

Criteria for the Evaluation of Dissertations at the Medical Faculty (Suggestions for the Reviewers)

1. Foreword:

The review of the dissertation should contain an evaluation of the following points:

- The formal criteria should be met (see leaflet at http://www.uniklinikum-jena.de/akademische_Verfahren.html)¹.
- For the dissertation, the following five ratings are available: „rite“, „cum laude“, „magna cum laude“, „summa cum laude“ and „non sufficit“.²

2. Categories of dissertations:

- Descriptive / field studies are dissertations, in which particular relationships are established (observed) only (e.g., case control studies, cohort studies).
- Experimental dissertations are studies, in which the relationships under study have been scrutinized by the investigator himself or by a fixed procedure that has been planned by the researcher (e.g., in vitro experiments, animal studies, randomized clinical trials).
- Theoretical (non-experimental) dissertations are studies that lead to an explanation based on a formal theoretical model (for example, a biometric model) or to a reasoned classification of contexts (for example, classification scheme, testing and decision-making procedures, meta-analyses). This category also covers studies which use established empirical methods from the humanities, social sciences and law.
- Systematic reviews and meta-analyses are studies that systematically summarize research on a particular subject and critically evaluate it (e.g., narrative reviews, systematic reviews, meta-analyses of published data).

For all descriptive / field studies, experimental dissertations, theoretical dissertations and systematic reviews and meta-analyses that require statistical analyses, it is assumed that the results are validated by adequate statistical means.

3. For reviews with a positive recommendation, the following guidelines are provided:

„Rite“:

- a) Descriptive / field studies of simple type and case histories of predominantly descriptive character; analysis of already available documents using simple methods.
- b) Experimental dissertations on a simple topic that are mainly confirmatory, or less ambitious work under supervision, based on locally established, simple methods.
- c) Theoretical dissertations of simple, mostly reviewing character with reference to existing or slightly modified models.
- d) Systematic reviews and meta-analyses providing a simple and rather broad overview of a particular topic. The selection of the reviewed research data is subjective and meets only minimal quality criteria.

„Cum laude“:

- a) Descriptive / field studies, in which the observations were collected and processed by the candidate himself. In the analysis of the results, solutions that the candidate reached himself are implemented.
- b) Experimental dissertations with moderate objectives involving either simple, not established or established, but difficult methods.
- c) Theoretical dissertations, which require the development of new models or the substantial modification of existing models *or* consider methods / procedures from an untested perspective.
- d) Systematic reviews and meta-analyses using predefined inclusion and exclusion criteria of nearly all published studies. The methodological quality of the enclosed studies is judged and reasons for differences in the results of the studies are examined. The results of the study are presented and evaluated according to defined criteria (study design, recruitment mode)

¹ If it is determined that the formal criteria specified in the leaflet have not been met to a limited extent, the deviations should be mentioned in the review. The graduate student will be informed by the doctoral committee that the deficiencies must be corrected before printing of the thesis. In cases of serious deviations that justify a negative rating (*non sufficit*), the deficits should also be mentioned. The doctoral committee decides on how to proceed. Language, quality of figures and the form of the thesis should be considered in the review. Deficiencies can lead to a downgrading (see table in the appendix).

² The doctoral committee proposes the following grades for thesis to the faculty: Total grade of the thesis *summa cum laude* if the grade for the dissertation is *summa cum laude* and *magna cum laude* for the defense. Total grade of the thesis *magna cum laude* if the grade for the dissertation is at least *magna cum laude* and the defense was rated at least *cum laude*. For a total grade of *magna cum laude* no single vote may be *rite*. Total grade of the thesis *cum laude* if the grade of the thesis is *magna cum laude* and the defense is rated *rite*, or the thesis is rated *cum laude* and the defense is rated *magna cum laude*, *cum laude* or *rite*. Total grade of the thesis *rite* if the dissertation is rated *rite* (see Doctoral Graduation Regulations of the Medical Faculty, VIII., § 11, (3)).

„Magna cum laude“:

- a) Descriptive / field studies with challenging objectives. The implementation of the work is complicated, and the evaluation was performed based on an original approach.
- b) Experimental dissertations that are thematically demanding and methodologically difficult and have led to innovative results, based on largely independent planning and execution of the research.
- c) Theoretical dissertations on an original topic and complex model developments and applications. The interpretation of the results leads to innovative conclusions and was carried out from an independently developed perspective.
- d) Systematic reviews and meta-analyses on the basis of a complete literature search. The objective is challenging and the scientific relevance is high. The results are summarized quantitatively by statistical methods and pooled and estimated effects are calculated. There is an analysis of individual data.

From a) to d): Publication or acceptance for publication of the thesis results as an original manuscript in a journal with peer-review process can be taken as evidence for the quality of the dissertation.

„Summa cum laude“:

- a) Descriptive / field studies with very challenging objectives. The work has an independently developed, complex methodology with regard to the procedure and the evaluation.
- b) Experimental dissertations on a very demanding topic. The methodology was independently developed. Results of very highly relevant and reflect clearly novel solutions. The study was not a pilot project and the results can be generalized.
- c) Theoretical dissertations with exceptionally demanding objectives and complicated and innovative developments and applications of models. The interpretation of the data results in very innovative aspects and was carried out from an independently developed and interdisciplinary perspective.
- d) Systematic reviews and meta-analyses on the basis of a complete literature search of highest standard. The objectives are very demanding and the scientific relevance is very high. The study has been planned prospectively. The results are summarized quantitatively by statistical methods and pooled and estimated effects are calculated.

From a) to d): Publication or acceptance for publication of the thesis results as an original manuscript in a JCR-listed journal can be taken as evidence for the quality of the dissertation.

4. For reviews with a negative recommendation:

„Non sufficit“:

A performance that does not fulfill the minimum requirements for a scientific study and does not meet the criteria mentioned under Points 1 and 2 from above (e.g., inadequate derivation of the experimental question, insufficient statistical analysis, insufficient theoretical foundations, incorrect application of methods, deficient representation of the results).

The following table summarizes the above-mentioned Criteria together in an overview. Its purpose is to facilitate the assessment:

Systematic reviews or meta-analyzes

	rite	cum laude	magna cum laude	summa cum laude
Topic of work	Simple	Moderately challenging	Ambitious goal	Very ambitious goal
Methods / procedures	- Mostly narrative - Literature search meets minimal standards	- Systematic - Literature search complete by general standards (studies based on a priori inclusion and exclusion criteria)	- Complete literature search, including unpublished work, meeting general standards. - Systematical with meta-analysis (calculation of pooled estimates, homogeneity and sensitivity analysis) - Analysis of individual data	- Complete literature search, including unpublished work, meeting highest standards (Cochrane) - Systematical with meta-analysis (calculation of pooled estimates, homogeneity and sensitivity analysis) - Prospectively planned meta-analysis
Scientific relevance (Practical relevance)	Low relevance	Intermediate relevance	- High relevance - Innovative results - Publishable without restrictions	- Very high relevance - Innovative results - Publishable without restrictions in an international journal
- Language, figures, form; - Correctness and completeness of the statistics	Even if excellent, <i>no</i> upgrading.	Any deficiencies reduce the score; even if excellent, <i>no</i> upgrading.	Any deficiencies reduce the score	No relevant shortcomings

Monitoring / field studies

	rite	cum laude	magna cum laude	summa cum laude
Topic of work	Simple; Case reports: predominantly descriptive character	Moderately challenging; Case reports go beyond a description	Ambitious goal	Very ambitious goal
Observation basis	Data already available	Independently collected and analyzed documents	Independently collected and edited documents	Independently collected and edited documents; representativeness is demonstrated
Methods	Simple	Demanding	Demanding and analyzed with original approaches	Independently developed and complex methodology of implementation and analysis
Scientific relevance	Low relevance	<ul style="list-style-type: none"> ▪ Intermediate relevance ▪ Independent solutions recognizable 	<ul style="list-style-type: none"> ▪ High relevance ▪ Independent solutions recognizable ▪ Innovative results ▪ Publishable without restrictions 	<ul style="list-style-type: none"> ▪ Very high relevance ▪ Independent solutions clearly recognizable ▪ Innovative results ▪ Publishable without restrictions in an international journal
- Language, figures, form; - Discussion of the results; - Correctness and completeness of the statistics	Even if excellent, <i>no</i> upgrading.	Any deficiencies reduce the score; even if excellent, <i>no</i> upgrading.	Any deficiencies reduce the score	No relevant shortcomings

Experimental dissertations

	rite	cum laude	magna cum laude	summa cum laude
Topic of work	Simple; mostly confirmatory	Moderately challenging	Ambitious goal	Very ambitious goal
Methods	<ul style="list-style-type: none"> ▪ Easy, ▪ Established in the group 	<ul style="list-style-type: none"> ▪ Easy, not established or ▪ Established, but difficult 	<ul style="list-style-type: none"> ▪ Difficult and not established or ▪ Difficult and established, but planned and carried out independently ▪ Possible pilot study character 	<ul style="list-style-type: none"> ▪ Independently developed and complex implementation and evaluation of the methodology ▪ No pilot study character and generalization possible
Scientific relevance	Low relevance	Intermediate relevance	<ul style="list-style-type: none"> ▪ High relevance ▪ Innovative results ▪ Publishable without restrictions 	<ul style="list-style-type: none"> ▪ Very high relevance ▪ Independent solutions are clearly documented ▪ Innovative results ▪ Publishable without restrictions in an international journal
- Language, figures, form; - Discussion of the results; - Correctness and completeness of the statistics	Even if excellent, <i>no</i> upgrading.	Any deficiencies reduce the score; even if excellent, <i>no</i> upgrading.	Any deficiencies reduce the score	No relevant shortcomings

Theoretical dissertations

	rite	cum laude	magna cum laude	summa cum laude
Topic of work	Simple, mainly reviewing	Moderately challenging	Ambitious goal, original	Exceptionally ambitious goal
Model / Method	<ul style="list-style-type: none"> ▪ Established in the group or ▪ Slightly modified 	<ul style="list-style-type: none"> ▪ Newly developed or ▪ substantially modified or ▪ Reviewed from not yet been studied and evaluated perspective 	<ul style="list-style-type: none"> ▪ Complicated model development and model application ▪ Reviewed from an independently developed perspective 	<ul style="list-style-type: none"> ▪ Complicated model development and model application ▪ Reviewed from an independently developed and interdisciplinary perspective
Scientific relevance	Low relevance	Intermediate relevance	<ul style="list-style-type: none"> ▪ High relevance ▪ Innovative results ▪ Publishable without restrictions 	<ul style="list-style-type: none"> ▪ Very high relevance ▪ Innovative results ▪ Publishable without restrictions in an international journal
- Language, figures, form; - Discussion of the results; - Correctness and completeness of the statistics	Even if excellent, <i>no</i> upgrading.	Any deficiencies reduce the score; even if excellent, <i>no</i> upgrading.	Any deficiencies reduce the score	No relevant shortcomings

The regulations for the graduation procedure at the Friedrich Schiller University and especially at the Medical School and the formal evaluation criteria are available on the Internet http://www.uniklinikum-jena.de/akademische_Verfahren.html

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