Degree Program and Examination Regulations for the Master's Degree Program in Communications and Multimedia Engineering at the Faculty of Engineering at Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU)
- FPOCME -
Dated August 22, 2023

Based on Section 9 (1) in conjunction with Section 80 (1)(1), Section 84 (2)(1), Section 88 (9), Section 90 (1)(1) and Section 96 (3) Bavarian Higher Education Innovation Act dated August 5, 2022 (**BayHIG**), FAU enacts the following degree program and examination regulations:

Contents:

Part 1: General provisions

Section 34 Scope

The degree program and examination regulations for the Master's degree program Communications and Multimedia Engineering complement the currently valid General Examination Regulations for the Bachelor's and Master's Degree Programs at the Faculty of Engineering of Friedrich-Alexander-Universität Erlangen-Nürnberg – **AB-MPO/TechFak**.

Section 35 Master's Degree Program, Part-time Study, Standard Duration of Study, Start of Degree Program, Degree Programs in Equivalent Subjects

(1) [1]The Master's degree program in Communications and Multimedia Engineering is based on Bachelor's and Diplom degree programs with a focus on information and communication technology. [2]It consists of modules worth 120 ECTS credits in total and includes a Master's thesis with a six-month period for thesis work.

(2) [1]The Master's degree program in Communications and Multimedia Engineering can be studied as a full-time or part-time degree program. [2]The standard duration of study in the full-time degree program is four semesters and eight semesters in the part-time degree program.

(3) The distribution of the modules over the standard duration of the degree program is specified in **Appendix 1** (full-time) and **Appendix 2** (part-time).

(4) The Master's degree program Communications and Multimedia Engineering starts in the winter semester.

(5) The provisions in Section 30 (3)(2) **ABMPO/TechFak** do not apply to related degree programs.

Section 36 International Orientation, Teaching and Examination Language

[1]Notwithstanding Section 4 (5)(1) **ABMPO/TechFak**, the teaching and examination language in the Master's degree program in Communications and Multimedia Engineering is English. [2]This does not apply to modules aimed at teaching German language skills. [3]Individual teaching units and examinations in (compulsory) elective modules may also be taught in German in cases other than those stipulated in sentence 2. However, a maximum of 20 ECTS credits obtained in modules such as these may be counted towards the Master's examination. [4]The Master's thesis shall be written in English. [5]The degree certificate and final academic record shall be issued in German and English.

Part II: Special Provisions

Section 37 Qualification for a Master's Degree, Certificates and Admission Requirements

(1) [1]A subject-specific degree as defined by Section 29 (1)(1) **ABMPO/TechFak** shall be a Bachelor's degree in information and communication technology, computational engineering, or electrical engineering at FAU. [2]In accordance with (5)(4) of the **Appendix to the ABMPO/TechFak,** applicants with a subject-related degree or an equivalent degree as defined in Section 29 (1)(1) **ABMPO/TechFak** (in particular information technology, telecommunicatons engineering or automation) shall only be admitted to the Master's degree program after passing an oral admission examination according to (3).

(2) The following documents shall be submitted as additional documents according to paragraph 2 sentence 6 (3) of the **Appendix** to **ABMPO/TechFak**:

1. [1]Proof of English language skills equivalent to at least Level B2 of the Common European Framework of Reference (CEFR) on the basis of relevant school reports or certificates issued by a language school or university. [2]Proof of language skills can in particular be provided by submitting a school leaving certificate or a certificate issued by the school providing evidence that English lessons up to a level equivalent to B2 CEFR have been taken at school or evidence of having successfully completed the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) at level B2 or above (please refer to the table of equivalence published by the FAU Language Centre). [3]Proof of language proficiency does not need to be submitted if the applicant acquired their university entrance qualification or relevant undergraduate degree in English.

2. An application form completed in English (available on the website or from the Admissions Committee).

(3) In the oral admission examination according to paragraph 5 (3) et seq. of the **Appendix** to **AMBPO/TechFak**, applicants shall be evaluated according to the following criteria:
1. A good knowledge of the foundations of the subject, in particular engineering mathematics (60%)
2. Description of a relevant subject-related project, knowledge of the relevant literature (20%)
3. A positive prognosis demonstrated by the applicant's academic progress in their studies to date (of at least 10%); discussion of results from the applicant's previous degree (in particular from the transcript of records) (20 %).

Section 38 Scope, Structure, and Examinations of the Master's Degree Program
(1) The Master's degree program in Communications and Multimedia Engineering consists of modules amounting to 120 ECTS credits distributed as follows:
1. Compulsory modules amounting to a total of 30 ECTS credits.
2. Compulsory elective and practical modules amounting to a total of 30 ECTS credits (7.5 ECTS credits for laboratory courses/practicals, 10 ECTS credits for the research internship, 2.5 ECTS credits for the seminar and 10 ECTS credits for teaching units on technical topics).
3. Compulsory elective modules in subjects other than engineering (key qualifications) amounting to a total of 15 ECTS credits (students who do not already have German language skills equivalent to at least level B2 of the CEFR shall take all 15 ECTS credits in German language courses).
4. Elective Modules, Technical Electives amounting to a total of 15 ECTS credits
5. Master's thesis amounting to 30 ECTS credits pursuant to **Appendix 1** or **2**.

(2) Type and scope of the course and examination achievements are specified in **Appendix 1**, **Appendix 2** and the module handbook.

Section 39 Compulsory Elective Modules
(1) [1]The learning outcome of the compulsory elective modules M7 to M11 is firstly to allow students to gain a more in-depth knowledge of selected skills. [2]Secondly, they are aimed at helping students gain research skills. Students learn subject-related research methods and gain greater knowledge of their subject in technical courses, seminars, laboratory courses and the research internship. [3]The element of choice also allows students to tailor their profile in view of their career plans. [4]The specific learning outcomes of the individual compulsory elective modules are stipulated in Sections 40 to 44.

(2) [1]The type and scope of the examination depend on the skills taught in the respective module accounting for 5, 7.5 or 10 ECTS credits, or, if so chosen by the student, 2.5 ECTS credits, pursuant to paragraph 1 and the module handbook. [2]Possible examination achievements per module are: Written examination (60, 90 or 120 min), oral examination (30 min) or a laboratory course or seminar achievement. [3]The module handbook is published before the beginning of the semester in accordance with local practice.

(3) The modules available for choosing for modules M7 to M10 are listed in a catalog drawn up by the Degree Program Committee and published on the CME website.

Section 40 Lab Course Module

[1]The specific learning outcome of the Lab course module (M7 in **Appendix 1**) is to allow students to transfer the theoretical knowledge they have gained in the compulsory and compulsory elective modules into practice and to analyze and evaluate the results they obtain. [2]Secondly, a further learning outcome is aimed at promoting personal and social skills by working with a partner under supervision to develop and test subject-related applications and explore possibilities for implementation with respect to the chosen subject.

Section 41 Research Internship Module

(1) [1]The specific learning outcome of the Research internship module (M8 in **Appendix 1** or **Appendix 2**) is for students to learn about practical scientific work while conducting a project related to their degree program under supervision in a research environment equipped for this purpose. [2]The research may focus on theory, experiments or programming. Several areas of specialization may be combined.

(2) All full-time university lecturers pursuant to Section 53 (4) **BayHIG** teaching at the Department of Electrical Engineering shall be entitled to supervise the research internship.

Section 42 Seminar Module

[1]The specific learning outcome of the advanced seminar module (M9 in **Appendix 1**) is to allow students to gather, analyze and interpret information relevant to their subject. [2]The second learning outcome is aimed at promoting personal and social skills through preparing, reporting on and presenting a topic relating to the subject to a specialist audience at a Master's level in a manner tailored to the target group.

Section 43 Compulsory Elective Modules, Technical Courses

(1) [1]The learning outcome of the technical courses (M10 in **Appendix 1**) is to allow students to acquire advanced core engineering and research skills. [2]Secondly, the element of choice allows students to develop their own particular engineering profile suited to their future career goals.

(2) [1]Students can choose from a selection of modules each worth 5 ECTS credits. [2]Further information about the type and scope of lectures and seminars and the examination is available in **Appendix 1**, **Appendix 2** and the module handbook. [2]A technical course amounting to 5 ECTS credits usually consists of a lecture worth 2 SWS and a supplementary course worth 2 SWS or a lecture worth 3 SWS and a supplementary course worth 1 SWS. [3]Any exceptions are detailed in the module handbook.

Section 44 Compulsory Elective Modules Taken from Non-Engineering Subjects

[1]Students who are not sufficiently proficient in German, as stipulated in Section 38 (1), must take German courses as their compulsory elective modules taken from non-engineering subjects. [2]Students with German language skills of at least at level B2 acquire key qualifications by choosing compulsory elective modules taken from non-engineering subjects. The overriding learning outcome of the modules taken from non-

engineering subjects is to allow students to expand their engineering profile with transferable language, social, methodological and personal skills.

Section 45 Elective Modules, Technical Electives

(1) [1]Technical electives worth a total of 15 ECTS credits are selected from a module catalog of elective modules which is published before the beginning of the semester on the website for the CME degree program; students may also choose from the technical courses on offer pursuant to Section 43. [2]The chair of the Degree Program Committee may approve other modules upon application by a student.
(2) [1]The overriding learning outcome of the technical electives is firstly to allow students to develop skills in an area of particular interest to them. [2]The second learning outcome has a research focus, with students learning subject-related methods of research and exploring their subject in more depth. [3]Thirdly, the element of choice gives students the opportunity to create their own particular profile in view of their future career goals. [4]The specific learning outcomes for the individual technical electives depend on the chosen module and the relevant **degree program and examination regulations** or module description.

(3) [1] The type and scope of the lectures and seminars and the examination are dependent on the skills for the chosen module according to (2) and are stipulated in the relevant **degree program and examination regulations** and the module handbook. [2]The module catalog is published before the beginning of the semester in accordance with local practice.

(4) [1]Technical electives worth 7.5 ECTS credits usually consist of a lecture amounting to 2 SWS, a supplementary subject amounting to 2 SWS and an extended supplementary subject amounting to 2 SWS. [2]The technical electives worth 5 ECTS credits usually consist of a lecture amounting to 2 SWS and a supplementary subject amounting to 2 SWS or a lecture amounting to 3 SWS and a supplementary subject amounting to 1 SWS. [3]Technical electives amounting to 2.5 ECTS credits usually consist of a lecture amounting to 2 SWS. [4]Any exceptions are detailed in the module handbook.

Section 46 Requirements for Admission to the Master's Thesis

(1) In order to begin working on the Master's thesis, students must have passed the compulsory modules specified in **Appendix 1** or **Appendix 2** and have obtained a minimum of 80 ECTS credits in total.

(2) In justified, exceptional cases, the Examinations Committee shall be entitled to grant admission to the Master's thesis early, notwithstanding (1).

Section 47 Master's Thesis

(1) [1]The Master's thesis is intended to demonstrate students' ability to solve scientific problems in the field of communication and multimedia engineering independently. All full-time university lecturers pursuant to Section 53 (4) **BayHIG** teaching at the Department of Electrical Engineering shall be entitled to supervise the Master's thesis.

(2) The Master's thesis module shall be worth 30 ECTS credits.

Section 48 Evaluation of Achievements for the Master's Degree Program

(1) The Master's degree program shall have been completed successfully if proof of passing all modules stipulated in **Appendix 1** or **Appendix 2** has been submitted.

(2) [1]The final grade shall be calculated using all graded modules set forth in **Appendix 1** or **Appendix 2** including the module for the Master's thesis, each weighted with a factor corresponding to its ECTS credits. [2]To do so, a grade shall be calculated for each module category and weighted by a factor corresponding to their ECTS credits in the calculation of the final grade.

Part III: Final Provisions

Section 49 Legal Validity

(1) [1]These degree program and examination regulations shall come into effect on October 1, 2023. [2]They shall apply to all students who start the Master's degree program in Communications and Multimedia Engineering in the winter semester 2023/2024 or later. [3]With the exception of the amendments in module M7 (Speech and audio signal processing) and module M 10 (compulsory elective modules in engineering subjects), they shall also apply to all students who are already studying in accordance with the degree program and examination regulations for the Master's Degree Program in Communications and Multimedia Engineering at the Faculty of Engineering at Friedrich-Alexander-Universität Erlangen-Nürnberg **– FPOCME –** dated August 5, 2011 in the version dated September 3, 2018.

(2) [1]At the same time, the degree program and examination regulations for the Master's degree program in Communications and Multimedia Engineering at the Faculty of Engineering at Friedrich Alexander Universität Erlangen-Nürnberg (FAU) – **FPOCME** – dated August 5, 2011, last amended by statute of September 3, 2018 shall become invalid. [2]All students studying at this time in accordance with a valid version of the regulations stated in sentence 1 shall take their examinations in accordance with the version applicable to them; paragraph 1 (3) shall remain unaffected. [3]Examinations according to the previously valid version of the regulations stated in sentence 1 shall be offered for the last time in winter semester 2025/2026 (full-time degree program) and summer semester 2028 (part-time degree program). [3]From the date stated in sentence 3, those students who are affected by the degree program and examination regulations **FPO CME** becoming invalid shall take their examinations in accordance with the version of the degree program and examination regulations valid at this time.

Appendix 1: Study plan for the full-time degree program

Module name	No.	Teaching unit	SWS (semester hours)				Total ECTS credits	Distribution of workload in ECTS credits				Type and scope of the examination
			L	T	P	S		1. sem.	2. sem.	3. sem.	4. sem.	
Compulsory modules [1)]	M1	Digital communications	3	1			**5**	5				EA: W90
	M2	Information theory and coding	3	1			**5**	5				See FPOEEI
	M3	Digital signal processing	3	1			**5**	5				EA: W90
	M4	Mobile communications	3	1			**5**		5			See FPOIuK-ICT
	M5	Statistical signal processing	3	1			**5**	5				EA: W90
	M6	Image and video compression	3	1			**5**		5			EA: W90
Compulsory elective modules pursuant to Section 39 [1) 2)]	M7	Lab courses			9		**7.5**	2.5	2.5	2.5		See Section 39 (2)
	M8	Research internship					**10**			10		See Section 39 (2)
	M9	Seminar				2	**2.5**			2.5		See Section 39 (2)
	M10	Technical courses					**10**		5	5		See Section 39 (2)
Compulsory elective modules from non-engineering subjects pursuant to Section 44 [1)]	M11	Languages, soft skills		12			**15**	5	5	5		EA[3)]
Elective modules pursuant to Section 45 [1) 4)]	M12	Technical electives					**15**	2.5	7.5	5		EA[3) 5)]
Master's thesis	M13	Master's thesis					**30**				30	Master's thesis (EA) + presentation (CA)
Total SWS and ECTS credits:			**18**	**18**	**9**	**2**	**120**	**30**	**30**	**30**	**30**	
			47									

Key: EA = examination achievement; LA = laboratory course/internship achievement; SA = seminar achievement; CA = course achievement.

[1)] See Section 38 (1). As a general rule, there is one examination per module. Due to the specific subject competencies that must be acquired as part of the learning outcome of the Master's degree program, students are expected to prove on the basis of the module description that they will acquire additional skills in the Master's degree program in Communications

and Multimedia Engineering compared to the skills acquired in their previous Bachelor's degree. In the event that they have already successfully completed compulsory modules, students shall choose alternative modules approved by the Degree Program Committee.

2) Compulsory elective modules (M7 to M10) pursuant to Sections 39 to 43 shall be chosen from a catalog that is announced according to local practice at the beginning of every semester.

3) The type and scope of the examination depend on the specific manner in which the respective module is taught and are regulated by the applicable **degree program and examination regulations** and/or the relevant module handbook.

4) see Section 45

5) Notwithstanding Section 28 (2)(2) **ABMPO/TechFak** failed attempts will not be counted and in the event of a failure to pass there is no obligation to repeat the failed examination within the legally stipulated period pursuant to Section 28 (1)(5) **ABMPO/TechFak**.

Appendix 2: Study plan for the part-time degree program

Module name	Teaching unit	SWS (semester hours)				Total ECTS credits	Distribution of workload per semester in ECTS credits								Type and scope of the examination
		L	T	P	S		1.	2.	3.	4.	5.	6.	7.	8.	
Compulsory modules [1]	Digital communications	3	1			**5**			5						EA: W90
	Information theory and coding	3	1			**5**	5								See FPOEEI
	Digital signal processing	3	1			**5**	5								EA: W90
	Mobile communications	3	1			**5**				5					See FPOIuK-ICT
	Statistical signal processing	3	1			**5**			5						EA: W90
	Image and video compression	3	1			**5**		5							EA: W90
Compulsory elective modules pursuant to Section 39 [1) 2)]	Lab courses			9		**7.5**				2.5	2.5	2.5			See Section 39 (2)
	Research internship					**10**						10			See Section 39 (2)
	Seminar				2	**2.5**						2.5			See Section 39 (2)
	Technical courses					**10**		5			5				See Section 39 (2)
Compulsory elective modules from non-engineering subjects pursuant to Section 44 [1)]	Languages, soft skills		12			**15**	5	5	5						EA [3)]
Elective modules pursuant to Section 45 [1) 4)]	Technical electives					**15**				7.5	7.5				EA [3) 5)]
Master's thesis	Master's thesis					**30**							15	15	Master's thesis (EA) + presentation (CA)
Total SWS and ECTS credits		**18**	**18**	**9**	**2**	**120**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	**15**	
		47													

Key: EA = examination achievement; LA = laboratory course/internship achievement; SA = seminar achievement; CA = course achievement.

1) See Section 38 (1). As a general rule, there is one examination per module. Due to the specific subject competencies that must be acquired as part of the learning outcome of the Master's degree program, students are expected to prove on the basis of the module description that they will acquire additional skills in the Master's degree program in Communications and Multimedia Engineering compared to the skills acquired in their previous Bachelor's degree. In the event that they have already successfully completed compulsory modules, students shall choose alternative modules approved by the Degree Program Committee.

2) Compulsory elective modules (M7 to M10) pursuant to Sections 39 to 43 shall be chosen from a catalog that is announced according to local practice at the beginning of every semester.

[3] The type and scope of the examination depend on the specific manner in which the respective module is taught and are regulated by the applicable **degree program and examination regulations** and/or the relevant module handbook.

[4] see Section 45

[5] Notwithstanding Section 28 (2)(2) **ABMPO/TechFak** failed attempts will not be counted and in the event of a failure to pass there is no obligation to repeat the failed examination within the legally stipulated period pursuant to Section 28 (1)(5) **ABMPO/TechFak**.