

# TECHNISCHE UNIVERSITÄT ILMENAU

## **Examination and Study Regulations - Special Provisions - for the degree program Research in Media Engineering with the degree "Master of Science"**

According to § 3 para. 1 in conjunction with § 38 para. 3 of the Thuringian Higher Education Act (ThürHG) of May 10, 2018 (GVBl. p. 149), last amended by Article 7 of the Act of March 23, 2021 (GVBl. pp. 115, 118), the Technische Universität Ilmenau (hereinafter referred to as "University") issues the following Examination and Study Regulations - Special Provisions - for the degree program Research in Media Engineering with the degree "Master of Science", based on the Examination and Study Regulations - General Provisions - for "Bachelor", "Master" and "Diploma" programs of the University, published in the University Gazette No 174 / 2019, last amended by the Third Amendment Statute, published in the University Gazette No 216 /2021.

The Council of the Department of Electrical Engineering and Information Technology adopted these regulations on 13 September 2022. The Academic Committee issued a positive opinion on them in a resolution dated 10 October 2022. The President approved them on 23 May 2023.

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## **A. General regulations**

### **§ 1 Scope of application**

(1) The Examination and Study Regulations - Special Provisions - for the degree program Research in Media Engineering with the degree "Master of Science" determine the contents, objective, structure and organization of the degree program as well as details of the examination procedure in the mentioned degree program based on the Examination and Study Regulations - General Provisions - for degree programs with the degree "Bachelor", "Master" and "Diploma" of the University (PStO-AB), published in the University Gazette No. 174 / 2019 in the respective valid version. The annexes are part of these regulations.

(2) All references to persons and positions shall apply in the same way irrespective of gender.

## **B. Studies and degree program**

### **§ 2 Academic degree**

The university, on the proposal of the Department of Electrical Engineering and Information Technology, awards students who successfully complete this Master's program the academic degree

"Master of Science"

as further professionally qualifying academic degree.

### **§ 3 Admission requirements and prior knowledge**

(1) In addition to the general admission requirements to a Master's degree program according to the Thuringian Higher Education Act, the further admission requirements for this degree program shall apply as specified in the annex "Special Admission Requirements".

(2) For modules in a language of instruction and examination other than German or English (§ 9) as well as for double degree programs (§ 9), it is recommended to prove knowledge of the language of instruction and examination at C1 level according to the Common European Framework of Reference for Languages (CEFR) in order to successfully complete the degree program.

#### **§ 4 Objectives of the program, occupational field, profile**

(1) The degree program aims at a research-oriented deepening of the technical and methodological competencies in Media Engineering or Media Technology in general, which has already been acquired in a university degree program and, if applicable, in professional practice. Furthermore, the ability to work in a team, social competence and communication skills are to be developed to a high degree during the degree program. In the annex "Profile description", the qualification goals, content-related aspects of the degree program and the demand for graduates in the industry are described in detail.

(2) The degree program is consecutive with a "research-oriented" profile according to § 4 Thüringer Studienakkreditierungsverordnung (ThürStAkkrVO, ordinance on accreditation of degree programs).

#### **§ 5 Standard length of study**

According to § 52 ThürHG, the standard length of study is four semesters. The degree program begins in the winter or summer semester.

#### **§ 6 Content, structure, and scope of the degree program; curriculum**

(1) The curriculum (annex) presents the content and structure of the degree program so that it can be completed with all final examinations and the Master's thesis (§ 14) within the standard length of study according to § 5.

(2) The program covers a total of 120 credit points (LP/ECTS).

(3) In addition to the subject-specific modules, students are also recommended to attend optional or elective classes offered by the university exceeding the curriculum's requirements.

(4) Self-study is essential for gaining specialized knowledge and for the deepening and broadening of the subjects' contents presented in the lectures and classes.

(5) Students aiming to achieve the academic degree in a double degree program based on a cooperation agreement with a partner university shall, unlike the curriculum described in the annex, complete classes at the partner university in accordance with the provisions of the respective cooperation agreement and its amendments.

(6) According to § 3 para. 7 PStO-AB, the corresponding regulations are defined in the annex "Competence goals and regulatory area elective course catalogues".

(7) It is recommended to earn credits for the program during a longer stay abroad ('semester abroad'). The second and third semesters as well as the preparation of the Master's thesis in the fourth semester are suitable for a stay abroad. Therefore, an individual study agreement should be signed before the start of the stay abroad. For the recognition of credits earned abroad, § 26 PStO-AB applies.

(8) Students shall be invited to participate in the university's self-governing bodies, including the student body.

### **§ 7 Admission to program segments, admission to modules**

There are the following admission requirements for the modules Research Project and Media Project as part of the segment Research Work: Admission to the Media Project or the Research Project is only granted when the module examination in the module Research Seminar Ma-MT has been passed and modules from Elective Section 1 and/or Elective Section 2 accounting for at least ten credit points have been earned.

### **§ 8 Student advisory service**

The Department of Electrical Engineering and Information Technology appoints an academic advisor. Individual counselling on general questions about study organization and examination procedures is provided by the academic advisor and the Division of Education / Examination Office of the Department of Electrical Engineering and Information Technology.

### **§ 9 Language of instruction and examination**

The language of instruction and examination in the Research in Media Engineering program is German or English. The degree program can be studied entirely in German or entirely in English; proof of the corresponding knowledge in one of the two languages is sufficient. The language of the examination corresponds to the language of the class. The module officer determines the specific instruction and examination language for the respective module in the module description in accordance with sentences 1 and 2 as well as § 3 para. 9, sentences 1 to 3 PStO-AB.

(1) For students who are interested in an academic degree in a double degree program (Double Degree) based on a cooperation agreement with a partner university (§ 9 PStO-AB), classes and exams are held in the partner university's usual language of instruction and examination. The provisions of the cooperation agreement and its supplementary agreements apply to the Master's thesis.

## **C. Examinations**

### **§ 10 Admission to examinations**

There are no program-specific requirements for admission to examinations.

### **§ 11 Type, form, and duration of examinations; deadlines**

(1) The type of examination to be taken (§ 10, para. 1 PStO-AB) is specified in the curriculum (annex). The form and duration of the examination (graded and non-graded examinations) shall be determined by the module officer in the module description (§ 11 PStO- AB).

(2) Alternative academic achievements/examinations, which must be provided in writing, can be supplemented by a colloquium (§ 11 para. 5 PStO-AB).

### **§ 12 Second resit of examinations**

Three examinations can be repeated a second time in the entire degree program (§ 19 para. 1 PStO-AB). The media project and the research project are excluded.

### **§ 13 Grade improvement and free attempt (Freiversuch)**

An examination that has not been passed for the first time shall be deemed not to have been taken upon application provided it has been taken for the first time before or in the semester recommended in the curriculum (annex) (free attempt (Freiversuch) according to § 21 para. 1 PStO-AB). A grade improvement is subject to § 21 para. 2 PStO-AB. A total of four free attempts (Freiversuche) and grade improvements can be taken (total quota according to § 21 para. 3 PStO-AB). Neither free attempts (Freiversuche) nor grade improvement attempts can be applied for the Media Project and the Research Project.

### **§ 14 Master's thesis**

(1) The Master's thesis as a final paper according to § 24 PStO-AB is an examination in the fourth semester. It comprises the written scientific thesis and a

subsequent final colloquium (§ 24 para. 1 PStO-AB). The grade of the Master's thesis is determined by 4/5 of the arithmetic mean of the grades of the expert opinions and 1/5 of the grade of the colloquium.

(2) Admission to the Master's thesis requires the successful achievement of at least 85 credit points of graded and non-graded assignments and examinations as listed in the curriculum (annex). The topic is usually issued at the end of the third semester. For double degree programs, deviating regulations can be defined in the cooperation agreements and their supplementary agreements in accordance with § 9 in conjunction with Annex 1 PStO-AB.

(3) The supervisor is responsible for the topic and the mentoring of the Master's thesis. This person must be a professor, junior professor, (acting) head of a group or teaching group (as far as these are not already covered by naming the other groups of persons) or a habilitated employee of a group of the university involved in the degree program.

(4) The thesis covers a workload of 750 hours / 25 credit points and must be completed within five months. The processing period begins at the time determined by the examination board according to § 24 paragraph 7 PStO-AB.

(5) Students are admitted to the final colloquium when they have submitted proof of all graded and non-graded examinations listed in the curriculum (annex) with the exception of the Master's thesis and the Master's thesis has been submitted to the Examination Office of the Department of Electrical Engineering and Information Technology in due time.

The final colloquium consists of a talk of maximum 20 minutes in which the student presents the results of his/her thesis and a subsequent discussion of maximum 30 minutes. This can earn five credit points in this final colloquium.

It usually takes place no later than four weeks after the submission of the thesis, but only after the admission requirements have been met.

The final colloquium is assessed by two examiners. One of the examiners should be the supervising professor of the university.

(6) If a student intends to write the Master's thesis outside the university or in a group of the university not involved in the degree program, he/she must add the following to the application for admission:

1. the approval of the desired institution/company or the desired group, indicating a specialist supervisor with details and proof of his/her qualifications,
2. a brief description of the task and content,
3. a declaration by the supervising university professor.

(7) The supervising university professor is the first assessor/examiner of the thesis. According to § 33 para. 1 PStO-AB, the supervising professor is entitled to suggest the second assessor/examiner.

### **§ 15 Determination of the overall grade**

The determination of the overall grade follows § 17 para. 5 sentence 1 PStO-AB.

## **D. Final regulations**

### **§ 16 Validity and termination of validity**

(1) These Examination and Study Regulations - Special Provisions - for the degree program Research in Media Engineering with the degree "Master of Science" shall be valid on the day after their publication in the University's Gazette. They apply to all students enrolled as of the winter semester 2023 / 2024.

(2) At the end of the summer semester 2026, all other Examination Regulations - Special Provisions - and Study Regulations for the degree program Media Technology with the degree "Master of Science" valid at the time of validity of these Regulations shall cease to apply. For students who have not completed their studies by the time these regulations expire, the current version of the Examination and Study Regulations - Special Provisions - for the degree program Research in Media Engineering with the degree "Master of Science" shall apply from the time these regulations expire.

Ilmenau, 23 May 2023

signed by

Univ.-Prof. Dr.-Ing. habil. Kai-Uwe Sattler

President

### **Annex Special admission requirements**

1. The admission to the degree program Research in Media Engineering with the degree "Master of Science" requires, despite the general and other admission requirements, the presence of the following professional qualifications, which is to be verified in the aptitude test according to § 4 of the Regulations on the admission to Master's degree programs at the Technische Universität Ilmenau (MA-ZugO). The aptitude test determines whether the applicant meets

the special subject-specific requirements for the degree program Research in Media Engineering with the degree "Master of Science".

2. The aptitude test shall provide evidence of the subject-specific aptitude by combining the subject-specific qualifications specified in the following items 3 and 4 and weighted based on scores.

3. Graduation according to § 67 para. 1 clause 1 number 4 ThürHG is assessed

a) with 40 points for the following degree programs:  
Media Technology / engineering degree programs with specialization in or focus on Audio Engineering or Video Technology,

b) with 30 points for the following degree programs:  
Computer Science / Information Technology / engineering degree programs with specialization in or focus on Telecommunications Technology

Applicants who have not graduated in the programs mentioned under (a) and (b) are not qualified for the program Research in Media Engineering with the degree "Master of Science". In this case, the aptitude test is to be assessed as "special admission requirements not met".

4. Furthermore, the level of qualification is assessed according to the final grade of the degree program:

- |                 |                |
|-----------------|----------------|
| a) very good    | with 30 points |
| b) good         | with 20 points |
| c) satisfactory | with 10 points |

5. Moreover, the following items are assessed with 5 points each:

a) A final grade of "good" or "very good" in modules or subject groups relevant to the degree program: audio technology, media technology, multimedia technology, video technology, signal processing, usability, communications technology, software technology

and

b) the completion of a closely related and equivalent bachelor's or final thesis graded with at least a "good".

A maximum of 20 points can be earned.

6. Should the applicant achieve the following according to the assessments in sections 3 to 5:

a) The aptitude test is to be assessed as "special admission requirements met" when the total score is 70 points or more,

b) If, based on the file, the applicant does not achieve a total score of 70 points, but at least 50 points, the applicant's missing professional qualifications will be verified in a written, 90-minute electronic test in accordance with § 4 para. 2 sentence 3 of the MAZugO. Proof of qualifications in the test is scored with 20 points.

c) If, based on the file and the test in accordance with letter b), a total score of

- at least 70 points is achieved, the aptitude test is to be assessed as "special admission requirements met",
- less than 70 points is achieved, the aptitude test is to be assessed as "special admission requirements not met" (§ 4 para. 4 sentence 4, para. 6 sentence 1 MAZugO).

a) If, based on the file situation, the total score is less than 50 points, the aptitude test is to be assessed as "special access requirements not met" (§ 4 para. 4 sentence 4, para. 6 sentence 1 MAZugO).

7. The responsibility for the decision according to number 1 results from § 4 para. 1 MA-ZugO. In case of doubt, the Examination Board shall decide.

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**Annex: Curriculum**

Study section / Modules	Module type compulsory/ elective	Module completion (graded or non-graded exam, length of exam and details are defined in the module catalogue)	Semester				Σ ECTS	Weighting	Module description
			1st	2nd	3rd	4th			
			ECTS	ECTS	ECTS	ECTS			
<b>Research seminar Ma-MT</b>	P	MPL	5				5	<a href="#">201018</a>	
<b>Electives 1</b>	P								
Selection of modules totaling 20 ECT from the elective catalog	W	MPL		20			20		
<b>Electives 2</b>	P								
Selection of modules totaling 50 ECTS from the module catalog provided students complete the "Media Project" module from the "Research" elective section. Selection of modules totaling 40 ECTS from the module catalog, provided students complete the "Research Project" module from the "Research" elective section. Modules from Electives 1 that have not been selected in the minimum scope defined there can also be selected for Electives 2.	W	MPL		40 or 50			40 or 50	40 or 50	
<b>Research paper</b> (students select one of the two offered modules)	P								
Media project (MIng)	W	MPL		10			10 or 20	10 or 20	<a href="#">201133</a>
Research project (MIng)	W	MPL		20					<a href="#">201132</a>
<b>Soft Skills</b>	P								
Module or class(es) totaling 5 ECTS from the classes offered in economics, law, labor and media studies, Studium generale, European studies, and languages offered at TU Ilmenau.	W	MPL		5			5	5	
<b>Master's thesis with colloquium</b>						30	30	30	<a href="#">Link</a>
<b>Σ ECTS</b>			30	30	30	30	120	120	
		MPL	Module exam	LP	ECTS = credit points				
				P	compulsory module				
				W	elective module				

## **Annex: Profile description**

### **1. Qualification objectives**

The consecutive Master's program in Research in Media Engineering is designed as an in-depth program. It continues the previous Bachelor's degree program (or a related Bachelor's degree program) in terms of subject matter and deepens or expands it in an interdisciplinary manner.

The Master's degree program in Research in Media Engineering is designed for professional and scientific specialization and is research-oriented. The completion of the Master's program represents a further university degree qualifying for a profession, which provides graduates with competencies relevant to the labour market as well as the qualification to proceed to a doctorate.

Graduates of the Master's degree program in Research in Media Engineering will have acquired the following competencies:

#### **Knowledge, understanding, and comprehension**

Graduates have demonstrated broad and integrated knowledge and understanding based on the competencies of the Bachelor's degree program, which are significantly deepened and expanded. They independently gain new knowledge in the field of Media Engineering and related fields and apply this knowledge and their skills to new issues in the various Media Engineering segments (such as Audio and Video Engineering, Virtual and Mixed Reality, Streaming Technologies, System Integration, etc.). They are familiar with methods of user-centred engineering and technical quality assessment of media.

Based on their knowledge and incorporating the latest scientific findings in one or more key areas, they develop and provide independent ideas and new research or solution approaches in the various fields of Media Engineering Sciences.

Graduates weigh up technical and practice-relevant statements in terms of their correctness, considering scientific and methodological aspects. Using these considerations as a basis, they solve practice-relevant and scientific problems and issues.

#### **Use, application, and generation of knowledge**

Graduates will apply their knowledge, understanding, and problem-solving skills to new and unfamiliar situations that are more widely or multidisciplinary-related to Media Engineering.

Graduates:

- integrate existing and new knowledge in approaches to solving complex problems,

- make scientifically sound decisions and critically reflect on the possible consequences of their actions,
- gain new knowledge and skills independently,
- carry out application-oriented projects almost independently or by involving other experts,
- outline research questions and structure the resulting tasks,
- select research methods and justify this selection,
- present research results in a structured and comprehensible manner,
- review and critically evaluate their own work.

### **Communication and collaboration**

Graduates:

- develop and provide solutions to problems within their field of activity and can justify these solutions in discourse with other experts as well as with non-specialists using theoretically and methodically sound arguments,
- communicate and work together with experts and non-specialists to solve a problem responsibly,
- reflect and consider different points of view and interests of third parties.

### **Scientific self-image / professionalism**

Graduates:

- develop a professional self-image based on goals and standards of professional conduct in the various professional fields of Media Engineering (examples: audio and video technology manufacturers, streaming services, Internet service providers, telecommunications companies, automotive engineering, medical technology, broadcasting, publishing, and many more),
- justify their own professional activities with theoretical and methodological knowledge,
- can assess their own skills, independently and consciously reflect on relevant creative and decision-making options, and use them,
- recognize situationally appropriate general conditions for professional activities and justify their decisions responsibly and ethically,
- critically review their professional activities in terms of societal expectations and their consequences.

## **2. Content-related focus / course of studies / curriculum**

The Master's program in Research in Media Engineering covers four semesters and follows consecutively on a six-semester Bachelor's program.

During the first three semesters, students choose from a wide range of elective modules provided in the Electives 1 (core modules from Media Technology) and 2 (modules from related engineering areas) those that correspond to their interests and their planned professional orientation. Furthermore, students complete

a Media or a Research Project. The required basic skills and knowledge in the field of scientific work are gained or consolidated in the compulsory module "Research Seminar" at the beginning of the program. In addition to the methodical preparation for the Master's thesis, the students will also acquire competencies in terms of teamwork and project management during the project work. The topics are chosen in such a way that the students are involved in the current research projects of the institute. Furthermore, students gain competencies in economics or social sciences in the field of "soft skills" when choosing a module or class. In the fourth semester of the Master's program, the Master's thesis is written on a special topic of Media Engineering Sciences, continuing the integration of the students into the research work of the subject areas and further professional competencies and soft skills are acquired.

The teaching staff will impart ecological and ethical awareness as well as intercultural experiences to the students in all modules during their Master's program.

### **3. Demand for graduates in industry**

According to their broad and scientifically sound education, the so far more than 1,000 graduates of the Media Technology degree programs enjoy high recognition in industry and research, where they are active in many fields of application. This will also continue with the graduates of the Master's degree program in Research in Media Engineering.

Typical occupational fields are:

- project lead and management in research and development in media technology companies,
- design, development and integration of media systems and user interfaces,
- application-oriented use of media technology in complex systems (broadcasters, industry 4.0, Internet services, medicine, mobile companies, telecommunications, etc.),
- introduction of new technologies in industry (virtual reality, mixed reality, machine learning, etc.),
- scientific research in the fields of media engineering in industry, universities, and institutes,
- media engineering consulting in all economic sectors and public institutions.

Many of the graduates found career prospects in software development and traditional electrical and information engineering. Furthermore, many graduates have also decided to be self-employed.

The groups of the Institute of Media Technology are well networked with industry and other research institutions, providing students with the opportunity to establish contacts in terms of their professional careers.

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Since graduates of engineering programs - especially in the field of Electrical Engineering and related disciplines - have been unable to meet the demand in Germany for years, it is to be expected that graduates of the Research in Media Engineering program will also continue to find very good career opportunities and prospects. There are no differences between the female graduates of the program and their male co-graduates in terms of their career prospects.

## **Annex Competence goals and regulatory area for elective course catalogues**

The Research in Media Engineering program leading to the degree of Master of Science includes two electives for additional qualifications as well as the research thesis section with one elective option.

### **1. Electives 1**

(1) Students deepen or broaden their knowledge in core subjects of in Media Engineering Sciences through the modules offered in the elective catalogue of Electives 1. They can gain a broad foundation of knowledge in Research in Media Engineering, which provides them with the opportunity to work in interface functions in their later professional life. Furthermore, it is also possible to focus on a specific technical specialization.

(2) According to the curriculum (annex), students must earn 20 credit points in Electives 1.

(3) A selection of modules is suggested in the respective current elective catalogue, which correspond to the range of classes offered by the Institute of Media Technology of the Department of Electrical Engineering and Information Technology. For this purpose, it is ensured that sufficient modules are available for studying in English as the language of instruction and the same applies for studying with German as the language of instruction.

(4) According to § 3 para. 7 PStO-AB, the elective catalogue can be updated.

### **2. Electives 2**

(1) Students deepen or broaden their knowledge in related engineering fields of Media Technology by choosing modules from the elective catalogue of Electives 2. Thus, students can gain a broad foundation of knowledge, which provides them with the possibility to occupy interface functions in their professional life. However, it is also possible to focus on a particular technical specialization.

(2) According to the curriculum (annex), students must earn 40 or 50 credit points in Electives 2. Modules from Electives 1 that have not been selected in the minimum scope defined therein can also be selected for Electives 2.

(3) A selection of modules based on the range of classes offered by the university is provided in the respective current elective catalogue. This ensures that

sufficient modules are available for studying in English as well as sufficient modules for studying in German. Modules that have already been completed in a Bachelor's degree program at the university cannot be selected again.

(4) According to § 3 para. 7 PStO-AB, the elective catalogue can be updated.

### **3. Study phase "Research Work"**

(5) By choosing one of the two modules offered in "Research", students deepen their competencies in the field of scientific work.

(6) In the Research Work section, students earn ten credit points (when selecting the "Media Project" module) or 20 credit points (when selecting the "Research Project" module) according to the curriculum (annex).