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Technische Universität Dresden
Faculty of Mechanical Science and Engineering

Doctoral Thesis Regulations

From March 22, 2018

On the basis of §§ 40, 88 para. 1 no. 2, 13 para. 4 sentence 1 of the Act on the Freedom of the Universities in the Free State of Saxony (Saxon Higher Education Freedom Act - SächsHSFG) dated December 10, 2008 (SächsGVBl. p. 900), as amended by the announcement of January 15, 2013, the Faculty Council of the Faculty of Mechanical Science and Engineering of the Technische Universität Dresden has enacted the following doctoral regulations as statutes.

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§ 1

Scope

These regulations govern the doctoral procedures at the Faculty of Mechanical Science and Engineering.

§ 2

Doctoral Degrees

- (1) The Faculty of Mechanical Science and Engineering awards the following degree on behalf of the Technische Universität Dresden on the basis of a doctoral procedure the academic degree of

Doktoringenieur (Dr.-Ing.).

- (2) The Faculty of Mechanical Science and Engineering awards the following degree on behalf of the Technische Universität Dresden on the basis of a doctoral procedure for graduates of doctoral course of study leading to the degree of "Doctor of Philosophy (Ph. D)" in which the faculty as a whole or university teachers are involved, the academic degree

Doctor of Philosophy (Ph. D.).

- (3) Upon decision of the Faculty Council, the Technische Universität Dresden also awards the academic degree of

Doktoringenieur honoris causa (Dr.-Ing. h. c.).

§ 3

Doctorate

- (1) With the doctorate, the applicant must demonstrate a scientific education in the field of science that goes beyond the general study objective and the special ability to carry out independent scientific work. The scientific work (dissertation) must produce results that demonstrate the development of the special field of science, its theories, methods and procedures of the specific field of science.
- (2) Except in the case of an honorary doctorate pursuant to § 23, the evidence shall be provided by the dissertation according to § 12, the status presentation according to § 10 and the oral doctoral performances according to § 13 (rigorosum) and § 14 (defense).

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§ 4

Doctoral Committees

- (1) The body responsible for doctoral studies is the Faculty Council. For this purpose, it forms a doctoral committee as a permanent body of the faculty. Its members are the Dean or a university lecturer nominated by them as chairperson, at least five other university lecturers and one academic staff member with a doctorate from the faculty. The members of the doctoral committee are appointed by the Faculty Council for a term of three years. Reappointment is possible. Upon request, the doctoral committee has to report to the Dean and the Faculty Council about its activities.
- (2) After the opening of the concrete doctoral procedure, the doctoral committee appoints a doctoral commission for the tasks assigned to it according to these regulations and appoints its chairperson. The doctoral commission consists of at least five members, among whom must be the reviewers and, if applicable, the examiners of the rigorosum examination. The chairperson of the doctoral commission must be a professor of the faculty; § 12, para. 4, applies to the reviewers. The chairperson of the doctoral commission must not act either as a reviewer, or as an examiner of the rigorosum. As a rule, university professors of the faculty are to be appointed as members of the doctoral commission. The appointment of habilitated staff members of the faculty, TUD Young Investigators, non-faculty university teachers or qualified scientists is possible in exceptional cases, especially if the topic makes it necessary. When conducting cooperative doctoral procedures, one member of the doctoral commission must be a university lecturer of the cooperating institution.
- (3) The meetings of the doctoral committee and the doctoral commission are not open to the public. Their members are bound to confidentiality. For the quorum the attendance of the respective chairperson of the doctoral committee and the doctoral commission is required. The provisions of the SächsHSFG and the provisions of the Technische Universität Dresden's basic regulations apply to the majority of resolutions for the university committees. Minutes shall be kept of the deliberations and resolutions in doctoral matters.

§ 5

General Procedural Regulations and Appeal Procedure

- (1) Decisions of the responsible committees in the doctoral procedure are communicated to the candidate in writing. Incriminating decisions are announced by the chairperson of the responsible committee by means of an appealable decision, which must be justified and contain instructions on how to appeal.

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- (2) A formal appeal procedure takes place against decisions in the doctoral procedure which have the quality of an administrative act. The appeal authority is the Faculty Council. Decisions in the doctoral procedure with an administrative act quality are in particular:
1. non-admission to the doctoral program and rejection as a doctoral candidate as well as revocation of acceptance as a doctoral candidate,
 2. the non-opening of the doctoral procedure,
 3. the non-acceptance of the dissertation,
 4. the evaluation of the additional academic achievements, the status presentation and the doctoral performance,
 5. the non-admission to the repetition of doctoral performances,
 6. the termination without results (discontinuation) of the doctoral procedure, and
 7. the non-awarding of the doctoral degree.
- (3) Upon request, the candidate will be granted access to the doctoral file after the completion of the doctoral procedure. The application must be submitted to the Dean or the chair of the doctoral committee within one month after the announcement of the overall result.

§ 6

Admission to doctoral studies

- (1) Admission to the doctoral procedure is granted to those who
1.
 - a) has obtained a *Diplom*, master or magister degree from a university or has passed the state examination in an engineering, natural science or mathematics course of study with a grade at least "good" and has completed the corresponding thesis with a grade of at least "good"; or who
 - b) has obtained a *Diplom*, master or magister degree from a university or has passed the state examination with a grade of at least "satisfactory" and has passed the determination of suitability in accordance with § 7;
 2. fulfills the personal requirements for the use of the doctoral degree;
 3. has not already twice unsuccessfully completed a doctoral procedure or is not in a pending doctoral procedure; and;
 4. has submitted an application for acceptance as a doctoral candidate with all required documents in accordance with § 8.
- (2) Furthermore, admission to the doctoral procedure is granted to those who have obtained a bachelor's degree at a university in an engineering course of study that corresponds in its orientation to a course of study of the Faculty of

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Mechanical Science and Engineering with at least the grade "very good" and who have passed the determination of suitability according to § 7.

- (3) Graduates of Universities of Applied Sciences can be admitted in a cooperative procedure. For this purpose, the Faculty of Mechanical Science and Engineering and the participating University of Applied Sciences conclude a cooperation agreement.
- (4) No person shall be admitted to doctoral studies who
 1. Does not fulfill the requirements of para. 1 or para. 2,
 2. Uses or has used intermediaries for the purpose of presenting doctoral opportunities in return for remuneration,
 3. Pays fees in connection with the doctoral procedure and its preparation, or uses services free of charge which contradict the meaning and purpose of an examination procedure,
 4. Provides or has provided remunerated services in connection with the doctoral procedure and its preparation which are contrary to the meaning and purpose of an examination procedure.
- (5) The doctoral committee decides on the recognition of the equivalence of foreign examinations and degrees, taking into account equivalence agreements. In cases of doubt, a statement from the Saxon State Ministry for Science, Culture and Tourism must be obtained. In cases where applicants have been approved to use an academic degree acquired abroad in the form of a German degree entitling them to doctoral German doctoral degree, this degree is to be recognized as equivalent.
- (6) The admission decision is made in the context of the decision on acceptance as a doctoral candidate according to § 8.

§ 7

Determination of Suitability

- (1) Applicants who can only be admitted to doctoral studies according to the provisions of these regulations on the basis of a positive determination of suitability must prepare a written paper (project outline) for this purpose, which contains statements on the state of the art in science, the relevant literature, the working hypotheses in relation to the intended doctoral topic as well as a work plan. In addition, a written statement (vote) must be submitted to the doctoral committee by the responsible university professor of the faculty, in the case of cooperative procedures also by the prospective scientific supervisor of the cooperating institution, which should include statements on the prospects of success as well as on the scope and content of additional qualifications to be

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acquired. The decision on a fundamental suitability is made by the doctoral committee on the basis of the submitted vote and the submitted project outline, and also in appreciation of the additional qualifications acquired after graduation.

- (2) The regulation according to para. 1 does not apply if the applicant can prove admission to a graduate school in which the faculty as a whole or individual university lecturers are involved and whose statutes show a commitment to the doctoral regulations of the Faculty of Mechanical Science and Engineering. In this case, the admission must be confirmed in writing by the spokesperson of this institution, stating the scope and content of the existing obligations within the framework of the training program, as well as any conditions imposed upon admission.
- (3) If the basic suitability according to para. 1 has been positively established or the admission to a graduate school according to para. 2 has been proven, the applicant has to complete two subject examinations, which are related to the topic of the dissertation, with at least the grade "good" in the regular examination attempt. A repeat exam is excluded. The examination subjects must be from the range of modules offered by the faculty and are determined by the doctoral committee on the recommendation of the prospective academic supervisor of the faculty. Examinations that have been successfully completed in connection with admission to a graduate school may be recognized. Examinations are conducted and evaluated in accordance with the relevant examination regulations. In deviation from this, the examinations can also be taken orally and outside the regular examination time with the approval of the responsible examiner.
- (4) If the required aptitude cannot be demonstrated because either the required positive vote in accordance with para. 1 - or admission to a graduate school according to para. 2 - is missing, or the requirements according to para. 3 are not fulfilled, a negative decision on suitability is issued.

§ 8

Acceptance as a doctoral candidate

- (1) Anyone who fulfills the admission requirements according to § 6 and intends to pursue a doctorate at the Faculty of Mechanical Science and Engineering must apply for acceptance as a doctoral candidate before starting the doctoral thesis. An application for acceptance as a doctoral candidate is the expression of the applicant's intention to the faculty to do a doctorate there within the next six years.

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- (2) The application must be submitted in writing to the chairperson of the doctoral committee. The following must be submitted with the application:
 1. The intended topic of the dissertation,
 2. The written declaration of willingness of a professor of the faculty or a TUD Young Investigator to scientifically supervise the applicant in the preparation of the dissertation according to para. 4,
 3. Proof of the admission requirements according to § 6
 4. Curriculum vitae in tabular form, signed by the applicant themselves, with a description of their scientific career, including documentary evidence of additional studies or examinations already completed in official certified form,
 5. A written statement on any previous unsuccessful doctoral procedures,
 6. A written statement that these doctoral regulations are recognized,
 7. A written declaration that a certificate of good conduct to be sent to the faculty has been applied for at the responsible registration office according to § 30 para. 5 Bundeszentralregistergesetz (BZRG).

- (3) The doctoral committee decides on the acceptance or rejection as a doctoral candidate. Acceptance as a doctoral candidate is to be rejected if the subject-related admission requirements according to § 6 are not fulfilled. Acceptance as a doctoral candidate shall also be refused if the applicant does not meet the personal requirements for the use of a doctoral degree. The decision shall also be made in consideration of the certificate of good conduct according to para. 2 no. 7. Acceptance may be combined with the imposition of conditions in accordance with § 9. In the event of acceptance, the applicant shall be included in the list of doctoral candidates to be maintained by the faculty; a doctoral relationship shall be established between the faculty and the candidate, and the applicant shall be granted the status of doctoral candidate. Upon acceptance as a doctoral candidate, the candidate is obliged to adhere to the "Guidelines for Ensuring Good Scientific Practice, for Avoiding Scientific Misconduct, and for Dealing with Violations"

- (4) The doctoral student is supervised by a university professor, extraordinary professor, honorary professor, PD (Privatdozent) or TUD Young Investigator of the faculty, in the case of cooperative procedures also by a university professor of the cooperating institution (scientific supervisor). A supervision agreement based on the recommendations of the DFG or the Graduate Academy of the Technische Universität Dresden must be concluded between the academic supervisor and the doctoral student.

- (5) Acceptance as a doctoral candidate can be revoked if the state of completion of the dissertation or the results available up to that point do not allow the successful completion of the doctoral procedure to be expected. A written

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statement of the scientific supervisor must be available for this purpose. The supervisor must be heard before the acceptance as a doctoral candidate is revoked. The decision is made by the doctoral committee after six years at the latest, but not before three years have elapsed. The doctoral candidate may also indicate in writing to the Dean of the Faculty that they no longer wishes to pursue a doctoral degree after being accepted as a doctoral candidate. All of the above cases terminate the doctoral relationship with the Faculty and result in the termination of the doctoral procedure without results. The doctoral candidate is removed from the doctoral list.

- (6) Acceptance as a doctoral candidate is a mandatory prerequisite for the opening of the doctoral procedure. It should take place at least one year before the opening of the doctoral procedure.

§ 9

Additional academic credits

- (1) For a successful doctorate, additional academic achievements in the form of examinations can be set as requirements for acceptance as a doctoral candidate (doctoral studies). The aim is to promote the content of the doctoral project on the one hand and to ensure a broad specialist foundation on the other, in particular in subject areas that have not yet been covered or only to a limited extent.
- (2) For applicants who have been admitted to doctoral studies according to § 6 para. 1 no. 1 lit. a and have acquired at least 300 credit points but less than 60 credit points from subjects with engineering content or less than 300 credit points but at least 60 credit points from subjects with engineering content in their studies, the scope of the required additional study achievements should generally be between 10 and 20 credit points. For applicants who do not meet the requirements of sentence 1 or whose admission to doctoral studies according to § 6 para. 1 no. 1 lit. b was based on a positive decision on aptitude, the scope of the additional study achievements may comprise up to 30 credit points. For university degrees without proof of the acquired credit points, the certificated semester hours shall be converted into credit points by a factor of 1.2 and the provisions of sentences 1 and 2 shall apply mutatis mutandis.
- (3) If a bachelor's degree is accepted in accordance with § 6 para. 2, the extent of the additional study for a degree of
1. At least 240 credit points, comprise up to 30 credit points,
 2. At least 210 credit points, comprise up to 60 credit points and
 3. At least 180 credit points, comprise up to 90 credit points.

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- (4) The additional course work is determined by the doctoral committee in consultation with the academic supervisor. They should primarily come from subject areas not yet or only slightly covered by the proven degree and be taken from the range of modules offered by the Technische Universität Dresden, primarily from the Faculty of Mechanical Science and Engineering. The doctoral student can make suggestions.
- (5) The examinations defined as additional study achievements are to be taken by examiners appointed by the doctoral committee. The performance and assessment of the examinations shall be governed by the relevant examination regulations, unless otherwise specified below.
- (6) If a relevant module description provides for a written examination, this can also be taken orally and outside the regular examination time with the approval of the responsible examiner. If only one examination is to be taken, it must be passed with at least the grade "good". If several examinations were specified, the average of the grades of the individual examinations, weighted with the credit point percentage, must reach at least the mathematical grade of 2.5. However, the formal determination of an overall grade does not take place. The examiners shall inform the chairperson of the doctoral committee of the assessment of the individual examinations. If several examinations have been taken, the chairperson of the doctoral committee calculates the arithmetical average according to sentence 2.
- (7) The additional course work should normally be completed within three years of acceptance as a doctoral student. A repetition of failed examinations is only possible once after the announcement of the examination result; § 8 para. 5 applies.

§ 10

Status presentation

- (1) Prior to the opening of the doctoral procedure, the applicant must submit a scientific presentation in German or English on the state of research in their field of work (status presentation) followed by a scientific discussion. The aim of the presentation is to provide a well-founded analysis of the field of research targeted in the dissertation and to derive the main open questions from this. The scientific discussion can also go beyond the core area of the dissertation topic and address related topics.
- (2) The status presentation lasts a maximum of 45 minutes, the total duration of the status presentation and scientific discussion should not exceed 2 hours. The status presentation and the subsequent scientific discussion are public and must

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be announced in a suitable manner one week before it takes place. They may also be completed as part of a conference presentation or an inter-departmental doctoral colloquium. The scientific supervisor must be present.

- (3) Following the status presentation and the scientific discussion, the academic supervisor evaluates the overall performance of the doctoral candidate as "passed" or "failed" and informs the chairperson of the doctoral committee of the result; the latter announces the result to the doctoral candidate in writing. If the status presentation is not passed, it can be repeated once after three months at the earliest. If the status presentation is not passed again, the doctoral procedure will be terminated without results. The doctoral candidate is to be removed from the list of doctoral candidates.
- (4) For members of a graduate school, the status presentation is considered to have been successfully completed if the relevant regulations of this institution specify a colloquium on the progress of work and the proper fulfillment of this obligation by the doctoral candidate is confirmed in writing by the academic supervisor. The confirmation is to be submitted with the application for the opening of the doctoral procedure according to § 11 para. 1 no. 2.

§ 11

Opening of Doctoral Procedure

- (1) Doctoral procedures are opened upon formal application by the doctoral candidate. The application for the opening of a doctoral procedure must be submitted in writing to the chairperson of the doctoral committee of the faculty. The application must be accompanied by:
 1. a tabular and signed curriculum vitae with a description of the scientific career,
 2. a copy of the notice of acceptance as a doctoral candidate in accordance with § 8 and a documentary evidence of the fulfillment of any conditions imposed, of the successfully completed status presentation and if applicable, of the successfully completed early rigorosum,
 3. the dissertation in five bound copies in A4 format printed on one side and an electronic version on data carrier as well as 15 printed copies and an electronic version of theses in German language,
 4. a list of scientific publications, lectures and patents of the doctoral candidate according to the model attached in Appendix 1,
 5. the written declaration of the doctoral candidate according to the model attached in Appendix 2,
 6. the written declaration that a certificate of good conduct to be sent to the faculty has been applied for at the responsible registration office according to § 30 para. 5 BZRG.

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Without entitlement to consideration, proposals for the members of the doctoral committee, in particular for the reviewers, and, if applicable, for the examiners of the rigorosum may also be attached to the application. Documents that are already available to the doctoral committee and do not require any changes can be accepted as valid.

- (2) The withdrawal of the application for the opening of a doctoral procedure by the doctoral candidate is permitted as long as it has not yet been opened. In this case, the application shall be deemed not to have been filed. If the doctoral candidate indicates after the opening of the doctoral procedure that they do not wish to continue with it, this will result in the termination of the doctoral procedure and will be considered as an unsuccessful doctoral attempt. In case of withdrawal of the application before and after the opening, the electronic version of the dissertation and theses will remain in the doctoral file. The printed copies will be returned to the candidate.
- (3) The doctoral committee decides on the opening of the doctoral procedure. The opening of the procedure is to be rejected if the fulfillment of any conditions associated with the acceptance as a doctoral candidate as well as the successful completion of the status presentation have not been proven. The opening of the doctoral procedure shall also be rejected if the doctoral candidate no longer fulfills the personal requirements for the use of a doctoral degree. The decision shall also be made in consideration of the certificate of good conduct according to para. 1, no. 6. Finally, the opening of the doctoral examination procedure shall be refused if there are reasons which, in addition, would lead to the withdrawal of the doctoral degree. If the doctoral procedure is not opened for reasons according to sentences 3 to 5, § 19 shall apply. With the opening of the doctoral procedure, the doctoral committee shall appoint not only the doctoral commission but also the reviewers according to § 12, para. 4. The notification of the opening of the doctoral procedure to the doctoral candidate shall at the same time provide information on the composition of the doctoral commission, on the reviewers and, if applicable, on the examiners of the rigorosum.
- (4) The chairperson of the doctoral committee refers the doctoral procedure after its opening to the doctoral commission for its continuation.

§ 12

Dissertation

- (1) The dissertation provides evidence of independent scientific work. It should make a significant contribution to research in the scientific fields represented by the Faculty of Mechanical Science and Engineering and must contain new scientific findings.

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- (2) The dissertation is usually a completed individual work of the doctoral candidate. It may also result from collaborative research work. A scientific work written by several authors can be accepted as a dissertation in exceptional cases, provided that the individual share of the doctoral candidate is clearly identified, distinguishable and assessable. For authorship, § 6 para. 1 and 2 of the "Guidelines for Ensuring Good Scientific Practice, for Avoiding Scientific Misconduct and for Dealing with Violations" apply.
- (3) The dissertation should be written in German or English. The source material used for the preparation as well as other aids are to be indicated completely. Work that has already served previous examinations or graduations may not be used as a dissertation. The preliminary publication of partial results of the dissertation requires the written consent of the academic supervisor.
- (4) The dissertation is evaluated by two reviewers, in justified cases by three reviewers, who are qualified for the scientific questions of the dissertation. One reviewer must be a professor of the Faculty of Mechanical Science and Engineering appointed according to § 60 or § 62 SächsHSFG. The additional reviewer(s) may be university professors, professors at universities of applied sciences, junior professors, or TUD Young Investigators, or they must demonstrate at least habilitation-adequate performance. For cooperative doctoral procedures, a university professor from the cooperating institution must be appointed as a reviewer. When appointing the reviewers, it must be ensured that the doctoral candidate has not been in an employment or instruction relationship with at least one reviewer in the last three years prior to the opening of the doctoral procedure and has not published any joint publications with this reviewer during the aforementioned period.
- (5) In personal and independent opinions, the reviewers recommend to the doctoral committee the acceptance or rejection of the thesis as a dissertation. If acceptance is recommended, the dissertation is to be evaluated by the reviewers with the following grades and differentiating marks:
- | | |
|-----------------|---|
| magna cum laude | = very good (1.0; 1.3) |
| | = a particularly commendable achievement |
| cum laude | = good (1.7; 2.0; 2.3) |
| | = a good performance |
| rite | = satisfactory (2.7; 3.0) |
| | = a performance that meets the requirements |
- If the acceptance of the dissertation is refused, it must be evaluated with:
- | | |
|--------------|---------------------------------|
| non sufficit | = not sufficient |
| | = an unsatisfactory performance |

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The report of the scientific supervisor should also contain statements on compliance with the "Guidelines for Ensuring Good Scientific Practice, for Avoiding Scientific Misconduct and for Dealing with Violations" and, in the case of experimental or empirical parts of the dissertation, statements on the acquisition and quality of the data.

- (6) The reviews should be received by the chairperson of the doctoral committee within three months. If the preparation of the reviews is unduly delayed despite repeated reminders, the doctoral committee may revoke the appointment of the defaulting reviewer and appoint a new reviewer.
- (7) If a reviewer recommends that the dissertation be returned to the doctoral candidate for completion or revision, the doctoral commission shall decide on this. If the doctoral commission does not reach an agreement on this, it shall call in another university lecturer as a reviewer, who shall be appointed by the doctoral committee on its proposal. The doctoral commission may set a reasonable deadline of up to six months for resubmission of the revised dissertation. The resubmission of a returned dissertation is possible only once. For a resubmitted dissertation, the reviewers must request new reviews or additions to their existing reviews.
- (8) After receipt of all reviews, the dissertation will be displayed in the Dean's office of the faculty for a period of two weeks and the display will be announced. University professors and post-doctoral lecturers of the faculty have the right to inspect the dissertation and the expert opinions without the proposed grades and to register their personal vote for or against the acceptance of the dissertation within the display period. The vote must be submitted in writing within fourteen days to the Dean or the chair of the doctoral committee and must be corroborated. The members of the faculty council, like the members of the doctoral commission and the doctoral committee, are entitled to inspect the expert opinions, including the proposed grades. The candidate has the right to inspect the expert opinions without the proposed grades.
- (9) At the end of the display period, the doctoral commission decides on the acceptance or rejection of the dissertation on the basis of the expert opinions and the votes received. In the case of acceptance, the doctoral commission decides at the same time on the final evaluation of the dissertation, using the predicates and their differentiating grades mentioned in para. 5. If the dissertation is rejected and thus assessed as "not sufficient (non sufficit)", the doctoral procedure is terminated; § 16, para. 1 applies. The electronic copy of the rejected dissertation and theses remains in the doctoral file with the expert reports; the remaining copies are returned to the doctoral candidate.

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§ 13

Rigorosum

- (1) Once the dissertation has been accepted, the doctoral candidate must demonstrate their in-depth knowledge in the subject area of their dissertation in a non-public scientific examination (rigorosum). The rigorosum is conducted as an oral examination on the subject-related fundamentals of the field of work on which the dissertation is based (major subject) and a further field touched upon by it (minor subject).
- (2) The date for the rigorosum is set by the chairperson of the doctoral commission after the dissertation has been accepted and the doctoral candidate is invited to attend in writing. The invitation period is two weeks. In addition, the chairperson of the doctoral commission invites the members of the doctoral commission.
- (3) The rigorosum is conducted by the chairperson of the doctoral commission. It is to be conducted in German. At the candidate's request, the doctoral commission may allow the rigorosum to be conducted in English. The request must be received by the chairperson of the doctoral commission at least one week before the date of the rigorosum. The rigorosum is conducted by two examiners, the examiner for the major subject and the examiner for the minor subject. An examiner may also be appointed who is a reviewer according to § 12, section 4, provided that they are a member of the Technische Universität Dresden.
- (4) The rigorosum is not open to the public. The members of the doctoral commission may attend the rigorosum and are entitled to ask questions. The chairperson of the doctoral commission may reject questions that are not related to the doctoral candidate's professional orientation in the relevant scientific field or the scientific subject of his or her dissertation.
- (5) The rigorosum lasts a minimum of 45 minutes and a maximum of 60 minutes. Two thirds of the examination time should be devoted to the main subject. The examiners assess each sub-examination with a grade according to § 12 para. 5. Passing the rigorosum, for which each sub-examination must be passed, is a prerequisite for conducting the defense. The assessment of the passed partial examinations of the rigorosum will be announced to the doctoral candidate after completion of the defense. If the rigorosum was not passed in one or both partial examinations, this will be announced to the doctoral candidate immediately after the rigorosum. In this case, the rigorosum must be repeated in its entirety; §17 para. 2 applies.
- (6) The essential course of the rigorosum is to be recorded by a minute-taker to be appointed by the chairperson of the doctoral commission, as a rule this is an

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academic staff member of the institute to which the scientific supervisor also belongs. The minutes must be signed by the minute-taker and the chairperson of the doctoral commission and included in the doctoral file.

§ 14

Early Rigorosum

- (1) The rigorosum can be replaced by the so-called early rigorosum. For this purpose, the doctoral student must either:
 1. the acquisition of additional qualifications to the extent of at least twelve credit points from at least two subjects which were not already part of the university studies, the determination of suitability examination pursuant to § 7 para. 3 or the additional study achievements pursuant to § 9, or
 2. successful participation in a training program of a graduate school in accordance with para. 4,to be proven together with the application for the opening of the doctoral procedure. The applicant must apply to the chairperson of the doctoral committee for the examination credits to be taken in accordance with para. 1, Sentence 2, No. 1, and these must be approved by the doctoral committee. The application may only be submitted once all conditions imposed in connection with acceptance as a doctoral candidate have been fulfilled. The doctoral candidate must enclose proof of this with the application. If the application is rejected, the doctoral candidate may submit a new application once or take the rigorosum according to § 13.

- (2) The examinations according to para. 1, sentence 2, no. 1 should be taken from the modules offered by the Technische Universität Dresden, primarily from the Faculty of Mechanical Science and Engineering. The execution and evaluation of the examination performances is governed by the relevant examination regulations, unless otherwise specified below. If the relevant module examinations require written examinations, these can also be taken orally and outside the regular examination time. In addition, all oral examinations must be taken by two examiners or one examiner in the presence of a member of the doctoral committee. The examiners, who must meet the requirements according to § 8 para. 4, are appointed by the doctoral committee. The results of the examinations are to be communicated by the examiners to the chairperson of the doctoral committee without delay. In order to replace the rigorosum, all examination performances must have been passed with at least the grade "good" in the first attempt; a repetition is excluded. Examination results taken more than one year before the opening of the doctoral procedure are not eligible for consideration.

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- (3) In the case of para. 1, sentence 2, no. 2, the rigorosum is replaced if the training program within the framework of the graduate school has been completed with at least the overall grade "good" and the scope of the subject-specific additional qualification acquired therein amounts to at least ten semester hours or twelve credit points. The type and scope of the subject-specific additional qualifications must be evident from the certificate of the graduate school or confirmed separately by the institution and must fulfill the requirements of para. 1 sentence no. 1 in terms of content.
- (4) If the required evidence according to para. 1, 3 and 4 cannot be provided, the doctoral candidate shall take the rigorosum according to § 13.

§ 15

Defense

- (1) Once the dissertation has been accepted and the rigorosum has been passed, the doctoral candidate must present the results achieved with the dissertation in a public lecture and face questions from the audience in a subsequent scientific discussion in defense of their results (defense).
- (2) The date for the defense is set by the chairperson of the doctoral commission after acceptance of the dissertation and invites the doctoral candidate to this in writing. The invitation must be sent at least two weeks prior. In addition, the chairperson of the doctoral commission invites the members of the doctoral commission and publicly announces the date of the defense. In case of failure of the rigorosum, the date of the defense will be cancelled.
- (3) The defense is conducted by the chairperson of the doctoral commission. It is to be conducted in German. In agreement with the doctoral commission, the defense may be conducted in English if the doctoral candidate applies for this in due time to the chairperson of the doctoral commission. The doctoral candidate's presentation should last at least 20 minutes and at most 30 minutes, and the defense should not exceed a total of two hours. In the scientific discussion, all those present are entitled to ask questions. The chairperson of the doctoral commission may reject questions that are not related to the doctoral candidate's professional orientation or the scientific subject of their dissertation. If no objection has been raised by the candidate in connection with the exercise of their right to inspect the expert reports in accordance with § 12 para. 8, the experts may, on the basis of their expert reports, present an appraisal of the candidate's scientific performance without disclosing the grade during the defense.

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- (4) Immediately after the defense, the doctoral commission decides whether the doctoral candidate has passed the defense and evaluates it with the predicates and differentiating grades specified in § 12 para. 5. If the defense was not passed, it is to be evaluated as "not sufficient (non sufficit)"; § 17 para. 2 applies.
- (5) The essential course of the defense is to be recorded by a minute-taker appointed by the chairperson of the doctoral commission, as a rule this is an academic staff member of the institute to which the academic supervisor also belongs. The minutes must be signed by the person taking the minutes and by the chairperson of the doctoral commission and must be included in the doctoral file.

§ 16

Overall Assessment

- (1) If the dissertation and the defense have been passed, the doctoral committee shall determine the overall grade for the doctoral procedure in a closed session following the defense by a majority vote of the members present. The predicates according to § 12 para. 5 are to be used. As a rule, two thirds of the final result of the dissertation according to § 12 para. 9 and one third of the result of the defense according to § 14 para. 4 shall be taken into account when determining the overall grade.
- (2) If the dissertation has been evaluated by all reviewers as well as the defense with "magna cum laude" (very good) and the doctoral candidate has demonstrated exceptional scientific achievements, then the overall grade "summa cum laude" (with distinction) can be awarded. For the award of this overall grade, the dissertation must have been evaluated by all reviewers, the defense and the individual examinations of the rigorosum must have been evaluated with the differentiating grade 1.0. In the case of the execution of the early rigorosum, this also applies to the individual examination performances according to § 14 para. 3 or the final grade of the training at the Graduate School according to § 14 para. 4. Exceptional scientific achievements are usually evidenced by publications with a quality assurance system, patents, project initiation or independent research responsibility.
- (3) The results achieved and the overall grade shall be made known to the candidate immediately, in privacy. In the case of the announcement of the overall grade "summa cum laude", this is done subject to the confirmation of the doctoral committee. The successful completion shall be announced to the public. In the case of non-confirmation of the overall grade, the chairperson of the doctoral committee shall inform the chairperson of the doctoral commission of the reasons that led to this decision. The chairperson of the doctoral commission

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shall announce this to the doctoral candidate together with the determination of the overall grade "magna cum laude" and inform the members of the doctoral commission accordingly.

§ 17

Repetition of failed doctoral examinations

- (1) After termination of the doctoral procedure according to § 12 para. 9 as a result of rejection of the dissertation, the doctoral candidate may make another attempt to obtain a doctorate. For this purpose, they may submit a new application for the opening of the doctoral procedure according to § 11 after six months at the earliest. Another dissertation or a fundamentally revised version of the first dissertation with the same topic must be submitted with the application. In case of opening of the doctoral procedure, the doctoral commission which was already appointed in the first doctoral attempt shall be appointed. If the second doctoral procedure is also unsuccessful, further doctoral applications to the faculty are inadmissible.
- (2) If the rigorosum or the defense is not passed, these can be repeated once within one year at the request of the doctoral candidate in the same doctoral procedure. The application can be made after three months at the earliest. If the repetition is not passed or not carried out within the time limit, the doctoral procedure is terminated.

§ 18

Publication of the dissertation

- (1) The applicant is obliged to make the accepted and approved dissertation available to the scientific public in an appropriate manner within a period of one year.
- (2) The applicant can fulfill this obligation by making his or her own selection from the following options:
 1. Handing over six copies in printed and bound form to Saxon State Library – Dresden State and University Library (SLUB) and one copy to the supervisor as well as additional electronic publication on the internet according to the guidelines SLUB;
 2. Transfer of six copies of a version produced and distributed by a commercial publisher to the SLUB and one copy to the supervisor, if the circulation is at least 150 copies and at least on the back of the title page the correspondence with the dissertation is shown, indicating the title as well as place and time of the doctorate;

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3. handing over ten copies in printed and bound form to the SLUB and one and one copy to the supervisor.
- (3) If an accepted dissertation is objected to by a member of the doctoral committee in individual parts, the chairperson of the doctoral commission may, after successful completion of the doctoral procedure, impose conditions for improvement. The doctoral candidate shall be notified of the nature and extent of the deficiencies as well as stipulations regarding proof of their elimination immediately after the defense and these shall be noted in the doctoral file. The dissertation is considered to be approved upon submission of the documented proof of the elimination of the objections in accordance with the stipulations made.
- (4) In exceptional cases requiring special justification, the doctoral committee may, at the request of the doctoral candidate, allow the submission deadline to be exceeded. If the set deadline is culpably missed, all rights acquired in the doctoral procedure expire. The procedure is terminated without the award of the academic degree. The chairperson of the doctoral committee shall inform the applicant of this in writing.

§ 19

Conclusion of the Doctoral Procedure

- (1) After a positive outcome of the doctoral examination procedure, the chairperson of the doctoral commission recommends to the doctoral committee the award of the respective academic degree in accordance with § 2 para. 1 or para. 2. The doctoral committee arranges for the doctoral certificate to be issued and for the doctoral candidate to be removed from the list of doctoral candidates.
- (2) The doctoral certificate contains, in addition to the surname, first name, academic degree, date and place of birth of the doctoral candidate, the title of the dissertation, the academic degree to be awarded and the overall grade. It is issued on the day of the defense and bears the signature of the Rector and the dean of the faculty as well as the seal of the Technische Universität Dresden.
- (3) In a form appropriate to the occasion, the Dean of the Faculty presents the doctoral candidate with the certificate as soon as the delivery of the deposit copies has been confirmed by the doctoral committee in accordance with § 17. This concludes the doctoral procedure. The conclusion of the procedure is to be announced to the faculty public.
- (4) Upon completion of the doctoral procedure, the doctoral candidate is entitled to use the academic degree awarded with the certificate.

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§ 20

Discontinuation of the Doctoral Procedure

- (1) The doctoral procedure may be terminated without result at any time after the decision on acceptance as a doctoral candidate if facts become known that preclude the award of the academic degree. This applies in particular to deception in the proof of admission requirements or doctoral achievements as well as to circumstances concerning the candidate's personal requirements for the award of the doctoral degree. With the inconclusive termination of the doctoral procedure, all legal positions and claims acquired by the doctoral candidate in the doctoral procedure up to that point expire. They are to be removed from the list of doctoral candidates. The decision on termination shall be made by the doctoral committee at its due discretion.
- (2) The doctoral candidate must be heard before the doctoral procedure is terminated without results. In cases of suspected scientific misconduct, the regulations of the "Guidelines for Ensuring Good Scientific Practice, for Avoiding Scientific Misconduct and for Dealing with Violations" apply to the procedure.

§ 21

Withdrawal of the academic degree

- (1) The award of the doctoral degree is to be revoked if the doctoral candidate has been deceptive in proving the admission requirements or in performing the doctoral work, or if facts become known which would have precluded the award of the doctoral degree. The decision is made by the doctoral committee.
- (2) If the professional requirements for admission to doctoral studies were not fulfilled without the doctoral candidate intending to deceive and if this fact only becomes known after the award of the academic degree, this deficiency shall be cured by the passing of the doctoral performance.
- (3) In cases of suspected scientific misconduct, the regulations of the "Guidelines for Ensuring Good Scientific Practice, for Avoiding Scientific Misconduct and for Dealing with Violations" apply to the procedure.

§ 22

Joint international Doctoral Procedure

The doctorate may also be awarded as part of a joint international doctoral procedure, provided that the Faculty of Mechanical Science and Engineering or individual members of its teaching staff are involved. Supplementary regulations

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can be made for this. In this case, it must be ensured that the doctoral candidate acquires and proves the qualification required by these doctoral regulations. In case of doubt, the doctoral committee decides whether this equivalence exists.

§ 23

Honorary Doctorate

- (1) With the award of the doctoral engineer honoris causa according to § 2 para. 3, individuals can be honored who have rendered special services to science and technology in the fields of Mechanical Engineering, Process Engineering or Materials Science and who are furthermore particularly associated with the faculty. The person to be honored may not work full-time at the Technische Universität Dresden.
- (2) An application for the award of the doctoral engineer honoris causa can be submitted to the Faculty Council by at least two professors of the faculty with sufficient justification. A doctoral commission to be appointed by the Faculty Council, to which the applicants do not belong, examines the merits of the person to be honored, obtains at least two additional expert opinions and submits a proposal for decision to the Faculty Council.
- (3) The Faculty Council decides on the application by secret ballot.
- (4) The decision of the Faculty Council on the award of the doctoral engineer honoris causa shall be confirmed by the Senate.
- (5) The conferment of the doctoral engineer honoris causa is to be accomplished by the delivery of a certificate signed by the Rector and the Dean in a dignified form appropriate to the occasion. The certificate shall state the reasons and merits in a brief version. The awarding of the honorary doctorate is carried out by the Rector. The Rector may delegate this right to the Dean of the Faculty.
- (6) The award of the doctoral engineer honoris causa is to be reported to the Saxon Minister of State for Science, Culture and Tourism.

§ 24

Honorary Doctorate

The Faculty may honor the 50th anniversary of the award of the doctoral degree if this seems appropriate with regard to the special scientific merits, the particularly close connection of the person or persons to be honored with the Faculty or the Technische Universität Dresden as a whole. The Faculty Council decides on the choice of occasion and the form of the honor.

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§ 25

Entry into Force and Transitional Regulations

- (1) These regulations come into force one day after publication in the Official Announcements of the TU Dresden. With the entry into force of these regulations, the doctoral regulations of the Faculty of Mechanical Science and Engineering of July 1, 2001, shall cease to be in force.
- (2) All new doctoral procedures opened after their entry into force shall be carried out on the basis of these regulations. All other procedures shall be continued and terminated on the basis of the doctoral regulations of July 1, 2001 or upon application in accordance with these regulations.

Issued on the basis of the resolution of the Faculty Council of the Faculty of Mechanical Science and Engineering of August 16, 2017 and the approval of the Rectorate of February 27, 2018.

Dresden, March 22, 2018

The Rector
of the Technische Universität Dresden

Prof. Dr.-Ing. habil. DEng/Auckland Hans Müller-Steinhagen

Appendix 1: List of scientific contributions

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A) Publications with scientific quality assurance

Contributions listed in the Web of Science (ISI standard)
Accepted but not yet published papers
Book publications

B) Other publications

Contributions in periodicals
Contributions to monographs
Contributions to conference proceedings

C) Lectures

International conferences
National conferences with international participation
National conferences, workshops, colloquia

D) Patents and patent participations

Granted patents
Patents applied for

Place, date

Signature of the doctoral candidate

**Appendix 2:
Declarations for the opening of the doctoral procedure**

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1. I hereby certify that I have prepared this thesis without the unauthorized assistance of third parties and without the use of aids other than those indicated; the ideas taken directly or indirectly from outside sources are identified as such.
2. In the selection and evaluation of the material as well as in the production of the manuscript I have received support from the following persons:
 - ...
 - ...
3. Other persons were not involved in the intellectual production of the present work. In particular, I did not seek the assistance of a commercial doctoral advisor. Third parties have neither directly nor indirectly received pecuniary benefits from me for work related to the content of the submitted dissertation.
4. The thesis has not been submitted to any other examination authority in the same or a similar form, neither in Germany nor abroad, nor has it been published.
5. I confirm that I accept the doctoral regulations of the faculty of Mechanical Science and Engineering of the Technische Universität Dresden.

Place, date

Signature of the doctoral candidate

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