

# Doctoral Programme

## Doctoral School of Mechanical Engineering

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Coordination Team, Doctoral School of Mechanical Engineering, Chairperson

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# Doctoral School of Mechanical Engineering

where the **European Higher Education Area** meets the **European Research Area**



# The Dissertation (doctoral thesis)

**In the course of the doctoral studies, a doctoral thesis is to be written, which proves the doctoral candidate's ability to master new scientific problems independently.** (§ 5 para 1 CURR)

## Qualification:

- Graduates of the Doctoral Programme of Technical Sciences of TU Graz **have advanced and perfected the ability to formalise problems** in the engineering or natural sciences and to **develop research-guided analyses and solution approaches**.
- The graduate is capable of **performing high-level scientific work independently**.
- Graduates can **work in a team** and take on **coordinating and managerial functions** in engineering or natural sciences research, **both in a university and in a private industry setting**.


(§ 1 para 2 CURR)

# Doctoral Programme

In the [University Act of 2002 \(UG\)](#), the Austrian legislator established the fundamental guidelines for the Doctoral Thesis (Dissertation). [The universities](#) design the doctoral program's curriculum within their autonomy. The Doctoral Programme in Technical Sciences is set by the [Senate of the Graz University of Technology](#) (TU Graz), and the [coordination teams of the Doctoral School](#) are charged with creating statutes that take subject-specific characteristics into account.

Graz University of Technology

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Curriculum for the Doctoral Programme  
in Technical Sciences

[Curriculum 2024](#)

New version valid for students  
registered after 1<sup>st</sup> Oct. 2024  
or in case of voluntarily opting

[Appendix](#): Explanatory Notes

**CURR**

Doctoral School Mechanical Engineering

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Statutes of the Doctoral School of  
Mechanical Engineering at the Faculty of  
Mechanical Engineering and Economics  
of Graz University of Technology

**The Statutes are a subject-  
specific supplement  
to the Curriculum**

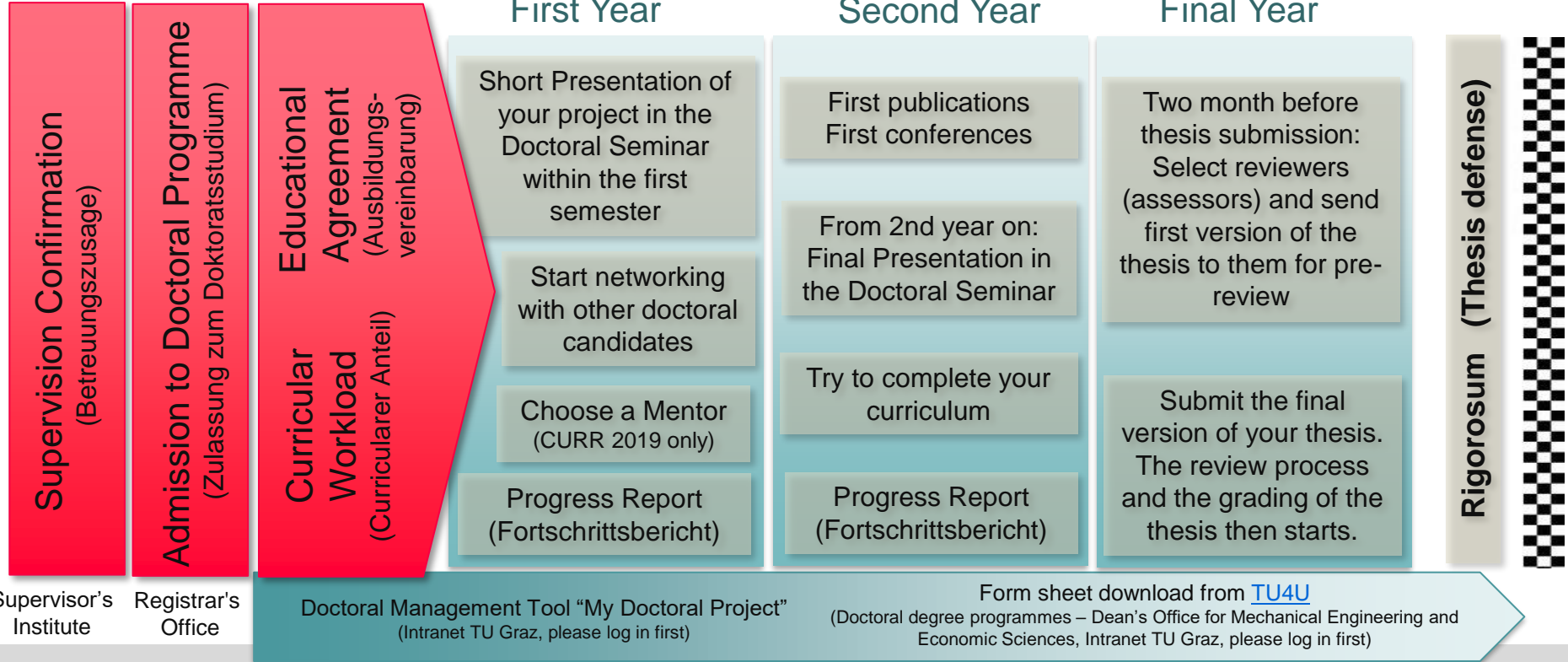
[As of June 2020](#)  
(supplement to Curriculum 2019)

[Appendix](#): Explanatory Notes

**STAT**

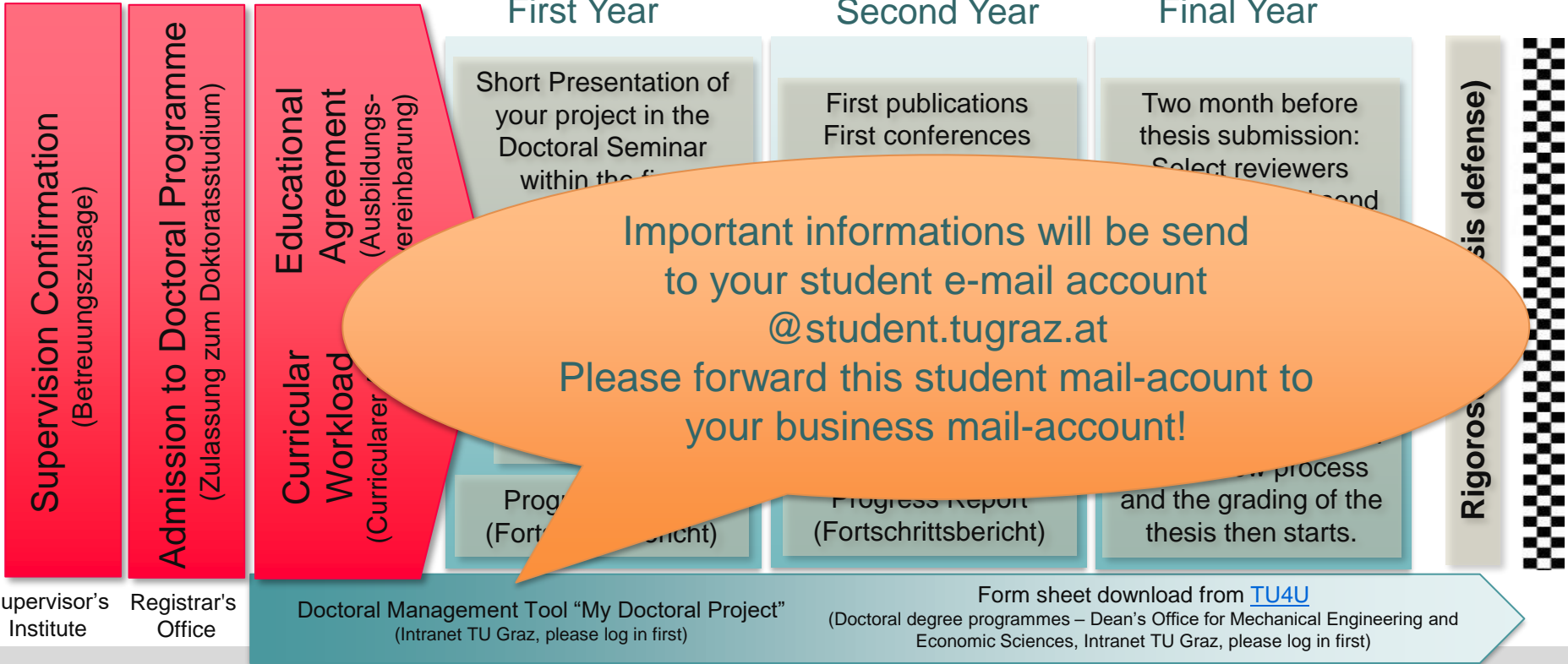
# Doctoral Programme

## Admission Process



# Doctoral Programme

## Admission Process



**Supervision Confirmation**  
(Betreuungszusage)

**Admission to Doctoral Programme**  
(Zulassung zum Doktoratsstudium)

**Educational Agreement**  
(Ausbildungsvereinbarung)

**Curricular Workload**  
(Curricularer Arbeitsaufwand)

First Year

Short Presentation of your project in the Doctoral Seminar within the first year

Second Year

First publications  
First conferences

Final Year

Two month before thesis submission:  
Select reviewers and submit the thesis

Important informations will be send to your student e-mail account @student.tugraz.at  
Please forward this student mail-ccount to your business mail-account!

Rigorous thesis defense

Doctoral Management Tool "My Doctoral Project"  
(Intranet TU Graz, please log in first)

Form sheet download from [TU4U](#)  
(Doctoral degree programmes – Dean’s Office for Mechanical Engineering and Economic Sciences, Intranet TU Graz, please log in first)

## Doctoral thesis – Choose the Supervisor

- Doctoral candidates are entitled to choose a supervisor, depending on the availability. He or she is also entitled to propose the topic in consultation with the doctoral supervisor. A justified change of supervisor shall be permissible up until the doctoral thesis is submitted, but has to be approved by the Dean of Studies (§§ 4 and 5 CURR).
- One task of the supervisor is to guide the doctoral candidate towards independent scientific work. An exchange at regular intervals between the doctoral candidate and the supervisor, based on progress reports provided by the doctoral candidate shall be agreed upon. The supervisor has to be a doctoral school member with a venia docendi (licence to teach at TU Graz; Lehrbefugnis). (§ 4 CURR, para 7 STAT)

**Venia (Docendi)**, [Latin, **venia** = favour, permission, license; **docere**, to teach, to instruct]: license to teach at a university. In Austria, a license to teach is granted by appointment as a professor at this university or by a habilitation at this university by a decision of the rectorate.

## Doctoral thesis – Co-Supervision (from CURR 2024)

- Other people can also be involved may also assist in the supervision of doctoral theses in the form of a co-supervision. The co-supervisors at the Doctoral School of Mechanical Engineering hold a doctorate or a teaching license or both, are members of the scientific staff at Graz University of Technology or, as members of Graz University of Technology, are entitled to exercise their teaching license at Graz University of Technology without an employment or service contract.
- Equivalent supervision of a dissertation can also be carried out by scientific staff with a teaching license assigned to the Doctoral School of Mechanical Engineering together with a university lecturer with a teaching license at a recognized domestic or foreign university. Equivalent supervision is to be agreed upon in a legally binding contract between the supervisors and the doctoral candidate. (para 7 STAT)



# Signing the Educational (Training) Agreement

- Upon acceptance of a doctoral candidate, an educational agreement is concluded and signed by the doctoral candidate, the supervisor, any possible co-supervisors, and the Dean of Studies.
- The supervisor confirms, according to the supervisor's expertise in the subject that the doctoral project can be accomplished within the envisaged time frame.
- The doctoral candidate agrees to observe the guidelines of Graz University of Technology ensuring good scientific practice. (§ 4 CURR) [guideline good scientific practice](#)
- Minimum period of the programme : 3 years (§ 54 UG)

online



Form sheet download from [TU4U](#)

# Choosing the Curricular Workload

para 10 – 13 STAT

## **14 semester course hours (SCH) / 18 ECTS of instructional classes in three modules**

When starting your doctoral program, the instructional classes portfolio (Curricular workload) has to be approved by the Dean of Studies.

### **Module 1: “Subject-specific basic courses”, 8 SCH / 12 ECTS;**

Subject-specific basic courses are selected by the doctoral candidate in close consultation with his/her supervisor from the portfolio offered by Graz University of Technology. The DSM recommends courses from the master’s curriculum in Mechanical Engineering (electives). Courses completed in the doctoral candidate master’s programme are not eligible as subject-specific basic courses. You are strongly discouraged to choose all courses from the supervisor’s institute!

### **Module 2: “Scientific Methods and Communication”, 4 SCH / ECTS, 2 of which must be the doctoral seminar;**

aim: to provide the theoretical knowledge and practical skills for developing results in research with scientific methods, and to present and defend these results. **Please register the doctoral seminar in winter AND summer semester** (each semester is only 1 SCH/ECTS).

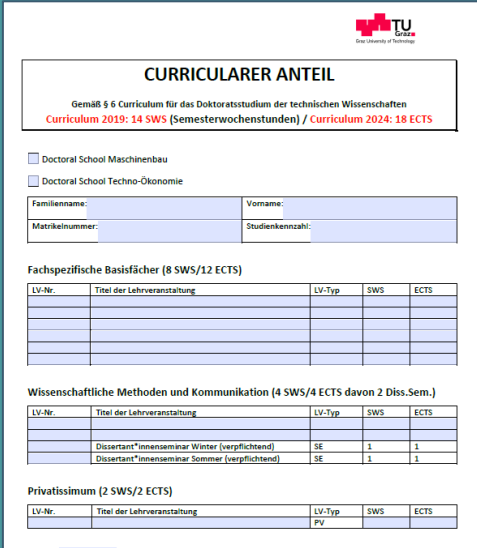
### **Module 3: An exclusive tutorial (Privatissimum), 2 SCH / ECTS.**

The exclusive tutorial is an opportunity for one-to-one engagement with the candidate’s work offered by the supervisor and also entails the study and discussion of presented concepts, preliminary results, formulations etc. and a concrete feedback from the supervisor.

in ECTS from CURR 2024 on

# Choosing the Curricular Workload

para 10 – 13 STAT



**CURRICULARER ANTEIL**  
Gemäß § 6 Curriculum für das Doktoratsstudium der technischen Wissenschaften  
Curriculum 2019: 14 SWS (Semesterwochenstunden) / Curriculum 2024: 18 ECTS

Doctoral School Maschinenbau  
 Doctoral School Techno-Ökonomie

Familienname: \_\_\_\_\_ Vorname: \_\_\_\_\_  
Matrikelnummer: \_\_\_\_\_ Studienkennzahl: \_\_\_\_\_

**Fachspezifische Basisfächer (8 SWS/12 ECTS)**

LV-Nr.	Titel der Lehrveranstaltung	LV-Typ	SWS	ECTS

**Wissenschaftliche Methoden und Kommunikation (4 SWS/4 ECTS davon 2 Diss.Sem.)**

LV-Nr.	Titel der Lehrveranstaltung	LV-Typ	SWS	ECTS
	Dissertant*Innenseminar Winter (verpflichtend)	SE	1	1
	Dissertant*Innenseminar Sommer (verpflichtend)	SE	1	1

**Privatissimum (2 SWS/2 ECTS)**

LV-Nr.	Titel der Lehrveranstaltung	LV-Typ	SWS	ECTS
		PV		

**Form sheet download from [TU4U](#)**  
(Doctoral degree programmes – Dean's Office for Mechanical Engineering and Economic Sciences, Intranet TU Graz, please log in first)

**Module 2: Courses often chosen by doctoral candidates can be found in para 12 STAT.**

**Module 1: Courses from other subject areas or other universities may be chosen upon application. Please choose these courses in the Curricular Workload form when you start your doctoral programme. (The supervisor confirms, the dean of studies approves.) § 6 para 2 CURR**

**Please fill out the form sheet immediately when you start your doctoral programme and mail it to the Dean's office!**

**During your studies your classes portfolio (Curricular workload) can be changed upon application. Please apply together with your supervisor at the dean's office. An explanatory statement why this change is required must be given!**

# Mentorship

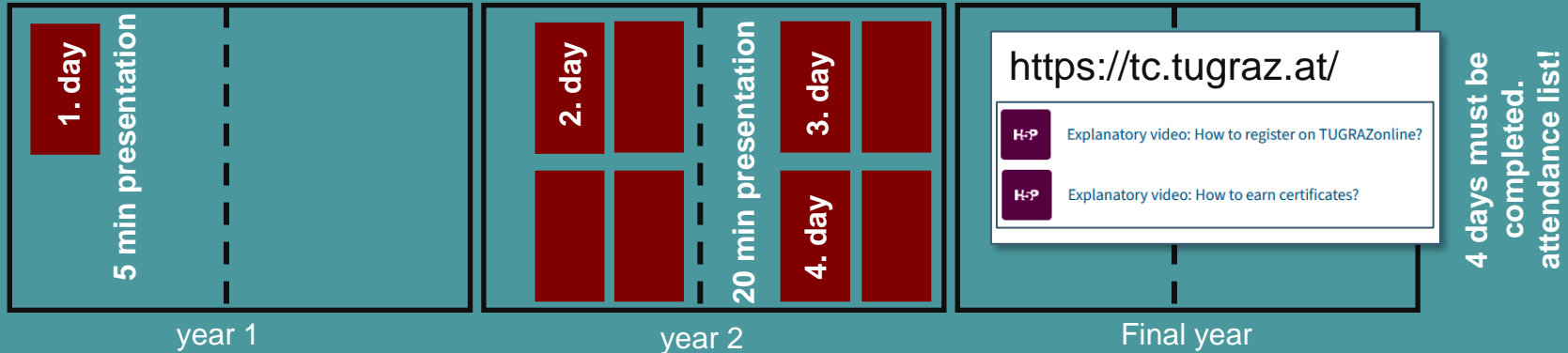
- Doctoral Candidates are entitled to call upon one or more persons to consult and accompany the doctoral project. (§ 4 para 5 CURR)
- The Doctoral School of Mechanical Engineering agrees upon the good scientific practice to suggest experienced scientists as mentors. (para 7 STAT)
- Especially in industry-related projects, doctoral candidates must take into account confidentiality and conflicts of interest when making their selection. (para 7 STAT)

# The Doctoral Seminar at DSM

para 12 STAT

In the doctoral seminar, progress and results of the doctoral projects at the Doctoral School of Mechanical Engineering are presented. The seminar is held in four four-hour blocks each semester. In these sessions, doctoral candidates from their second year on present their work in a 20 min presentation. All doctoral candidates in the first semester of their studies briefly introduce themselves and their work (5 min).

Online registration is the only option for presenters!



# The Doctoral Seminar at DSM

para 12 STAT

## 5 minutes presentation:

Where are you from, what did you study ?  
What is the objective of your scientific work ?  
Will you work experimentally or numerically ?  
Who is your supervisor ? At which institute  
(company) are you employed ? In which lab  
will you carry out your research ? Financing ?  
Are there any research partners?

## 20 minutes presentation (+ 10 min discussion):

At first, mention your supervisor, your supervising institute, your employer (if not identical) and the project funding.

### What can you expect from the audience?

deepened mathematical knowledge; deepened scientific knowledge (physics, chemistry, informatics, diagnostic techniques); basic knowledge on design and construction, mechanics, dynamics, fluid mechanics, thermodynamics, and materials science; basic principles of business administration.

**The presentations must be in English and should be easy to follow so that all members of the Doctoral School are properly informed about your scientific task. A scientific discussion on the topic shall be triggered.**

# The Doctoral Seminar at DSM

para 12 STAT

Please download your presentation to the laptop placed at the console before the seminar starts.

Please test the presentation in case you have animated transparencies. Whenever special animations are required, please plug in and test your personal laptop before the seminar starts!

A Feedback Form is distributed to all participants of the seminar in the classroom.

The individual result on his or her 20 minutes presentation of this feedback can be viewed by the speaker only.

Some statistics (8 years average)

**Worst 4.1**

**Best 1**

	Content	Arrangement	Language	Time	Presentation	Questions
Grading 1 to 5	1.7 ± 0.3	1.6 ± 0.3	1.7 ± 0.4	1.8 ± 0.3	1.7 ± 0.2	1.4 ± 0.4

# Publications

- The Doctoral School of Mechanical Engineering encourage doctoral candidates to **publish at least two reviewed articles in international journals or at international conferences prior to pre-selection of the reviewers.** Articles must be submitted, accepted for publication or published. (para 9 STAT)

**Publication**, [Latin, **publicare** = to make public]: A valid scientific publication usually is characterized by a DOI (digital object identifier), or an ISBN (international standard book number), or an ISSN (international standard serial number).

**Peer-reviewed publication:** To be considered a peer-reviewed publication, there must generally be two, mostly anonymous reports, based on which the editor accepts, rejects, or returns the paper for revision before a possible acceptance. This peer-review process ensures the quality of scientific work before it is published.

Average number of publications per doctoral candidate at DSM. 2018-2022, 2008-2014, and 2014-2018 evaluation periods are compared.

	publications in total	reviewed publications
2018 - 2022	6,3	4,1
2014 - 2018	7,3	4,4
2008 - 2014	6,1	2,6



# Pre-Publications

- Throughout Europe, young scientists on their way to a doctorate must pre-publish important first results in international journals before submitting their doctoral thesis (dissertation). On the one hand, such an approach increases the probability of obtaining funding for one's scientific work quickly after the Rigorosum (final examination; defense); on the other hand, it also increases the international visibility of our TU Graz. Since these publications are pre-publications for the dissertation, many of our doctoral candidates ask themselves how it is possible to include these works in their dissertations.

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## Die Dissertation an der Doctoral School für Maschinenbau The dissertation at the Doctoral School of Mechanical Engineering

Erfahrungen aus 15 Jahren Doctoral School für Maschinenbau  
Experience from 15 years Doctoral School of Mechanical Engineering

Ao. Univ.-Prof. Dipl.-Ing. Dr. techn.  
*Jakob Woisetschlager*

Vorsitzender des Koordinationsteams der  
Doctoral School für Maschinenbau  
an der Technischen Universität Graz  
Coordination Team,  
Doctoral School of Mechanical Engineering  
at Graz University of Technology,  
Chairman

August 2023

This document contains a discussion of the legal and ethical issues related to the dissertation.

# Pre-Publications

- 1) Publish Open Access under a Creative Common Licence **CC-BY 4.0**
- 2) Confirm the authors' contributions to the publication, **especially yours**, if permitted by the journal.

This work is a pre-publication of S. T.'s dissertation, and it builds on the initial and preliminary investigations in D. K.'s master's thesis (Kaiser 2023).



- 3) “**One chapter = one pre-publication**”-policy in a Mantelldissertation.

In the heading of each chapter quote the pre-publication:

*A modified version of this chapter has been published as: Authors (2025) Title, Journal Vol., page, DOI, **CC-BY 4.0***

In the text please acknowledge the authors contribution, **especially yours!**

These chapters must be framed (jacket = Mantel) with an introductory chapter, a description of the research question, a report on the current state of research, a description of the methodology used and a **conclusion presenting the results of the doctoral project (what is the contribution to the progress in science?)**.

## Coming to an end – the review process

- Possible reviewer statement:

Without going into detail, let me emphasize the correct procedure of Ms. XY, who, at the beginning of the concerned chapters 3-6, cites the pre-published papers and precisely explains her and the co-authors' contributions to each. Such a procedure serves transparency and scientific integrity. During the assessment of the thesis, I noticed particularly positively that Ms. XY did not simply take her discussions and reviews (chapter 7 "Conclusions"), which are so significantly important for her thesis, from said pre-publications, but rephrased them in her own words and further expanded on them, going beyond the pre-published contributions.



# Coming to an end – pre-selection of reviewers

- The reviewers (with venia) have to be pre-selected 2 months before submission of the doctoral thesis** at the latest. From that time on, all the referees are to be provided with a preliminary version of the doctoral thesis (**pre-assessment phase**). (§ 5 para 3 CURR)
- Completed parts of the thesis shall be published before the selection of reviewers.** If proof of such publications cannot be provided at the time that the assessors are appointed, at least **three assessors (reviewers)** shall be appointed, of which at least one must be from outside of TU Graz. (§ 5 para 6 CURR)

**Form sheet download from [TU4U](#)**  
 (Doctoral degree programmes – Dean’s Office for Mechanical Engineering and Economic Sciences, Intranet TU Graz, please log in first)

**Vorauswahl der Gutachter\*innen – Pre-selection of Reviewers**

Doctoral School Maschinenbau – Doctoral School of Mechanical Engineering  
 Doctoral School Techno-Ökonomie – Doctoral School of Techno - Economics

(Dissertation wird assessed, thesis being assessed)

**Cariculus § 1 (2):** Die Begutachtung der Dissertation erfolgt gemäß § 31 Abs. 5-7 Satzabsatz 2 Studienrecht der TU Graz. Die Auswahl der Gutachter\*innen/Gutachter erfolgt durch das Koordinationsbüro der Doctoral School im Zusammenwirken mit dem ordentlichen Richter. Hierbei haben die Doktorierenden/innen sowie die Dissertationen/Dissertationen die Vorrangigkeit. Wichtigen eine Gutachter\*innen/Gutachter soll von außerhalb der TU Graz kommen. Es dürfen nicht alle ausgewählten Gutachter\*innen/Gutachter am selben Institut tätig sein.

**(1) Die Vorauswahl der Gutachter\*innen/Gutachter soll spätestens zwei Monate vor Einreichung der Dissertation erfolgen. Alle Gutachter\*innen/Gutachter sind ab diesem Zeitpunkt mit der vollständigen Version der Dissertation vertraut zu machen. Der Einreichung der Dissertation folgt die ordentliche/richterliche Organe die mögliche Begutachtung durch die ausgewählten Gutachter\*innen/Gutachter ein. (Dissertation\*innen für die dies Curriculum Version 2007/052 noch gilt, der Betreuer der neuen Gutachter)**

**Cariculus § 1 (2):** The doctoral thesis is assessed according to § 31, para. 5 through 7 of the Statutes, Chapter "Study Regulations", of Graz University of Technology. In consultation with the officers responsible for such matters, reviewers are pre-selected by the coordinating team of the doctoral school. The supervisor and the doctoral candidate have the right to propose names of reviewers. At least one reviewer should be from outside Graz University of Technology. Reviewers must not all be employed at the same institute.

**(1) The reviewers should be pre-selected 2 months before submission of the doctoral thesis at the latest. From that time on, all the reviewers are to be provided with a preliminary version of the doctoral thesis. Upon submission of the doctoral thesis, the officers responsible for study matters initiate the final assessment by the selected reviewers.** (Doctoral candidates still in Curriculum version 2007/052. The supervisor is 1<sup>st</sup> reviewer).

**Dissertant\*in – Doctoral Candidate**

Nachname – Last Name  Vorname – First Name  Matrikelnummer – Matriculation Number

Vorschlag Gutachter\*innen (Name und Zugehörigkeit) – Reviewers Proposed (Name and Affiliation)

1. Gutachter\*in – 1<sup>st</sup> Reviewer:

2. Gutachter\*in – 2<sup>nd</sup> Reviewer:

3. Gutachter\*in – 3<sup>rd</sup> Reviewer:

Falls erforderlich – If necessary: **3. Gutachter\*in – 3<sup>rd</sup> Reviewer:**

**Cariculus § 5 (6):** Die Veröffentlichung von abgeschlossenen Teilen, auch von der Begutachtung der Dissertation, in internationalen Publikationsorganen wird empfohlen. Falls solche Veröffentlichungen zum Zeitpunkt der Erstellung der Gutachter\*innen/Gutachter nicht nachgewiesen werden können, sind mindestens drei Gutachter\*innen einzuholen, von denen wenigstens eines von außerhalb der TU Graz kommen muss.

**Cariculus § 5 (6):** Publication of finished parts of the doctoral thesis in international scientific journals, even before assessment, is recommended. If evidence of such publications cannot be provided at the time of appointment of the reviewers, at least three reviewers should be required. At least one report must come from outside Graz University of Technology.

**Publikationen bitte auf den nächsten Seiten eintragen – Please list publications on the next pages**

Datum - Date:  Unterschrift Doktorant\*in – Signature Doctoral Candidate:

Datum - Date:  Unterschrift Name Betreuer\*in – Signature Name Supervisor:

Genehmigung – Approval – Doctoral School:  Datum - Date:  Leiter\*in der – Head of - Doctoral School

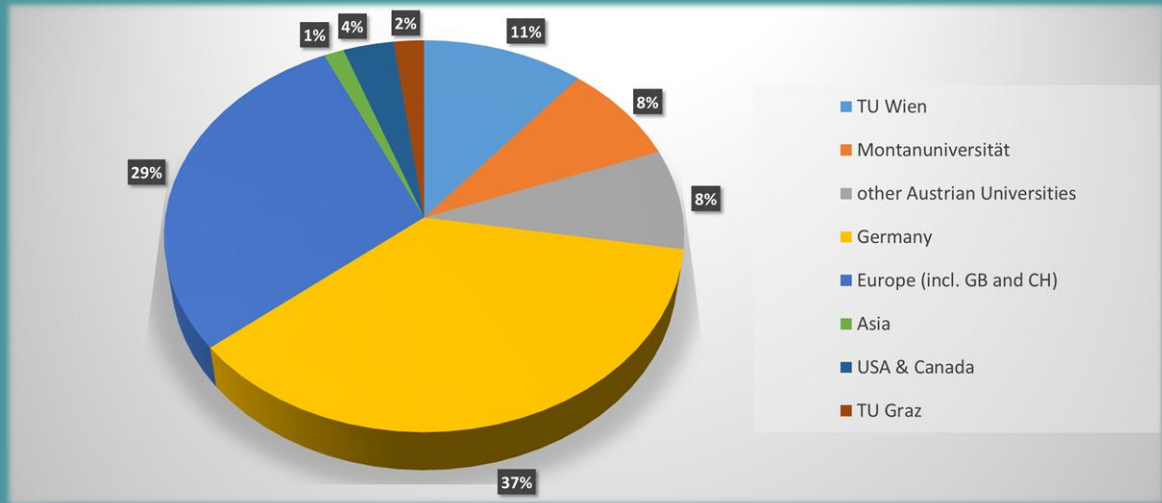
Bitte den ausgefüllten Formular an den Dekan übermitteln – Please send the completed form to the Dean's Office

Ab Abstract submitted with the Abstract Published in Abstract, must cover the paragraph	Ab Abstract submitted with the Abstract Published in Abstract, must cover the paragraph	Ab Full paper submitted with the Abstract Published in Abstract, must cover the paragraph	Linea submitted with the Abstract Published in Abstract, must cover the paragraph (JA, nein) All lines must submitted with the Abstract Published in Abstract, must cover the paragraph (Yes, No)

**Please sign and mail to the Dean's office**

## Coming to an end – the review process

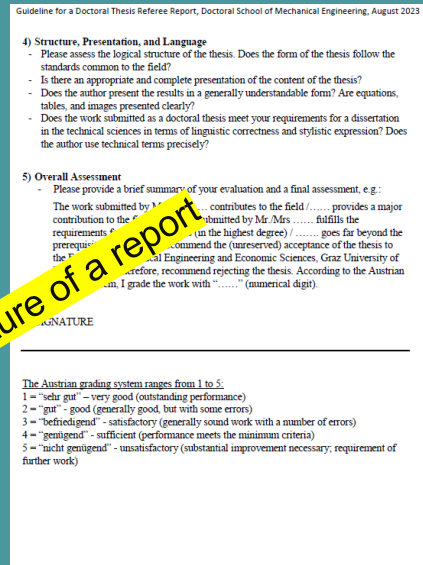
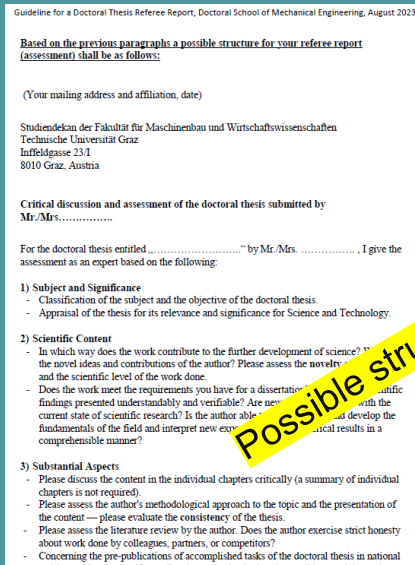
- When the thesis is finally submitted to the dean's office, the dean of studies will forward the doctoral thesis to the assessors (with venia), who must assess the doctoral thesis within four months.
- At least one assessor should come from outside TU Graz.



In 2018 – 2022, the DSM second reviewers were from the following regions:

# Coming to an end – the review process

- Upon submission of the doctoral thesis, the Dean of Studies initiates the final assessment (grading!) by the selected referees. The doctoral school provides a [guideline for the thesis assessment](#).



How does the doctoral programme at Graz University of Technology work?

Possible structure of a report

# Thesis defense at DSM

What do I need to organize my defense ?

- 1) Positive assessment of the thesis**
- 2) Successful completion of the courses**
- 3) The yearly progress reports**

**Instructions how to file your thesis and the form sheet download is found at [TU4U](#)**

**(Doctoral degree programmes – Dean's Office for Mechanical Engineering and Economic Sciences, Intranet TU Graz, please log in first)**

## Rigorosum – The thesis defense at DSM

para 16 STAT

- As a rule, the board of examiners (committee) for the thesis defence consists of the Dean of Studies for Mechanical Engineering (chairperson), the supervisor, and additional university lecturers with *venia who may, but do not have to be, the assessors of the doctoral thesis*. Such a committee must consist of at least three persons.
- The thesis defence starts with the doctoral candidate presenting his/her research work based on the content of his/her doctoral thesis, e.g. the scientific problem formulation, the selected research methodology, the areas of emphasis and the main results. After the presentation the candidate answers questions on the doctoral thesis and its presentation, as well as on closely related subject areas. The thesis defence is open to the public, but only members of the examination board are authorised to ask questions.
- As a recommended guideline, a presentation time of 30 minutes is considered to be sufficient. The discussion part should be approx. 20 minutes per examiner. The discussion part has the character of a defence of the doctoral thesis consisting of questions on the subject of the doctoral thesis and the related subject area. (Appendix to § 7 CURR)





**During Promotion at Graz University of Technology, the candidates vow to serve science, promote science's goals and thereby contribute responsibly to solving the problems of human society and its prosperous further development.**

An allegory of mechanical engineering or mechanics is depicted on the Aula's ceiling. She holds a gear wheel and a centrifugal governor. In 1901, legislation granting the Technische Hochschule Graz the ability to confer doctorates was passed concurrently across the entire monarchy for all Technical Universities. At what is now the Graz University of Technology, Hans Löschner received the first engineering sciences doctorate ever granted by the monarchy in 1901.

