowledge of the English language. As a proof, one of the following certificates is accepted:
- If a candidate is unable to provide an appropriate certificate, in individual case, an approval under condition is possible
  - TOEFL (Test of English as a Foreign Language), at least 550 points (old test procedure) and 220 points respectively (computer procedure since 1998) or 80 points (internet based TOEFL)
  - IELTS (International English Language Testing System), number of points between 5.5 and 6.5
  - Cambridge Proficiency in English (A, B and C)
  - UNICert II (European level B2)
- If a candidate is unable to provide an appropriate certificate, in individual case, an approval under the condition is possible by handing in the certificate by the end of the second semester.

(4) The certificates and proofs have to be presented in German and English language respectively and in an appropriate translation by a certified interpreter.

(5) The study course is limited in admission. Details are regulated by the terms of reference.

## **§ 5 examination board**

(1) An examination board is built for the administration of the tasks assigned by these examination regulations. The examination board normally consists of seven members. Five of those members are appointed, employed and matriculated respectively at the Department of Electrical Engineering and Information Technology (FEIT): The chairperson, the assistant chairperson and an additional member of the group of professors, assistant professors, university professors, a member of the group of research assistants and a member of the group of students. Two other members of the group of professors, assistant professors and university professors are members of cooperating departments according to section 1.

(2) The examination board provides the accomplishment of the examinations. The examination board observes that the terms of the examination regulations are kept. The examination board regularly informs the faculty about the developments of the examinations and the study periods and gives helpful suggestions with regard to the reform of the examination regulations and the study regulations. Great emphasis is placed on the compliance of the regular period of study and to the deadlines of the exams.

(3) The examination board makes its decisions with the majority of the casted votes. Abstention from voting is not valid. In case of an equality of votes, the vote of the chairperson is deciding, in case of the chairperson's absence it is the vote of the assistant chairperson. The examination board is competent if the majority of its members is attendant, amongst them at least two members of the group of professors.

(4) The tenure of the members of the examination board amounts to two years, those of the student member to one year. Re-election is possible.

(5) In the particular singular case, the examination board is authorized to revocable assign competencies -that have to be appointed concretely -to the chairperson and to the assistant chairperson.

(6) The members of the examination board have the right to attend exams as an observer.

(7) The members of the examination board are subject to professional discretion. If they are not employed in the public service, they have to be committed to discretion by the chairperson.

(8) An Examination Office is established to support the work of the examination board of the Faculty.

## **§ 6 examiners and observers**

(1) The examination board commissions the examiners and the observers. Professors, assistant professors, university professors, research assistants if they give lectures, lecturers as well as persons who are experienced in the professional practise and education are authorized to accomplish exams. Only persons who have at least a master degree or a comparable one are authorized to evaluate examination achievements.

- (2) Two examiners have to be commissioned for the evaluation of written examinations. Pre-corrections can be made by research assistants. The examination board can decide that a written exam is evaluated by one examiner only if the examination board notices (after having contacted all persons authorized to examine, according to paragraph 1) that two examiners are not available for a certain examination appointment or that the extra effort caused by the appointment is unacceptable for the examiners concerned, with consideration to their remaining duties. The students have to receive a notification about the decision when registering for an examination.
- (3) For the evaluation of a master thesis, two examiners (first and second examiner) have to be commissioned.
- (4) Students may propose examiners for oral examinations and the master thesis. The proposal does not constitute a legal claim.
- (5) The examiners are independent in their examination job.
- (6) The examination board makes sure that the names of the examiners are announced in time to the students.
- (7) § 5, section 7 is accordingly valid for the examiners and observers.

## **§ 7 acknowledgment of the years of study, the course achievement and the examination achievements**

- (1) After a written application, the examination board decides about the acknowledgment of the years of study, the course achievement and the examination achievements. For the acknowledgement, the students have to present the necessary documents in original or as certified copies.
- (2) The years of study, the course achievements and the examination achievements of university studies within the constitution's area of application are taken in to account as long as no considerable differences between the achievements can be observed. The years of study, the course achievements and the examination achievements abroad are taken into account as long as no considerable differences can be observed.  
  
By crediting the years of study, course and examination achievements from university outside of the Federal Republic of Germany, the Lisbon Recognition Convention from November 11<sup>th</sup> 1997, the equivalency agreements approved by the Conference of Ministers for Cultural Affairs and the Conference of University Rectors, as well as the regulations of direct cooperation between universities are taken into account.  
  
The basis of valuation is the European Credit Transfer System (ECTS) as long as it is mutually applied by both parties.
- (3) The ECTS marks, if they do exist, are taken and shown on the certificate for the acknowledgement of the examination achievements.
- (4) In case of comparable rating systems, the marks are taken.

## **§ 8 semester abroad**

- (1) The students may complete optional modules abroad. Regarding the acknowledgement of the periods of study abroad, the course and examination achievements abroad, § 7 is accordingly valid.

(2) In case of a semester spent abroad, a written agreement has to be concluded before departure between the student, an authorized person of the examination board and an authorized person from the host university's chair in question, regarding description, content and extent of the credit points which are intended for acknowledgement.

## **§ 9 major course assessment**

(1) Preconditions for the acceptance to a course-related examination of the modules are major course assessments. The course-related examination of a module/partial module can first be effected, when the achievement to be considered as a preliminary test has been fulfilled.

(2) Preliminary tests are marked in the attached examination schedule.

(3) In the framework of the offered courses, failed preliminary tests can be repeated.

## **§ 10 types of course-related examination achievements**

(1) The following types of course-related examination achievements are possible:

1. written examination (= schriftliche Prüfung „S“, paragraph 2)
2. oral examination (= mündliche Prüfung „M“, paragraph 3)
3. thesis (= Hausarbeit „H“, paragraph 4)
4. experimental work (= experimentelle Arbeit „EA“, paragraph 5)
5. research project (= wissenschaftliches Projekt „WP“, paragraph 6)
6. seminar paper (= Referat „R“, paragraph 7)

(2) In a written exam the students have to prove that they are able to recognize problems and find solutions under supervision, within a limited period of time, with limited resources and with the commonly used methods of the specific field. The process time amounts to 60 minutes at least but not to more than 240 minutes.

(3) Via oral examinations the student should prove that he or she is able to recognize the context of the subject area and that he or she is in a position to classify special questions into those coherences. The oral exam takes place in front of several examiners (cooperative exam) or in front of one examiner and a skilled observer as a single or group exam whereas a group can be built by a maximum of three students. One has to listen to the observer before the marks are assigned. For every student the duration of the exam usually amounts to 30 minutes plus time for the consultation. For a group exam the examination time is increased up to 45 minutes plus time for the consultation. The basic subjects of the examination and the appraisal have to be documented in a protocol. It has to be signed by the examiners and the observers. The student has to be informed about the result of the oral examination right after the exam.

(4) The thesis demands experimental, empirical or theoretical work for processing the task. The student may submit proposals for the topic or the tasks. That does not constitute a legal claim. In appropriate cases, the acquired solutions can be orally explained in a way typical for the occupational activity.

(5) An experimental work particularly contains:

- the theoretical preparation of experiments
- the assembling and implementation of experiments

- the written documentation of work steps, of the test procedure and the results of the experiments as well as their critical appraisal
- in appropriate cases the oral presentation of results in the form of a lecture with discussion

Paragraph 4, section 2 – 4 are accordingly valid

(6) With cooperation in a research project, the students should prove that they do research work independently and that they are in a position to act as team players. The independent part in the project work has to be proven.

(7) A seminar paper contains:

- an independently and detailed written debate about a problem out of the work context of the lecture under involvement and analysis of corresponding literature as well as
- a presentation of work and the communication of the results in an oral lecture with discussion. The preparations have to be rendered in written form.

(8) The examiners decide the assignment of tasks for the examination. If there is no agreement, the task will be assigned by the examination board.

(9) Provided that students with a personal medical attendance report show in a credible form that they are not in a position to pass an exam completely or partly in the required form due to prolonged or permanent disease, the examination board has to admit the possibility to render equal examination achievements in another form.

(10) Disadvantage compensation in the form of additional working material and additional facilities can be warranted for disabled students, as long as this is necessary for equal opportunities. For these purposes the time required for processing could be extended to an adequate extent or the taking of an exam in another form could be permitted.

Disabled is defined as those not in a position to pass examinations completely or partly in the required form because of a prolonged or permanent disability. The disability has to be shown in a credible form. For the substantiation, the university may ask for a medical certificate.

One has to apply for the disadvantage compensation in written form at the examination board. The application should be made at the latest together with the registration for the examination.

(11) Appropriate types of examination achievements can also be accepted in the form of teamwork. The contribution of every single student has to meet the demands made on the examination as well as clearly defined and has to be assessable on its own as an individual achievement on the basis of chapters and page numbers or other objective criteria stated. The group is limited up to three students.

(12) The type and the extent of the course-related examination achievements of the single modules are seen in the examination schedule attached.

(13) When there are less than 12 students registered or expected for an exam being held as a written test by one examiner, the examination board can allow an application from the examiner for oral exams as an alternative. This allowance is valid for one examination appointment. If there are more than 20 students registered or expected for a planned oral exam by one examiner, the examination board can allow an application from the examiner for written exams with a maximum duration of 120 minutes as an alternative. This allowance is valid for one examination appointment.



(14) These protection provisions – according to the articles 3, 4, 6 and 8 of the law on the protection of expectant and nursing mothers as well as according to the deadlines of the German federal law on child support – about the parental leave have to be observed adequately on application of the examination regulations, in particular, the calculation of deadlines and their utilization has to be made possible. Students who are suspended due to family commitments can voluntarily render course and examination achievements during their suspension. The repetition of a failed exam during the suspension is possible based on a written application addressed to the examination board.

## **§ 11 publicity of oral examinations**

(1) Students of this study course can be accepted as auditors for oral examinations (paragraph 10, section 3) if they are not registered for the same exam and have not yet passed this exam successfully. That does not extend over the consultation and announcement of the result to the students. According to paragraph one the auditors have to be excluded on application of a student to be tested. The examination board decides about acceptance.

## **§ 12 acceptance of course-related examination achievements**

(1) Whoever is matriculated at the Otto-von-Guericke University can get accepted for attending the course-related examination achievements.

(2) The deadline for the registration for the exam starts with the registration for the module. The exam has to be taken at the latest one semester after completion of the module. Otherwise, the module examination is considered as failed for the first time.

(3) Students of this study course make an application for the acceptance to the course-related examination achievements and the re-examination in the form and within the period of time agreed by the examination board. In case the registration period has not been kept, the acceptance for the exam is impossible unless otherwise agreed by the examination board on the basis of a written application from the student.

(4) If applicable, proposals for examiners as well as proof about the adduced examination achievements have to be added to the application for acceptance as long as appropriate documents are not found at the Otto-von-Guericke University.

(5) The application can be withdrawn at least one week before the examination appointment. In case of cancellation, an application for acceptance has to be made again according to paragraph 1 and 2, at a later examination appointment.

(6) The examination board decides about the acceptance. It has to be denied if:

- the requirements have not been fulfilled
- the documents are not complete or
- the examination has been “failed” finally or is finally considered as “failed”

## **§ 13 assessment of the examination achievements and generation of the module marks**

(1) The single examination achievement is evaluated by the respective examiners. In case of written exams, the result should be announced four weeks after the particular exam at the latest.

(2) For the evaluation of examination achievements the following marks have to be used:

mark	
1 (very good)	an outstanding achievement
2 (good)	an achievement that is considerably beyond the average standard
3 (satisfactory)	an achievement that meets the average requirements
4 (fair/pass)	an achievement that meets the requirements, despite the faults
5 (fail)	an achievement that does not meet the requirements anymore because of substantial faults

For the differentiated assessment of the examination achievements individual marks can be advanced or lowered by 0.3 to an interim value. The marks 0.7, 4.3, 4.7 and 5.3 are excluded here.

(3) An exam is passed if it has been assessed with at least “fair/pass”. If the examination achievement is evaluated by several examiners, it is passed if all assessments are at least “fair/pass”. In this case the mark of the examination achievement is the arithmetic mean truncated to one decimal place after the comma based on the individual marks given by the examiners where the decimal places may differ from the definition in paragraph 2.

(4) A module examination is passed if all necessary examination achievements have been assessed with at least “fair/pass”.

If a module examination consists of just one examination achievement, the mark of the module equates the mark of the examination achievement.

If a module examination consists of several examination achievements, the module mark is the arithmetic mean of the examination marks in the module, truncated to one decimal place after the comma, assessed if necessary where the decimal places may differ from the definition in paragraph 2.

The weightings for the individual examination achievements are to be seen in the attached examination schedule if necessary and result from the Credit Points of the appropriate partial module respectively.

(5) For the creation of a mark based on the average only the first decimal place after the comma is included, all other places are truncated without rounding. The grade says:

in case of an average mark	grade
up to and including 1.5	very good
from 1.6 up to and including 2.5	good
from 2.6 up to and including 3.5	satisfactory
from 3.6 up to and including 4.0	fair/pass
from 4.1	fail

(6) The German mark should be completed with an ECTS mark according to the recommendations of the HRK (i.e. Hochschulrektorenkonferenz = Association of Universities and other Higher Education Institutions in Germany).

## **§ 14** **repetition of course-related examination achievements**

- (1) Course-related examination achievements which have not been passed or which are considered as failed can be repeated once. The repetition is valid only within 12 months after notification about the failure of the examination if an extension of time has not already been guaranteed to the student due to particular reasons the student is not responsible for. For the assessment paragraph 13 is valid.
- (2) In justified exceptional cases, a second repetition of a course-related examination achievement can be accepted, normally for the next regular examination appointment, if the necessary prospect of success for the pass of the exam is given. The examination board can amicably fix an early appointment with the examiner on the basis of an application from the student. A second repetition is valid during the complete study course for a maximum of three examination achievements of a module or partial module.
- (3) Within a preclusion period of 6 weeks after the notification about the failure of the first repetition of the course-related examination achievement, the student has to apply at the examination board in written form and give reasons for taking a second repetition of a course-related examination achievement. The examination board decides about acceptance.
- (4) Unsuccessful trials to pass an exam at another university in the same or comparable study course within the area of application of the constitution have to be taken into account regarding the possibility to repeat.
- (5) The repetition of a passed course-related examination achievement is not valid.

## **§ 15** **additional tests**

- (1) If the admission requirements allow it, students may also pass exams in other compulsory modules as those stated in the attached examination schedule.
- (2) Upon application by the student, the result of the additional tests is recorded in the certificate or proof. For the calculation of average marks and the assessment of the final grade, the results of additional tests are not taken into account.

## **II. Master Degree**

### **§ 16** **registration for the master thesis and release of the topic**

- (1) Whoever is matriculated at the Otto-von-Guericke University in the respective study course and has achieved at least 75 CP in compulsory and elective modules, is accepted for the master thesis if the examination board has not arranged something else.
- (2) The master thesis should show that the students are able to work scientifically and independently on a problem of a specific field within an agreed time limit . The topic and the task of the master thesis have to meet the purpose of the exam and the time limit. When issuing the topic, the type of problem and a specific problem formulation have to be defined.
- (3) Students apply in written form at the examination board for the acceptance to the master thesis. This should be added to the application for the master thesis:
  - a proposal for the subject area from which the topic of the master thesis is taken

- if necessary, an application for awarding the topic as team work
- as well as proposals for examiners if necessary

(4) It is possible to withdraw the registration for the master thesis before the processing time begins. In case of a withdrawal, the acceptance for a future date demands a new application.

(5) Normally, the topic of the master thesis is issued at the beginning of the fourth semester. The issue has to be in time so that the master thesis can be finished within the regular period of study.

(6) The student should be given the opportunity to make a proposal for the topic and the problem formulation of the master thesis. The proposal does not constitute a legal claim.

(7) The topic is determined by the first examiner after hearing of the students to be tested. On the basis of an application, the examination board allows students to receive a topic in time. The issue of the topic has to be put on record. With the issue of the topic, the first examiner who determined the topic as well as the second examiner are appointed. The students are supervised by the first examiner during the production of their work.

(8) The topic of the master thesis can be determined by every professor of the Department for Electrical Engineering and Information Technology. Upon approval by the examination board this is also valid for professors who are not a member of this department. It also can be determined by others according to § 6, section 1 who are authorized for examinations. In this case the second examiner has to be a professor of the Department for Electrical Engineering and Information Technology. Upon approval by the examination board, the second examiner can also be a professor who is not a member of this department.

## **§ 17 processing and delivery of the master thesis**

(1) The master thesis has to be written in German or English.

(2) The master thesis can be accomplished as team work. The individual contribution which has to be assessed as an examination achievement, which has to be clearly defined as well as be appraised of its own as an individual achievement on the basis of chapters and page numbers or other objective criteria stated, has to meet the standards according to section 1. The group is limited up to three students.

(3) There are 20 weeks time from the issue of the topic until the submission of the master thesis.

(4) Exceptions from this deadline are proved in cases of the disease of the student as well as unforeseeable technical or organizational circumstances that make an extension appear reasonable. In these cases, the processing time is extended by the proven inactive period for 9 weeks as a maximum. If a submission of the thesis is not possible after expiration of the maximum extension of time, the work has to be cancelled.

(5) A trial cancelled because of reasons stated in section 4 is not chargeable for the possibilities of a repetition, provided that during the extension time there have been new reasons which would have caused a new extension of time.

(6) On the basis of a written application, the examination board decides about an extension and the renewal period as well as about charging for repetition.

(7) When submitting their master thesis, the students are obliged to affirm in written form that they have composed the thesis – or in case of team work the marked part of the thesis independently and that they have not used any other means and resources than stated.

(8) The master thesis has to be submitted in duplicate at the examination office on the due date. The moment of submission has to be put on records.

## **§ 18** **colloquium and assessment of the thesis**

(1) The master thesis should be evaluated and assessed by the examiners within four weeks after submission. §13 is valid.

(2) In the master thesis colloquium the students have to prove that they are in a position to defend in an expert talk the results of their independent scientific work in a special field.

(3) Preconditions for the acceptance to the master thesis colloquium are the successful pass of the module examinations and that the master thesis has been assessed by both examiners with at least “fair/pass”.

(4) The master thesis colloquium will be processed by the examiners of the master thesis as an individual exam or a group exam. Further examiners can be appointed by the examination board. The duration of the colloquium amounts to 60 minutes normally plus consultation time but not more than 90 minutes plus consultation time for each student. § 13 is valid for the assessment of the colloquium.

(5) In principal, the colloquium is public and normally consists of a talk given by the student with a discussion afterwards. The precise procedure as well as the schedule are fixed by the first examiner and have to be arranged and announced in time, especially in case of group examinations for the coordination of the examinees.

(6) The colloquium has been passed successfully if it was assessed by the examiners with at least “fair/pass”. In case of the assessment “fail”, the repetition conforms with the terms of § 19.

(7) For the successfully passed master thesis with the colloquium, 30 credit points are given.

(8) The module mark is built by two-thirds of the mark for the master thesis and by one-third of the mark for the colloquium.

## **§ 19** **repetition of the thesis and of the colloquium**

(1) The master thesis can be repeated once if it has been assessed with “fail” or is considered as “fail”.

(2) In case of the repetition of the master thesis, the return of a topic is permitted only if no use has been made of this possibility for the first master thesis.

(3) The new topic for the master thesis is issued in an appropriate time limit, normally within three months.

(4) A second repetition is not valid.

(5) The repetition of a successfully passed master thesis is impossible.

(6) The master thesis colloquium can be repeated once if it has been assessed with “fail” or is considered as “fail”. The repetition has to be effected within 8 weeks.

- (7) A second repetition of the master thesis colloquium is not valid.
- (8) The repetition of a successfully passed master thesis colloquium is impossible.

## **§ 20 overall result**

- (1) The master degree has been passed successfully if all course-related examination achievements of the compulsory modules and the elective modules as well as the master thesis with the colloquium have been assessed with at least “fair/pass”.
- (2) The final grade results from the weighted average of the marks for the course-related module examinations and the module mark of the master thesis with the colloquium. The average calculation and the awarding of the grade have to be effected according to § 13 section 5. The weightings for the individual modules result from the credit points of the modules.
- (3) If the average of the formed final grade is better than 1.3 and the final grade of the master thesis at least 1.3 the predicate

### **“passed with distinction”**

is given.

- (4) The master degree is failed definitely if one course-related examination achievement or the master thesis with the colloquium has been assessed with “fail” or is considered as “fail” and a possibility for repetition does not exist anymore.

## **§ 21 certificates and statements**

- (1) A certificate about the successfully concluded master study course has to be issued immediately, preferably within 4 weeks. The certificate must be dated of the day where the last examination achievement has been rendered. It has to be signed by the chairperson of the examination board, the dean of the Department for Electrical Engineering and Information Technology and the seal of the Otto-von-Guericke University has to be affixed to it.
- (2) With this certificate, the students receive a Diploma Supplement.
- (3) If the master degree has been failed or is considered as failed, the examination board gives an official letter to the student also providing information if examination achievements may be repeated and to what extent they may be repeated. Information on legal remedies available is attached to the official letter about a finally failed master degree.
- (4) If students leave the university or change the study course, upon request, a certification is issued for them, stating the examination achievements rendered and their assessment. In case of section 3, the certification is issued without application. The certificate also shows what examination achievements are still missing and further that the master degree has been failed or has been definitely failed. In case of section 3, the students receive a certification upon application which simply shows the examination achievements rendered.

## **§ 22 document**

(1) With the certificate the students receive the diploma with the date of the certificate. Therein, the award of the master degree is certified.

(2) The diploma is signed by the dean of the Department for Electrical Engineering and Information Technology of the Otto-von-Guericke University and the seal of the Otto-von-Guericke University is affixed to it.

### **III. Final Provisions**

## **§ 23 access records of the examination**

(1) After completion of every module examination as well as the colloquium, the students are allowed to look at the written exams, their assessments carried out by the examiners and the minutes of the examinations respectively, at a time within a preclusion period of three months after announcement of the result. Time and place of the inspection are set by the examiner.

(2) After delivery of the certificate, one has to apply in written form at the examination board for the inspection. Time and place of the inspection are set by the chairperson of the examination board.

(3) The inspection has to be put on records.

## **§ 24 failure, withdrawal, deception, breach of regulations**

(1) A course-related examination achievement is considered as assessed with “failed” if the student without a good reason:

- does not arrive to an examination appointment, obligatory for her/him
- withdraws after the start of the examination
- does not complete the repetition of an examination achievement within the period allotted

(2) The causes asserted for the withdrawal or the absence, immediately have to be shown credibly and have to be reported in written form to the examination board. If that does not take place, the examination achievement has to be assessed with “fail”. In case of a sick leave a medical certificate has to be presented. Should the causes be accepted, the examination achievement has to be rendered at the next regular examination appointment, provided the examination board does not establish a rule, deviant to this.

(3) If a student tries to have an impact on the result of an examination achievement by the usage of forbidden means or by deception, the examination achievement concerned is considered as assessed with “fail”. Whoever disturbs the correct processing of an examination appointment can be excluded from the continuation of the exam by the examiner or the supervisor. In this case, the examination achievement has to be assessed with “fail”. In profound cases, the examination board can exclude the student from further exams.

(4) If the deadline of an examination achievement is not kept by a student due to reasons he or she can be held responsible for, the examination achievement is considered as assessed with “fail”. Section 2 is valid accordingly.

## **§ 25**

### **invalidity of the examination achievements**

(1) The examination board can invalidate an examination completely or partially if a student has committed exam fraud during an examination achievement and this fact is discovered after delivery of the certificates.

(2) If the preconditions for the acceptance to an examination achievement have not been fulfilled, without a fraud to be intended, and this fact is discovered after delivery of the certificates, this desideration is healed by the successful pass of the exam. If students acted deliberately and wrongly in applying for admission, the examination board decides about the withdrawal of illegal administrative acts, considering legal requirements.

(3) The opportunity to discuss the matter in front of the examination board has to be given to the students concerned before a decision is made.

(4) The incorrect certificate and the incorrect diploma have to be confiscated and to be replaced by a correct certificate and diploma. After a period of 5 years from the date on the certificate, a decision is impossible, according to section 1 and 2.

## **§ 26**

### **decisions, opposition proceedings**

(1) All decisions made according to these examination regulations and which demonstrate an administrative act, have to be accounted for in written form, have to be supplemented by an information on legal remedies available and have to be announced according to § 41 of the Administrative Procedures Law of the Federal State of Saxony-Anhalt (= Verwaltungsverfahrensgesetz des Landes Sachsen-Anhalt = VwVfG LSA). Within a month after receipt of the official letter an objection against the decision can be filed at the examination board.

(2) The examination board decides about the objection. As long as the objection is about the assessment, the examination board forwards the objection to the respective examiner(s) for verification. Should the assessment be changed according to the application, the examination board finds a remedy for the objection. Otherwise, the examination board just checks the decision if

1. the examination procedure has been accomplished according to the rules
2. the examiner assumed wrong premises
3. universally valid principles for the assessment have been observed
4. the examiner let himself/herself be guided by inappropriate considerations

## **§ 27**

### **announcements of the examination board open to all students and employees of the university**

Decisions and other actions to be resolved according to these examination regulations, especially the admission to an exam, the denial of admission, the registration and examination appointments and deadlines as well as the examination results are announced customary in the place and open to all students and employees of the university. In doing so, data protection regulations have to be observed.



## **§ 28 temporary arrangement**

This regulation is valid for all students enrolled in the Master program Medical Systems Engineering starting with the winter semester 2015/16. Students already enrolled in the Master program Medical Systems Engineering before the June 3, 2015 can join this regulations upon request. The written request has to be addressed to the examination office of the Faculty of Electrical Engineering and Information Technology. The request is irreversible.

## **§ 29 coming into effect**

These examination regulations come into effect after announcement in the Administrative Handbook to all students and employees of the Otto-von-Guericke-University.

Written on the basis of the decisions made by the faculty board of the Department of Electrical Engineering and Information Technology from June 3, 2015 and on the basis of the decisions made by the Academic Senate of the Otto-von-Guericke-University from June 17, 2015.

Magdeburg, June 18, 2015

sgd Prof. Dr.-Ing. Jens Strackeljan

Rector of the Otto-von-Guericke-University Magdeburg

# Examination schedule

Master program

## Medical Systems Engineering



### Explanation to the Examination schedule:

**LN** = Required course certificates (prerequisite)

\* = Depends on the chosen modules

**PL** = Types of course-related examination achievements

**K** = written examination

**M** = oral examination

**H** = thesis

**EA** = experimental work

**PRO** = research project

**R** = seminar paper

\* = Depends on the chosen modules

**CP** = Credit Points

### Timing of the course assessment:

During the examination period of the semester in which the course attended.

### Legende zum Prüfungsplan:

**LN** = erforderliche Leistungsnachweise (Prüfungsvorleistung)

\* = Abhängig von der Modulwahl

**PL** = Art der Prüfungsleistung

**K** = Klausur

**M** = Mündliche Prüfung

**H** = Hausarbeit

**EA** = Experimentelle Arbeit

**PRO** = Wissenschaftliches Projekt

**R** = Referat

\* = Abhängig von der Modulwahl

**CP** = Credit Points = Leistungspunkte

### Zeitpunkt der Prüfungsleistung:

Im Prüfungszeitraum am Ende des Semesters, in dem das Modul belegt wurde.

## Technical compulsory modules

Regular curriculum and Research Track	LN	PL	CP
Anatomy for Engineering students	seminar certificate	K60	4
Biological Statistics	----	K120	5
Medical Imaging and Diagnostics	----	K90	5
<i>submodule: Introduction into Medical Imaging</i>	----	----	----
<i>submodule: Radiological Diagnostics</i>	----	----	----
Medical Measurement Technology	----	M	6
<i>submodule: Chemical and Biological Sensors</i>	----	----	----
<i>submodule: Ultrasonic Sensors for Imaging</i>	----	----	----
Medical Physics and Radiation Protection	----	K90	5
Microsystems- and Nano-Technologies for Medical Solutions	tutorial certificate	K120	5
Human-Computer Interfaces in Medicine	----	R	4
Mathematical foundations	----	K90	6
Digital Information Processing	tutorial certificate	K120	5

## Methodical and social compulsory modules

Regular curriculum and Research Track	LN	PL	CP
Scientific working	----	R	5
MedTec Innovation Generation and Entrepreneurship	seminar certificate	K60	5

## Research Project within Research Track

Research Track	LN	PL	CP
Research Project	proposal	PRO	20

## Elective modules

<b>Elective Modules - Deepening "Imaging"</b>	<b>LN</b>	<b>PL</b>	<b>CP</b>
Nuclear medicine	----	K90	5
Methods of MRI	tutorial certificate	M	5
Computed Tomography	----	K120	10
<i>submodule: Medical Imaging - Computed tomography</i>	tutorial certificate	----	----
<i>submodule: Computed Tomography in Material Science</i>	----	----	----
<i>submodule: Lab course CT</i>	lab certificate	----	----
<b>Elective Modules - Deepening "Intervention"</b>	<b>LN</b>	<b>PL</b>	<b>CP</b>
Instruments for IGP	seminar certificate	K60	5
Computer Assisted Surgery	----	R	5
Image Guided Procedures	----	K60	5
<i>submodule: Medical Imaging in Interventional Endovascular Therapy</i>	seminar certificate	----	----
<i>submodule: Seminar IGP</i>	seminar certificate	----	----
<b>Elective Modules - Deepening "Biomedical Signals"</b>	<b>LN</b>	<b>PL</b>	<b>CP</b>
Digital Information Processing Lab	----	EA	5
EMC of Medical Systems	----	M	5
Tomographic Imaging in Medicine	----	M	5
Functional Safety for Medical and Technical Systems	----	M	5
Lab course Electrophysiology	----	EA	5
<b>Elective Modules - Deepening "Medical Microsystems"</b>	<b>LN</b>	<b>PL</b>	<b>CP</b>
Development of Bio-MEMS for Medical Engineering	----	K120	10
MEMS-Packaging for Medical Solutions	----	K120	5

<b>Elective Modules - Deepening "Biomechanics and Haemodynamics"</b>	<b>LN</b>	<b>PL</b>	<b>CP</b>
Simulation and Numerical Methods in Biomechanics and Medical Engineering	----	H/M	10
<i>submodule: Computational Biomechanics</i>	----	----	----
<i>submodule: Simulation in Medicine and Medical Engineering</i>	----	----	----
Rheology and Rheometry	----	M	5
Computational Fluid Dynamics	----	PRO	5

<b>Elective Modules - Deepening "Medical Computer Science"</b>	<b>LN</b>	<b>PL</b>	<b>CP</b>
Bayesian network	tutorial certificate	M	5
Machine Learning for Medical Systems	tutorial certificate	M	5
Image Coding	----	M	5
Advanced Security Issues in Medical Systems	----	M	5
Medical Visualization	tutorial certificate	K120	5
Selected Topics in Image Understanding	----	M	5

<b>Elective Modules - Deepening "Neuro-Biology"</b>	<b>LN</b>	<b>PL</b>	<b>CP</b>
Theoretical Neuroscience I	tutorial certificate	K180	5
Theoretical Neuroscience II	tutorial certificate	K180	5
Analysis and modeling of Physiological Systems	----	M	5
<i>submodule: Mathematical Modeling of physiological Systems</i>	----	----	----
<i>submodule: Brain Computer Interfaces</i>	lab certificate	----	----

## Master Thesis

	<b>LN</b>	<b>PL</b>	<b>CP</b>
Master Thesis	----	H/R	30