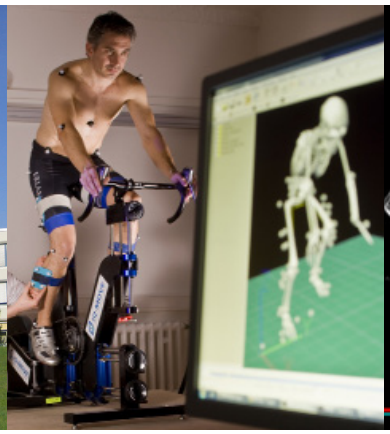
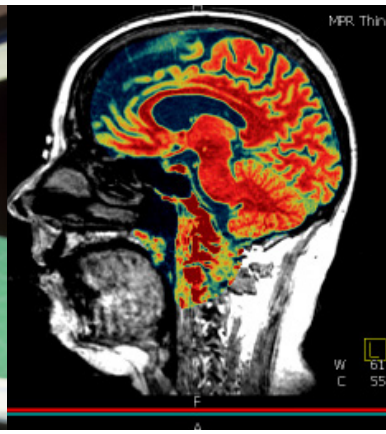
FRIEDRICH-ALEXANDER
UNIVERSITÄT
ERLANGEN-NÜRNBERG

TECHNISCHE FAKULTÄT

Master degree programme

Medical Engineering



Study guide
WS 2017/2018

http://www.medical-engineering.study.fau.eu/

Preface

This study guide is meant as a handbook for the Master´s students of Medical Engineering at Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) to find their way through the sometimes confusing university jungle. It is primarily directed towards students completing their studies according to the new degree programme and examination regulations for Medical Engineering (FPO version 2013 - study begin: 1st April 2013 or later). Master´s students of the old degree programme and examination regulations (FPO version 2009 or 2011) can also find useful information in this study guide, but should consult the regulations that apply to them, which can be found at the Medical Engineering homepage.

All facts and information were researched thoroughly and worded with great care. However, only the degree programme and examination regulations Medical Engineering (FPO) and the general examination regulations for the Bachelor´s and Master´s degree programmes at the Faculty of Engineering (ABMPO TechFak) form the legally binding basis for all study-related issues.

If you are unsure of some technical terms and abbreviations used, you can consult the glossary at the end of the study guide. In the last chapters you can also find explanations of online tools relevant for your studies and information of all contacts mentioned.

We would like to state our gratitude to Prof. Dr.-Ing. Andreas Maier, the chairman of the study programme, the coordinators of the study programme, Dipl.-Phys. Heike Leutheuser, Helga Jahreis of the Examinations Office, Elisabeth Bächle-Grosso of the Student Advice and Career Service (IBZ) as well as the student assistants Bastian Stahl and Katharina Tregoning who have contributed to this project with their knowledge and vigorous support. Last, but not least, we would like to give special thanks the students of the Medical Engineering study programme; without their insightful questions and notes this study guide would consist of fewer important aspects.

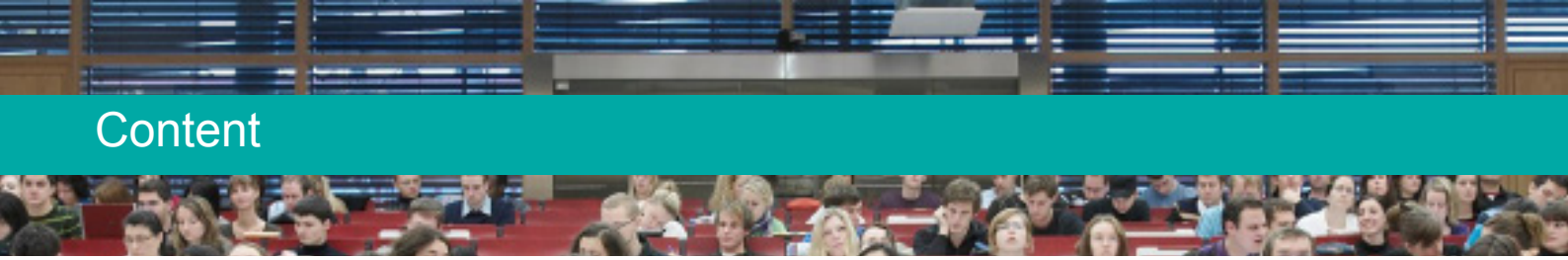
We wish you many “aha”-moments while reading our guide and good luck with your studies!

Claudia Barnickel

Study Advisory Medical Engineering

Last updated: September 2017

Content



Content

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1 First orientation

1.1 What is Medical Engineering?

The fast-paced progress in medicine obligates the field of medical engineering to search for innovative developments and improved processes. This concerns the imaging techniques applied in the process of diagnosing and treating patients, e.g. computer tomography (CT) or magnetic resonance imaging (MRI) as well as the constant improvements of highly complex technical equipment such as x-ray systems, radiation therapy units and surgical robots. A third trendsetting area is the research of new materials (e.g. artificial bone) used for implants (e.g. hip implants) and prosthetics.

This broad spectrum of requirements demands great efforts from researchers. Research teams consist more and more of experts of various fields and require a vast cooperation of medicine, computer sciences, electrical engineering, mechanical engineering and material sciences to meet the manifold demands. Medical engineering companies and research centres therefore seek engineering specialists who have an interdisciplinary background, a request answered by the Medical Engineering study programme.

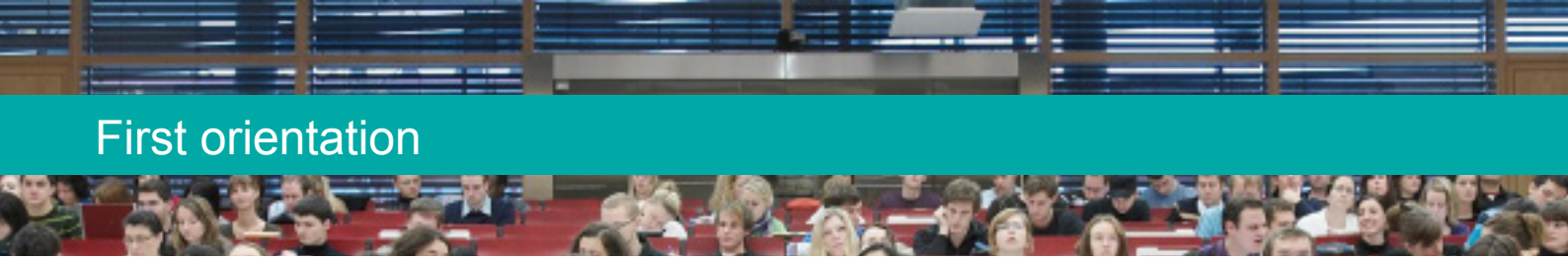
1.2 Medical Engineering career

Which jobs are suitable for Medical Engineering students?

Medical Engineering graduates work in the process of developing, selling or servicing and maintaining highly complex medical equipment and units, and training in and advising on medical engineering issues. Prospective employers can be found in medical research, private business, healthcare institutions, consulting companies and public health agencies.

The specific job opportunities can be divided in four work environments:

In **hospitals** and **laboratories,** medical engineers are responsible for the entire equipment and ensure that devices and units are fit to operate. The area of work might include fields like intensive care, nuclear medicine and the central data acquisition and processing including its extensive monitoring system and storage procedures.



First orientation

Being experts for devices, medical engineers work mostly independently from the hospital staff, but must remain in close communication with doctors and patients.

In **research institutions** or the **development laboratories** of industrial manufacturers, medical engineers test devices for new examination methods, analysing their functions and comparing them to already existing methods. The engineers also prepare for clinical examinations and risk assessments.

In larger **medical practices** (e.g. in dialysis centres) medical engineers supervise the equipment and ensure their operability and instruct medical practitioners on equipment issues and the testing of new devices.

Medical engineers can also operate in **sales** and **consulting**. The highly specialized medical devices require the experts in these areas to be properly trained in the field of engineering, to possess basic knowledge in medicine and to fully understand the general and specific technology. Our graduates also have the possibility to work as a consultant on medical products or as a product manager.

What does the job market have to offer for medical engineers?

The job perspectives in medical technology are promising for medical engineers. Experts state that the demand for engineers and scientists will continue to increase, due to the success of German medical engineering companies on the world market. In 2016, the overall 1,230 German medical engineering manufacturers produced a revenue growth of approximately 9% and were able to obtain a total revenue of 29.2 billion €. The domes-tic revenue for 2016 grew 6%, accumulating a turnover of 10.6 billion euros. The international sector recorded a growth of approximately 5.5%, with an international revenue worth 18.6 billion euro. The export ratio of German companies is 65 percent. The number of medical engineering employees rose by 4% to approximately 133,000 people.

The industry is looking for well-educated personnel not only for research and development, but also for questions of authorization and registration. The path of medical devices from its conception to being launched on the market is becoming increasingly more complex and demands improvement of the know-how and personnel resources within a company.

The income potential of graduates is attractive and comparable to the earnings in the pharmaceutical industry. The excellent opportunities for career building and advancement and the increasing internationalization of the medium-sized medical engineering business facilitate a fortunate salary development.

(sources: bvmed.de; spectaris.de)

1.3 Medical Engineering at FAU

1.3.1 General information

The Bachelor´s degree programme Medical Engineering was launched in the winter semester 2009/10 and the classes for the two-year Master´s degree programme Medical Engineering began in the winter semester 2011/2012. The principles of our degree programme consists of providing a thorough education in engineering, incorporating the benefits of our specific location in the Medical Valley of the Nuremberg Metropolitan Region and promoting international and interdisciplinary studies. The Central Institute of Healthcare Engineering (ZiMT) and the Study Commission Medical Engineering of FAU´s Faculty of Engineering determine the concept and organization of the study programmes. We would like to emphasize not only our close cooperation with different departments of the University Hospital that facilitates the clinical internships for our students, but also the variety of our contacts with external partners, e.g. companies of all scales, booster clubs, associations, research facilities and other universities. Involving our course of studies into national and international networks allows it to take a direction towards the current research demand and expectations of future employers.

Almost 800 students are currently enrolled in our Bachelor´s and Master´s degree programme. After the launch of our degree programme, the student numbers have increased continuously, as Figure 1 indicates. The balanced gender ratio is remarkable for a study programme in the field of engineering.

For the winter semester 2017/2018, the Master´s degree programme received 169 applicants of which a median of 82% were admitted.

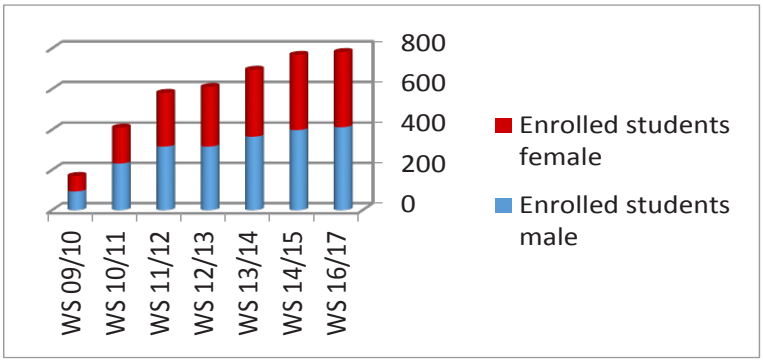


Figure 1: Development of the students numbers (Bachelor´s and Master´s) since the beginning of the degree programme until the winter semester 2016/2017

1.3.2 Structure and objectives of Master´s degree programme

The research oriented Master´s degree programme is designed to complement the interdisciplinary education and prepares the graduates for working as an engineer on the highest scientific level. The studies build on the knowledge acquired during the Bachelor´s degree programme in mathematics, algorithms and technology in order to allow both a specialisation and the employability across disciplines.

The Master´s degree programme offers three branches of study: Medical Image and Data Processing (can be studied entirely in English), Medical Electronics (study language: German) and Medical Device Engineering, Production Technology and Prosthetics (study language: German). The students gain deep technical knowledge in their chosen engineering science with a clear focus on problem solving and application methods in their respective field of medical engineering.

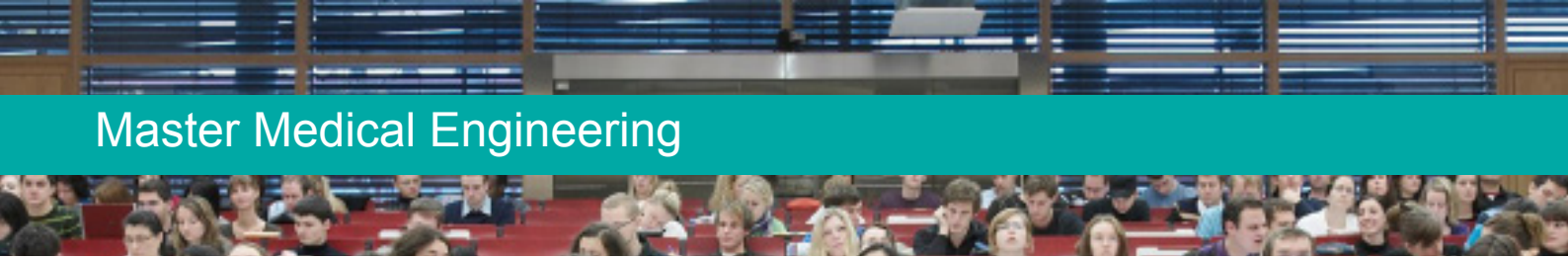
Through our close cooperation with the University Hospital, students have the opportunity to learn about medicinal processes and anatomic-physiological connections and develop medical terminology skills. Additionally, they are prepared to face the regulatory, ethical and economic issues of the medical engineering sector by attending classes on medical device law, medical ethics, health economics and business creation.

Another key element of the study programme is the interdisciplinary Master´s thesis, whose supervision is conducted by members of both the Faculties of Engineering and Medicine or a compatible medical facility.

1.3.3 Requirements of the study programme

Who is suitable for the Medical Engineering study programme?

The Medical Engineering study programme is directed towards prospective students with a technical and scientific (especially mathematical) understanding and teaches technical problem-solving competence for hands-on medical applications. For this, you will not only need extensive knowledge in **Mathematics**, but also proficiency in sophisticated fundamental courses of **Electrical Engineering** and **Computer Science**. Accompanying the engineering studies, basic medical knowledge (Anatomy, Physiology, and Biochemistry) is incorporated into the study plan from the first semester on. Due to the broad technical spectrum and the simultaneous specialization, great commitment is required to master this sophisticated degree programme. The interdisciplinary nature of the studies asks for open-mindedness across the disciplines, excellent communication skills and an interest in diverse subjects. Endurance while handling complex tasks and the ability to be well organized are keys to succeeding in your studies. In exchange, you have the opportunity to enter an exciting prospective job market.



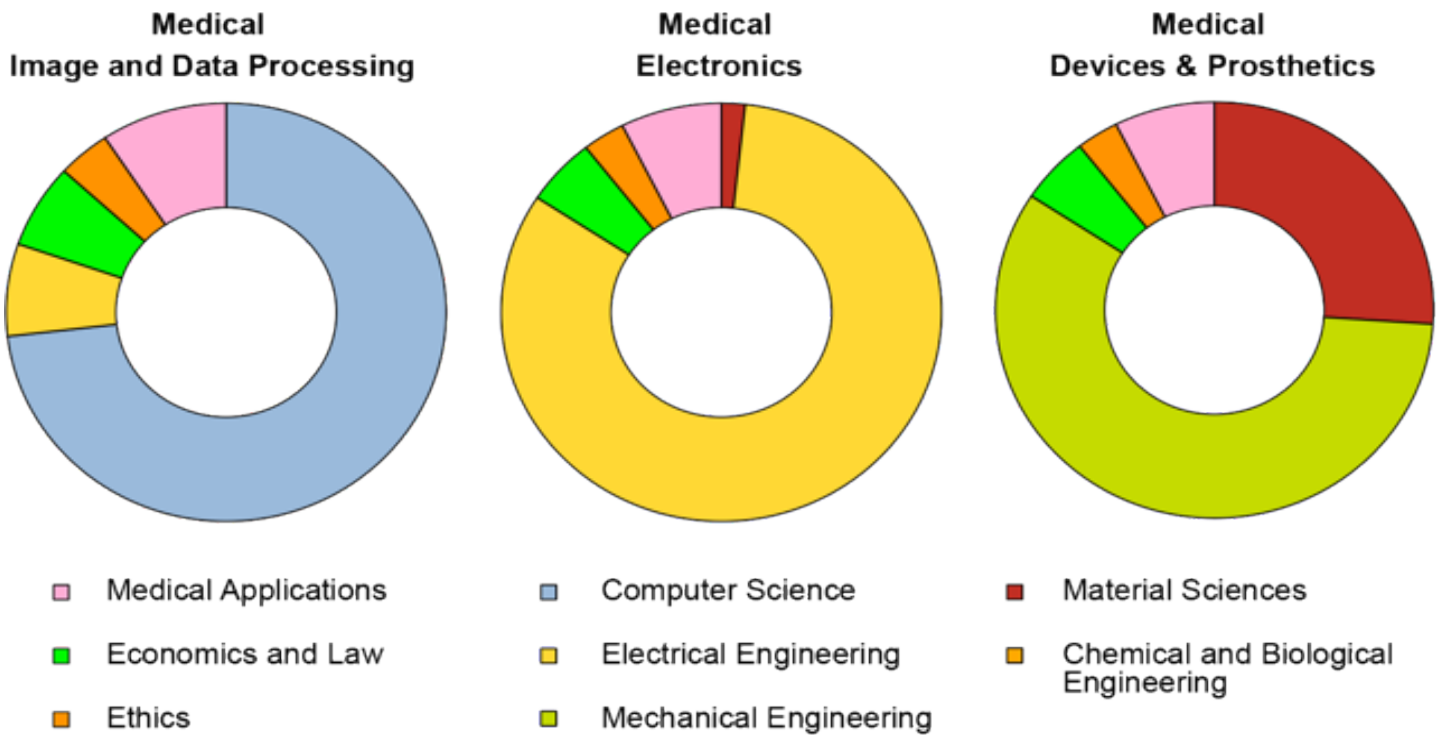


Figure 2: Subject distribution within the Master´s branches of study

2 Master´s Medical Engineering

2.1 Overview

The standard duration of studies for the Master´s Medical Engineering amounts to four semesters. The students must indicate in their application one of the three possible branches of study: Medical Image and Data Processing (possible to study in German or entirely in English), Medical Electronics (German only) or Medical Device Engineering, Production Technology and Prosthetics (German only). **The Master´s study plan is very flexible -with the exception of a few compulsory subjects- students may design their plan individually according to their branch of study.** Practical knowledge is gained through an academic laboratory (laboratory training class) and a research laboratory carried out at one of the chairs involved in the programme. In the Flexible Budget module ,students can take non-subject-related classes. The Master´s exams take place after each lecture period, right at the beginning and at the end of the semester break. The fourth semester is designated for the Master´s thesis paper. In order to successfully complete the Master´s degree programme, 120 credit points must be acquired and the academic title Master´s of Science (M.Sc.) is awarded.

2.2 Before beginning your studies

2.2.1 Admission requirements

In order to apply successfully for the Master´s degree programme Medical Engineering you must have a **subject-specific or subject-related Bachelor´s degree**.

The subject-related Bachelor´s degrees are **exclusively from the field of engineering**, e.g.:

- (possibly) (Bio-)Medical Engineering degrees from different universities
- Electrical-Electronic-Communication Engineering
- Computer Science
- Mechanical Engineering
- Engineering for Teaching
- Computational Engineering
- Information and Communication Technology
- Mechatronics
- Information Systems
- Industrial Engineering

A degree in a non-engineering field (e.g. Medicine or Biochemistry) does not meet the admission requirements for the Master´s degree programme Medical Engineering.

We cannot give you a general statement on how your chances for admission are. We must analyse your application and determine whether your Bachelor´s degree is subject-related compared to the consecutive applicants (=applicants with a Bachelor´s degree in Medical Engineering from FAU), whether possible discrepancies can be balanced through certain conditions (applicable for subject-related degrees) or if your subject knowledge does not meet the standards of the degree programme. If applying from abroad, the grades and credits must be converted into the German system.

2.2.2 Application

The application for the Master´s can only be entered via the online portal Campo, available in German and English.

The application deadline for winter semester is **July 15th** and for summer semester it is **January 15th**. Non-EU applicants should hand in their application as soon as possible in order to have enough time to apply for their visa after being accepted.

The following documents must be submitted with your application (they **must always** be sent in by mail and **can** be uploaded optionally on Campo):

- certificate of secondary education (e.g. high school diploma)
- certificate of university degree, diploma supplement (if applicable)
- transcript of records
- personal data sheet
- letter of motivation (at least one DIN A4 page)
- If you are **neither a German nor an English native speaker**, certificate of language skills are required:
    - **either** for German: DSH 2 or equivalent (see p. 10.6 Language certificate guidelines)
    - **or** English: internet based TOEFL: at least 95, paper based TOEFL: at least 570, computer based TOEFL: at least 230, IELTS: at least 7.0, Cambridge Certificate in Advanced English or UNIcert III
- If you haven´t completed your Bachelor´s studies and **do not** study according to the ECTS credit system (see p. 7 Glossary - important terms for studying Medical Engineering): confirmation from the university on when you will have completed your Bachelor´s studies

Foreign certificates must be handed in as certified copies. If the certificates are not available in German, English or French, a certified translation is required (see https://www.fau.eu/international/international-applicants/important-information/notes-on-certification-of-documents/). German certificates can be submitted as non-certified copies. However, the original documents must be shown at your enrolment. If your Bachelor´s is graded by the ECTS credit system (this applies to many universities in Europe and some non-European countries), you can apply for the Master´s degree programme once you have acquired at least 140 ECTS points in your Bachelor´s. However, you must definitely submit your Bachelor´s certificate when enrolling in your Master´s degree programme.

Important note!!!

If you have been admitted to the Medical Engineering degree programme and do not begin your studies within the same semester, your admission is valid indefinitely until the Master´s admission process for Medical Engineering has changed significally. However, you **must reapply** (see notes in Campo), or you cannot begin your Master´s studies in a future semester!

2.2.3 Qualification assessment process (QFV)

During the qualification assessment process (QFV), it is determined if applicants have the required technical qualifications for the Master´s degree programme Medical Engineering at FAU. Unlike studies with a *numerus clausus* system (NC), there is no limitation to the numbers of students accepted. **All suitable applicants are admitted.**

The QFV process is divided into several steps:

- First, all applications received by the Master´s office of FAU are examined with regard to their completeness and formal requirements. Foreign grades are conversed into the German grading system.
- Then a content oriented consideration of the application documents is conducted at the Central Institute of Healthcare Engineering (ZiMT). The documents are pre-selected according to the verified mathematical skills - if the knowledge in mathematics is not sufficient, first rejection letters are sent out.
- The documents of the remaining applicants are further examined on the basis of existing qualification in Mathematics, Computer Science and Electrical Engineering. If those qualifications are equivalent to those of the Bachelor´s degree programme Medical Engineering at FAU and if you have received a final Bachelor´s grade of at least 2.5 (according to the German system), first direct admissions are given.
- The remaining applications (no equivalent qualifications earned in the Bachelor´s studies and/or Bachelor´s grade lower than 2.5) are redirected to the departments of Computer Science, Electrical Engineering and Mechanical Engineering/Material Sciences in concordance to your course of study.
- The application documents are viewed at the departments by professors who are members of the Admissions Committee Medical Engineering and invite prospective candidates to an admission test in person or via skype.
- The oral exam will take about 15 minutes and will test following categories:
    - discipline-related basic knowledge: e.g. in Mathematics, Physics and Algorithms
    - secure knowledge of the chosen field of specialisation (Medical Image and Data Processing, Medical Electronics or Medical Device Engineering, Production Technology and Prosthetics)
    - description of a relevant discipline-related project (e.g. Bachelor´s thesis), knowledge of the relevant literature
    - analysis of the grade curve from previous studies (tendency: improving or deteriorating?)

For applicants of Medical Image and Data Processing, the test will be held in English, for all other branches of study in German. The examination shall be rated as “bestanden” (passed) or “nicht bestanden” (failed).

2.3 During your study

2.3.1 Conditions and “obligatory compulsory electives”

Applicants from different universities usually receive certain conditions with their Master´s admission. With this conditions you must catch up on certain qualifications which were already acquired by the Bachelor´s Medical Engineering students at FAU. Subjects of these conditions are usually one or two of the following lectures:

- **Advanced Programming Techniques**
- **Engineering Mathematics**

More information on these subjects can be found in the online database UnivIS (see p. 5.3 UnivIS). The conditions must be met within one year (i.e. from October 1st until September 30th of the subsequent year or from April 1st until March 31st of the subsequent year), **or else you will be de-registered.** In total you have **at most two chances** of passing these exams. Even if you have missed the conditional exams due to health issues, we cannot prolong the deadline and no further exam attempt is given. The conditions entail an additional workload of up to 20 ECTS credits to the total of 120 ECTS credits of the Master´s degree programme. However, students can use the credits from their conditional subjects for the module “Flexible Budget” if they wish to (only recommended if you have very good grades). Once you have passed your conditional subjects, please contact Ms. Jahreis at the Examinations Office (see p. 8 Useful addresses and contact persons) and inform her. She will pass the information on to the Student Records Office in order for you to be able to re-register for the third Master´s semester (see p. 3.4 Re-registration).

As indicated in the footnotes in the Master´s module catalogue, some compulsory electives must be attended independently from the conditional subjects, if certain qualifications were not acquired in the Bachelor´s studies. This applies to the lecture “Clinical Applications of Optical Technologies and Associated Fundamentals of Anatomy” and for the following lectures depending on your branch of study:

- Branch of study “Medical Image and Data Processing”: **Pattern Recognition, Pattern Analysis**
- Branch of study „Medical Electronics“: ***Signale und Systeme II, Passive Bauelemente und deren Hochfrequenz-Verhalten, Schaltungstechnik, Regelungstechnik A (Grundlagen), Medizinelektronik***
- Branch of study “Medical Device Engineering, Production Technology and Prosthetics”: ***Medizintechnik II, Werkstoffoberflächen in der Medizin***

Your freedom of selecting compulsory electives is limited due to these “obligatory compulsory electives” if you are missing certain qualifications. These compulsory electives are, however, not conditions (i.e they don’t have a one-year-deadline). You therefore have the entire duration of your Master´s degree programme to pass these classes, which are included into the total workload of 120 ECTS credits. Whether you already possess the respective knowledge or must take these classes to catch up, is subject of your own evaluation. Please keep in mind that the mentioned subjects form the foundation of a successful completion of your branch of study.

2.3.2 Branches of study

In the Master´s degree programme, you can choose between three branches of study: Medical Image and Data Processing (focus on Computer Science), Medical Electronics (focus on Electrical Engineering) and Medical Device Engineering, Production Technology and Prosthetics (focus on Mechanical Engineering/Material Sciences). **“Medical Image and Data Processing” is the international branch of study offered entirely in English.** Of course, students of this branch can choose to visit lectures in English as well as in German.

You must indicate your desired branch of study in your Master´s application, but you actually make your decision by taking the exams of a certain branch in the first semester. Due to the flexibility of the Master´s study plan, it is relatively easy to switch branches after passing your first exams. Some of the academic achievements made in the old branch can be transferred in parts into the new branch. Please contact Ms. Jahreis of the Examinations Office to communicate your changes. If you intend to switch branches at a later point in your studies, it is necessary to address the examinations committee with your request.

For International students without the required German language skills it is not possible to switch branches as “Medical Electronics” and “Medical Device Engineering, Production Technology and Prosthetics” are only taught in German.

2.3.3 Course of study

The Master´s degree programme Medical Engineering is composed of eight modules. Modules M 1 (Medical Specialisation Modules), M 4 (Medical Engineering Core Skills), M 6 (Medical Engineering Practical Skills), M 7 (Flexible Budget) and M 8 (Master´s Thesis) apply equally to all Master´s students. Module M 2, M 3 and M 5 vary according to the chosen branch of study (see p. 10.1 Module Catalogue Master´s Programme Medical Engineering). All module catalogues for the Master´s degree programme are updated every semester and published on the Medical Engineering homepage (http://www.medical-engineering.study.fau.eu/current-students/general-study-information-masters-programme.shtml).

No.	Module groups	ECTS credits	Recommended semester distribution [8]				Type and scope of the course and examination achievement [4]
			1.	2.	3.	4.	
M 1	**Medical specialisation modules** according to the catalogue of elective modules for all branches of study [1] [2] [3]	10	5	5			**EA**: written examination 60/90 min. /oral examination 30 min.
M 2	**Engineering core modules** according to catalogue of elective modules for specific branch of study [2] [3]	20	10	10			**EA**: written examination 60/90 min. /oral examination 30 min.
M 3	**Medical Engineering core modules** according to catalogue of elective modules for specific branch of study [3] [5]	20	10	10			**EA**: written examination 60/90 min. /oral examination 30 min.
M 4	**Medical Engineering core skills** according to basic curriculum in catalogue of elective modules for specific branch of study [3]	10	5		5		**EA** (reports + presentations acc. to dept. specifications)
M 5	**Medical Engineering specialisation modules** according to catalogue of elective modules for specific branch of study [3] [6]	10		5	5		**EA**: written examination 60/90 min. /oral examination 30 min.
M 6	**Medical Engineering practical skills** according to the catalogue of elective modules for all branches of study [3]	10			10		**uCA** (reports acc. to module descriptions and dept. specifications)
M 7	**Flexible budget** [7]	10			10		**EA**: according to applicable examination regulations
M 8	**Master's thesis**	30				30	**EA** (report + presentation)
	Total ECTS credits [9]	120	30	30	30	30	

Figure 3: Master´s study plan template

In the Master´s studies, there are very few mandatory classes. You can choose classes from every module group with the indicated ECTS credits according to your own interests. **This freedom in selecting classes also means that there is no pre-determined course of study and you must compose your schedule every semester on your own**.

Even if the Master's study plan template and the module catalogues give you a recommendation as to when you can take your classes, you are not bound to comply. It is possible that the responsible

professor states certain qualifications required for successfully completing the class in the module description in UnivIS. Please consider these notes in your selection.

In general, you must inform yourself very carefully, which lecture is offered when (winter or summer semester or both), which requirements are given for participating and if/when you have to register for a course (see UnivIS or in doubt contact the professor in question). It is also imperative to keep the workload (ECTS credits) required for the module group in mind while designing your schedule.

2.3.4 Description of individual modules

2.3.4.1 Modules of the core curriculum (for all branches of study)

Medical Specialisation Modules (M1)

This module group is offered by professors of the Faculty of Medicine and contains lectures on the subjects of disease diagnosis and the application of technical devices in the clinical field. Students who have not gained medicinal knowledge in their Bachelor´s studies are obliged to take the lecture “Clinical Applications of Optical Technologies and Associated Fundamentals of Anatomy” for two semesters. If you are interested in attending different lectures at the Faculty of Medicine for the module group M1, you are free to do so. All you have to do to attend said lecture is to contact the professor and ask if he is willing to let a Medical Engineering student attend his classes and discuss with your study advisor if the lecture in questions is compatible for the module group M1.

Medical Engineering Core Skills (M4)

This module groups allow insights into different legal, economic and ethical questions of the medical engineering field. It is important to pay attention to the superscript, as it limits your choices. You can choose freely from the module groups “Medical Device Law” (M 4.1) and “Economics and Innovation” (M 4.2). The module “Seminar Medical Engineering and Ethics” (M 4.3), however, is mandatory and consists of two submodules: **the seminar “Medical Ethics” (M 4.3 a) and the seminar “Medical Engineering” (M 4.3 b) are both obligatory.** The seminar “Medical Ethics” consists of one particular lecture which that be attended by all Medical Engineering Master´s students. For the seminar Medical Engineering students, can choose between different lectures from the seminar catalogue (p. 10.2 Seminar Catalogue Bachelor and Master´s Programme Medical Engineering).

Medical Engineering Practical Skills (M 6)

This module is composed of two, non-graded practical achievements:

Academic Laboratory (M 6.1)

Academic Laboratory refers to a laboratory training in which students learn how to prepare, execute and document experiments at the university. Internships at the Department of Computer Science include the attempt to resolve a given problem with a hardware or software based solution and the analysis of the solution incorporating a database. The preparation for the Laboratory training is conducted according to the experiment´s description and generally includes literature or exercises connected to the experiment. The conduction of the experiment must be done in accordance to the experiment´s instructions. Your work must be documented in a laboratory journal. This documentation must contain the applied materials and methods, the results, and an analysis and a discourse of the work done.

Many classes offered by the Faculty of Engineering and the Faculty of Sciences that are marked as “Praktikum” (practical training) in UnivIS fulfil the requirements for the Academic Laboratory. It is also possible to divide the Academic Laboratory into two laboratory trainings with a workload of 2.5 ECTS credits each.

You can search specifically for laboratory trainings in UnivIS by selecting “Lecture list” for the search, clicking on “expert search” and searching for “Praktikum” as the type of class. If you select English as your language (“Sprache”), you will receive a list of trainings with English language supervision.

You can find a list of suitable courses for the Academic Laboratory module here. If you are unsure if the training you have selected is suitable for the module, please contact your study advisor.

Research Laboratory (M 6.2)

The Research Laboratory allows students to learn how to apply academic methods in the field of research and serves as a good preparation for the Master´s thesis to come. The focus of the research paper can be of experimental, theoretical or constructive nature or a combination of these areas, while always referring to the field of medical engineering. The Research Laboratory is conducted at a department of the Faculty of Engineering. Research Laboratories at the Faculty of Medicine are also possible after being green-lighted by your study advisor. The Research Laboratory can also be conducted at a company if your academic supervisor at FAU agrees. **In order to do so, students must inquire about industry contacts at the respective FAU chair. Do not sign a contract for a company internship on your own, since these projects usually cannot be supervised!**

It is obligatory that your department´s supervisor issues a certificate regarding the completion of your research laboratory to hand in at the Examinations Office. The form can be found on our homepage: http://www.medical-engineering.study.fau.eu/current-students/research-laboratory.shtml.

The intention of the Research Laboratory is to familiarize the students with tasks in the engineering related research and to offer practical experience in scientific work on a Master´s level. That

includes learning how to research literature and assess its relevance, develop and apply criteria for the classification of the work done, to evaluate and further develop the methods applied and to analyse the results.

A written report of the conducted work must be submitted. You can either participate in a scientific publication of your department as a co-author or can present an individual report to your supervisor (4 - 6 pages) that respects the style of scientific publications (abstract, introduction, methods, results, discussion, and references).

Flexible Budget (M 7)

For this module you are allowed to take any class offered by FAU (e.g. language courses, psychology, technical or medical engineering courses) and on-site exams (no online exams) of the Virtual University of Bavaria (see p. 5.7 Virtual University of Bavaria (VHB)) with a total workload of 10 ECTS credit points. The only condition is that the class is **graded.** If the total amount of workload exceeds 10 ECTS credits, you can still use these classes for the Flexible Budget module; however, you cannot split up modules and use them partly for another module group. If you are planning to go abroad for a semester, this module is a good opportunity to incorporate academic achievements that would not be accredited otherwise (see p. 3.17 Accreditation of academic achievements). The credits acquired in your conditional subjects can be used for the Flexible Budget. In this case, you must be satisfied with the grades you have received in your conditional subject, otherwise you will lose the opportunity to improve your overall grade by the Flexible Budget with different classes.

Master´s thesis (M 8)

Once you have achieved 75 ECTS credits and completed possible conditions (see p. 2.2.1 Admission requirements), you can begin your Master´s thesis. The thesis paper consists of a workload of 30 ECTS credits and therefore weighs more on your final grade than a Bachelor´s thesis. You should begin contemplating a Master´s thesis topic in your last semester at the latest, preferably earlier, so you can choose your lectures specifically to acquire the appropriate knowledge for your thesis paper.

The Master´s thesis topic is given by a professor of the Faculty of Engineering who is involved with the curriculum of the Medical Engineering Bachelor´s or Master´s degree programme (with the exception of “Free choice Uni”, “Medical Engineering Practical Skills” and “Flexible Budget”) (see p. 10.9 List of all departments involved in the study programme) The professor signs the registration form for your thesis paper and is responsible for its grading. You can select a topic by searching the websites of the different chairs or checking the bulletin boards in the Faculty of Engineering. You also have the possibility to approach professors at a chair on your own and ask if you can work on a medical engineering subject there. Only professors and junior professors can officially supervise your Master´s thesis.

The technical and practical supervision is usually conducted by an academic employee or a doctoral candidate of the same chair. This task can also be exercised by a supervisor from a company if the department´s responsible supervisor agrees that your paper is conducted within a business cooperation. If you are interested in this option, you must ask at your chair of choice if there are established business contacts and partners appropriate for your paper. **You cannot establish a business contact for your Master´s thesis on your own since external projects cannot be supervised!**

You must also search for a medical supervisor who may not grade your paper, but proof reads your work regarding medical information. This medical supervisor may be an employee of the University Hospital or a similar institution, e.g. a different clinic, an x-ray practice or the Faculty of Medicine (the supervising departments often have established contacts). Before you start the thesis process, you should ask your medical supervisor, to which degree he wants to be involved in supervising your thesis paper. For instance, does he want regular updates from you during the process or does he prefer to proofread your final draft? The medical supervision generally can be done by every private (and registered) practitioner.

You must appoint your thesis at the Examinations Office through your supervising chair. The form required must be signed by the supervising professor, the medical and if necessary the technical supervisor and can be found on the Medical Engineering homepage: http://www.medical-engineering.study.fau.eu/current-students/thesis-paper.shtml.

From the date of registration, you have **six months** to complete your thesis paper. An extension of up to three months can be given if severe issues occur. If you become ill during the working or writing process and submit a doctor´s notice to the Examinations Office, your working period is on hold for the amount of time indicated in the notice.

The Master´s thesis must include a short summary of the results (abstract) and a declaration by the student confirming that the thesis is an original work and that no other sources or materials than the ones listed were used. The design must meet the regulations given by the supervising department. If the department does not have design guidelines, you can work with our templates (see p. 10.8 Template: Form for final thesis paper, Transcript of Records, Certificate, Grade distribution table). Within the first two weeks after your registration, you have the possibility to resign from your Master´s thesis topic once. For this process, you must hand in a substantiated request at the Examinations Office. Once the paper is completed, one printed and bound version and one digital copy (PDF document on a storage device) of the Master´s thesis shall be submitted to the academic supervisor. If the Master´s thesis receives the grade “unsatisfactory”, students have the options of either revising their paper or choosing a new topic in the subsequent semester.

2.3.4.2 Modules specific to your specialisation

The module groups M 2 (Engineering Core Modules), M 3 (Medical Engineering Core Modules) and M 5 (Medical Engineering Specialisation Modules) include the classes that are specific for the specialisation you have chosen. They are listed in the corresponding catalogue of your branch of study (see p. 10.1 Module Catalogue Master´s Programme Medical Engineering), which can be found on the Medical Engineering homepage and is updated each semester. **In the catalogue, it is crucial to pay attention to superscripts and footnotes.** You can incorporate the classes specific to your specialisation flexibly. For M 3 you can incorporate up to 5 ECTS credits from M 2 and M 5 of your own branch of study or from M 2, M 3 or M 5 of the other **(German-taught)** branches. For M 5 you can incorporate up to 5 ECTS points from modules M 2 and M 3 of your branch of study or from M 2, M 3 and M 5 from the other **(mostly German-taught)** branches.

2.4 After completing your studies

2.4.1 Certificates

After successfully completing your last academic performance in the Master´s degree programme you will normally receive your Master´s certificate, transcript of records in German and English, diploma supplement and a grade distribution table within four weeks by mail. Please indicate a working postal address!

Master´s certificate: shows all modules with respective grade (if available) and ECTS credit points that are part of you Master´s examination. The certificate will also show your overall grade and the topic of your Master´s thesis paper, however, it will not show failed attempts or the number of semesters you studied.

Transcript of records in German and English: shows every module you have taken, its respective grade (if available) and ECTS credit points, i.e. including those which were not considered in your Master´s examination (see p. 3.13 Additional course and examination achievements), which are listed under the category “Add-on modules”. Again, it does not contain information about failed attempts or the number of semesters that you needed to graduate.

Diploma supplement in German and English: shows general information regarding the content of the study programme, the qualification profile of the graduate and the German university system.

Grade distribution table: To simplify the comparison of final grades achieved at different universities in different countries, Friedrich-Alexander-Universität Erlangen-Nürnberg publishes grade distribution data in addition to students’ final grades as part of higher education reform. Each grade in the local grading system is listed with the number of degrees which were awarded this grade in the reference group.

If you intend to apply for jobs right after handing in your Master´s thesis paper, you can ask the supervisor of your thesis paper for a confirmation that you will receive at least a 4.0 (“passed”) on your paper. After submitting this confirmation to Ms. Jahreis of the Examination´s Office, you will receive a preliminary certification of your graduation.

2.4.2 Doctorate

If the research you have done for your Master´s thesis was so much fun that it inspired you to immerse yourself further into the topic, you should think about writing a doctoral thesis. Your first step would consist of finding a supervisor for your doctoral thesis. You can inform yourself online at the chair of your choice or directly contact your professor. You can find information on all formalities here: http://www.graduateschool.uni-erlangen.org/doctoral-research/start-doctorate.shtml. The FAU Graduate School offers official doctoral candidates interesting courses in scientific work, literature administration or statistics, among other things.

2.5 Tips and notes

2.5.1 Tips for successful Master´s studies

Tip n°1: visit the Master´s welcome event

The study advisory Medical Engineering organizes an introductory event for first semesters at the beginning of the lecture period every winter and summer semester. You will be introduced to the south campus, your primary study location and will receive not just helpful information regarding your studies, but also regarding social life on campus. The welcome meeting is also a chance to meet and bond with your fellow students, which will be essential in upcoming semesters. The dates for the welcome event can be found on the Medical Engineering homepage.

Tip n°2: visiting the Medical Engineering homepage

The study programme´s homepage http://www.medical-engineering.study.fau.eu/ includes the categories “prospective students” and “current students”. Many questions can be solved by reading through those pages. Please also give the FAQ section a thorough read!

Tip n°3: get familiar with the campus and the city centre of Erlangen

The courses of Medical Engineering take place on the south campus and in parts in the city centre. Knowing your way around and having a bike is an enormous advantage in trying to get from one class to another. It is also recommended to stroll around the campus and the different lecture halls, as they are not sequentially numbered (see p. 9 Map) Sooner or later you will need to know where to find an ATM or the CIP-Pool supervisor (see p. 5.2 CIP-Pool-Account). The student union FSI Med-

ical Engineering (p. 7 Glossary - important terms for studying Medical Engineering) and the study advisory regularly offer guided tours through the campus at the beginning of the lecture period.

Tip n°4: get familiar with the FAU Information System UnivIS

Whether you are looking for the email address of a professor or need to know how to register for a class - UnivIS (see p. 5.3 UnivIS) will become one of your most important tools while studying. So take some time at the beginning and get to know the search functions; a very helpful one is the expert search of the category “lecture list”. Here you can search for different types of classes (e.g. “Praktikum”/tutorial) or the course´s language (“Sprache”). Unfortunately UnivIS, is only in parts available in English for our international students. Don´t hesitate to ask fellow German students for help and try to learn the German terms as fast as possible to be able to work with the German version.

Tip n°5: Don´t miss the first meetings of the semester!

In most lectures, the professor discusses the most important issues during the first session, e.g. where to find the study material, how you can register for the tutorials, etc. Please check if there is a set date for your laboratory training or seminar on UnivIS for registration or a preliminary discussion - if so, it is mandatory to respect these dates!

Tip n°6: collect information

A unique trade of the German university system is that students must organize their studies on their own; from the class schedule to the study material, even the topic of your Master´s thesis paper. If you are unsure about an issue, you should always search for the answer independently. For example, if the lecture content seems unclear, it is helpful to research the topic by looking for literature in the library or forming a study group. For general study questions, you can take a look at FAU´s webpage. Navigating through the website is sometimes a bit complicated, but you will have high chances for results if you enter your key word and “FAU” in the search engine. If you have subject-specific or legal questions, we recommend looking into the degree programme and examination regulations Medical Engineering or the general examination regulations of the Faculty of Engineering (links for both documents can be found on the Medical Engineering homepage: http://www.medical-engineering.study.fau.eu/current-students/general-study-information-masters-programme.shtml). If all those methods show no results, don´t hesitate to ask someone for help, like the student association or the study advisory. The best approach to avoid misunderstandings is to clear up any doubts as soon as possible, or else you might discover at the end of the semester that you are taking the wrong class. **This sort of organization is the student´s responsibility.** You can also contact your professors regarding important issues (but refrain from asking them questions the answers of which can be found by a click on UnivIS). On occasion, you will need a little patience while searching for your answer. If professors do not reply to your emails, you can visit them during their consultation

hours. You can find their schedule either at the chair´s homepage or by asking the chair´s secretary.

Tip n°7: focus on your conditional subjects

If your admission requires you passing conditional subjects, then you should mainly focus on passing them. **You must pass a conditional subject within a year in order to continue your Master´s studies.** If you´re struggling with the first semester engineering classes from the Master´s module catalogue because you are lacking basic knowledge of the conditional subjects, you can attend lectures from module M 1, M 4 and M 7 instead.

Tip n°8: read module catalogues and UnivIS thoroughly

Carefully study the module catalogues and pay attention as to which subject is offered in either winter or summer semester or in both while designing your personal class schedule. **Read footnotes!** Although the module catalogues are crafted with special care and are updated regularly, it is possible that some information is incorrect. This can occur when e.g. a non-subject-related department (at the Faculty of Medicine or School of Business and Economics) stops offering a certain lecture without informing the Study Commission Medical Engineering (p. 7 Glossary - important terms for studying Medical Engineering). The lecture in question may still be listed in the module catalogue although it is not possible to take it anymore. To avoid any misinformation of this kind, we recommend to consult both the module catalogue and the UnivIS entries for the current semester and consult your study advisor if there is any doubt.

Tip n°9: get to know your chairs early

Inform yourself early on about the chairs where you intend to do your Research Laboratory or Master´s thesis paper and contact potential supervisors.

2.5.2 Obstacles in your Master´s studies and how to deal with them

Conditions

Issue: It is possible that your conditional subject is not offered every semester but only once a year. For example, if you start your Master´s studies in the winter semester and have the lecture “Engineering Mathematics” as a conditional subject, you only have the possibility to attend the lecture in the summer semester. However, you must complete your conditional subjects within a year after study begin and therefore have only one chance to pass the exam instead of two.

Solution: You acquire the lecture´s content studying the online material on your own, and take the repeat test of you conditional subject offered in the winter semester. For access to the lecture material, please contact your study advisor!

Conditions

Issue: If an exam for a conditional subject is scheduled to take place in the second examination period (see p. 3.7 Examination registration, examination period), you might have difficulties accounting for having passed your conditional subjects within the given time frame of one year at the Examinations Office.

Solution: In this case, contact Ms. Jahreis of the Examinations Office as soon as possible. She can make a note in the examination administration system, so you won´t be taken off the university´s register and she can support you in emergency cases in requesting a faster correction of your exam.

3 General study information

3.1 Semester schedule

The winter semester begins on October 1st and ends on March 31st; the summer semester takes place from April 1st until September 30th. The lecture period, i.e. the term in which classes and lectures are held, is scheduled roughly from mid-October until the beginning of February and from the beginning of April until the end of July respectively. The actual dates vary from semester to semester and can be found here: www.fau.eu/study/current-students/semester-dates/. The webpage also lists all official holidays (i.e. lecture-free days) in Bavaria.

3.2 Enrolment

The dates for the enrolment in person can be found here: https://www.fau.eu/study/prospective-students/application-and-enrolment/deadlines-and-documents-for-enrolment/. Your enrolment consists of following steps:

- Register at www.campo.fau.de. There you will only receive an **appointment** that will make easier for the administrator at the Student Records Office to process your data - **this is not an application!** Your application for the Medical Engineering degree programme was completed after receiving your admission. The dates for enrolment are published progressively. If you want to make an appointment for a later date, you should check the site regularly.
- After your successful online registration, transfer the semester fee one week before your personal enrolment at the latest.
- Go to the Student Records Office in Erlangen for your personal enrolment (see p. 8 Useful addresses and contact persons).

For this purpose bring all of your documents (consult the enrolment page of the Student Records Office above for more details).

After your enrolment you will receive the activation code for your University user account by mail (see p. 5.1 IdM-Portal). After registering at the IdM-portal, you have the possibility to print out your certificate of enrolment and **must upload a photo for your student ID**. The ID will be sent to you within about four weeks. **Please make sure to add your address where you will be living during the semester in the IdM-portal or else all documents will be sent to your home address.**

By paying the semester fee, you automatically receive the basic ticket for the local transportation network (*VGN*), which you can print out in the *VGN* online shop (shop.vgn.de/index.php/tickets). The ticket is valid for the entire *VGN* network from Monday to Friday between 7 p.m. and 6 a.m. and all day on Saturdays, Sundays and public holidays. If you want to use public transportation during 6 a.m. and 7 p.m. during the week, you can purchase the additional ticket. More information can be found here: www.fau.eu/study/programme-start/semester-ticket/.

3.3 Housing

Once you have received your spot in the Medical Engineering degree programme, look as early as possible for a living accommodation before you begin your studies. Find more information here:

www.fau.eu/international/international-applicants/important-information/accommodation-2/

http://www.werkswelt.de/index.php?id=tipps-fuer-erstsemester&setlang=en

Everything else (book, notebooks, etc.) is not as crucial and can be easily organized in the first few months of the lecture period. The housing situation in Erlangen is especially tense at the beginning of the winter semester. You should also consider moving to nearby cities (Nürnberg, Forchheim, Fürth) as they are well connected to Erlangen via public transportation. Even for these cities, you should start looking as soon as possible!

3.4 Re-registration

On the webpages of the Student Records Office you can find information on the re-registration process: https://www.fau.eu/study/current-students/semester-dates.

If you want to continue your studies at FAU, you must re-register for every new semester mid-way through your current semester. Every student receives an email by the Student Records Office to their FAU email address as a reminder to re-register on time (please make sure that you can receive emails at your FAU address!). The re-registration consists of transferring the semester fee to the university's bank account. You can find the bank details and more information in MeinCampus (see p. 5.6 *MeinCampus*) in the tab "Studentenkanzlei aktuell".

3.5 BAföG

The Federal Training Assistance Act (*BAföG*) gives a monthly financial aid to students whose family can´t support them. The financial aid consists of an interest-free loan, which must only be re-paid in parts after the completion of your studies. The requirements for receiving *BAföG* are the following:

- You must be a German citizen or have permanent residence permit for Germany.
- You must regularly prove by your academic achievements that you are on the way of successfully completing your studies.
- You must have started your Bachelor´s degree programme by the age of 30 and your Master´s degree programme by the age of 35.

Your *BAföG* application must be sent to the *BAföG* office (see p. 8 Useful addresses and contact persons). You can find more information here: http://www.bafög.de/ (in German).

Your *BAföG* certificates to prove your academic achievements can be printed out over *MeinCampus* (see p. 5.6 *MeinCampus*). If that is not possible because you have earned not enough ECTS credits, please contact your study advisory.

3.6 Classes - a typology

As a Medical Engineering student you must attend a variety of class types - here you have a quick overview:

Most classes consists of a **lecture** that takes place one to three times a week, in which the lecturer presents the technical content to his students. Lectures usually take place in big lecture halls, with many students attending and are of a very theoretical nature. Students generally play the role of a passive listener, who -depending on the teaching style- might have to answer some questions. It is highly recommended to bring the study material or lecture slides provided online into the lecture and take notes.

Exercises are often offered as an addition to a lecture to explain the lecture content in greater detail or show how it is applied. There are blackboard exercises and computer exercises.

During the **blackboard exercises** the content of the lecture is repeated and discussed using tutorial exercises. The groups are significantly smaller than in the lecture, so it is not a problem to ask questions or re-address a subject if haven´t fully grasped it. It is smart to go over the exercises before the tutorial and to write down possible questions, so you can follow the explanations of the tutor and profit from extensive answers. The registration process is explained by the professor during the first lecture session.

The **computer exercises** are designed to apply the theory taught in the lecture and write your own programmes. There is no blackboard teaching, but tutors are present who can answer your questions while you are programming independently. Usually, there is no registration required for the computer exercises. You can drop by at the dates indicated and work on your projects.

Your exercise supervisor will tell you if you must solve the exercises on your own or if under certain conditions you can do the exercises in groups of two. The results are submitted online and corrected every one to two weeks. The exercises are usually very time consuming, so do not wait to until just before the deadline to go to the computer exercise to answer possible questions. The computer exercises just before the deadline are usually very crowded.

Exercises can be graded or ungraded but are usually marked with ECTS credit points. They are partly mandatory in order to pass a certain module, partly thought to be as a voluntary addition to your lectures (please consult with your lecturer). **Any additional and non-graded exercise elevates the ECTS credit value with which your lecture exam grade is incorporated into the cor-**

responding module group. Sometimes questions about the exercises are included in the lecture exam.

Tutorials are very similar to exercises except that they are usually not mandatory and you cannot earn credits for them. They are meant for the independent solving of tutorial or exam exercises with one or more tutors present to address questions to.

For **Laboratory Trainings** you usually receive experiment documents before your first appointment (possibly at the first meeting or via online platform (see p. 5.4 StudOn). An experiment exercise consists of a preparation part that must be done at home and brought to the training and the experiment itself that is conducted at the university. It is important the give your best on the preparation as it will be tested by the supervisors and will help you in understanding and conducting your experiment more easily and faster. Laboratory training is always with compulsory attendance, i.e. you must be present at all sessions. If you have missed up to 15% of your training due to illness and have a doctor´s certificate confirming this, then your training supervisor must offer you a substitute achievement with which you can compensate your absence. If you miss more than 15% of the training, you must repeat it in its entirety.

Seminars are usually composed of a smaller group discussing a special topic with the lecturer. It is important to actively participate in the discussion. Every student handles an individual subtopic on which he must hold a presentation during the seminar and write a thesis about. You can choose your own project or select one of a list. The first few seminar sessions are normally meant as an introduction in which the professor teaches the most important basic knowledge. Attendance during these sessions is voluntary most of the times. As soon as the presentation phase starts, attendance is compulsory for all seminar participants. After a student has held his presentation, the subject is discussed in the group and questions can be asked.

In most classes of the Medical Engineering degree programme there is no compulsory attendance. You will note this by the lack of attendance lists, you are therefore not obligated to be in the lecture hall or seminar room, but can work through the material at home, as it is provided by the professor on StudOn or the FAU video portal (see p. 5.9 Video platforms). We do however recommend attending the classes so your questions can be answered immediately.

In classes at the Faculties of Medicine, Humanities and Business and Economics or for the module “Flexible Budget” which you might take at different faculties, attendance regulations may differ. Your lecturer in charge will inform you on this matter during the first session.

3.7 Examination registration, examination period

The registration for the exams is made on *MeinCampus* (see p. 5.6 *MeinCampus*) about five weeks after the beginning of the lecture period. The exact time period of the examination registration (three

weeks in total) is given at the beginning of the semester by your tutors and professors. Additionally, you will be notified by an email from your student advisory when the registration period starts.

The fact that you are attending a class and perhaps have to register for it, does not mean that you have to take the corresponding exam or are automatically registered for it. If you do not register for an examination during the official registration period, you cannot take the exam at the end of the semester.

Should any technical problem occur during registration (e.g. error report) please contact the *MeinCampus* support (see p. 8 Useful addresses and contact persons). Should any examinations from the Medical Engineering curriculum be missing, please inform the student advisory who will take care of it.

If there are different ECTS credit points offered for the same exam, you must achieve at least the value given by the module catalogue. You may achieve more ECTS credits voluntarily and incorporate them additionally into the same Master´s module group, allowing your exam grade to be incorporated at a higher ECTS value into your module group. If you register for an exam with a certain ECTS credit value and fail, you are obligated to repeat this exam version at its credit value. Only if the exams are offered individually for each achievement (e.g. lecture and exercise seperately) in *MeinCampus*, you are allowed to register and de-register from the respective exam or achievements independently. You must decide on which type of exam you want to take until the exam registration period. It is not allowed to register for various varieties of the same exam simultaneously (e.g. once for the lecture exam only and once for the lecture exam in combination with the exercise) and de-register from one of the options later.

Exams for the module “Flexible Budget” (M7) are normally not listed in your *MeinCampus* account. If this is your case the registration can be made by Ms. Jahreis of the Examinations Office. A short email with your Student ID Number and the name and respective examination number from *MeinCampus* is enough. The professor of your elective class should of course be consulted whether it is possible for you to take the exam as a non-discipline-related participant. You will receive the examination results either as a paper certificate, which you have to hand in at the Examinations Office, or your professor will send the results directly to Ms. Jahreis.

The examinations take place in the lecture free period (semester break). The **first examination period starts in the first two weeks after the end of the lecture period** and the **second period in the last three weeks of the semester break** (i.e. partially in during the official start of the new semester). The exams during the second exam period are still regarded as part of the semester in which its registration took place. You can find the scheduled exam periods for the Faculty of Engineering here. The exact time and room of an exam is published in *MeinCampus* around two weeks before the exam date.

3.8 Exam preparation

In order to prepare for the exams, it is recommended to regularly attend the exercises and tutorials during the semester, where the lecture content is explained in detail and you are able to ask questions.

Once the exam date is slowly approaching, it makes sense to start the study period early on. You should plan a couple of weeks' time for the process as well as determining certain hours in which you will be studying to minimize the time pressure. And don´t forget to take a break regularly! Six hours of pure studying (over the course of a day) are considered ideal for studying, everything exceeding the time limit is inefficient. Don´t just study the lecture content. Contact the Student Association Medical Engineering (FSI MedTech) or depending on your subject the Student Associations Computer Science and Electrical, Electronic and Communication Engineering (see p. 8 Useful addresses and contact persons) and ask them for old exams in order to practice on previous exam questions. Often times the lecture content becomes clearer once you try to solve actual exercises. You should start out trying to solve the exercise on your own without consulting the solution. It is even more helpful if you discuss open questions and results in small study groups of three to four people. Even if you make a lot of mistakes in the beginning: don´t beat yourself up over it and ask your fellow students for help!

3.9 Exams

The Master´s exam is considered successfully completed if all modules with a total workload of 120 ECTS credits are passed. The total grade is composed of the individual module grades according to their ECTS credit value. Module 6 (Research Laboratory and Academic Laboratory) is non-graded, so the academic achievements are not included in the total grade. Therefore the total grade is determined on the basis of 110 ECTS credit points, however, module 6 must be completed for the Master´s exam to be completed. Module exams could take the following shape:

Oral examination (abbreviation: o): conducted by an examiner (lecturer of subject) and a second attendee, who doesn´t ask questions, but protocols the exam. The oral exam usually takes about 30 minutes. Your examiner is generally interested in creating a pleasant and conversational atmosphere and try to steer you back into the right direction if you seem to stumble over a problem. We also encourage you to ask questions if you haven´t understood the question or problem and to admit if you do not know the answers to a certain topic. It is always better to speak (even if you are not 100% sure if your answer is correct) rather than sitting there in silence and waiting until the time is over.

Written exam (abbreviation: w): depending on the information given by the programme and examination regulations (FPO) or the module catalogues, a written exam can take between 45 and 120

minutes. The exam questions can either be of two different types: open questions or multiple choice. Before and during the exam, the supervisors will indicate how much time is remaining, once the time is up, there will be no extension. Therefore, we recommend to take a couple of minutes at the beginning of a test so you can assess the number and difficulties of the individual questions and estimate how much time you will need for answering each question.

Electronic exam (abbreviation: e-exam): Some FAU professors conduct exams on a computer. In this case the exam takes place at a certain date in one of the CIP pools (computer pools).

Tutorial Achievement: here students must submit tutorial exercises on a regular basis (mostly weekly).

Laboratory Achievement: includes performing practical problem solving and writing an experiment protocol and a laboratory report.

Seminar Achievement: generally consists of a presentation and a written composition of a pre-determined topic.

The professors can demand all of these examination types for either a graded course achievement (gC) or an ungraded course achievement (uC) result. An examination achievement is defined through its grading, whereas for study achievements only the successful completion is evaluated (pass/fail) and can be repeated as often as necessary (unlike examination achievements). This system is commonly applied in laboratory trainings and tutorials.

A **Portfolio Examination** (abbreviation: PfE) is an exam with a combination of graded and ungraded Course Achievements or an exam consisting of several parts.

Which achievement or examination type is demanded for which module, as well as the duration of the test (e.g. “90 w” = 90 minutes of written exam) can be found in UnivIS (see p. 5.3 UnivIS)

For the Flexible budget module (M 7) the examination regulations depend on the respective Faculty from which you have chosen your classes. The only two things that are important are that you must receive a **graded** achievement and that you take an **on-site exam (no online exam)**.

For classes that are only held in the winter semester, there is always a repetition exam offered in the summer semester (and vice versa); in UnivIS it is marked with the abbreviation “Wdh.”. But you can also write the repetition exam as your first attempt.

Once the correction of the exams are made and the grades are registered, you can see the list of your results on *MeinCampus* (see p. 5.6 *MeinCampus*). Please be patient - sometimes the results aren´t listed until the beginning of the next examination registration period. Some professors publish the preliminary exam results on StudOn (see p. 5.4 StudOn) or via email. You always have the right to access your corrected exam and ask questions if you are not satisfied with your grade or correc-

tion. Your examiner must provide you with an appointment. If your objection to the exam correction is justified, your grade can be corrected to your advantage.

In some classes (especially seminar and electives from different faculties) you will receive academic achievements results in paper form, so called “Scheine” (certificates). They must be collected from the respective lecturer and submitted to Ms. Jahreis of the Examinations Office, so she can enter the results in *MeinCampus*.

3.10 Attempts at deception, plagiarism

It is a given that using non permitted devices (notes, books, cell phones, etc.) is prohibited. If you are caught in such an attempt of deception, you will automatically receive a 5.0 and fail the exam.

The same applies to tutorial exercises, seminar papers or final theses in which content was partly or completely copied from another person. If you must solve a programming exercise and copy a code from a fellow student, you will bring yourself and the other student in trouble. Both will receive zero points and are not allowed to submit any tutorial exercises for the rest of the semester. If such attempts at deception occur repeatedly, the Examination Office must be informed.

3.11 Withdrawal from examinations

If you have already signed up for an exam, but later on do not feel sufficiently prepared, you can withdraw from the exam three working days (a workday is considered all days from Monday to Friday including, excluding holidays) before the exam date on *MeinCampus*- no explanation needed. If your exam would take place on Monday, you can withdraw your registration on *MeinCampus* until midnight on Wednesday. **Do consider these deadlines, as it is a wasted attempt to either take an exam unprepared or not showing up at all.** Classes at other faculties could have different deadlines, research the withdrawal deadlines for an exam on time.

The withdrawal two days before the exam (in our example Thursday) or later is significantly more elaborate. You must report your absence due to health reasons with a doctor´s certificate- which verifies that you are unable to take the test- to Ms. Jahreis at the Examinations Office Office (the form is called “Krankmeldung” can be found here: https://www.fau.de/studium/im-studium/pruefungen-studienordnungen/pruefungsamt-technische-fakultaet under the category “Hinweise und Formulare der Technischen Fakultät”). This certificate should ideally be submitted until the day of the exam, if you are sick make sure e.g. a friend will deliver it. Alternatively, you can send the doctor´s certificate to Ms. Jahreis within one week after the exam date via mail. Once the deadline is passed, the certificate should have been handed in or the exam is else considered failed.

Before beginning the exam, the supervisor will ask the participants if they are feeling healthy. Until this moment you have the possibility to leave the room for health reasons, get a doctor´s certificate right after and submit it to the Examinations Office.

If you want to interrupt due to physical or psychological distress your exam after you have received your exam documents, do so immediately after you realize the precarious situtuation and visit a university appointed doctor, a list of such doctors can be found here: https://www.fau.de/studium/im-studium/pruefungen-studienordnungen/pruefungsamt-technische-fakultaet/. If such a case arises you must contact the Examinations Office (p. 7 Glossary - important terms for studying Medical Engineering) as soon as possible and definetly before the exam in question has been corrected. Once you have officially failed the exam and have received the information, your case cannot be treated as a harship case.

3.12 Repeating the examination

Exams are repeated if someone fails them, but the number of attempts vary. Exams of conditional subjects can only be taken twice at the most; every other exam thrice. Academic achievements without grades can be repeated as often as necessary. For the Master´s thesis you have only a second attempt if you have failed the first one.

If you do not pass an exam, you are automatically registered for the repetition exam in the subsequent semester. This also applies if you take a vacation semester (see p. 3.16 Leave of absence) or de-register from the degree programme. If you do not attend the repetition exam (and do not have a doctor´s certificate), it is still seen as another failed attempt! Stays abroad or internships should therefore be organized in order for you to be able to attend the repetition exam or you must inform the examinations office beforehand and ask Mrs. Jahries to deactivate your exam registration for the corresponding semester. If you intend to switch to a different university after failing an exam, you must contact the examinations office beforehand to avoid a continuous exam registration at FAU. It is possible, that a student fails an exam at the last possible attempt due to reasons without their reach (e.g. chronic disease, personal strokes of fate). For situations of this kind you can request a hardship decision from the examinations committee (p. 7 Glossary - important terms for studying Medical Engineering), who will decide if another attempt is granted. Please contact the student advisory who will support you in your request. It is guaranteed that your personal information will be handled with confidentiality.

Exams that were passed can generally not be repeated. All compulsory electives in the Master´s degree programme have the option of substituting a failed subject with another compulsory elective. In this case contact Ms. Jahreis of the Examinations Office during exam registration to communicate your substitution. The failed attempts, however, are transferred to your alternative subject, i.e. if you have failed once in your first subject you only have two remaining attempts for your alternative

choice. If the first module is worth more ECTS credits (e.g. 5) and is substituted by two modules with lower ECTS credits (2 x 2,5), then the failed attempt will only be transferred to one of the modules.

Important note!!!

You cannot de-register from repetition exams. You can generally only withdraw from them with a doctor´s certificate.

The certificates are always directed to Ms. Jahreis at the Examinations Office and never to the professor whose exam is concerned.

3.13 Additional course and examination achievements

Once you have achieved the mandatory 120 ECTS credit points for the Master´s degree you won´t be de-registered from the university immediately, but are enrolled until the end of the ongoing semester. You can take advantage of the time and take more exams of the compulsory elective or elective modules, in order to improve your final grade. Only exception: exams that were already passed cannot be repeated!

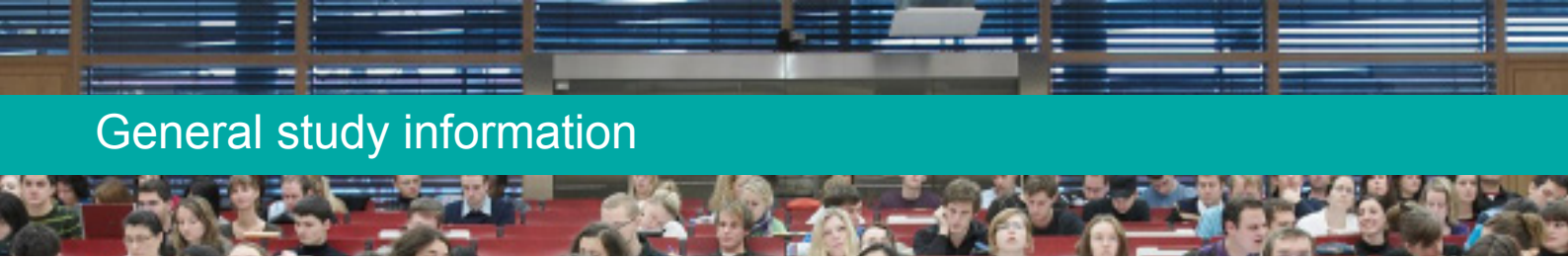
If you decide to take more exams, please communicate this to Ms. Jahreis of the Examinations Office, so that your certificate won´t be issued prematurely. At the end of your studies you must inform her on which achievements should be listed in your certificate, if you don´t give a preference, the best achievements are selected. In the transcript of records (see p. 10.8 Template: Form for final thesis paper, Transcript of Records, Certificate, Grade distribution table) all of your achievements are listed (the ones that were not part of your final grade are listed in the category “Add-on modules”).

3.14 Calculation of grades

MeinCampus calculates the current total grade of the Master´s and the module groups (e.g. “Flexible Budget”) with every new entry. If you choose to render the exact amount of ECTS credits for a module groups, the individual modules are incorporated into the final grade according to their ECTS value. The final grade is not rounded, but takes only the first decimal into account.

Example: Flexible Budget module of the Master´s (10 ECTS)

- achievement worth 5 ECTS credits: grade: 1.0



- achievement worth 2.5 ECTS credits: grade: 1.0
- achievement worth 2.5 ECTS credits: grade: 2.0

  → average grade: (5 x 1 + 2.5 x 1 + 2.5 x 2) : 10 = 1.25

The average grade of 1.2 is worth 10 ECTS credits in the Master´s final grade.

If you render more credits than demanded in the module group, the Examinations Office will automatically pick the best grades available that are necessary to meet the ECTS conditions of the module group. Additional modules are not taken into account. The last module, i.e. the worst of the selected best, will be “cut” if it exceeds the ETCS credit value of the module group. The calculated grade will not be rounded up, but abbreviated after the first decimal.

Example: Flexible Budget module of the Master´s (10 ECTS)

- achievement worth 5 ECTS credits: grade: 2.0
- achievement worth 2.5 ECTS credits: grade: 1.0
- achievement worth 2.5 ECTS credits: grade: 1.0
- achievement worth 2.5 ECTS credits: grade: 1.0

  → average grade: (2.5 x 2 + 2.5 x 1 + 2.5 x 1 + 2.5 x 1): 10 = 1.25

The average grade of 1.2 is worth 10 ECTS credits in the Master´s final grade which is worth a total of 110 ECTS credit points, as module group M6 is not graded

Should you have rendered more achievements than the ECTS credits required in the module group and do not want to automatically have the best possible listed, then you must contact the Examinations Office before your final certificate is issued and communicate which achievements should be incorporated into your final grade.

Since the calculation of the module group subgrade was cut after the first decimal, the module groups M2, M3 and M5 are combined to a conjoined subgrade (total credit worth: 50 ECTS) and its grade cut after the first decimal, too, as well as the Master´s final grade (therefore not rounded up).

3.15 Studying abroad

If you are thinking about going abroad during your studies, please start your planning process early, ideally 18 months in advance. For a first consultation for stays abroad within the Erasmus partnerships and the direct exchange programme of the Faculty of Engineering (e.g. with Australia, Canada and the USA) you can turn to the Office of Student Information and Advice (StIB) (https://www.tf.fau.eu/studying/office-for-student-information-and-advice-stib/). A good overview of your options for

semesters abroad in general is listed on the homepage of FAU´s International Office (www.fau.eu/international/going-abroad) or on the Medical Engineering webpage under http://www.medical-engineering.study.fau.eu/current-students/study-abroad.shtml.

As the Master´s mainly consists of compulsory electives, you are very independent in planning a stay abroad under the condition that you have passed every conditional subject. In general, the medical subjects offered by foreign universities are well applicable for accreditation in module Medical specialisation modules (M 1) as well as technical and scientific Laboratory trainings for an accreditation as Academic Laboratory (M 6.1, see p. 10.1 Module Catalogue Master´s Programme Medical Engineering).

Furthermore, the Research Laboratory (M 6.2, see p. 2.3.4.1 Modules of the core curriculum (for all branches of study)) is a favourable academic achievement to conduct during a stay abroad. In this case you need a supervisor at one of the chairs at the Faculty of Engineering at FAU. They must issue the laboratory certificate, which you can download on the Medical Engineering homepage. The research project itself will be conducted at the university abroad with further tutors.

The exchange offers for Medical Engineering students are under development, our recent partner universities can be found here: www.medical-engineering.study.fau.eu/current-students/study-abroad.shtml. Medical Engineering students can participate in the Erasmus exchange programmes of the departments involved in the study programme (Electrical Engineering, Computer Sciences, Mechanical Engineering, Material Sciences and Chemical Engineering, and Bioengineering, depending on your branch of study). Just consult the corresponding webpages of the International Office.

Is it also possible to write a thesis paper abroad, in this case you must have a responsible supervisor from one of the departments participating in the Medical Engineering Programme (see p. 10.9 List of all departments involved in the study programme) who agrees to let you write you Bachelor´s or Master´s thesis paper under an external, technical supervision. The chairs often have already established contacts abroad, it is worth asking! A request for accreditation won´t be necessary, because the FAU supervisor will determine the grade.

In every other case, you should make sure before leaving that your achievements abroad will be recognized for your FAU studies.

In cases of studying, abroad students and the study advisory commit to a so called learning agreement, i.e. that students search for classes in the curriculum of the foreign university that correspond with the contents and learning achievements from Erlangen. A good way of determining if classes are equivalent is to compare the foreign and the Erlangen modules and highlight the common content. **If 80% of the material is identical, there is a realistic chance of an accreditation.** Accreditation for compulsory electives can be handled more flexibly. Please ask your study advisor. By

writing an email to the study advisory, you can request an example sheet in which you can insert the module descriptions (foreign and FAU), (possibly converted) credits and further details. This sheet is to be sent back to the study advisory who will discuss the possible accreditation with the person responsible for the FAU modules.

The more information is provided to the foreign subjects, the higher your chances of accreditation are. Invest some time and effort in researching the information! With short content descriptions, that might not even resemble the modules in Erlangen, you only irritate your professor and do little to improve your chances. Instead, demonstrate that you have read your study offers carefully and make your information available as reader friendly as possible. It is helpful to contact the professors of your foreign university from Germany before leaving and ask for a detailed content description.

If you want to discuss the accreditation with you FAU professor personally, you can contact him via email. Make sure to save all emails from this correspondence and submit them together with your learning agreement to the study advisory.

If the people responable for the module give their consent, the accreditation of your foreign achievements will be inserted into the learning agreement, making the accreditation process upon your return easier and quicker. Should changes in your study plan occur during your stay abroad, please contact the study advisory as soon as possible in order to adjust your learning agreement. We generally recommend taking a vacation semester (see next chapter) for your semester abroad.

3.16 Leave of absence

A leave of absence during your studies for important reasons can be requested at the Student Records Office (form: www.fau.de/files/2013/10/Beurlaubung.pdf, more information: https://www.fau.eu/study/current-students/student-records-office/). This includes e.g. a semester abroad, maternity and parental leave, a serious health condition or severe other issues. A practical semester does not exist at FAU, you can, however, request a leave of absence if an internship takes up more than seven weeks of the lecture period. For your study abroad, you can take up to two subsequent semester leaves, once in your Bachelor´s and once in your Master´s, for an internship only one semester each. **A vacation semester cannot be granted for professional activities, writing a final thesis paper or a family visit abroad.**

If you are able to plan your leave of absence early on, please submit your request before re-registering for the next semester, but at the latest before the start of the lecture period of the new semester. If the reason for your leave of absence crystallizes later on in the semester, you can naturally appeal on short notice, however, requests that are submitted two months after the beginning of the lecture period cannot be considered. It is also not possible to convert retroactively an already completed semester into a vacation semester.

The vacation semester is not counted as an official Master´s semester; it is therefore not allowed to render any seminar or examination achievements during the vacation semester.

The exceptions to this are:

- Repeating exams: You are obligated to repeat exams during your vacation semester (does not apply if you have Mrs. Jahreis deactivate your exam registration).
- Study abroad: You can incorporate academic achievements rendered during a study abroad up to a value of 29 ECTS credit points per semester into your studies in Germany without having to revoke your leave of absence. If you surpass the limit, your vacation semester won´t be revoked, however you will automatically advance to the next higher official semester.
- If you miss exams in an official semester at FAU due to your upcoming stay abroad (because the semester at the foreign university starts earlier), you have the possibility of taking those missed exams after your return during the vacation semester. For this procedure, you must submit a confirmation of the foreign academic calendar to Ms. Jahreis. *Important note:* The foreign academic achievements that shall be incorporated into you study at FAU should not be of a higher value than 29 ECTS credit points or else will automatically advance to the next higher official semester.
- If you are on maternity or paternity leave, you are allowed to render academic achievements during your vacation semester.

Important note!!!

Generally, it is not possible to perform academic achievements during your leave of absence. In Bavaria, however, students who take leave of absence due to raising children have the possibility to perform academic achievements.

3.17 Accreditation of academic achievements

If you have rendered achievements at a different university in Germany or abroad, in a different degree programme, during a vocational training or professional activities, which are equivalent to those of the Medical Engineering degree programme, it is possible in general to accredit those achievements to your studies. You can find out whether a Medical Engineering module is comparable to your external achievement by looking through its module description in the corresponding module handbook on the Medical Engineering homepage or UnivIS (see p. 5.3 UnivIS).

We recommend to compare the content description of your external achievement with the FAU Medical Engineering module and highlight the identical elements. If 80% of the material is identical, there is a realistic chance of an accreditation. It is always possible to accredit your achievements for the Flexible Budget module under the conditions that your achievement was graded and not part of your Bachelor´s studies. In this case, you won´t need to search for an equivalent class.

Next, you must fill out the accreditation form.

In the bracket “mein campus module no.“ you must insert the corresponding module (group) number (M 1, M 7, etc.) from the Master´s module catalogue. Hand in the signed form at the study advisory, in addition to following documents: Certificate/transcript of records and an extensive module description (in German or English, please translate if necessary) or, if not existing, scripts, notes, old exams, literature references, etc. Only exception: if the accreditation has been determined in a learning agreement (see p. 3.15 Studying abroad), you don´t have to submit the aforementioned documents.

Information on the common semester workload and the grading system of the foreign university; i.e. the number of credit points (if not ECTS) that should be achieved during one semester and the best and worst possible grade according to the foreign grading system

Your accreditation representative then discusses the possible accreditation with the person responsible for the FAU modules. If the lecturers give their consent, the results will be transferred to the Examinations Office and listed in *MeinCampus*, where foreign grades and non-European credits are transferred into the German system. By accrediting a subject from abroad for a certain Medical Engineering class, you will receive as many ECTS credit as the corresponding module indicated in the Medical Engineering study plan. If accrediting for the module “Flexible Budget”, the grades will be transferred exactly into the ECTS system. Transferred foreign grades are not adjusted meticulously, i.e. grades can be listed that do not exactly correspond with the German grading levels (2.0/2.3/2.7 etc.).

If your request for accreditation of academic achievement is denied by the module responsible, you have the right to object the decision at the Examinations Office and your case will be re-evaluated.

You can issue your request for accreditation during the entire time of your studies; your achievements

will stay valid, no matter when you they were rendered. You also have the possibility to accredit unused achievement from a previous or interrupted study or a stay abroad during your Bachelor´s to the Flexible Budget Master´s module.

Accrediting an achievement in your Master´s that has already been accredited in your Bachelor´s is generally not possible. Achievements that were part of your grade from your completed Bachelor´s cannot be reused for your Master´s.

Important note!!!

If your accreditation has a value of 30 ECTS credits or higher, you are automatically elevated into the next higher semester.

The accreditation of non-academic achievements (e.g. from vocational training) may not exceed half of the ECTS credit values of your degree programme, i.e. 90 ECTS credits in your Bachelor´s and 60 ECTS in your Master´s.

3.18 Extending your studies

In case you cannot finish your Master´s studies within the standard duration (four semesters), you have the possibility of extending your studies by one semester (in total five). You do not have to submit a special request, but merely to re-register for the next semester (see p. 3.4 Re-registration).

If you need more than five semesters for your Master´s, you have to hand in a petition for extending your studies at Ms. Jahreis of the Examinations Office and explain why this extension is necessary. You can then re-register as usual; your petition for extension should be submitted to the Examinations Office until September 20th (for the winter semester) or March 20th (for the summer semester). The form can be found here.

3.19 Switching your degree programme or university

If you wish to switch from Medical Engineering to a different degree programme, you can consult the study advisory Medical Engineering for a first orientation. Explicit requests for accreditation of academic achievements from Medical Engineering to a different degree programme must be discussed with the respective study advisory and/or accreditation representative of the new study programme (see p. 8 Useful addresses and contact persons). If you intend to switch university, please consult the corresponding contacts there.

Should you be interested in switching to a degree programme of a different Faculty at FAU or do not have any exact plan, you can make use of the advisory programme of the Student Advice and Career Service (IBZ, see p. 8 Useful addresses and contact persons).

4 Students in special situations

4.1 Students with a chronic condition or disability

Prospective and current students with a disability or a chronic condition are entitled to special support. Chronic conditions are categorized by physical, mental or psychological impairments with symptoms lasting longer than six months. This includes mental conditions or dyslexia.

As the process of admission for both the Bachelor´s and Master´s degree programme Medical Engineering is conducted by an entrance examination, applicants with disabilities have the possibility to request compensation for the disabilities and a subsequent adjustment of the examination conditions (by adding more time or changing the nature of the examination).

A compensation of disadvantages is also possible for exams during the course of study. Please contact the head of the Student Advice and Career Service (IBZ, see p. 8 Useful addresses and contact persons): Dr. Gündel. He can tell you in detail how a doctor´s certificate must look like in order to receive compensation for disadvantages. Once the certificate is submitted and the compensation is greenlighted, Ms. Jahreis of the Examinations Office will issue an appropriate document which should be handed in at the department where your examination takes place as soon as possible. This is necessary to organize the compensation, e.g. by seating you separately during the exam, as you will be less disturbed by students leaving sooner.

If you are unsure of issuing a request for compensation, you can contact the study advisory Medical Engineering. Your request will always be handled confidentially!

4.2 Studying during pregnancy or with child

As a pregnant student, you enjoy certain protection. Pregnant students who can prove with a doctor´s certificate, up to four weeks before an exam that they are in their 30th week of pregnancy and are not able to take the exam under the usual conditions are entitled to perform the exam in a different matter or arrange an extended exam period with their professor and the Examinations Office.

Special leave of absence conditions also account for students with children:

Parent students can request a maternity of parental leave. The leave of absence is valid from the birth of the child until the completion of its third year (in total not more than six semesters). It is possible to postpone twelve months of this parental leave (two semesters) to a point later on until the eighth year of the child.

Further than that, a student can take up to two vacation semesters (due to different reasons: stay abroad, internship, see p. 3.16 Leave of absence) that are not included into the maternity or parental leave.

If you have difficulties meeting your exam date, there are different options for you, e.g. the Family Service offers childcare during the exam time in cases of emergency or if you cannot attend the exam due to a family emergency, you can request prompt repetition dates.

If you are interested in a consultation or more information, e.g. on childcare offers at the university or living arrangements for student parents, you can make use of the Family Service of FAU (see p. 8 Useful addresses and contact persons). Information on financial aid for students with children can be found here: www.studentenwerke.de/en/content/studentenwerke-establish-family-friendly.

4.3 Psychological consultation

Studying at university is a time filled with many happy experiences but may also be prone to high expectations and levels of stress. Test anxiety, difficulties in time management (procrastination) or doubts if one has chosen the right degree programme are a couple of examples for situations that can be burdensome for students. Especially conflicts with your partner, family members or fellow students are difficult to digest in your day-to-day schedule.

FAU students with these or different problems can contact the psychological advisory at the *Studentenwerk* (Association for Student Affairs) (for the contact see p. 8 Useful addresses and contact persons). During your first conversation, you are not required to give personal details, as it is non-committal and free of charge during the open consultation hours. The employees of the advisory are all trained psychologists and are familiar with student specific issues. It does not matter what weighs on you, you will soon discover that you do not stand alone with your problems.

4.4 Part time studies

It is possible to study the Master´s Medical Engineering part time. This means you can complete your studies part time with half of the time and workload in which case your number of semesters doubles. Per study year students can complete up to 35 ECTS credits. The degree programme's standard duration is therefore set to eight semester with the possibility to extend two more semesters. The Master´s thesis work period consists of 12 months. The studies´ content remains identical to the full time studies. A part time Bachelor´s Medical Engineering is currently not offered.

You choose your type of studying (full time or part time) while enrolling for the Master´s degree programme. Switching between part and full time is possible once per study year and requires a written petition at the Student Records Office. After three full time semesters, a switch to part time is only given in reasonable cases. A switch to gain more time for the Master´s thesis is therefore not possible.

This offer is directed to professional athletes, students with children, health conditions, and caregiving tasks or with an active job. The part time schedule, however, does not take place in the evening

or on weekends, i.e. you must attend the regular classes with full time students taking place during the day and the entire week, the part time studies therefore should only be considered if you can set your work hours flexibly.

International students who require a study visa must clarify with officials of the foreign office if a part time study programme is permitted. In general, a residence permit is only issued for full time studies.

4.5 Double degree

Some Medical Engineering students are interested in the option for a double degree in their Master´s. They would like to study the Master´s Medical Engineering at the same time as a Master´s in Computer Science or Electrical Engineering (both taught in German) and to integrate the exact same academic achievement (if identical) in both degree programmes, e.g. the Master´s thesis if the programme and examination regulations (FPO) allow it. In general, this is possible, but must be considered with care.

For a double admission, a formal petition at the Student Records Office must be made and approved by the deans of the faculties in question. Apart from the regular admission requirements (i.e. language levels and subject-related requirements), you must first justify that you have a special interest -professional or academic- in the joint completion of both of your desired degree programmes. Secondly, you must verify that you are able to complete both studies without overlaps and within the standard duration. Please take in mind that a double study is not a reason for an extension of your study period and you might receive worse grades due to the elevated workload.

Because of the second condition rarely being met, it is recommended to first complete one Master´s degree programme and then begin the second one, to which many academic achievement from the first Master´s can be accredited to (see p. 3.17 Accreditation of academic achievements). The respective Officer of Accreditation of Academic Achievements is responsible for this accreditation (see p. 8 Useful addresses and contact persons). However, please take note, that in your second Master´s certificate the double credited achievements are indicated with “accreditation from previous studies” and ask yourself if this will really give you an advantage in the job market.

5 Online tools

5.1 IdM-Portal

The IdM-Portal is where you log in first after enrolment. For this, you will need the activation code you have received from the Student Records Office after handing in all enrolment documents and paying the semester fee. You will receive your personal user identification and password either directly at the Student Records Office or via mail after paying the fee (if you indicate a correct address!) With this user identification, you activate your IdM account and must upload a photo of yourself for your student id (FAU-Card). After completing this step you will receive your FAU-Card within the following four weeks, which you can use e.g. for paying in the cafeteria or using the library services.

The IdM-Portal contains you general user data, e.g. you can check for which services your card is activated under the category “services”. The button “Requests/Tasks” allows you to block your FAU-Card if you happen to lose it. The email forwarding function allows you to redirect the emails you receive at your @fau address to another email address (Home » Profile » Data overview: Forwarding to a different email address) **If you do not use your FAU email account regularly, please use the forwarding service in order to not miss important information!** One of your first steps in the IdM-Portal is to activate the library services of your card by clicking on “Requests/Tasks”, “FAUcard”, “Library account activation” and follow the steps. The activation of your library account may take one to two working days. On the first page of the IdM-Portal, you have the possibility to subscribe to newsletters or cancel them.

5.2 CIP-Pool-Account

CIP-Pools are open computer laboratories located across the university. However, if you install an account via the Computer Science´s CIP-Pool team, you can only access the CIP-Pools of the Department of Computer Science (blue tower). In the first two weeks of the lecture period you have the possibility to log in to any of the Computer Science´s CIP-Pools using the log-in name and password “cipan” and let the system give you a step by step to install your account. If you need additional help with the process, you can find help during the CIP-Pool consultation hour. The consultation hour takes place in the first two weeks of the lecture period from Monday to Friday from 12 am until 1 pm in the server room 00.157 (ground floor, blue tower) or according to the CIP-Pool´s bulletin. You can find further information (English available) regarding printing and scanning at the CIP-Pools and answers to frequently asked questions at their website: https://wwwcip.informatik.uni-erlangen.de/index.en.html.

5.3 UnivIS

The university´s information system (www.univis.fau.de) is a large database you can use for example to search for your courses, including their contents, registration and examination types, ECTS points or related tutorials and internships.

Another helpful service of UnivIS is the search function for persons or rooms with which you are able to find information on every employee of FAU (with address, telephone number and email address) or the location of the lecture halls and seminar rooms. A lesser-known function is the events calendar and the job offers section for FAU, which can be very interesting if you are seeking a part-time job as a student assistant or a doctoral position.

UnivIS also helps you in creating your individual class schedule by selecting the study programme “Medical Engineering”. You are also able to generate your individual schedule and save it as a pdf-document. You can find a more detailed instruction here: http://www.medical-engineering.study.fau.eu/current-students/general-study-information-masters-programme.shtml.

5.4 StudOn

StudOn is the communication and education platform for all FAU students, where you have your personal desktop in which you can administrate the classes and groups for which you are registered. In these groups, you have the possibility to communicate with the professors and tutors, as well as with other students. For some lectures, learning platforms are activated on StudOn to help you prepare for your exam. Furthermore, you can find the material (lecture slides, tutorial exercises) for the corresponding lectures and tutorials. Your professor will tell you how to find the group at your first lecture.

5.5 Campo

The Campo portal is used for the Master application and administrating the enrolment at FAU - please do not confuse it with *MeinCampus* (see below)!

5.6 MeinCampus

MeinCampus (www.campus.fau.de) provides an abundance of administrative functions. In the course of your studies, you will need the platform to register and cancel your exams. You can also print your certificate of enrolment, overview of grades and your *Bafög* certificate (see p. 3.5 BAföG). Most of the grades of passed exams are directly registered in *MeinCampus*. In the navigation bar “Studentenkanzlei aktuell“ (current news Student Records Office) you are able to find the information you will need to pay the semester fee while re-registering (see p. 3.4 Re-registration). You can

find a more detailed instruction with screenshots for *MeinCampus* at http://www.medical-engineering.study.fau.eu/current-students/general-study-information-masters-programme.shtml.

5.7 Virtual University of Bavaria (VHB)

The Virtual University of Bavaria is a cooperation between Bavarian universities offering a wide range of online courses, which is free of charge for students enrolled at a Bavarian university. The VHB gives you the opportunity to take different classes simultaneously to your studies at FAU and schedule you study time more flexibly. This is an advantage if you have frequent overlaps in your schedule or if you generally tend to study from your home. Some of the VHB courses are a part of the catalogues of compulsory electives in the Master´s degree programme Medical Engineering. Every **graded** class that ends with an **on-site exam (no online exam)** can be used for the Master´s module “Flexible Budget”.

In order to participate you must first register yourself on the VHB´s webpage (www.vhb.org/en/homepage/). Select the status “Student einer Trägerhochschule“(student of a participating university) and „Gesundheitstechnik“ (Health Engineering) as your degree programme (category “Studienfach”). You will be guided through the further registration process. The VHB homepage informs you about the courses available and its registration and examination details. Parts of the VHB website are only available in German but you can find a user’s manual on the Medical Engineering website: http://www.medical-engineering.study.fau.eu/current-students/general-study-information-masters-programme.shtml. Most of the exams are taken online, however some require a written or oral test (e.g. at FAU or other universities). Only the latter can be accredited towards your Master´s degree.

5.8 EST system

The “Exercise Submission Tool”, or EST, is used by the Department of Computer Science 5 (Chair of Pattern Recognition (LME)) to submit weekly tutorial exercises online and to view its results. To use the tool you must register yourself with your University Student Number at: https://est.informatik.uni-erlangen.de/en/login.html?action=student. Registration is open only during the first weeks of the lecture period.

5.9 Video platforms

FAU has two platforms at the moment: www.video.uni-erlangen.de (in German), an offer of the FAU Computer Centre and video.cs.fau.de/, supervised by the Student Union for Computer Science (FSI Inf). Both platforms contain past and upcoming lectures held at FAU. At fsi.informatik.uni-erlangen.de/dw/informationen/videoaufzeichnungen (in German) you can base your search on the semester, professor or course title and follow the desired lecture from your home (lectures do not require attendance!). The videos can also help you to prepare for exams and give you the opportunity to repeat

the lecture´s content, especially if you intend to take the exam to a winter semester course in the summer semester or vice versa.

5.10 Important websites

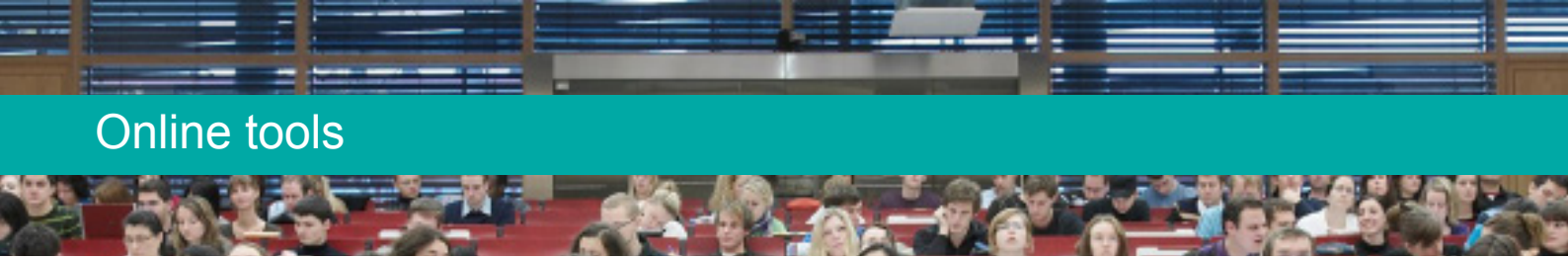
For questions concerning your studies, you should first consult the Medical Engineering homepage (www.medical-engineering.study.fau.eu) where you can find a **FAQ section**. The information on the Medical Engineering homepage is also available in English for our international students. The archive offers a collection of catalogues of compulsory elective modules from former semesters that can become helpful at the end of your studies to decide which course should be credited for which module. When in doubt, consult the archive to see which module the course could be credited to at the moment when you have attempted the first corresponding exam.

The events calendar of the Faculty of Engineering´s website (https://www.apps.tf.fau.de/veranstaltungskalender/) keeps you informed on recent speeches, training events for entering the job market or job fairs.

5.11 VPN-Client

The VPN-Client (Virtual Private Network) offers you the possibility to access the university´s network and its services from your home. In most cases, it is sufficient to install the Cisco-VPN of FAU´s Computer Centre, which can be downloaded for different operating systems at the Computer Centre's website (www.rrze.fau.de/dienste/internet-zugang/vpn/cisco-vpn.shtml (in German)).

By using this method, you cannot only access software provided by the Computer Centre to enrolled students, but you can also use the wide range of e-books and online publications offered by the university library.



5.12 Overview: which tool can be used for what?

Online tool:	Features:
IdM portal	General user information FAU-Card features Blocking FAU-Card if lost Redirecting emails (Un-)subscribe university newsletters
UnivIS	Search for classes and modules Search for people and rooms Creating personal class schedule Events calendar Job offers
Studon	Platform for communication and studying Study and exercise material Forums for individual classes
Campo	Registration
meinCampus	(De-)registering for exams Exam dates BaföG certificates Certificate of enrolment Overview of grades Information on re-registration process

6 Student life

Of course, your study experience does not exclusively revolve around ECTS credits, modules and exams. Especially the Faculty of Engineering takes great efforts in offering social events. There are many parties and events in the south campus buildings and outside depending on the season. Not only the famous TechFak summer party is a big event, but also the parties organized by the student associations (FSI) of the different study programmes or other student organizations. The student association FSI Medical Engineering (p. 7 Glossary - important terms for studying Medical Engineering) holds summer and Christmas events, the FSI Computer Science is famous for their crypto parties and in December, the *ETG Kurzschluss* shows the classic German movie “Die Feuerzangenbowle”. To keep yourself informed on the events keep your eye out for posters and bills or subscribe to the mailing list of the respective organizers. If you want to involve yourself personally, help out at the events or are interested in meeting new people, you are very welcome to join the FSI Medical Engineering or any other student organization. You can find more information to other events, e.g. FAU sport activities, Erlangen´s nightlife and the *FAU FabLab* where students can work on their own technical projects in the first-semester information pamphlet (also available in English) of the FSI Medical Engineering which is handed out in the FSI room or at the study advisor office.

Figure 5: summer event of the FSI Medical Engineering

7 Glossary - important terms for studying Medical Engineering

Compulsory courses

Taking compulsory courses is mandatory; this includes the conditional subjects and the obligatory compulsory electives as well as the seminar Medical Ethics (p. 10.1 Module Catalogue Master´s Programme Medical Engineering). You have one year to pass your conditional subjects, no matter whether you have one or two chances to take the corresponding exam during that time. You have three attempts in order to pass all other modules.

Compulsory electives

Compulsory electives consist of a preselected list for a respective module group. You can choose the modules you want to take within the list. At the end of your studies, enough modules must be passed successfully to fulfil the ECTS requirement for the group. Most module groups in the Master degree programme consist of compulsory electives. If you fail an exam for a regular compulsory elective (not an obligatory one, see above) you are not obligated to repeat the exam in the following semester. You can switch your registration for the repeat exam to a new module from the same module group by sending an email to Ms. Jahreis of the examinations office during exam registration.

Degree Programme and Examination Regulations (FPO)

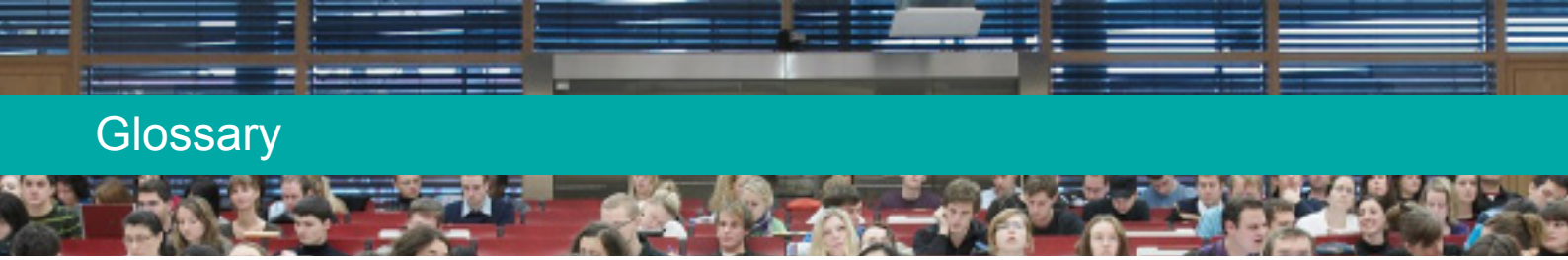
The degree programme and examination regulations Medical Engineering (FPO) contain discipline-related regulations for the examinations of the Bachelor and Master degree programme Medical Engineering. If the FPO does not state any guidelines, the rules of the Faculty of Engineering APO apply (see below). At the moment, the degree programme Medical Engineering has two different FPO versions: if you have begun your Master studies on April 1, 2013 or after, you are studying according to the FPO version of 2013, if you have begun studying beforehand the previous FPO version of 2011 applies for your Master studies.

ECTS Credits

ECTS stands for European Credit Transfer and Accumulation System, which was introduced to measure the workload of students and compare study performances Europe-wide. The ECTS credits a student receives for completing a course are in relation to the required workload. One ECTS credit equals a workload of roughly 30 hours. The total workload for a Bachelor degree are 180 ECTS and for a Master degree 120 ECTS. **There is no minimum of ECTS credits points that must be acquired per semester.** It is recommended to achieve around 30 ECTS points per semester to complete your studies in the standard study period, which can be important for *BAföG* recipients (p. 3.5 BAföG).

Electives

Electives can be chosen out of the entire class selection of FAU (from all faculties) and the Virtual Univer-



sity of Bavaria. The module Flexible Budget of the Master´s degree programme is an elective module. Please note that you can only use **graded** coursework **acquired through on-site exams** for this module.

Examinations Committee

The examinations committee of the Faculty of Engineering is responsible for all important case-by-case decisions regarding the degree programme and examinations. The committee meets twice per semester and discusses specific cases, e.g. if a student who has failed his exam three times is given a final chance. Urgent decisions can be made directly by the presiding members. If you intend to appeal a decision (e.g. regarding the denied accreditation of academic achievements or a questionable grade) you must approach the examinations committee. The current head of the examinations committee is Prof. Andreas Wierschem, but you can forward your inquiry via email to Ms. Jahreis of the Examinations Office.

General degree programme and examination regulations (APO)

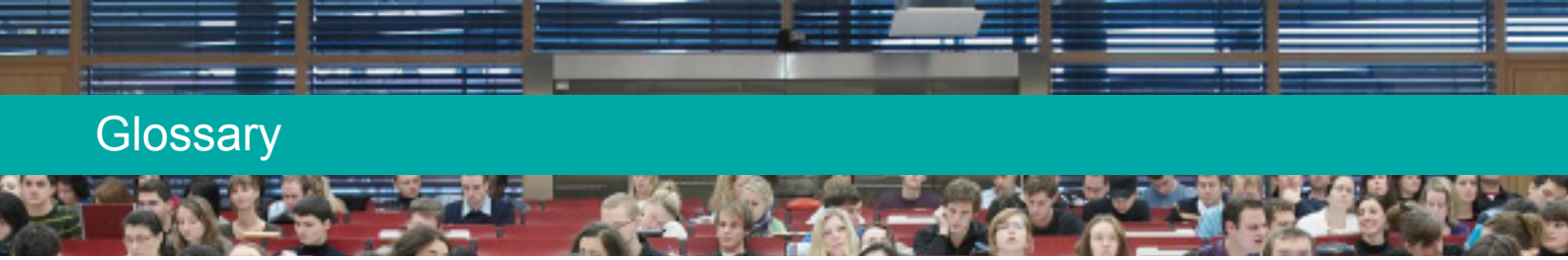
For Medical Engineering students the APO Tech FAK - the General Examination Regulations for the Bachelor's and Master's degree programmes at the Faculty of Engineering- apply. The documents can be found in German and English at the link section of the Medical Engineering website. It contains essential regulations for all study programs of the Faculty of Engineering and is complemented in discipline-related questions by the degree programme and examination regulations FPO (see above).

Module

One module is a chronologically connected and self-contained teaching and learning unit, the contents of which can be tested in a study-related examination (for the different exam types p. 3.9 Exams). Colloquially the term "subject" is used for describing a module. For example, the module or subject "Engineering Mathematics" contains an eponymous lecture and exercise. Sometimes it is difficult to see at first look which course or lecture belongs to the same module. In the Master degree programme you can only complete module M 4.3 if have successfully passed both module components, the seminars "Medical Ethics" (M 4.3a) and "Medical Engineering" (M 4.3b).

Module catalogue

The module catalogue complements the Master's study plan template. Unlike the study plan template, it is not regulated by the programme and examination regulations (FPO) and can be changed every semester by the Study Commission. Once a new catalogue is formed, it will be published on the Medical Engineering website and you will be notified by your study advisory. The current catalogue determines which modules are available in the ongoing semester. The catalogues of previous semesters are can be found in the catalogue archive on the Medical Engineering website open for your consultation.



Glossary

Module descriptions

The module descriptions determine which content is to be taught, which learning goals are strived for and which qualifications a student should acquire from the module. They furthermore indicate the examination type for the module and how many ECTS credit points it is worth. Usually you can find the module description for your degree programme in the module handbook or in the lecture list search on UnivIS. The module descriptions are especially important if you are interested in studying abroad or are seeking the accreditation of external achievements in exchange for the FAU Medical Engineering modules (see p. 3.17 Accreditation of academic achievements)

Module group

The different modules of a branch of study are combined to module groups with an individual name and number (the M stands for the Master module groups). Some module groups represent a topical unity, others are a placeholder to choose different possibilities (e.g. M 7 Flexible Budget). An overview of the Master module groups can be found in the module catalogue (p. 10.1 Module Catalogue Master´s Programme Medical Engineering) or on the Medical Engineering homepage.

Module handbook

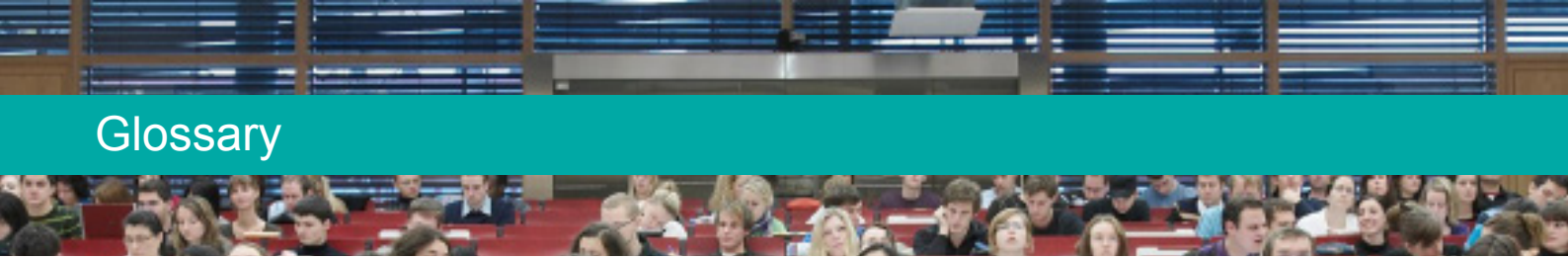
A module handbook for the Master degree programme Medical Engineering is available and contains all module groups and their respective modules. Browse the Medical Engineering homepage under the category “Current Students-General Study Information Master’s Programme” to find a module handbook generated based on the most recent data from UnivIS. But beware, if a class has not been registered correctly in UnivIS or wasn´t tagged as a Medical Engineering class, then there is a possibility that it won´t be listed in the module handbook for Medical Engineering. It is therefore important to always study both the module handbook and the module catalogue and if necessary search for classes that may be missing in the module handbook in UnivIS.

Practical/Laboratory Training

Practical/Laboratory training takes different forms in the Medical Engineering degree programme: a practical class with mandatory attendance, which usually takes place in the laboratory (Academic Laboratory), an internship in an industrial company (voluntary for Master´s students) and the Research Laboratory, a practical research project at a university chair.

Programme structure/Master’s study plan template

There is no dictated schedule in the Master Medical Engineering. The study plan template gives you an overview of the required module groups and the overall ECTS credit points you must achieve for completing a module group (p. 2.3.3 Course of study). Which classes apply for which module group can be found in the module catalogue. The programme and examination regulations (FPO) Medical



Engineering regulate the Master´s study structure. The version you started with (currently FPO 2013) applies for the period of your studies.

Student Association Medical Engineering (FSI MedTech)

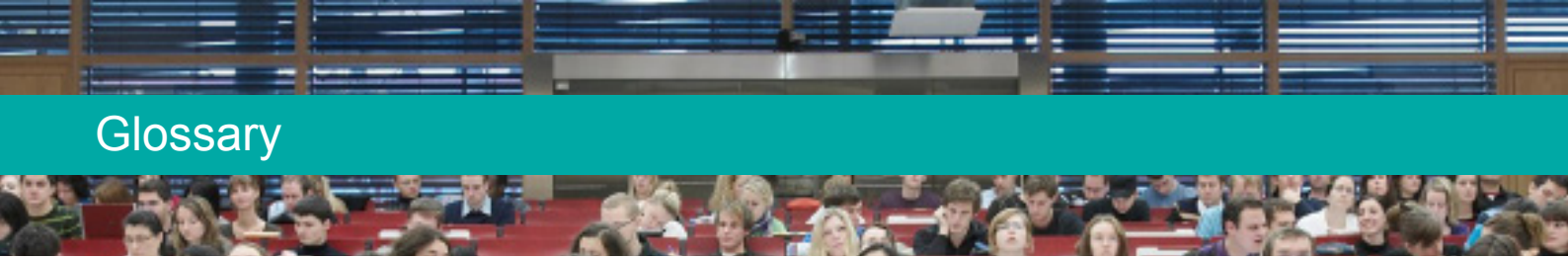
The student association FSI MedTech is a collective of students who are representing the interests of all Medical Engineering students. The FSI also has members in the Study Commission Medical Engineering in which important decisions for the degree programme are made. The FSI is also your student contact for all questions regarding your studies, e.g. if you need old exams in order to exercise for your own exam, if you have questions to certain modules or professors or if you need help or tips on general topics. For these types of questions a weekly consultation hour is offered, the exact time can be found on the FSI homepage. Of course, you can just stop by the FSI room and talk to your fellow students. The FSI regularly organizes information events, e.g. on beginning your studies or deciding on your branch of study for your Bachelor. They are also responsible for the social life of the Medical Engineering students and throws a variety of parties where you can meet fellow students from higher semesters and have of course the opportunity to actively participate yourself (p. 8 Useful addresses and contact persons).

Study Commission Medical Engineering (StuKo MT)

The Study Commission Medical Engineering is responsible for all decisions concerning the study admission, the programme and examination regulations and the module catalogue for the degree programme Medical Engineering. The Study Commission meets twice per semester. Participants are the head of the Study Commission, Prof. Andreas Maier, the study programme coordinator, Heike Leutheuser, four representatives of the student association FSI Medical Engineering, the study advisor and others who are involved in the organization of the degree programme. The panel´s topics are general problems in the degree programme and including certain classes in the module catalogue. You can actively participate in the commission´s topics as a student by contacting the study advisory or the FSI Medical Engineering with your problem or concern, who will represent your interests in the Study Commission. The site https://www.fau.eu/university/organisation/commissions-and-senior-officers/ gives an overview over all panels participating in university politics at FAU.

SWS

SWS stand for the weekly lecture hour and indicates the duration of a class. A SWS is equal to 45 minutes, many lectures consists of 2 SWS units, but longer periods for tutorials and internships are possible. By successfully completing a class of 2 SWS units (through an written exam or otherwise) you will usually receive 2,5 ECTS credit points, for a class of 4 SWS units 5 ECTS credit points, and if accompanied by additional tutorials or project work up to 7,5 or 10 credit points. However, there is no direct correlation between SWS units and ECTS credit points, because the workload for the preparation and follow-up work of a class varies heavily.



TNZB

The Science and Technology Branch Library (TNZB) is a branch of the Central University Library and is located on the south campus, it includes books, magazines and other publications of the field of science and technology. In order to borrow books you must have a student ID that is activated for library services (see p. 5.1 IdM-Portal). The service team of TNZB offers frequent library tours in English to introduce the students to literary research.

ZiMT

The Central Institute of Medical Engineering (ZiMT) functions as a bridge between research, scholarship and business in the field of Medical Engineering. The institute is important for students as it is where the coordinators of the study programme are located. The ZiMT team also coordinates the admission process, in which the aptitude of applicants for the Bachelor and Master´s degree programme is evaluated and offers interesting classes and lectures each semester.

8 Useful addresses and contact persons

BAföG office (federal education assistance)
Hoffmannstraße 27
91052 Erlangen
phone.: 09131 8002900

BAföG representative Medical Engineering
Claudia Barnickel (deputy)
room 02.0158
Martensstraße 3
91058 Erlangen
phone: 09131 8567337
fax: 09131 8528781
email: Claudia.Barnickel@fau.de
open consultation hours: Mon-Thu, 1 - 4 pm
or by arrangement

Cafeteria (meal plan)
http://www.werkswelt.de/index.php?id=mensen-cafeterien-cafebars

Central Institute of Healthcare Engineering (ZiMT)
Henkestrasse 91
91052 Erlangen
https://www.zimt.fau.eu/
phone: 09131 8526861
fax: 09131 8526862

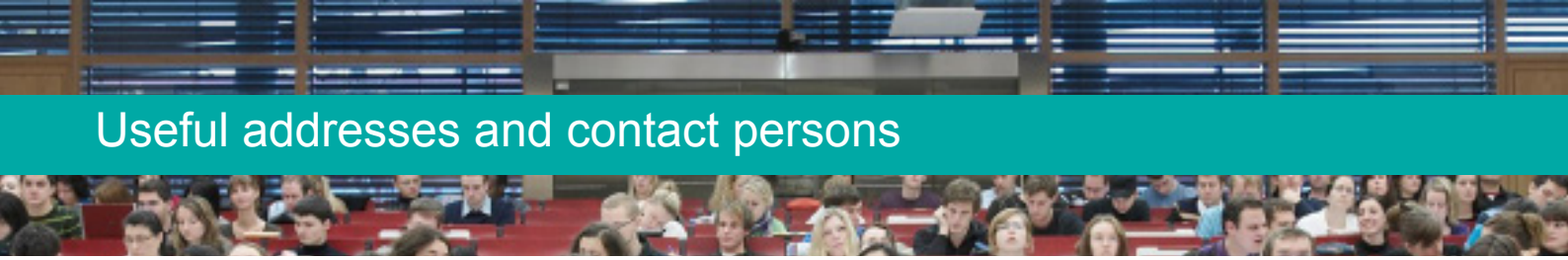
Heike Leutheuser (director)
phone: 09131 8526868
email: heike.leutheuser@fau.de

Tobias Zobel
(deputy director, international affairs)
phone: 09131 8526869
email: tobias.zobel@fau.de

Central Office for International Affairs (RIA)
Helmstraße 1
91054 Erlangen
https://www.fau.eu/international/central-office-for-international-affairs/

Erasmus coordinators
Medical Engineering: Claudia Barnickel
EEI: Almut Churavy
MB: Dr. Oliver Kreis
WW: Dr. Alexandra Haase
INF: Dr.-Ing. Harald Köstler
CBI: Dr. Anna Hilbig

Examinations Office (Faculty of Engineering)
Helga Jahreis
(consultant for Medical Engineering)
room 1.042
Halbmondstraße 6
91054 Erlangen
phone: 09131/85-24752
fax: 09131/85-24054
email: helga.jahreis@fau.de



Useful addresses and contact persons

Family Service of FAU
second floor
Bismarckstr. 6
91054 Erlangen
phone: 09131 8523231
www.familienservice.fau.de (in German)

FAU-Card ServiceOffice
https://www.fau.eu/study/programme-start/faucard/

FSI Electrical, Electronic and Communication Engineering
room 0.16 (left energy technology tower)
Cauerstraße 9
91058 Erlangen
phone: 09131 8527043
email: fsi-eei@fau.de
https://eei.fsi.uni-erlangen.de/wiki/ (in German)

FSI Computer Science
rooms 02.150-113
Martensstr. 3
91058 Erlangen
phone: 09131 8527939
email: fsi@cs.fau.de
https://fsi.informatik.uni-erlangen.de/dw/
(in German)

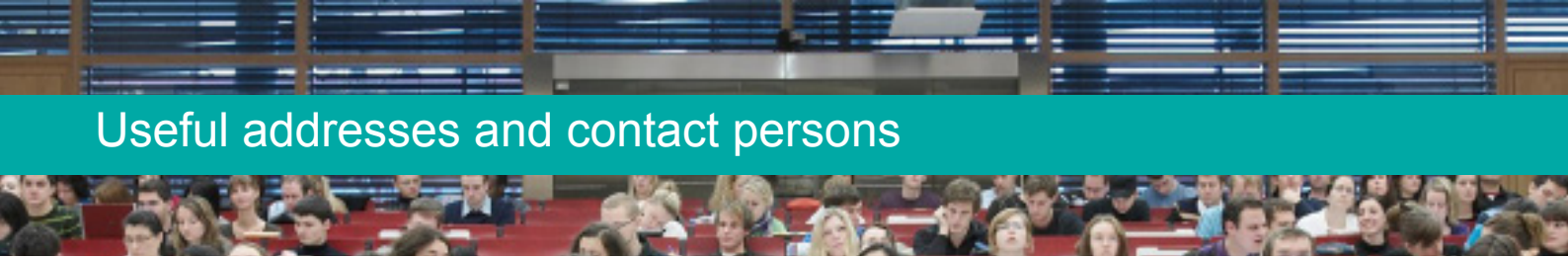
FSI Medical Engineering
rooms 01.150-113
Martensstraße 3
91058 Erlangen
email: fsi-medtech@cs.fau.de
find us on Facebook: FSIMedizintechnikErlangen
www.medtech.fsi.fau.de (in German)

International Office of the Faculty of Engineering
Erwin-Rommel-Strasse 60
91058 Erlangen
https://www.tf.fau.eu/person/international-office-tf/

Elisabeth Mayer
room U 1.251
phone: 09131 8528688
fax: 09131 8525470
email: elisabeth.mayer@fau.de
appointments by arrangement

Christine Mohr
room U 1.250
phone: 09131 8527851
fax: 09131 8527831
email: christine.mohr@fau.de
consultation hours: Tue 9 am - 4 pm, Wed 9 am - 1 pm, Thu 9 am - 4 pm

Language Centre (SZ)
www.sz.uni-erlangen.de/ (in German)



Useful addresses and contact persons

Legal advice (examination regulations, tenancy law, labour law, etc.)
2nd floor, room 201
Hofmannstraße 27
91052 Erlangen

2nd floor, room 2.332
Andreij-Sacharow-Platz 1
90403 Nürnberg
http://www.werkswelt.de/index.php?id=rechts-beratung&setlang=en (in German)

Lost and found (Faculty of Engineering)
https://www.tf.fau.de/infocenter/fundbuero/
(in German)

MeinCampus-Support:
phone: 09131 8520100
(weekdays, 11 am - 4 pm)
email: meincampus-support@fau.de

Office for Gender and Diversity
Bismarckstraße 6, 3. Stock
91054 Erlangen
Tel.: 09131 85-22951
E-Mail: gender-und-diversity@fau.de
Guidelines for sexual harassment:
http://www.gender-und-diversity.uni-erlangen.de/richtlinien_sexuelle_belstigung_fau_04_2015.pdf

Office for internships EEI
Traudl Stumpf (secretary)
room 1.25
Cauerstraße 7
phone: 09131 8527159
mail: Praktikumsamt.Medizintechnik@uni-erlangen.de
https://www.eei.tf.fau.de/studium/praktikum-samt/ (in German)

Office of Accreditation of Academic Achievements
Medical Engineering: Claudia Barnickel
Department for Electrical, Electronics and Communication Engineering (EEI), Information and Communication Technology (IuK), Energy Technology (ET), Engineering for teaching:
Almut Churavy
Mechanical Engineering, Mechatronics:
Dr.-Ing. Oliver Kreis
Computer Science:
Prof. Dr. Christoph Pflaum
Computational Engineering:
Prof. Dr. Ulrich Rüde
Life Science Engineering, Chemical Engineering and Bioengineering:
Dr.-Ing. Anna Hilbig, Prof. Dr.-Ing. Malte Kaspereit

Useful addresses and contact persons

Psychological-psychotherapeutic counselling centre
2nd floor
Hofmannstraße 27
91052 Erlangen
http://www.werkswelt.de/index.php?id=ppb&-setlang=de (in German)

Studentenhaus Insel Schütt
cultural affairs, room 2.216
Andreij-Sacharow-Platz 1
90403 Nürnberg
Claudia Göbel (secretary Erlangen/appointment)
phone: 09131 8002750
Mon - Fri 8:30 - 12 am
open consultation hours (anonymous, without appointments):
Tuesdays 1:30 - 4:30 pm at the counselling office in Erlangen

Regional Computer Centre in Erlangen (Bavaria) - service desk
room 1.013
Martensstraße 1
91058 Erlangen
phone: 09131 85 29955
fax: 09131 85 29966
email: rrze-zentrale@fau.de
www.rrze.fau.de/ (in German)
Mon - Thu: 9 am - 4pm
Fri: 9 am -2 pm

Secretary agency Computer Science
Isabella Frieser
room 02.155
Martensstraße 3
91058 Erlangen
phone: 09131 8528807
fax: 09131 8528781
email: sekretariat@informatik.uni-erlangen.de
www.cs.fau.de

Student Advice and Career Service (IBZ)
room 0.021
phone: 09131 8524444 or 23333
www.fau.eu/study/prospective-students/student-advice/
office hours: Mon - Fri: 8 am - 6 pm

General Study Advisor (Faculty of Engineering):
Elisabeth Grosso
room 1.031
phone: 09131 8524809
fax: 09131 8524803
email: elisabeth.baechle-grosso@fau.de
consultation hours: Mon- Thu: 9-12 am or by arrangement

Useful addresses and contact persons

Head of IBZ, representative of disabled students:
Dr. Jürgen Gündel
room 1.032
phone: 09131 8524051
fax: 09131 8524803
email: juergen.guendel@fau.de

Student Records Office
Halbmondstraße 6-8
91054 Erlangen

Enrolment, Student Records:
room 00.034
office hours: Mon - Fri: 8:30 - 12 am

Study Advisor Computational Engineering
Dr. Roberto Grosso (Bachelor CE)
room 01.116-128
Cauerstr. 11
91058 Erlangen
phone: 09131-85 29921
email: Roberto.Grosso@fau.de

PD Dr. habil. Harald Köstler (Master´s CE)
room 00.115
Cauerstraße 11
91058 Erlangen
phone: 09131 8528359
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ce-Master´s@informatik.uni-erlangen.de

phone: 09131 85 67337
email: Claudia.Barnickel@fau.de

Study Advisory Computer Sciences
Martensstraße 3
91058 Erlangen
www.informatik.studium.uni-erlangen.de/studienberatung/ (in German)

Dr. Christian Götz
(Subject-specific advising: Computer Science, Two-subject Bachelor degree programme Computer Science)
room 02.157
phone: 09131 8527007
email: Christian.Goetz@fau.de

Claudia Barnickel
(subject-specific advising: Medical Engineering)
room 02.158
phone: 09131 85 67337
email: Claudia.Barnickel@fau.de

Study Advisor Information Systems
Dominik Forster
room 4.4444
Lange Gasse 20
90403 Nürnberg
phone: 0911 5302865
fax: 0911 5302 379
email: dominik.forster@fau.de
http://www.wi2.fau.de/person/fo

Useful addresses and contact persons

Study Advisor Life Science Engineering
Cauerstraße 4
91058 Erlangen

Laura Fröba
room 1.260
phone: 09131 8529506
fax: 09131 8529503
email: laura.froeba@fau.de
Please make an appointement per email!

Frauke Groß
room 1.260
phone: 09131 8529506
fax: 09131 8529503
email: frauke.gross@fau.de
Please make an appointment per email!

Study Advisory Mechanical Engineering
Patrick Schmitt
Haberstraße 2
91058 Erlangen
phone: 09131 8528769
fax: 09131 8520709
email: studium@mb.uni-erlangen.de
https://www.mb.studium.fau.de/studien-service-center/ (in German)

Study service center EEI, IuK, CME, Engineering for teaching, Energy technology
room 1.26
Cauerstrasse 7
91058 Erlangen
https://www.eei.studium.fau.de/infocenter/kontakt/ (in German)

Almut Churavy
phone: 09131 8527165
fax: 09131 8527163
email: almut.churavy@fau.de

University sports
www.hochschulsport.fau.de

9 Map

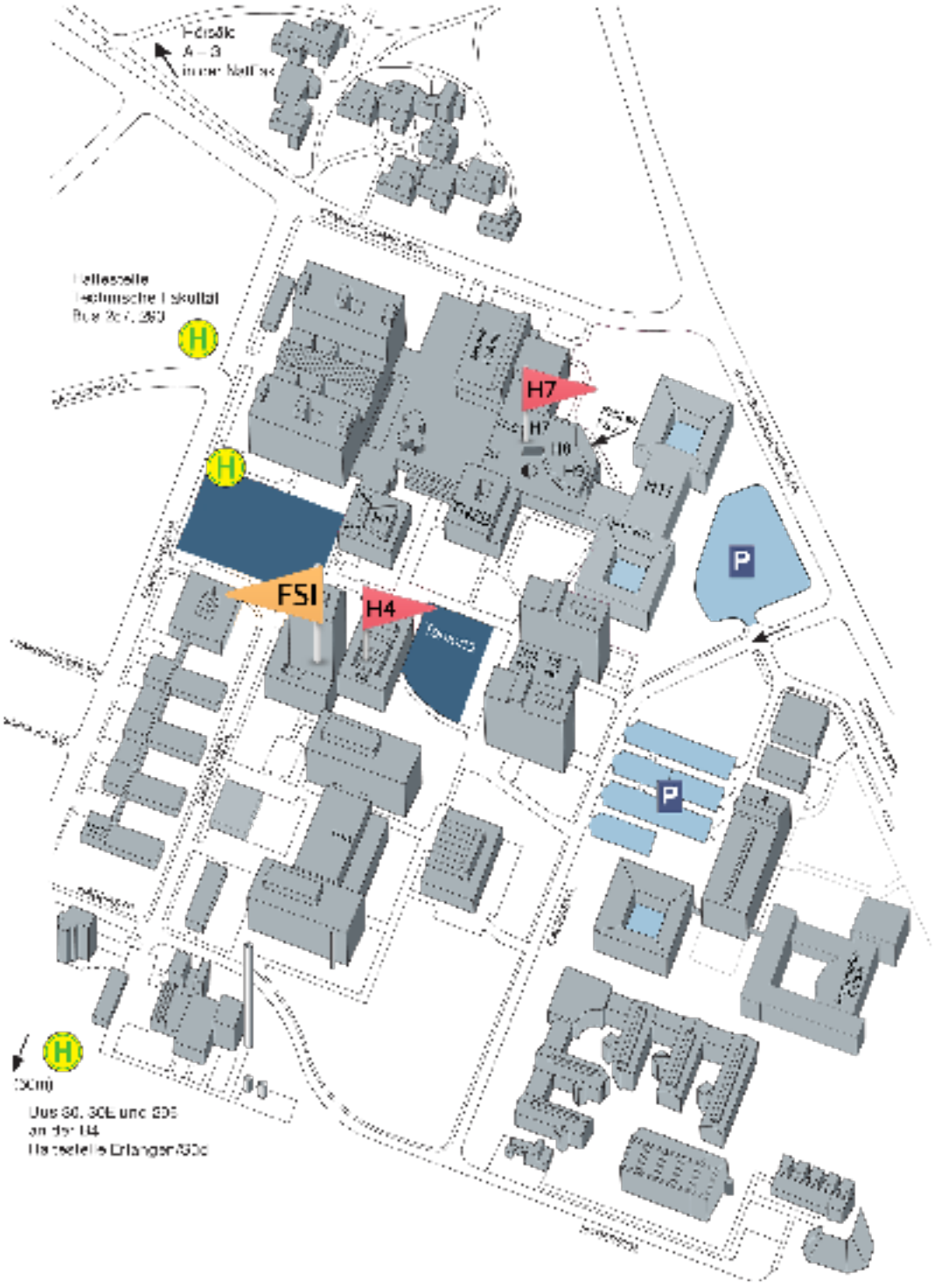

Figure 6: Map

10 Appendix

10.1 Module Catalogue Master´s Programme Medical Engineering

Module Catalog Master Program Medical Engineering
Study Field "Medical Image and Data Processing"

Please note the Module Descriptions in UnivIS!

Modul Group	Modul Number	Modules: Modul Name (Name of Lecture)	Abbr.	SWS: L+E+S+P	Total Sum: ECTS	1st Year: WS ECTS	1st Year: SS ECTS	2nd Year: WS ECTS	2nd Year: SS ECTS	Language	Credit Modalities	Department	Responsible Chair(s)	WS/SS
M 1	**Medical Specialisation**			**L+E+S+P**	**10**	**5**	**5**	**0**	**0**					
	M 1.1	Clinical Applications of Optical Technologies and Associated Fundamentals of Anatomy[1]	OMED/CA	4+0+0+0	5	0	5	0	0	EN	gCA	MED	Lehrstuhl für Anatomie II (Prof. Dr. Paulsen)	SS
	M 1.2	Applications of nanotechnology in cardiovascular diseases	HNO 24	0+0+2+0	2,5	0	2,5	0	0	EN	gCA	MED	Professur für Nanomedizin (Stiftungsprofessur der Else Kröner-Fresenius-Stiftung)	WS/SS
	M 1.3	Medizinische Biotechnology / Medical Biotechnology	MBT	3+1+0+0	5	0	5	0	0	EN	gCA	CBI	Lehrstuhl für Medizinische Biotechnologie (MBT)	SS
	M 1.4	Medical Physics in Radiation Therapy Praktikum	MSP	4+0+0+2	10	2,5 0	0 7,5	0 0	0 0	EN	PfE	MED	Lehrstuhl für Strahlentherapie	WS+SS
	M 1.5	Medical Physics in Radiation Therapy - lab only Praktikum	MSPL	2+0+0+2	7,5	2,5 0	0 5	0 0	0 0	EN	PfE	MED	Lehrstuhl für Strahlentherapie	WS+SS
	M 1.6	Medical Physics in Radiation Therapy - special topic only	MSPS	4+0+0+0	5	2,5 0	2,5 0	0 0	0 0	EN	PfE	MED	Lehrstuhl für Strahlentherapie	WS+SS
	M 1.7	Medical Physics in Nuclear Medicine	MPNM	2+0+0+0	2,5	2,5	0	0	0	EN	gCA	MED	Lehrstuhl für Klinische Nuklearmedizin	WS
	M 1.8	Jüngste Entwicklungen der medizinischen Systembiologie / Advances in Medical Systems Biology	AdvMedSys	0+0+3+0	2,5	0	2,5	0	0	EN	PfE	MED	Lehrstuhl für Haut- und Geschlechtskrankheiten	SS
	M 1.9	Introduction to simulation, network and data analysis in Medical Systems Biology	IntSysMed_f_Eng	2+0+0+0	2,5	2,5	0	0	0	EN	gCA	MED	Lehrstuhl für Haut- und Geschlechtskrankheiten	WS

[1] Obligatory, if appropriate skills not acquired in the Bachelor.

Additional medical modules can be used with the agreement of the program director. Please consult with your study advisor beforehand.

M 2	Engineering Core Modules		L+E+S+P	20	10	10	0	0					
M 2.6	Digitale Übertragung / Digital Communications Übung	DÜ / DiCo	3+1+0+0	5	5	0	0	0	WS: EN SS: GER	PL	EEI	Lehrstuhl für Digitale Übertragung (IDC)	WS: EN SS: GER
M 2.8	Computergraphik / Computer Graphics[3] Exercise	CG	3+1+0+0	5	5	0	0	0	EN	gCA	INF	Lehrstuhl für Informatik 9 (Graphische Datenverarbeitung)	WS
M 2.9	Digitale Signalverarbeitung / Digital Signal Processing Exercise	DSV	3+1+0+0	5	5	0	0	0	EN	gCA	EEI	Lehrstuhl für Multimediakommunikation und Signalverarbeitung (LMS)	WS
M 2.10	Pattern Recognition[1]	PR	3+0+0+0	5	5	0	0	0	EN	gCA	INF	Lehrstuhl für Informatik 5 (Mustererkennung)	WS
M 2.11	Pattern Analysis[1]	PA	3+0+0+0	5	0	5	0	0	EN	gCA	INF	Lehrstuhl für Informatik 5 (Mustererkennung)	SS
M 2.12	Statistische Signalverarbeitung / Statistical Signal Processing Exercise	STASIP	3+1+0+0	5	5	0	0	0	EN	gCA	EEI	Lehrstuhl für Multimediakommunikation und Signalverarbeitung (LMS)	WS
M 2.13	Computer Vision Übung	CV	2+2+0+0	5	0	5	0	0	EN	PL	INF	Lehrstuhl für Informatik 5 (Mustererkennung)	SS
M 2.18	Reconfigurable Computing Übung	RC	2+2+0+0	5	5	0	0	0	EN	PL	INF	Lehrstuhl für Informatik 12 (Hardware-Software-Co-Design)	WS
M 2.20	Informationstheorie und Codierung / Information Theory and Coding Übung	ITC ITC-EN	3+1+0+0	5	0	5	0	0	WS: EN SS: GER	gCA	EEI	Lehrstuhl für Digitale Übertragung (IDC)	WS: EN SS: GER
M 2.21	Channel Coding Exercise	ChCo	3+1+0+0	5	0	5	0	0	EN	gCA	EEI	Lehrstuhl für Informationsübertragung (LIT)	SS
M 2.23	Geometrische Modellierung / Geometric Modeling[3] Exercise	GM	3+1+0+0	5	5	0	0		EN	gCA	INF	Lehrstuhl für Informatik 9 (Graphische Datenverarbeitung)	WS
M 2.24	Applied Visualization Exercise	AppVis	2+2+0+0	5	0	5	0	0	EN	gCA	INF	Lehrstuhl für Informatik 9 (Graphische Datenverarbeitung)	SS
M 2.25	Transformationen in der Signalverarbeitung / Transformations in Signal Processing	TSV	2+0+0+0	2,5	0	2,5	0	0	EN	gCA	EEI	Lehrstuhl für Multimediakommunikation und Signalverarbeitung (LMS)	SS
M 2.27	Dependable Embedded Systems currently offered in SS! Exercise	DES	2+2+0+0	5	5	0	0	0	EN	gCA	INF	Lehrstuhl für Informatik 12 (Hardware-Software-Co-Design)	WS
M 2.28	Algorithms of Numerical Linear Algebra Exercise	ANLA	4+2+0+0	7,5	7,5	0	0	0	EN	gCA	INF	Lehrstuhl für Informatik 10 (Systemsimulation)	WS
M 2.29	Functional Analysis for Engineers[2] Exercise	FuncAnEng	2+2+0+0	5	5	0	0	0	EN	gCA	INF	Lehrstuhl für Informatik 10 (Systemsimulation)	WS
M 2.30	Optimierung für Ingenieure / Optimization for Engineers Exercise	OptIngV	3+1+0+0	5	5	0	0	0	EN	gCA	NAT	Lehrstuhl für Angewandte Mathematik 2 (Prof. Dr. Leugering)	SS
M 2.33	Heterogene Rechnerarchitekturen Online	HETRON	4+0+0+0	5	VHB (online)				EN	PL	VHB	Virtuelle Hochschule Bayern (VHB)	WS/SS

[1] Obligatory, if appropriate skills not acquired in the Bachelor.

[2] Very profound knowledge of mathematics required.

[3] Yearly change between German and English.

M 3	Medical Engineering Core Modules		L+E+S+P	20	10	10	0	0					
M 3.1	Visual Computing in Medicine	VCMed	4+0+0+0	5	2,5	2,5	0	0	GER/EN	gCA	INF	Lehrstuhl für Informatik 9 (Graphische Datenverarbeitung)	WS+SS
M 3.2	Diagnostic Medical Image Processing (VHB-Kurs)	DMIP-VHB	4+0+0+0	5	VHB (online)				EN	gCA	VHB	Virtuelle Hochschule Bayern (VHB)	WS/SS
M 3.3	Interventional Medical Image Processing	IMIP	3+0+0+0	5	0	5	0	0	EN	gCA	INF	Lehrstuhl für Informatik 5 (Mustererkennung)	SS
M 3.4	Biomedizinische Signalanalyse / Biomedical Signal Analysis Exercise	BioSig	2+2+0+0	5	5	0	0		EN	gCA	INF	Lehrstuhl für Informatik 5 (Mustererkennung)	WS
M 3.5	Computer Architectures for Medical Applications Exercise	CAMA	2+2+0+0	5	0	5	0	0	EN	gCA	INF	Lehrstuhl für Informatik 3 (Rechnerarchitektur), Professur für Höchstleistungsrechnen	SS
M 3.7	Image and Video Compression Exercise	IVC	3+1+0+0	5	0	5	0	0	EN	gCA	EEI	Lehrstuhl für Multimediakommunikation und Signalverarbeitung (LMS)	SS
M 3.8	Wavelet-Transformationen in der Bildverarbeitung / Wavelet Transformations in Image Processing Exercise (Theoretical or Practical)	WTBV	3+1+0+0	7,5	0	0	7,5	0	EN	gCA	INF	Lehrstuhl für Informatik 8 (Theoretische Informatik)	WS
M 3.10	Multidimensional Signals and Systems	MDSS	4+0+0+0	5	5	0	0	0	EN	gCA	EEI	Lehrstuhl für Multimediakommunikation und Signalverarbeitung (LMS)	WS

M 4	Medical Engineering Core Skills		L+E+S+P	10	5	0	5	0					
M 4.1	**Medical Law, Economics and Innovation**			5	5								
	Innovation Technology		2+2+0+0	5	5	0	0	0	EN	gCA	WISO	Lehrstuhl für Wirtschaftsinformatik I	WS
	Interdisciplinary Innovations in Medical Engineering	ININMEN	0+0+2+0	2,5	2,5	0	0	0	EN	gCA	ZiMT	Innovation Research Lab (IRL)	WS/SS
	Leadership and communication in a global world		2+0+0+0	2,5	VHB (online)				EN	gCA	VHB	Virtuelle Hochschule Bayern (VHB)	WS/SS
	Management of Change Processes in a Global World		2+0+0+0	2,5	VHB (online)				EN	gCA	VHB	Virtuelle Hochschule Bayern (VHB)	WS/SS
	Product Management	OSS-PROD	4+0+0+0	5	0	5	0	0	EN	gCA	INF	Professur für Open Source Software	WS
	Innovation & Leadership		2+2+0+0	5	5	0	0	0	EN	gCA	WISO	Lehrstuhl für Wirtschaftsinformatik I	WS
	Internationales Projektmanagement / International Projekt Management	IntPM	4+0+0+0	5	5	0	0	0	EN	gCA	WISO	Lehrstuhl für International Business and Society Relations mit Schwerpunkt Lateinamerika	WS
	Innovation Management in Emerging Markets		4+0+0+0	0	VHB (online)				EN	gCA	VHB	Virtuelle Hochschule Bayern (VHB)	SS
M 4.2[5]	**Seminar Medical Engineering and Ethics**, consisting of:			5			5						
M 4.2 a	Seminar Medizinethik / Seminar Medical Ethics	MEDET	0+0+2+0	2,5		0	2,5	0	WS: EN SS: GER	gCA	ZiMT	Lehrstuhl für Systematische Theologie II (Ethik)	WS: EN SS: GER
M 4.2 b[4]	Seminar Medical Engineering		0+0+2+0	2,5	0	0	2,5	0	EN	gCA	ZiMT	see Seminar Catalogue	

[4] Selection of 1 out of Catalogue

[5] Obligatory

M 5	Medical Engineering Specialisation Modules		L+E+S+P	10	0	5	5	0					
M 5.6	Software Test and Analysis (Software Verification and Validation) Exercise	SWE-VV	2+2+0+0	5	0	0	5	0	EN	gCA	INF	Lehrstuhl für Informatik 11 (Software Engineering)	WS
M 5.8 MEL[6]	Medical Imaging System Technology Übung	MISysT	3+1+0+0	5	0	5	0	0	EN	gCA	EEI	Lehrstuhl für Hochfrequenztechnik (LHFT)	SS
M 5.9	Human Computer Interaction Exercise	HCI	3+1+0+0	5	0	5	0	0	EN	gCA	INF	Lehrstuhl für Informatik 5 (Mustererkennung)	SS
M 5.10	Convex Optimization in Communications and Signal Processing Exercise	ConvOpt	3+1+0+0	5	0	0	5	0	EN	gCA	EEI	Lehrstuhl für Digitale Übertragung (IDC)	WS
M 5.11	Image Processing in Optical Nanoscop **currently not offered!** Exercise	IPNano	1+1+0+0	5	0	0	5	0	EN	gCA	INF	Lehrstuhl für Informatik 10 (Systemsimulation)	SS
M 5.12	Security in Embedded Hardware **currently not offered!** Exercise	SEH	2+2+0+0	5	0	5	0	0	EN	gCA	INF	Lehrstuhl für Informatik 12 (Hardware-Software-Co-Design)	SS
M 5.1 GPP[6]	Optical Technologies in Life Science	OIC/OTLS	4+0+0+0	5	0	0	5	0	EN	gCA	CBI	Lehrstuhl für Medizinische Biotechnologie (MBT)	WS
M 5.2 GPP[6]	Lasers in Healthcare Engineering	LASHE	2+0+0+0	2,5	0	0	2,5	0	EN	gCA	WW	Lehrstuhl für Photonische Technologien (LPT)	WS

M 5.17 MEL[6]	Body Area Communications	BAC	2+0+0+0	2,5	0	0	2,5	0	EN	gCA	EEI	Lehrstuhl für Technische Elektronik (LTE)	WS
M 5.18	Knowledge Discovery in Databases	KDD	2+0+0+0	2,5	0	2,5	0	0	EN	gCA	INF	Lehrstuhl für Informatik 6 (Datenmanagement)	SS
M 5.22	Image, Video and Multidimensional Signal Processing Exercise	IVMSP	3+1+0+0	5	0	0	5	0	EN	gCA	EEI	Lehrstuhl für Multimediakommunikation und Signalverarbeitung (LMS)	WS
M 5.23	Molecular Communications Übung	MolCom	3+1+0+0	5	0	0	5	0	EN	PL	EEI	Lehrstuhl für Digitale Übertragung	WS

[6] Modules from the branch of study "Medical Devices, Manufacturing Engineering and Prosthetics" (GPP) and "Medical Electronics" (MEL): only a maximum of 5 ECTS from the module groups M2, M3 or M5 of all branches of study can be used.

M 6	**Medical Engineering Practical Skills**		**L+E+S+P**	**10**	**0**	**0**	**10**	**0**					
M 6.1	Academic Laboratory See list on the homepage		0+0+0+4	5	0	0	5	0	EN	uCA		Zentralinstitut für Medizintechnik (ZiMT)	WS/SS
M 6.2	Research Laboratory		0+0+0+4	5	0	0	5	0	EN	uCA		Lehrstuhl für Informatik 5 (Mustererkennung)	WS/SS
M 6.1 + M 6.2	Alternatives for M 6.1 **and** M 6.2:												
	Project Flat-Panel CT Reconstruction	ProjFCR	0+0+0+8	10			10		EN	uCA		Lehrstuhl für Informatik 5 (Mustererkennung)	WS/SS
	Project Pattern Recognition	ProjME	0+0+0+8	10			10		EN	uCA		Lehrstuhl für Informatik 5 (Mustererkennung)	WS/SS
	Project Computer Vision	ProjCV	0+0+0+8	10			10		EN	uCA		Lehrstuhl für Informatik 5 (Mustererkennung)	WS/SS
	Project Magnetic Resonance Imaging	ProjMRI	0+0+0+8	10			10		EN	uCA		Lehrstuhl für Informatik 5 (Mustererkennung)	WS/SS
	Innovationslabor für Wearable und Ubiquitous Computing	InnoLabPro	0+0+0+8	10			10		EN	uCA		Lehrstuhl für Informatik 5 (Mustererkennung	WS/SS

M 7	**Flexible Budget**			**10**	**0**	**0**	**10**	**0**					
M 7.1	Flexible Budget any **graded** lecture / course at the university			10	0	0	10	0		gCA			

M 8	**Master's Thesis**			**30**	**0**	**0**	**0**	**30**					
	M 8	Master's Thesis Thesis + Talk			30	0	0	0	30		PfE		

For M3 you can use max. 5 ECTS points from the module groups M2, M3 or M5 of your own branch of study or the other branches of study (taught in German!)

For M5 you can use max. 5 ECTS points from the module groups M2, M3 or M5 of your own branch of study or the other branches of study (taught in German!)

All lectures can be complemented by additional exercises and practical courses.
It is possible that in rare cases the exam type is changed. This information must be communicated to the students no later than two weeks after the semester start and must be documented in the module

L	Lecture
E	Exercise
S	Seminar
P	Practical Exercise
WS	Winter Term
SS	Summer Term

PfE	Portfolio Examination
gCA	graded Course Achievement
uCA	ungraded Course Achievement
w	written
o	oral
online	online (Virtual University Bavaria, www.vhb.org)

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10.2 Seminar Catalogue Bachelor and Master´s Programme Medical Engineering

Bachelor- und Masterstudiengang Medizintechnik / Bachelor and Master Program Medical Engineering
Seminarkatalog / Seminar Catalogue

Hell unterlegte Module werden in der Regel in englischer Sprache unterrichtet und geprüft / Modules with bright background are normally offered in English.

Bitte beachten Sie die Modulbeschreibungen im UnivIS! / Please note the module descriptions in UnivIS!

IT-Sicherheits-Seminar	ITSecSem	5*	DE	INF	Lehrstuhl für Informatik 1 (IT-Sicherheitsinfrastukturen)	WS/SS
Machine Learning	Inf2-SEM-ML	5*	DE/EN	INF	Lehrstuhl für Informatik 2 (Programmiersysteme)	WS
"Hallo Welt!" für Fortgeschrittene	inf2-algo	5*	DE	INF	Lehrstuhl für Informatik 2 (Programmiersysteme)	SS
Architekturen von Multi- und Vielkern-Prozessoren	MultiPro	5*	DE	INF	Lehrstuhl für Informatik 3 (Rechnerarchitektur)	SS
Seminar Wearable Computing	SemWC	5*	DE/EN	INF	Lehrstuhl für Informatik 5 (Mustererkennung)	WS/SS
Seminar Sportinformatik - Messtechnik, Algorithmen und Anwendungen *(Computer Science in Sports - Measurement, Algorithms and Applications)*	SemSportInf	5*	DE/EN	INF	Lehrstuhl für Informatik 5 (Mustererkennung)	WS/SS
Seminar Automatische Analyse von Stimm-, Sprech- und Sprachstörungen bei Sprachpathologien *(Seminar Automatic Analysis of Voice, Speech, and Language for Speech Pathologies)*	SemSprachPath	5*	DE/EN	INF	Lehrstuhl für Informatik 5 (Mustererkennung)	WS/SS
Seminar Computer Vision[1]	SemCSV	5*	EN	INF	Lehrstuhl für Informatik 5 (Mustererkennung)	WS
Seminar Deep Learning Theory & Applications[1]	SemDL	5*	EN	INF	Lehrstuhl für Informatik 5 (Mustererkennung)	WS
Seminar Automatic Question Answering Using IBM Watson	SemWatson	5*	EN	INF	Lehrstuhl für Informatik 5 (Mustererkennung)	SS
Interventionelle und Diagnostische Endoskopie	InDiEndo	2,5	DE/EN	INF	Lehrstuhl für Informatik 5 (Graphische Datenverarbeitung)	WS/SS
Design Patterns and Anti-Patterns	DPAP	5*	DE	INF	Lehrstuhl für Informatik 11 (Software Engineering)	SS
Multi-Core Architecture and Programming[1]	MAP	5*	DE	INF	Lehrstuhl für Informatik 12 (Hardware-Software-Co-Design)	SS
Seminar Hochfrequenztechnik/Mikrowellentechnik	HFSEM	2,5	DE	EEI	Lehrstuhl für Hochfrequenztechnik (LHFT)	WS/SS
Seminar Medizintechnik	MedSem	2,5	DE	EEI	Lehrstuhl für Hochfrequenztechnik (LHFT)	SS

Seminar Photonik/Lasertechnik	PhoSem	2,5	DE	EEI	Lehrstuhl für Hochfrequenztechnik (LHFT)	WS/SS
Seminar Ausgewählte Kapitel der Multimediakommunikation und Signalverarbeitung *(Seminar on Selected Topics in Multimedia Communications and Signal Processing)*	Sem LMS	2,5	DE/EN	EEI	Lehrstuhl für Multimediakommunikation und Signalverarbeitung (LMS)	WS/SS
Hauptseminar Medizinelektronik und elektronische Assistenzsysteme für den Alltag	SEM MEDEL	2,5	DE	EEI	Lehrstuhl für Technische Elektronik (LTE)	WS/SS
Advanced Seminar on Medical Electronics and Systems for Ambient Assisted Living AAL	SEM MELAAL	2,5	EN	EEI	Lehrstuhl für Technische Elektronik (LTE)	WS/SS
Ausgewählte Kapitel der Navigation und Identifikation: Roboternavigation *(Selected Chapters of Navigation and Identification)*	RoboNav-Sem	2,5	DE/EN	EEI	Lehrstuhl für Informationstechnik mit dem Schwerpunkt Kommunikationselektronik (LIKE)	WS
Hauptseminar Qualitätsmanagement	HS QM	2,5	DE	MB	Lehrstuhl für Fertigungsmesstechnik (FMT)	WS
Seminar Glas und Keramik für Medizintechnik	METGUK	2,5	DE	WW	Lehrstuhl für Werkstoffwissenschaften (Glas und Keramik)	WS/SS
Seminar Biomaterialien für Medizintechniker	SemBioMatMT	2,5	DE	WW	Lehrstuhl für Werkstoffwissenschaften (Biomaterialien)	SS
Seminar Polymerwerkstoffe-Kernfach	SEMPWSt	2,5	DE	WW	Lehrstuhl für Werkstoffwissenschaften (Polymerwerkstoffe)	WS/SS
Seminar Cognitive Neurowissenschaften	V-PS18	2,5	DE	MED	Institut für Physiologie und Pathophysiologie	WS/SS
Seminar Erkrankungen des Skelettsystems: Pathomechanismen, Diagnostik und Therapie	Chir-205	2,5	DE	MED	Unfallchirurgische Abteilung in der Chirurgischen Klinik	WS/SS
Seminar Technik in der Orthopädie	TECH-ORTHO	5	DE	MED	Lehrstuhl für Orthopädie mit Orthopädischer Chirurgie	WS/SS
Journal Club Medizinische Informatik	MEDINFJCLUB	2,5	DE	MED	Lehrstuhl für Medizinische Informatik	WS/SS
Seminar Informationssysteme im Gesundheitswesen	MEDINFSEM	2.5*	DE	MED	Lehrstuhl für Medizinische Informatik	WS/SS
Seminar Physik in der Medizin	PS PhysMed	5	DE/EN	NAT	Lehrstuhl für Biophysik, Lehrstuhl für Strahlentheraphie, Max-Schaldach-Stiftungsprofessur für Biomedizinische Technik (MBST)	WS/SS
Seminar Medical Devices of the Future	FutureMD	2,5	DE/EN	ZiMT	Zentralinstitut für Medizintechnik (ZiMT)	WS/SS
Seminar Operating Room of the Future	Future OR	2,5	DE/EN	ZiMT	Zentralinstitut für Medizintechnik (ZiMT)	WS/SS
Advanced Medical Imaging[1]	AdvancedMI	2,5	EN	ZiMT	Zentralinstitut für Medizintechnik (ZiMT)	WS/SS
Innovation Management		5*	EN	ZiMT	Innovation Research Lab, Zentralinstitut für Medizintechnik (ZiMT)	SS/WS
Innovation Leadership		5*	EN	ZiMT	Innovation Research Lab, Zentralinstitut für Medizintechnik (ZiMT)	SS/WS

[1] Nur für Masterstudierende / only for Master students

*** abhängig vom Umfang des bearbeiteten Projektes können im Bachelor Medizintechnik weitere 2,5 ECTS im Wahlvertiefungsbereich oder im Master Medizintechnik im Modul "Hochschulpraktikum" eingebracht werden. Hierfür muss der Dozent einen zweiten Schein mit dem Vermerk "Zusatzleistung" ausstellen.**

***If you intend to work on an extensive subject (after consulting your professor) exceeding the workload of 2,5 ECTS you are able to use an additional 2,5 ECTS from this project for the module group Academic Laboratory. For this, your professor must issue a second certificate including the title of the seminar and the note "Zusatzleistung" (additional achievement).**

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10.3 Degree Programme and Examination Regulations for the Master´s Degree Programme Medical Engineering

These degree programme and examination regulations have been worded carefully to be up to date; however, errors cannot be completely excluded. The official German text available at the Examinations Office is the version that is legally binding.

Note: For students who started their studies before the latest amendment came into effect: please also note the previous amendments with their transitory provisions.

Degree Programme and Examination Regulations for the Bachelor´s and Master´s Degree Programme Medical Engineering at the University of Erlangen-Nürnberg – FPOMT –

Dated 15 September 2009

amended by statutes of
30 October 2009
04 March 2010
09 March 2011
05 August 2011
24 February 2012
31 July 2012
18 February 2013
18 February 2014

Based on Section 13 (1)(2), Section 43 (5)(2), Section 61 (2)(1) of the Bavarian Higher Education Act (Bayerisches Hochschulgesetz, BayHSchG) in conjunction with Section 57 QualV (Qualification Regulations for Studies at Public Universities in Bavaria), the University of Erlangen-Nürnberg enacts the following examination regulations:

Part I: General Conditions

Section 35 Scope

[1]The degree programme and examination regulations govern examinations for the Bachelor´s and consecutive Master´s degree programme Medical Engineering. [2]It complements the General Examination Regulations for the Bachelor´s and Master´s Degree Programmes of the Faculty of Engineering at the University of Erlangen-Nürnberg as amended from time to time.

Section 36 Bachelor´s Degree Programme, Standard Duration of Studies, Start of the Degree Programme, Language

(1) [1]The degree programme shall consist of the compulsory modules of the module groups B1–B4, core modules of the module group B5 or B6, and specialisation modules of the module group B8,

as well as core skills of the module group B7 and the Bachelor´s thesis module (B9). [2]It includes ten weeks' vocational practice (up to four of which shall be spent in a healthcare institution) to be carried out in the course of the degree programme according to placement guidelines. [3]Students shall choose a branch of study made up from core and specialisation modules of the module groups B5 or B6 and B8 which complement each other with regard to content. [4]The modules and recommended programme structure can be found in **Appendix 1**. [5]The fifth or sixth semester is recommended for stays abroad.

(2) [1]The degree programme Medical Engineering may be studied with one of the following two branches of study:
1. Imaging Techniques (Electrical Engineering/Information Technology/Computer Science)
2. Device Engineering and Prosthetics (Mechanical Engineering/Materials Science/Chemical and Biological Engineering)

[2]The branch of study shall be chosen by registering for the first examination in a module from the module group B5, B6, or B8. [3]After choosing the branch of study, the core modules of the module group B5 must be completed for the branch of study Imaging Techniques; the core modules of the module group B6 must be completed for the branch of study Device Engineering and Prosthetics. [4]A change of the branch of study shall only be permitted in justified, exceptional cases upon written request and with the Examination Committee's approval. [5]The module catalogue for the branches of study (core modules worth 40 ECTS credits and corresponding specialisation modules worth 20 ECTS credits) may be adjusted by the Examinations Committee; publication shall occur in the form of a bulletin.

(3) The standard duration of studies shall be six semesters.

(4) The Bachelor´s degree programme Medical Engineering shall begin in the winter semester.

(5) [1]The teaching language of the Bachelor´s degree programme shall be German or English and shall be announced in the module handbook according to local practice before the beginning of the lecture period. [2]The language of written examinations shall correspond to the teaching language. [3]The provision in Sentence 2 may be waived for oral examinations in consultation with the examinee.

Section 37 Master´s Degree Programme, Standard Duration of Studies, Start of the Degree Programme, Language

(1) [1]The Master´s degree programme Medical Engineering shall consist of a medical specialisation subject from the module group M1, core modules from the module groups M2 to M4, specialisation modules from the module groups M5 and M6, and elective modules from the module group M7, and the module Master´s Thesis (M8). [2]The module group M6 includes laboratory training and a research laboratory. [3]Students shall choose a branch of study made up of modules from the module groups M2, M3 and M5.

(2) The Master´s degree programme Medical Engineering shall have a standard duration of four semesters.

(3) The Master´s degree programme Medical Engineering may be started in the winter semester or in the summer semester.

(4) [1]The teaching language of the Master´s degree programme shall be German or English and shall be announced in the module handbook according to local practice before the beginning of the lecture period. [2]The language of written examinations shall correspond to the teaching language. [3]The provision in Sentence 2 may be waived for oral examinations in consultation with the examinee.

Part II: Special Provisions

1. Bachelor´s Examination

Section 38 Scope of the Preliminary Examination (Grundlagen- und Orientierungsprüfung)

The preliminary examination (Grundlagen- und Orientierungsprüfung, GOP) according to Section 3 (1) ABMPO/TechFak shall have been passed if at least one module from each of the module groups B2 to B4 has been passed in the first year of study (first and second semesters) and modules worth a total of 30 ECTS credits have been passed.

(2) The ECTS credits allocated to each module are listed in column 4 and the type and scope of the examinations is given in column 5 in **Appendix 1**.

Section 39 Scope and Structure of the Bachelor´s Examination, Admission Requirements

(1) [1]The Bachelor´s examination shall comprise the modules of the module groups B1 to B9 listed in **Appendix 1**, whereby the module group B5 must only be completed by students of the branch of study Imaging Techniques and the module group B6 must only be completed by students of the branch of study Device Engineering and Prosthetics. [2]The ECTS credits allocated to each module are listed in column 4 and the type and scope of the examinations is given in column 5 in **Appendix 1**.

(2) The Bachelor´s examination shall have been passed if all modules specified in Section 39 (1) have been passed.

Section 40 Bachelor´s Thesis

(1) [1]The Bachelor´s thesis is supposed to enable students to learn to solve medical engineering problems independently. [2]Requirements for the thesis shall be such that it can be completed with a workload of approximately 300 hours. [3]10 ECTS credits shall be awarded for the thesis.

(2) The subject of the Bachelor´s thesis shall be allocated by a full-time university lecturer (responsible lecturer) teaching in the compulsory, core, or specialisation modules of the Bachelor´s or Master´s degree programme Medical Engineering (with the exception of module B7.1); supervision shall be carried out by the responsible lecturer and/or research fellows from the same department, as well as at least one member of Universitätsklinikum or a comparable institution.

(3) [1]The Bachelor´s thesis shall be written in German or English. [2]It shall deal with a scientific subject from the field of medical engineering. [3]The results of the Bachelor´s thesis shall be presented in a presentation followed by a discussion. [4]The date of the presentation shall be determined by the responsible lecturer either after the student has submitted their Bachelor´s thesis or during the final stage of thesis work. [5]The date shall usually be within four weeks after the date on which the thesis was submitted; students shall be notified of the date at least two weeks in advance.

Section 41 Grading of Course and Examination Achievements

[1]An overall grade shall be calculated for each of the module groups B5 or B6, and B8; the individual module examinations shall be weighted with a factor corresponding to their ECTS credits. [2]The overall grade of the module group B5 or B6 shall be weighted with 40 ECTS credits and the subject grade of the specialisation modules shall be weighted with 20 ECTS credits in the calculation of the overall grade.

2. Master´s Degree Programme

Section 42 Qualification for a Master´s Degree Programme, Certificates and Admission Requirements

(1) [1]A subject-specific degree within the meaning of Section 29 (1)(1) ABMPO/TechFak shall be a Bachelor´s degree in medical engineering that is equivalent according to these examination regulations. [2]Applicants with a subject-related degree or a non-equivalent degree shall only be admitted to the Master´s degree programme after passing an oral admission examination according to Paragraph 3.

(2) [1]Additionally, applicants whose native language is not German or English must provide proof of German or English language proficiency according to **Appendix 1 (2)(4) ABMPO/TechFak**. [2]Proof of the level DSH-2 in the Deutsche Sprachprüfung für den Hochschulzugang (DSH) examination shall serve as proof of German language proficiency. [3]It shall be considered to have been provided if it had to be provided for the degree described in Section 29 (1) ABMPO/TechFak and the degree was completed no less than one year previously. [4]The following shall serve as proof of English language proficiency:

- an Internet-based TOEFL score of at least 100
- IELTS score of at least 6.5
- Cambridge Certificate in Advanced English
- UNIcert III
- CEFR C1

(3) Applicants shall be deemed as qualified for the Master´s degree programme Medical Engineering at the Faculty of Engineering of the University of Erlangen-Nürnberg according to **Appendix 1**, Paragraph 5 (2)(2) ABMPO/TechFak if they have passed at least four of the B5 or B6 modules of the Bachelor´s degree programme with an average module grade of 3.0 or better according to these examination regulations.

(4) In the oral admission examination according to **Appendix 1 (5)(3) ff. ABMPO/TechFak**, applicants shall be evaluated according to the following criteria, weighted as specified:

- a good knowledge of the foundations of the subject (25%)
– good knowledge of a field of specialisation in medical image and data processing, medical electronics or medical equipment technology, production technology and prosthetics corresponding to an eligible specialisation in the Master´s degree programme (25%)
– description of a relevant subject-related project, knowledge of the relevant literature (25%)
- a positive prognosis based on improving progress during their course of studies (25 percent)

Section 43 Scope and Structure of the Master´s Degree Programme

(1) [1]Master´s students shall choose a branch of study in order to establish a subject-specific profile. [2]The following branches of study are possible:

- Medical Image and Data Processing
- Medical Electronics
- Medical Production Technology, Medical Equipment Technology and Prosthetics

(2) The Master´s degree programme shall contain the module groups listed in **Appendix 2**.

(3) [1]The module group M6 'Medical Engineering practical skills' comprises laboratory training and a research laboratory. [2]For the laboratory training, students must select laboratory courses worth 5 ECTS credits from those offered by the following departments:

- Mechanical Engineering
- Materials Science
- Electrical, Electronic and Communication Engineering
- Computer Science

[3]5 ECTS credits for the research laboratory must be completed at a chair of the Faculty of Engineering. [4]Instead of a research laboratory, the Degree Programme Committee's chairperson may also approve other ungraded elective modules from the course catalogue of the Faculty of Engineering worth 5 ECTS credits.

(4) Furthermore, 10 ECTS credits shall be obtained in engineering and non-engineering modules (M7) from the course catalogue of the entire University.

Section 44 Master´s Degree Examinations

(1) Students shall choose their branch of study according to Section 43 (1) by registering for the examinations.

(2) Type and scope of the course and examination achievements are set out in **Appendix 2**. [2]For individual modules that may be chosen from other degree programmes as part of the flexible budget in the module M7, the type, length and scope of the examinations can be found in the applicable examination regulations.

Section 45 Master´s Thesis, Requirements for Subject Allocation

(1) The Master´s Thesis module shall be worth 30 ECTS credits.

(2) [1]The Master´s thesis is supposed to demonstrate students' ability to solve medical engineering problems independently. [2]Requirements for the thesis shall be such that it can be completed with a workload of approx. 900 hours within six months. [3]Section 40 (2) and (3) shall apply accordingly.

(3) The requirements for admission to the Master´s thesis shall be as follows:

1. achievement of 75 ECTS credits in the Master´s degree programme
2. submission of relevant certificates if admission to the Master´s degree programme was granted with conditions according to Section 29 (2)(2) ABMPO/TechFak.

(4) In justified, exceptional cases, the Examinations Committee shall be entitled to grant admission to the Master´s thesis early.

III. Transitory and Final Provisions

Section 46 Legal Validity

[1]These degree programme and examination regulations come into effect on the day after their publication. [2]They shall apply to all students who enter a Medical Engineering degree programme in the winter semester 2009/2010 or later.

Appendix 1

Study plan and examinations for the Bachelor´s degree programme Medical Engineering

Column 1		*Column 2*		*Column 4*							*Column 5*
Module group	**Module no.**	**Module**		**Total**	**1st sem.**	**2nd sem.**	**3rd sem.**	**4th sem.**	**5th sem.**	**6th sem.**	**Course and examination achievements**
		Module name	**Possible GOP modules[2)]**	ECTS credits	ECTS credits	ECTS credits	ECTS credits	ECTS credits	ECTS credits	ECTS credits	Type and scope of examination
B 1	**Basics of Medicine**			**10**	**0**	**2.5**	**2.5**	**0**	**2.5**	**2.5**	
	B 1.1	Anatomy and Physiology for Non-Medical Students		5	0	2.5	2.5	0	0	0	**EA**: written examination (90 minutes)
	B 1.2	Biomedicine and Engineering (Basics of Biochemistry and Mol. Medicine; Advanced Seminar: Disease Mechanisms)		5	0	0	0	0	2.5	0	**PfE**: EA: written examination (45 minutes) +
		Seminar: Medical Technology			0	0	0	0	0	2.5	uCA: written report + presentation
B2	**Medical Engineering**			**10**	**5**	**5**	**0**	**0**	**0**		
	B 2.1	Medical Engineering I	X	5	5	0	0	0	0	0	**PfE**: EA: report (approx. 10 pages) + presentation (approx. 6 min.) + uCA: independent solving of tutorial exercises and/or oral/written attestations
		tutorial									
	B 2.2	Medical Engineering II	X	5	0	5	0	0	0	0	**EA**: written examination (90 minutes)

B 3	**Mathematics and Algorithms**		**45**	**17.5**	**10**	**5**	**12.5**	**0**	**0**	
B 3.1	Mathematics for MT 1 [1)]	X	7.5	7.5	0	0	0	0	0	**PfE**: EA: written examination (90 minutes) + uCA: independent solving of tutorial exercises and/or oral/written attestations
	tutorial									
B 3.2	Mathematics for MT 2 [1)]	X	10	0	10	0	0	0	0	**PfE:** EA: written examination (120 minutes) + uCA: independent solving of tutorial exercises and/or oral/written attestations
	tutorial									
B 3.3	Mathematics for MT 3 [1)]		5	0	0	5	0	0	0	**PfE**: EA: written examination (60 minutes) + uCA: independent solving of tutorial exercises and/or oral/written attestations
	tutorial									
B 3.4	Mathematics for MT 4 [1)]		5	0	0	0	5	0	0	**PfE**: EA: written examination (60 minutes) + uCA: independent solving of tutorial exercises and/or oral/written attestations
	tutorial									
B 3.5	Algorithms and Data Structures MT	X	10	10	0	0	0	0	0	**PfE**: EA: written examination (120 minutes) + uCA: independent solving of tutorial exercises and/or oral/written attestations
	tutorial									
B 3.6	Algorithms for Continuous Systems		7.5	0	0	0	7.5	0	0	**PfE**: EA: written examination (90 minutes) + uCA: independent solving of tutorial exercises and/or oral/written attestations
	tutorial									

B 4	**Basics of Physics and Engineering**		**30**	**7.5**	**12.5**	**5**	**5**	**0**	**0**	
B 4.1	Basics of Electrical Engineering I	X	7.5	7.5	0	0	0	0	0	**EA**: written examination (120 minutes)
B 4.2	Basics of Electrical Engineering II	X	5	0	5	0	0	0	0	**EA**: written examination (90 minutes)
B 4.3	Statics and Structural Mechanics	X	7.5	0	7.5	0	0	0	0	**EA**: written examination (90 minutes)
B 4.4	Experimental Physics I		5	0	0	5	0	0	0	**EA**: written examination (90 minutes)
B 4.5	Experimental Physics II		5	0	0	0	5	0	0	**EA**: written examination (90 minutes)
B 5	**Branch of study: Imaging Techniques (ET/INF)** according to catalogue of branches of study [3]		**40**	**0**	**0**	**15**	**12.5**	**12.5**	**0**	
or										
B 6	**Branch of Study: Equipment Technology (MB/WW/CBI)** according to catalogue of branches of study [3]		**40**	**0**	**0**	**15**	**12.5**	**12.5**	**0**	
B 7	**Core Skill**		**15**	**0**	**0**	**2.5**	**0**	**0**	**12.5**	
B 7.1	Laboratory training		2.5	0	0	2.5	0	0	0	**uCA:** laboratory achievement[4]
B 7.2	Free choice Uni/Soft Skills		2.5	0	0	0	0	0	2.5	**gCA:** according to applicable examination regulations/module handbook
B 7.3	Industrial placement		10	0	0	0	0	0	10	**uCA:** according to the placement guidelines for the Medical Engineering degree programme
B 8	**Specialisation modules for branches of study[3]**		**20**	**0**	**0**	**0**	**0**	**15**	**5**	
B 8.1	Elective specialisation modules		15	0	0	0	0	15	0	**EA[3]**
B 8.2	Elective specialisation modules		5	0	0	0	0	0	5	**EA[3]**
B 9	**Bachelor's thesis**		**10**	**0**	**0**	**0**	**0**	**0**	**10**	**EA** : written assignment + presentation
w	**Total ECTS credits (~150 semester hours)**		**180**	**30**	**30**	**30**	**30**	**30**	**30**	

PfE portfolio examination

EA examination achievement

gCA graded course achievement

uCA ungraded course achievement

[1] The equivalency of the Mathematics modules in the degree programmes of the Faculty of Engineering shall be announced according to local practice.

[2] The modules marked with 'X' may make up part of the preliminary examination (GOP) according to Section 38. At least one module from each of the module groups B2 to B4 must have been passed.

The catalogues of branches of study and elective modules with detailed examination requirements for each module shall be published on the Medical Engineering website before the start of the semester according to local practice.

[4] Practice of practical tasks, written experiment protocols, and oral or written attestations.

10.4 General Examination Regulations for the Bachelor‘s and Master´s Degree Programmes at the Faculty of Engineering

These examination regulations have been worded carefully to be up to date; however, errors cannot be completely excluded. The official German text available at the Examinations Office is the version that is legally binding.

Note: For students who started their studies before the latest amendment came into effect: please also note the previous amendments with their transitory provisions.

Note:
These examination regulations shall apply to students starting a degree programme from the winter semester 2007/08 onwards.
Students who study under the General Examination Regulations for at the Faculty of Engineering from 17 October 1972 (KMBl 1973 p. 91) and the degree programme and examination regulations for their degree programme shall be examined according to those regulations.
(http://www.uni-erlangen.de/universitaet/organisation/recht/studiensatzungen/TECHFAK/DPO_TechnischeFak_Alt.pdf).

– New –

General Examination Regulations for the Bachelor's and Master's degree programmes at the Faculty of Engineering of Friedrich-Alexander-Universität Erlangen-Nürnberg – ABMPO/TechFak –

Dated 18 September 2007

amended by statutes of
25 July 2008
03 December 2009
04 March 2010
06 May 2010
07 July 2010
07 June 2011
30 July 2012
22 May 2013
05 June 2014
14 August 2015

Based on Section 13 (1)(2), Section 43 (4)(5), Section 61 (2)(1) of the Bavarian Higher Education Act (Bayerisches Hochschulgesetz, BayHSchG), the University of Erlangen-Nürnberg enacts the following examination regulations:

Appendix - General Examination Regulations

Table of Contents

I: General Conditions

Section 1 Scope, Purpose of the Bachelor's and Master's Examination

(1) These examination regulations govern the examinations for the Bachelor's and Master's degree programmes at the Faculty of Engineering resulting in the degrees 'Bachelor of Science' and 'Master of Science'. [2]They are supplemented by the degree programme and examination regulations.

(2) [1]The Bachelor of Science is a first university degree that qualifies the graduate for professional work. [2]The purpose of the Bachelor's examination is to assess whether the students:

- have acquired fundamental knowledge as well as in-depth technical and methodical understanding of the examined subjects
- have the ability to employ scientific methods and knowledge independently
- are prepared for the transition to professional practice

(3) [1]The Master of Science is a second university degree that qualifies graduates for further research as well as professional work. [2]The Master's examination serves to determine whether the students:

- have acquired in-depth knowledge of the basics and the fundamental research findings in the subjects of their Master's degree programme
- are capable of working independently according to scientific methods and to develop these further
- are prepared for professional practice

Section 2 Degrees

(1) [1]Passing the examinations results in the following degrees, depending on the type of degree programme:

1. the degree of Bachelor of Science (abbreviation: BSc) for passing the Bachelor's examination
2. the degree of Master of Science (abbreviation: MSc) for passing the Master's examination

[2]In the degree programmes of the Elite Network of Bavaria, the degree is conferred 'with honours' according to Sentence 1 (2).

(2) The degree may also be used with the addition '(FAU Erlangen-Nürnberg)'.

Section 3 Structure of the Bachelor's Degree Programme, Examinations and Standard Duration, Practical Work Prior to Studies, Examination and Teaching Language

(1) [1]Students shall take a Grundlagen- und Orientierungsprüfung (GOP) covering the foundations of the Bachelor's degree programme by the end of the second semester. [2]The degree programme and examination regulations govern which Bachelor's degree programmes are equal in the GOP. [3]The subsequent part of the Bachelor's degree programme includes the examinations and Bachelor's thesis module until the end of the standard duration, as well as, where applicable, a placement or internship, a research project and/or a final oral examination module. [4]180 ECTS credits are required for the Bachelor's degree programmes with a standard duration of six semesters; 210 ECTS credits are required for other programmes.

(2) Due to the requirement of gaining subject knowledge, each module may only be chosen once during a Bachelor's degree programme.

(3) The standard duration of a Bachelor's degree programme is six semesters unless the degree programme and examination regulations stipulate seven semesters.

(4) The degree programme and examination regulations govern for which degree programmes applicants are to carry out practical work prior to beginning their studies and state more detailed provisions regarding type and scope.

(5) [1]Modules may be taught in a foreign language. [2]Further details are set out in the relevant degree programme and examination regulations.

Section 4 Structure of the Master's Degree Programme, Examinations and Standard Duration, Examination and Teaching Language

(1) The Master's degree programme builds on the contents of the Bachelor's programme; it is more research-orientated.

(2) [1]The relevant degree programme and examination regulations of the Master's degree programmes stipulate a duration of two or three semesters plus one semester for completing the Master's thesis. [2]The Master's degree programmes are concluded with the Master's examination. [3]This consists of examinations in all modules including the Master's thesis module which must be taken during the lecture period or directly after the module. [4]120 ECTS credits are required for successful completion of the Master's degree programmes with a standard duration of four semesters, 90 ECTS credits for other programmes.

(3) Due to the requirement of gaining subject knowledge, each module may only be chosen once during a Master's degree programme.

(4) [1]The relevant degree programme and examination regulations of the Master's degree programmes stipulate a standard duration of three or four semesters including all examinations. [2]Sentence 1 notwithstanding, the standard duration of a part-time degree is eight semesters. [3]The total standard duration for consecutive Bachelor's and Master's degree programmes is ten semesters.

(5) [1]Modules may be taught in a foreign language. [2]Further details are set out in the relevant degree programme and examination regulations.

Section 4a Part-Time Degree Programmes, Transfer, ECTS Credit Exceedance

(1) [1]The Master's degree programmes Chemical Engineering, Chemical and Biological Engineering; Communications and Multimedia Engineering; Electrical Engineering, Electronics and Information Technology; Energy Technology; Computer Science; Information and Communication Technology; Life Science Engineering; Mechanical Engineering; and Medical Engineering may be completed in the form of a part-time degree programme. [2]Students must declare their choice of a part-time degree programme to the Student Records Office in writing upon enrolment.

(2) [1]A transfer between full-time and part-time degree programmes is permissible for the Master's degree programmes once per academic year on written request; Section 12 and Section 28 (1)(7) shall remain unaffected. [2]A change to a part-time degree programme from the third full-time semester shall only be permitted in justified exceptional cases; the decision shall rest with the Examinations Committee.

(3) [1]Part-time students in Master's degree programmes may achieve a maximum of 35 ECTS credits per academic year. [2]The Examinations Committee may grant exemp-

tions from Sentence 1 on written request; the request shall be submitted before the start of the examination.

Section 5 ECTS Credits

(1) [1]The degree programmes and examinations are structured based on the European Credit Transfer and Accumulation System (ECTS). [2]30 ECTS credits are estimated per semester. [3]One ECTS credit corresponds to 30 hours of work.

(2) [1]ECTS credits serve as a system to categorise, calculate and confirm the amount of work a student has invested. [2]They are a quantitative indicator of a student's workload.

Section 6 Modularisation, Course Credit Certificates

(1) [1]The degree programme consists of modules for which students are awarded ECTS credits. [2]One module is a chronologically connected and self-contained teaching and learning unit, the contents of which can be tested in an examination.

(2) [1]The modules shall be completed with a module examination. [2]This examination shall as a rule consist of one examination achievement or one course achievement. [3]In exceptional cases, this examination can also consist of several parts (portfolio examination) or a combination of examination and course achievements (portfolio examination) or partial examinations if the subject warrants it. [4]ECTS credits shall only be given for successful participation in modules that can be verified in an individual, separately identifiable performance in a module examination. [5]Module examinations are conducted during the lecture period or following the last lecture/seminar of a module before the start of the next semester's lecture period. [6]All examinations generally take place during the five-week examination period. [7]The examination period is divided into two weeks after the end of the lecture period of one semester and a period of three weeks before the beginning of the following semester's lecture period.

(3) [1]Examinations (examination achievements and course achievements) measure the student's success. [2]They may be in writing, electronic, oral, or in a different form. [3]In particular, tutorial achievements, which usually involve independently solving tutorial exercises each week, and laboratory achievements, which usually involve practice of practical tasks, written experiment protocols, and oral or written attestations, are permitted. [4]Furthermore, seminar achievements (usually a presentation and written report) and excursion work (usually a review or discussion contribution) may be permitted. [5]Examination achievements are graded. [6]The assessment of course achievements is limited to determining whether the student has passed or not.

(4) Enrolment in the relevant degree programme at the University of Erlangen-Nürnberg is a requirement for participation in module examinations (Paragraph 2 [1]).

(5) [1]In addition to the module examination, voluntary interim examinations (e.g. tutorial achievements or short tests) may be offered during courses as a way of measuring the standard of performance. [2]More detailed information, including the number, types and scope of these examinations, is given in the module handbook. [3]An interim examination achievements may improve the grade for a passed module examination or partial examination by a maximum of 0.7.

Section 6a Compulsory attendance

(1) [1]For lectures, which are marked accordingly in the respective module description, in which the qualification goal can only be achieved by regular attendance, compulsory attendance can be made a requirement for admission to the module examination or for obtaining the course achievement. [2]If attendance of the individual student is required for all participants to obtain the subject-specific skills, if the individual student obtaining such skills depends on the attendance of the other participants, if subject-specific skills can only be obtained by being present at a particular place, or if participation is required for safety reasons, it is permissible to introduce an obligation to attend.

(2) [1]Regular attendance is defined as no more than 15% of the lectures of any given course have been missed. [2]If between 15% and 30% of the lectures have been missed, the lecturer can offer the student the option to obtain a skills-orientated substitute achievement fulfilling the requirement of regular attendance. If no such substitute achievements are offered or the substitute achievements offered are not obtained by the student, attendance is not considered to have been regular. [3]If more than 30% of all lectures have been missed, the course must be taken again. [4]Any positions after the decimal point in the percentage of lectures missed shall be rounded for the benefit of the student.

(3) [1]Paragraph 2 notwithstanding, in the context of excursions, placements and block seminars, attendance is only considered to have been regular if all teaching units have been attended. [2]Appropriate skills-orientated substitute achievements fulfilling the requirement of regular attendance shall be offered in the case of credibly shown periods of absence due to reasons beyond the student's control of up to and including 15% of all lectures. [3]If more than 15% of all lectures have been missed, the course must be taken again. [4]Any positions after the decimal point in the percentage of lectures missed shall be rounded for the benefit of the student.

(4) Attendance is checked in the individual lectures by means of an attendance list in which students must enter their name and signature, or in a comparable manner.

Section 7 Examination Deadlines, Failure to Observe Deadlines

(1) [1]Examinations shall be sat in such a timely manner as to allow the student to obtain the ECTS credits specified in the relevant degree programme and examination regulations for the Grundlagen- und Orientierungsprüfung (GOP) and the Bachelor's or Master's examination by the scheduled deadline. [2]Deadlines shall be the second semester of the degree programme for the GOP and the last semester of the respective standard duration for the Bachelor's or Master's examination. [3]The deadline according to Sentence 2 may be exceeded by the following periods (extended deadline):

1. GOP – by one semester
2. Bachelor's examination – by two semesters
3. Master's examination – by one semester
4. Master's examination in a part-time degree programme – by two semesters

[4]An examination shall be considered to have been sat and failed at the final attempt if the required number of ECTS credits stipulated in the relevant degree programme and examination regulations was not obtained within the extended deadline according to Sentence 3, unless the reasons for this are beyond the student's control.

(2) The deadline set forth in Paragraph 1 shall be extended by claiming the periods of protection according to Sections 3, 4, 6 and 8 of the Maternity Protection Act (Mutterschutzgesetz – MuSchG) in the version published on 20 June 2002 (BGBl I S 2318 [German Federal Law Gazette I p. 2318]) as amended from time to time and according to the periods set forth in the Parental Allowance and Parental Leave Act (Bundesel-

lerngeld- und Elternzeitgesetz – BEEG) of 5 December 2006 (BGBl I S. 2748 [German Federal Law Gazette I p. 2748]) as amended from time to time.

(3) [1]The reasons according to Paragraph 1 (4) and Paragraph 2 shall be explained in writing and shown credibly to the Examinations Office without delay. [2]If the reasons are acknowledged, the examination shall be sat at the soonest possible time; already available examination and course achievements shall be accredited. [3]In case of an incapability to sit the examination occurring before or during the examination, the examiner shall be notified immediately; in cases where the student is unable to sit an examination due to illness, an official doctor's certificate shall be submitted at the same time. [4]The Examinations Committee may demand the student submit a certificate from an official medical examiner. [5]In case of withdrawal from an examination due to illness on the day of the examination after the time of the examination, the student must submit a certificate from an official medical examiner to the Examinations Committee without delay.

Section 8 Examinations Committee

(1) [1]An Examinations Committee consisting of six members of the Faculty of Engineering shall organise the examinations. [2]The chairperson and four more members are professors or full-time lecturers at the Faculty of Engineering, one member is a research associate and an authorised examiner according to Section 3 (2) of the Higher Education Examiners Act (Hochschulprüferverordnung; BayRS 2210-1-1-6-WFK) in the currently valid version. [3]The members of the Examinations Committee shall be elected by the Faculty Council. [4]The term of office of the members shall be three years. [5]Re-election shall be permitted. [6]A personal deputy shall be appointed for the chairperson and each member.

(2) The chairperson may transfer tasks within their responsibility to a member of the Examinations Committee.

(3) [1]The Examinations Committee shall be tasked with carrying out the examination procedures, especially the planning and organisation of the examinations. [2]Its duties include ensuring that the provisions of these examination regulations are observed. [3]With the exception of the examinations and examination results, all decisions shall be taken by the Examinations Committee. [4]It shall send out the examination notifications in particular, after having verified the examination achievements and their legitimacy. [5]It shall regularly report to the Faculty Council on the development of examinations and study periods. [6]The members of the Examinations Committee shall have the right to be present during the examinations.

(4) [1]The Examinations Committee shall have a quorum when all members are summoned observing a notice period of at least one week and the majority of members are present and eligible to vote. [2]Decisions shall be taken with the majority of votes cast in meetings. [3]Abstentions, ballot votes and delegation of votes shall not be permitted. [4]In case of a tie of votes, the vote of the chairperson shall be decisive.

(5) [1]The chairperson shall call the meetings of the Examinations Committee. [2]She or he shall be entitled to take decisions that cannot be delayed by herself or himself on the Examinations Committee's behalf. [3]The Examinations Committee shall be informed of such cases without delay. [4]Furthermore, unless these examination regulations state otherwise, the Examinations Committee shall have the right to revocably charge the chairperson with carrying out individual tasks.

(6) [1]Official notifications in matters pertaining to examinations that may result in the infringement upon a person's rights shall be made in writing; reasons shall be given and information on legal remedies available to the person shall be included. [2]Students shall be given the opportunity to make a statement before negative decisions are finalised. [3]The Examinations Committee shall have the right to rule that grade notifications may be made public in the form of a bulletin or may be sent out in digital form. [4]The president shall issue the notification of objection in questions of examination legislation following consultation with the Examinations Committee and after hearing the examiners.

Section 9 Examiners, Exclusion Due to Personal Involvement, Obligation to Confidentiality

(1) [1]The Examinations Committee shall appoint the examiners. [2]All persons eligible to administer examinations according to the Bavarian Higher Education Act (BayHSchG) and the Bavarian Higher Education Examiners Act (BayHSchPrüferV) in the currently valid version shall be eligible for appointment. [3]If the membership with the University of an eligible examiner ends, their eligibility as an examiner usually remains intact for up to one year. [4]The Examinations Committee shall have the right to extend this period upon request.

(2) A change of examiners shortly before the start of an examination shall be permissible on urgent grounds.

(3) [1]Persons who have completed the degree programme in question or an equivalent degree programme shall be eligible for appointment as observers. [2]Observers shall be research associates (wissenschaftliche Mitarbeiter) as their primary occupation.

(4) Exclusion from the deliberation and voting process of the Examinations Committee as well as from the positions of examiner and observer due to personal involvement shall be governed by Section 41 (2) BayHSchG.

(5) The obligation to confidentiality of the Examinations Committee and other persons involved in matters pertaining to examinations shall be governed by Section 18 (3) BayHSchG.

Section 10 Announcement of Examination Dates and Examiners; Registration, and Withdrawal

(1) The dates of the examinations and the examiners shall be announced by the Examinations Office in time in advance and according to local practice.

(2) [1]The students shall register for the individual module examinations after the start of the lecture period. [2]The registration dates and formalities shall be announced according to local practice four weeks prior.

(3) The deadlines set forth in Sections 7 and 28 notwithstanding, withdrawal from first attempts at written and oral examinations shall be permitted without stating reasons up until the end of the third workday before the examination date according to Paragraph 2 (1); withdrawals are to be submitted to the examiner. The days between and including Mondays and Fridays shall be considered as workdays. [2]An effective withdrawal shall result in the forfeiture of the registration for the examination.

(4) [1]An examination achievement shall be graded as 'nicht ausreichend' (unsatisfactory; 5.0) if the student does not attend an examination without good reasons or if the student withdraws from the examination after the withdrawal deadline as specified in

Section 3. [2]The reasons for withdrawal or absence according to Sentence 1 shall be explained in writing and shown credibly to the Examinations Committee without delay. [3]If the Examinations Committee accepts the reasons, a new date shall be set. [4]In cases where the student is unable to sit an examination due to illness, the Examinations Committee may demand that the student submit a certificate from an official medical examiner. [5]In case of withdrawal from an examination due to illness after the examination has started, the student must submit a certificate from an official medical examiner to the Examinations Committee without delay.

Section 11 Admissions Committees for a Master's Degree Programme

(1) The evaluation of the qualification and admission requirements for a Master's degree programme shall be the responsibility of admissions committees appointed for every Master's degree programme.

(2) [1]The admissions committees shall consist of at least one professor as the chairperson, a university lecturer, and a research associate working for the University as their main occupation. [2]The members shall be appointed by the Faculty Council of the Faculty of Engineering for a term of office of three years; re-election shall be permitted. [3]Section 8 (4) and (5) shall apply accordingly.

Section 12 Accreditation of Study Periods, Course and Examination Achievements

(1) [1]Study periods, modules, course and examination achievements achieved in degree programmes at other public or state-approved universities in the Federal Republic of Germany, through successful participation in a distance course as part of a degree programme at a public or state-approved university in the Federal Republic of Germany, or in degree programmes at foreign universities shall be accredited according to these examination regulations unless there are significant differences in the skills acquired. [2]The same shall apply to study periods, course and examination achievements achieved at a public or state-approved university in Bavaria in the course of other study programmes within the meaning of Section 56 (6)(1) and (2) BayHSchG, in special study programmes within the meaning of Section 47 (3)(1) BayHSchG, or at the Virtual University of Bavaria.

(2) [1]Skills acquired in the course of successfully completed vocational training, courses of secondary education or other specific courses within the meaning of Section 56 (6)(3) BayHSchG, or outside of higher education shall be accredited if they are equivalent to skills acquired through university studies. [2]Skills acquired outside the university sector shall replace no more than half of the required skills of which students must provide proof.

(3) [1]The grades of accredited modules, examinations and course achievements are accredited if they are recognised as equivalent according to the recommendations of the data stored in the database anabin (information portal for the recognition of foreign educational achievements) and if the grades were formed according to Section 18. [2]If the grading system applied in the examinations sat at a university or equivalent institution of higher education and accredited by the University of Erlangen-Nürnberg is not identical to the grading system set forth in Section 18, the grades achieved at other universities are usually converted according to the following formula:

$x = 1 + 3\,(N_{max} - N_0)/(N_{max} - N_{min})$ with
x = converted grade
Nmax = best grade attainable
Nmin = lowest grade for passing

Nd = grade attained

[3]Only one decimal place is shown for the grades thus calculated. [4]If conversion is not possible, the Examinations Committee usually determines a system by which to calculate the grades.

(4) [1]The documents needed for this accreditation shall be submitted to the chairperson of the Examinations Committee. [2]If the conditions set forth in Paragraphs 1 to 3 are met, the student shall have a legal claim to accreditation. [3]The decision shall rest with the chairperson of the Examinations Committee after consultation with the department representative appointed by the department in question; the decision shall be issued in writing.

Section 13 Fraud, Breach of Regulations, Exclusion from Further Participation

(1) In case of an attempt to commit fraud or to influence the result of an examination through the use of unauthorised materials, the examination in question shall be graded as 'unsatisfactory' (5.0).

(2) Persons who disturb the orderly examination process may be excluded from continuing the examination in question by the authorised examiner or the supervising person; in this case the examination achievement in question shall be considered to be 'nicht ausreichend' (unsatisfactory; 5.0).

(3) In case of repeated or severe breach of regulations in the sense of Paragraph 1 or Paragraph 2, the Examinations Committee may exclude students from further participation in the examination.

Section 14 Revocation of Degrees

The revocation of Bachelor's and Master's degrees shall be governed by Section 69 BayHSchG.

Section 15 Faults in the Examination Process

(1) Should it turn out that the examination process was faulty in a manner that influenced the result of the examination, it shall be ordered upon a student's request that a certain student or all students shall resit the examination or parts of the same.

(2) Faults in the examination process shall be reported to the chairperson of the Examinations Committee or the examiner without delay.

(3) Six months after completion of the examination, resit examinations may no longer be ordered ex officio as stipulated in Paragraph 1.

Section 16 Written Examination

(1) [1]In written examinations students are required to prove that they are capable of identifying a problem within a limited period and with limited materials, using the conventional methods employed in their field, and to find a solution to this problem. [2]Written examinations may take the form of a *Klausur* – which may also be administered in electronic form in accordance with Section 17a – assignment or term paper. [3]In exceptional cases (in particular due to stays abroad, illness or disproportionate strain on resources), the Examinations Committee may permit a change in the type of examination. [4]In case of a change in the type of examination due to disproportionate strain on resources, the change must be announced to students by the examiner at least two weeks before the start of the lecture period. [5]Such a change is subject to approval by the Examinations Committee.

(2) The duration of the written examination shall be governed by the relevant degree programme and examination regulations.

(3) [1]Written examinations shall generally be graded by the author of the examination questions. [2]If a written examination achievement is graded as 'nicht ausreichend' (unsatisfactory) it shall be presented to a second examiner for evaluation. [3]The examiner's evaluation must be documented in writing and reasons for the final rating must be made clear.

(4) [1]Written examinations (*Klausuren*) may take the form of multiple-choice examinations (single or multiple choice), either in full or in part. [2]Detailed information on the modules in which written examinations take the form of multiple choice questions are given in the module handbook. [3]The examinee shall state which of the answers presented along with the questions they deem to be correct. [4]Examination questions must allow for reliable examination results. [5]It must be specified during the design of the examination questions which of the answers shall be accepted as correct. [6]If the question does not allow multiple answers, multiple answers shall be inadmissible and disregarded. [7]Before the evaluation of the examination results, at least two of the authors of the examination shall assess whether the examination questions are faulty with regard to the requirements set forth in Sentence 4. [8]Should they determine that individual examination questions are faulty, these shall not be taken into account in the evaluation of the examination result; the number of examination questions shall be considered to have been reduced. [9]This reduction of the number of examination questions may not result in disadvantages for any of the examinees. [10]No minus points may be awarded outside of individual examination questions.

(5) [1]The examinations according to Paragraph 4 (1) shall be considered to have been passed if

1. the examinee answered at least 50 percent of the examination questions correctly/achieved at least 50 percent of the attainable points, or
2. the examinee answered at least 40 percent of the examination questions correctly/achieved at least 40 percent of the attainable points and the number of correct answers/points obtained is no more than 17 percent below the average number of correct answers/points obtained by all examinees sitting the examination for the first time.

[2]If Sentence 1 (2) is applied, the Dean of Studies shall be notified.

(6) In case of written examinations that are not entirely composed of multiple choice questions, Paragraphs 4 and 5 shall only apply for this part.

Section 17 Oral Examination

(1) [1]In oral examinations students are required to prove that they grasp the context of their subject and can handle specific questions in this context. [2]Oral examinations shall be conducted, unless otherwise stated, in the presence of an observer appointed by the examiner. [3]In exceptional cases (in particular due to stays abroad, illness or disproportionate strain on resources), the Examinations Committee may permit a change in the type of examination. [4]In case of a change in the type of examination due to disproportionate strain on resources, the change must be announced to students by the examiner at least two weeks before the start of the lecture period. [5]Such a change is subject to approval by the Examinations Committee.

(2) Oral examinations generally have a duration of at least 30 minutes; degree programme and examination regulations may contain provisions deviating from this.

(3) In oral examinations every examiner shall determine the grade according to Section 18 in the presence of several authorised examiners.

(4) [1]Minutes shall be recorded for oral examinations; they shall include the following: time, date and duration of the examination; subject and result of the examination; the names of the examiners, the observer and the student; and any special occurrences. [2]The minutes shall be signed by the authorised examiners and the observer. [3]It shall not be necessary to record the questions asked in the examination or the answers given.

Section 17a Computer-based Examinations

[1]Examinations may be administered in electronic form. [2]Detailed information on the modules in which examinations are in electronic form are given in the module handbook. [3]Computer-based examinations (e-examinations) are examinations which are administered and evaluated via computer-aided or digital media. [4]The authenticity and integrity of the examination results shall be verified. [5]Automatically calculated evaluations of examination achievements shall be verified by one examiner at the request of the examinee or two examiners in case of a failed examination.

Section 18 Evaluation of Examinations, Grade Scale, Final Grade

(1) [1]The evaluation of individual examination achievements shall be expressed by the examiners with the following ratings and grades:

sehr gut (very good)	= (1.0 or 1.3)	an outstanding achievement
gut (good)	= (1.7 or 2.0 or 2.3)	an achievement that exceeds the average requirements considerably
befriedigend (satisfactory)	= (2.7 or 3.0 or 3.3)	an achievement that fulfils average requirements
ausreichend (sufficient)	= (3.7 or 4.0)	an achievement that fulfils the requirements despite flaws
nicht ausreichend (unsatisfactory)	= (4.3 or 4.7 or 5.0)	an achievement that no longer fulfils requirements due to considerable flaws

[2]An examination (Section 6 [2]) has been passed if it has received at least the grade 'ausreichend' (sufficient). [3]For ungraded examinations (Section 6 [3][6]) the rating shall be 'bestanden' (passed) or 'nicht bestanden' (failed); this also applies in the case of a combination of several course achievements in cases as described in Section 6 (2)(3). [4]Except when otherwise stipulated in the relevant degree programme and examination regulations, a module examination shall have been passed when all parts of the examination or partial achievements (Section 6 [2][3]) have been passed. [5]If an examination has several examiners or several parts or partial achievements, the total grade is calculated from the weighted average of the individual grades. [6]One decimal place shall be shown in the calculation of the grade; further decimal places shall be omitted without being rounded.

(2) [1]Multiple choice examination (single or multiple choice) shall be graded as follows: [2]Students who answer the required minimum of examination questions according to Section 16 (4)(1) correctly shall receive the grade
1.0 (sehr gut/very good) if at least 75 percent of the remaining questions were answered correctly or remaining points were achieved,
2.0 (gut/good) if at least 50 percent but less than 75 percent of the remaining questions were answered correctly or remaining points were achieved,
3.0 (befriedigend/satisfactory) if at least 25 percent but less than 50 percent of the remaining questions were answered correctly or remaining points were achieved,

4.0 (ausreichend/sufficient) if no or less than 25 percent of the remaining questions were answered correctly.

[3]The grades can be increased or decreased by increments of 0.3 according to the percentage; the grades 0.7 and 4.3 shall not be awarded. [4]Students who do not achieve the required minimum shall receive the grade 5.0. [5]Sentence 3 notwithstanding, in addition to the grade 5.0, the grades 4.3 and 4.7 may also be awarded in cases in which examinations according to Section 16 (7) partly take the form of a multiple choice examination.

(3) The Grundlagen und Orientierungsprüfung (GOP) shall have been passed if the requirements stipulated in Section 25 of these examination regulations and in the relevant degree programme and examination regulations have been fulfilled.

(4) [1]The overall grade of the GOP, the Bachelor's examination, the Master's examination and the modules shall be as follows:
at an average of up to 1.5 = sehr gut (very good)
at an average of over 1.5 and up to 2.5 = gut (good)
at an average of over 2.5 and up to 3.5 = befriedigend (satisfactory)
at an average of over 3.5 and up to 4.0 = ausreichend (sufficient)
[2]Students who pass the Bachelor's or Master's examination with a final grade between 1.0 and 1.2 shall receive the overall assessment 'mit Auszeichnung bestanden' (passed with distinction).

(5) [1]If a module consists of more than one graded part or partial examination (Section 6 [2][3]), the module grade shall be calculated from the individual grades weighted according to their number of ECTS credits, insofar as the relevant degree programme and examination regulations do not specify otherwise. [2]If parts of examinations or partial examinations are not worth any ECTS credits, the module co-ordinator shall specify how the module grade is calculated from the evaluations of the individual parts of the module examination in the module catalogue; Paragraph 1 (6) shall apply accordingly. [3]If no graded examination is conducted, the successfully completed module shall be rated as 'bestanden' (passed).

(6) [1]The final grade of the GOP shall be calculated using all module grades from the modules required for passing the GOP with the weighting of their ECTS credits. [2]In case of several possible modules, the better results shall be used.

(7) [1]All module grades of the Bachelor's degree programme shall be included in the calculation of the final grade of the Bachelor's examination with the weighting of the ECTS credits. [2]Paragraph 1 (6) shall apply accordingly.

(8) [1]All module grades of the Master's degree programme shall be included in the calculation of the final grade of the Master's examination with the weighting of the ECTS credits. [2]Paragraph 1 (6) shall apply accordingly.

(9) The degree programme and examination regulations may stipulate that individual module examinations shall be given a different weighting in the calculation of the final grade of the Bachelor's or Master's examination.

Section 19 Invalidity of Examinations

(1) If fraudulent methods were used during the examination and if this only becomes known after the certificate has been awarded, the Examinations Committee may cor-

rect the grade after the fact and declare the examination as having been failed in part or in full.

(2) If the requirements for admission to the examination were not fulfilled while no fraudulent acts were committed wilfully and if this fact only became known after the certificate has been awarded, these circumstances shall be considered remedied by the passing of the examination.

(3) Students shall be given the opportunity to make a statement before a decision is taken.

(4) [1]The incorrect certificate shall be withdrawn; a new certificate shall be issued if applicable. [2]A decision according to Paragraph 1 shall be excluded after a period of five years starting with the certificate's date of issue.

Section 20 Inspection of Examination Records

(1) After the completion of the individual examination procedures, students shall on request be entitled to inspect their written examination papers, the corresponding reviews by the examiners, and the examination minutes.

(2) [1]Students shall submit the request to the responsible examination body within one month of being notified of their grades. [2]Unless the Examinations Office is responsible, the examiner shall allow the inspection; further details are decided by the Examinations Committee. [3]Students prevented from observing the deadline according to Sentence 1 without any fault of their own shall be granted restitutio in integrum according to Section 32 of the Bavarian Administrative Procedures Act (BayVwVfG) as amended from time to time.

Section 21 Report, Diploma Supplement, Transcript of Records, Certificate

(1) Students who have successfully completed a degree programme shall receive a report, a transcript of records, a diploma supplement and a degree certificate, if possible within four weeks.

(2) [1]The report shall contain the modules and module grades and the final grade of the Bachelor's or Master's examination; it shall also contain the topic of the Bachelor's or Master's thesis. [2]The transcript of records lists all modules attended; the report and the transcript of records may be combined into one document. [3]The transcript of records and the diploma supplement shall be issued in English and German. [4]Further details on the diploma supplement, in particular regarding its content, shall be determined by the Examinations Committee. [5]Information not yet available to the Examinations Office must be submitted together with the required proof by the time of the degree programme's completion at the latest; otherwise this information may no longer be taken into consideration for the documents listed in Paragraph 1.

Section 22 Notification on Failed Examinations

Upon request and submission of the required certificates as well as the de-registration certificate, students who have failed the Bachelor's or Master's examination permanently shall receive a written confirmation showing that the examination was failed, which grades were achieved in the individual module examinations and which examination achievements are still missing.

Section 23 Adjustments to Examination Arrangements

(1) [1]The examination procedure shall be adjusted to take into account the nature and extent of a student's disability. [2]Students with a doctor's certificate showing credibly

that they are either in part or fully incapable of sitting the examination in the intended manner due to long-term or permanent physical disabilities shall be entitled to have the permission of the chairperson of the Examinations Committee to offset this disadvantage by a corresponding extension of their working time or by the examination process being structured differently.

(2) Adjustments to examination arrangements may be made for pregnant students, if the student submits medical certificate confirming that she will be at least 30 weeks pregnant by the examination date to the Examination Committee responsible within four weeks before the examination date.

(3) [1]Decisions according to Paragraphs 1 and 2 shall only be taken by the chairperson of the Examinations Committee upon written request. [2]The student may be required to submit a certificate from an official medical examiner proving the fulfilment of the conditions in Paragraph 1. [3]Applications for adjustments to examination arrangements should be made to the Examinations Committee four weeks before the examination.

II: Bachelor's Examination

Section 24 Admission Requirements for Examinations

(1) [1]Students enrolled in a Bachelor's degree programme shall be deemed as admitted to the Bachelor's examination and the module examinations of which the Bachelor's examination consists, unless admission is to be refused. [2]Admission shall be refused if:

1. requirements are not met or certificates are not submitted at all or not in due time as stipulated in these examination regulations and in the degree programme and examination regulations
2. the GOP, the Bachelor's examination, the Diplom intermediary examination or the Diplom examination in the same subject or in a related subject (specified in the Faculty of Engineering's list of related degree programmes) has been failed at the final attempt
3. de-registration of the student resulting in the revocation of the student's right to sit the examination is effected

(2) If admission to the examinations is to be refused, the decision shall be taken without delay, furnished with reasons and information on legal remedies available and announced to the student.

Section 25 Grundlagen- und Orientierungsprüfung (GOP)

(1) In the Grundlagen- und Orientierungsprüfung (GOP) students should prove that they:

- can fulfil the requirements of an academic course of study in the chosen subjects
- have acquired particularly the methodological skills required to continue their studies successfully

(2) [1]The GOP consists of modules worth at least 30 ECTS credits. [2]The GOP shall have been passed when all modules designated as part of the GOP in the relevant degree programme and examination regulations have been passed and all requirements stipulated in the degree programme and examination regulations have been fulfilled. [3]The relevant degree programme and examination regulations shall specify subject, type and scope of the GOP.

Section 26 Bachelor's Examination

[1]The degree programme and examination regulations shall specify subjects, type and scope of the Bachelor's examination. [2]The Bachelor's examination shall have been passed if all subject modules required according to the relevant degree programme and examination regulations have been passed achieving 180 ECTS credits, or 210 ECTS credits for degree programmes with seven semesters.

Section 27 Bachelor's Thesis

(1) [1]The Bachelor's thesis is supposed to show that the student is capable of dealing with a problem from their field independently according to scientific methods within a set period and presenting the results in an appropriate form. [2]It shall receive between 8 and 12 ECTS credits according to the relevant degree programme and examination regulations.

(2) [1]Unless the relevant degree programme and examination regulations state otherwise, full-time university lecturers at the Faculty of Engineering for the degree programme in question (supervisors) shall be entitled to assign Bachelor's theses. [2]The Examinations Committee shall have the right to grant and regulate exceptions. [3]The Examinations Committee may permit students to write their Bachelor's thesis at an institution outside the University if supervision there is ensured.

(3) [1]Students shall ensure that they receive a subject for their Bachelor's theses at the latest by the start of the last semester of the degree programme's standard duration. [2]To be admitted to the Bachelor's thesis students must have obtained at least 110 ECTS credits as well as successfully completed the GOP. [3]The Examinations Office shall be notified of the subject and the date of allocation. [4]Should a student, despite a genuine effort to that end, not be allocated a subject, the chairperson of the Examinations Committee shall, in consultation with a representative of the student's department, allocate a subject and a supervisor to the student.

(4) [1]The period between the allocation of the subject and the date of the Bachelor's thesis' submission (standard thesis work period) shall be five months. [2]The scope of the subject must be such that it can be dealt with within the standard thesis work period. [3]With the Examinations Committee's approval, the supervisor may extend the work period by a maximum of one month upon receiving a justified request.
[4]If a student submits a doctor's certificate proving that they are incapable of working on the Master's thesis, the period for thesis work shall be held in abeyance.

(5) [1]The subject of the Bachelor's thesis may only be returned once and within the first three weeks of the thesis work period; returning the subject shall not be permitted for repetitions of the Bachelor's thesis. [2]If the subject is returned where it is not admissible, the Bachelor's thesis shall receive the evaluation 'nicht ausreichend' (unsatisfactory; 5.0); it shall be regarded as rejected. [3]Sentence 2 shall apply accordingly if the Bachelor's thesis is not submitted on time.

(6) [1]Unless otherwise stipulated in the relevant degree programme and examination regulations, the thesis shall be written in German, or in English with the permission of the supervisor. [2]With the supervisor's agreement, the chairperson of the Examinations Committee may permit students to write the thesis in a different language upon request.

(7) [1]One printed and bound copy and one digital copy (PDF document on a storage device) of the thesis shall be submitted to the supervisor. [2]The supervisor shall inform the Examinations Office of the date of submission without delay. [3]The Bachelor's the-

sis shall include a declaration by the student confirming that the thesis is an original work and that no other sources or materials than the ones listed were used.

(8) [1]The Bachelor's thesis is usually graded by the supervisor; Section 16 (3) shall apply accordingly. [2]The chairperson of the Examinations Committee shall work towards the Bachelor's thesis being graded within one month. [3]The thesis shall be accepted if it receives at least the grade 'ausreichend' (sufficient).

(9) [1]If a Bachelor's thesis is rejected, it may be repeated once; a second repetition or revision shall not be permitted. [2]The student shall ensure that they receive a new subject for the repetition of the Bachelor's thesis within two months following the announcement of the rejection; otherwise the Bachelor's thesis shall be regarded as having been failed at the final attempt; Paragraph 3 (3) and (4) shall apply accordingly. [3]Paragraphs 1 to 8 shall apply accordingly to the repetition.

Section 28 Resit Examinations

(1) [1]With the exception of the GOP and the Bachelor's thesis, every module examination or partial module examination may be resat twice; course achievements may be repeated as often as necessary. [2]The resit examination shall be limited to the failed examination or course achievement. [3]Examinations that are part of the GOP may only be resat once; Section 27 (9)(1) shall apply to repetition of the Bachelor's thesis. [4]Resit examinations shall take place at the earliest possible date, which is usually within six months of notification of the first examination result. [5]The degree programme and examination regulations may specify that examinations for elective modules that have already been started must be resat in the case of a change of module. [6]Resit examinations of the GOP shall not be offered before the examination period following the period of the first attempt. [7]The student shall be considered as registered for the next resit examination. [8]The deadline for resit examinations shall not be interrupted by de-registration, change to or from a degree programme, or leave. [9]If a student misses the resit examination or the resit period is not observed, the examination shall be deemed to have been failed unless the Examinations Committee grants the student a respite due to special reasons beyond the student's control. The standard deadlines according to Section 7 (1) shall continue to apply. [10]The provisions regarding maternity protection and parental leave (Section 7 [2]) shall apply.

(2) [1]Voluntarily resitting a passed examination of the same module shall not be permitted. [2]Unless the degree programme and examination regulations state otherwise, alternative modules may be completed to replace failed modules; the failed attempts in the previous alternative module shall be counted unless the degree programme and examination regulations state otherwise. [3]The same shall apply to modules that are attended and completed within the examination periods in Section 7 in addition to successfully completed modules. [4]If a student completes additional modules, they shall decide which of the achievements shall go into the calculation of the grade. [5]Students shall notify the Examinations Office of their decision at the latest by the end of the degree programme. [6]The choice shall thus become binding. [7]If no choice is made, the Examinations Office shall count the better achievements out of the student's achievements for a semester. [8]The achievements that are left out shall not be counted towards the grade but shall be listed in the transcript of records.

(3) Subject to the special provisions in the degree programme and examination regulations, students may choose in which order they complete the modules.

III. Master's Examination

Section 29 Qualification for a Master's Degree Programme

(1) Qualification for a Master's degree programme shall be proved through:

1. An undergraduate degree that is subject-specific or subject-related to the Master's degree programme in question from a university or another degree leading to equivalent expertise; the relevant degree programme and examination regulations of the Master's degree programmes shall govern the subject-specific and subject-related degrees according to Clause 1. Unless the degree programme and examination regulations state otherwise, the 'Bachelor-Master-Ampel', of which students are notified according to local practice, shall apply.
2. Proof of sufficient English proficiency where this is required according to the relevant degree programme and examination regulations.
3. Passing the qualification assessment process according to Appendix 1.

(2) [1]In terms of the skills and knowledge gained, the degrees according to Paragraph 1 (1) must not differ significantly from the subject-specific Bachelor's examination according to these examination regulations including the relevant degree programme and examination regulations. [2]If there are differences which can be substituted, the Admissions Committee may grant admission under the condition that proof of further achievements worth up to a maximum of 20 ECTS credits and to be determined by the Admissions Committee be submitted within one year of taking up studies for a Master's degree. [3]Section 61 (4) and Section 63 BayHSchG shall apply to the assessment of equivalence of German and foreign degrees. [4]Sentence 2 shall apply to subject-related degrees accordingly.

(3) [1]Paragraph 1 (1) notwithstanding, students enrolled in a Bachelor's degree programme may be admitted to a Master's degree programme if they have achieved at least 140 ECTS credits. [2]Proof of the successfully completed Bachelor's degree shall be submitted at the latest within one year of taking up the degree programme; completing the Bachelor's degree programme is a prerequisite for formally starting the Master's degree programme. [3]Admission to the Master's degree programme shall be granted with reservations.

(4) Paragraphs 1–3 notwithstanding, the qualification assessment process for the Elite degree programmes and the Master's degree programme International Project Management in Systems Engineering shall be governed by the relevant degree programme and examination regulations.

Section 30 Admission to Examinations

[1]Students enrolled in a Master's degree programme shall be deemed as admitted to the Master's examination and the module examinations of which the Master's examination consists, unless admission is to be refused. [2]If there are elective options for the modules to be completed for the Master's examination, the students shall only be admitted to the modules they choose by registering for the examination; the choice shall be binding. [3]Admission shall be refused if:

1. Requirements are not met or certificates are not submitted at all or not in due time as stipulated in the degree programme and examination regulations
2. The Diplom examination or the Master's examination in a related subject (specified in the Faculty of Engineering's list of related degree programmes) has been failed at the final attempt
3. De-registration of the student resulting in the revocation of the student's right to sit the examination is effected.

Section 31 Master's Examination

(1) [1]The Master's examination shall consist of the required module examinations including the Master's thesis module. [2]The relevant degree programme and examination regulations may stipulate that the Master's thesis is to be complemented by a final oral examination. [3]The Master's examination shall have been passed if all required course-related module examinations and the Master's thesis module including the oral final examination module, where applicable, have been passed.

(2) The relevant degree programme and examination regulations shall specify subject, type and scope of the Master's examination including, if applicable, vocational practice.

Section 32 Master's Thesis

(1) [1]The Master's thesis is an assessment which concludes the Master's degree. [2]It is supposed to show that the student is capable of dealing with a problem from their field independently and according to scientific methods within a set period. [3]The Master's thesis may not to any significant degree be identical to a previously submitted Diplom, Bachelor's or Master's thesis, or dissertation. [4]The relevant degree programme and examination regulations shall govern the allocation of ECTS credits.

(2) [1]Students shall ensure that they receive a subject for their Master's theses at the latest by the start of the last semester of the degree programme's standard duration. [2]The subject and the date of its allocation shall be confirmed by the supervisor and presented to the Examinations Office. [3]Should a student, despite a genuine effort to that end, not be allocated a subject, the chairperson of the Examinations Committee shall, in consultation with a representative of the student's department, allocate a subject and a supervisor to the student.

(3) [1]Unless the relevant degree programme and examination regulations state otherwise, full-time university lecturers at the Faculty of Engineering for the degree programme in question (supervisors) shall be entitled to assign Master's theses. [2]The Examinations Committee shall have the right to grant and regulate exceptions. [3]The Examinations Committee may permit students to write their Master's thesis at an institution outside the University if supervision there is ensured.

(4) [1]The time between the selection of a subject and the submission of the Master's thesis shall be six months, or twelve months for part-time degree programmes; the scope of the subject must be such that it can be dealt with within this period. [2]The Examinations Committee shall have the right to extend the period for the Master's thesis by a maximum of three months upon receiving a justified request. [3]If a student submits a doctor's certificate proving that they are incapable of working on the Master's thesis, the period for thesis work shall be held in abeyance.

(5) [1]The subject may only be returned once with good reason and with the approval of the chairperson of the Examinations Committee within the first third of the period for thesis work. [2]Otherwise the Master's thesis shall be graded 'nicht ausreichend' (unsatisfactory; 5.0) when the subject is returned; it shall be regarded as rejected.

(6) [1]Unless otherwise stipulated in the relevant degree programme and examination regulations, the Master's thesis shall be written in German, or in English with the permission of the supervisor. [2]The Master's thesis shall contain a summary of results at the end. [3]The Master's thesis shall include a declaration by the student confirming that the thesis is an original work and that no other sources or materials than the ones listed were used. [4]One printed and bound copy and one digital copy (PDF document

on a storage device) of the Master's thesis shall be submitted to the supervisor; the date of submission shall be recorded. [5]If the Master's thesis is not submitted in time, it shall be graded 'nicht ausreichend' (unsatisfactory; 5.0); it shall be regarded as rejected.

(7) [1]The Master's thesis is usually graded by the supervisor; Section 16 (3) shall apply accordingly. [2]The chairperson of the Examinations Committee shall usually work towards the Master's thesis being graded within one month.

(8) [1]The Master's thesis shall be accepted if it receives at least the grade 'ausreichend' (sufficient). [2]It shall be rejected if it receives the grade 'nicht ausreichend' (unsatisfactory).

(9) [1]If the Master's thesis is rejected or if it is regarded as rejected, it may be repeated once; a second repetition shall not be permitted. [2]The student shall ensure that they receive a new subject for the repetition of the Master's thesis within the semester following the announcement of the rejection; otherwise the Master's thesis shall be regarded as having been failed at the final attempt; Paragraph 2 (3) shall apply accordingly. [3]Paragraphs 1–8 shall apply accordingly for the repetition of the Master's thesis; returning the subject shall not be permitted. [4]The chairperson of the Examinations Committee may, if this is not impossible according to the reviews and with the student's approval, permit the student to submit a revised version of the Master's thesis within six months of the announcement of its rejection; in the case of revision, Paragraphs 1–8 shall apply accordingly.

(10) Provisions that deviate from Paragraph 1–9 may be agreed upon within the framework of dual degree agreements or degree programme co-operations.

Section 33 Resit Examinations

For resit examinations Section 28 shall apply accordingly.

IV. Final Provisions

Section 34 Legal Validity, Transitory Provisions

(1) [1]These examination regulations shall come into effect on 01 October 2007. [2]They shall apply to students starting a degree programme from the winter semester 2007/08 onwards.

(2) Students who study under the General Examination Regulations at the Faculty of Engineering from 17 October 1972 (KMBl 1973 p. 91) and the degree programme and examination regulations for their degree programme shall be examined according to those regulations.

Appendix:
Qualification assessment process for Master's degree programmes at the Faculty of Engineering at Friedrich-Alexander-Universität Erlangen-Nürnberg

(1) The qualification assessment process for the relevant Master's degree programme shall be carried out as necessary, but at least once before the start of the lecture period of the semester preceding the regular start of a degree programme.

(2) [1]Applications for the qualification assessment process must be submitted to the Master's Office by 15 July for the winter semester and 15 January for the summer semester. [2]The application shall contain:

1. A certificate proving that the applicant holds a university degree according to Section 29 (1)(1) (report, transcript of records, diploma supplement or comparable documents) or a transcript of records with at least 140 ECTS credits in the case set forth in Section 29 (3).
2. An application letter
3. Where applicable, further documents as proof of fulfilment of the requirements set forth in the relevant degree programme and examination regulations.

(3) [1]In accordance with Section 11, qualification assessment shall be the responsibility of the Admissions Committee of the Master's degree programme in question. [2]The Admissions Committee may transfer the task of co-ordinating and carrying out the process to individual members unless otherwise stated. [3]The Admissions Committee shall fulfil its obligations in co-operation with the Master's Office.

(4) [1]Admission to the qualification assessment process shall be subject to the timely and complete submission of the documents listed in Paragraph 2. [2]The qualification assessment process shall be carried out with those applicants who fulfil the requirements according to the provisions in Paragraph 5. [3]Applicants who are rejected shall receive a rejection notification including reasons and information on legal remedies available.

(5) [1]The relevant Admissions Committee shall carry out a preselection based on the submitted documents as part of the qualification assessment process to assess whether an applicant qualifies for a Master's degree programme. [2]The Admissions Committee shall deem the applicant qualified based on submitted documents if:

1. The final grade of the subject-specific or subject-related/equivalent degree fulfils the provisions under Section 29 (1)(1) or in the case of Section 29 (3) if the student has achieved an average of 2.50 (gut/good) or better in their previous achievements; for degrees graded on the basis of a different grading system Section 12 (3) shall apply accordingly or
2. Subject- or degree programme-related compulsory modules especially from the fourth semester of the Bachelor's programme onwards according to these examination regulations or equivalent modules at another university were passed with a certain grade average or minimum grade; the modules and the grade requirements shall be governed by the relevant degree programme and examination regulations.

[3]Applicants who cannot be admitted to the Master's degree programme in the course of the preselection shall be invited to an oral admission examination. [4]Sentence 2 (1) notwithstanding, individual degree programme and examination regulations can specify whether candidates with a degree from a related subject or an equivalent degree in the sense of Section 29 (2)(2) shall be subject to an oral admission examination for admission to the Master's degree programme. [5]The date of the oral admission examination shall be announced at least one week in advance. [6]If an applicant should

be unable to attend due to reasons beyond their control, a second date may be set upon justified request up until two weeks before the start of the lecture period. [7]The oral admission examination shall generally be held as an individual examination and have a length of approximately 15 minutes; it may be held as a group examination with a maximum of five applicants and a length of about 15 minutes per applicant. [8]With the applicant's approval, the oral admission examination may be conducted via video link. [9]It shall be conducted by at least one member of the Admissions Committee in the presence of an observer; Section 17 (4) shall apply accordingly. [10]The oral admission examination is supposed to demonstrate that the applicant possesses the required technical and methodological expertise and can be expected to carry out independent academic work in a more research-orientated degree programme; the individual degree programme and examination regulations shall specify the criteria of the examination and their weightings. [11]The examination shall be rated as 'bestanden' (passed) or 'nicht bestanden' (failed). [12]Applicants shall be notified of the result of the oral admission examination in writing. [13]A rejection notification shall include reasons and information on the legal remedies available.

(6) Section 23 shall apply accordingly.

(7) Applicants shall bear their own costs of the qualification assessment process themselves.

(8) Confirmation of passing the qualification assessment process shall remain valid indefinitely, provided that the qualification assessment process for the relevant Master's degree programme has not been changed significantly.

10.5 Information sheet on allocating topics for and completing ‚external‘ Bachelor‘s, Master´s and doctoral theses

FRIEDRICH-ALEXANDER UNIVERSITÄT ERLANGEN-NÜRNBERG

Information sheet on allocating topics for and completing 'external' Bachelor's, Master's and doctoral theses

Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) has close partnerships with many companies.

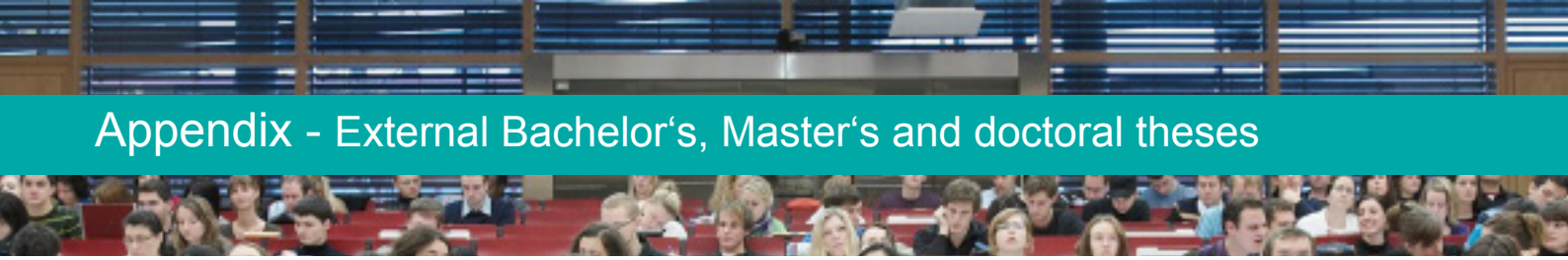
One of the results of these application-orientated partnerships is that companies are often interested in contributing to students' academic training while students wish to take advantage of the opportunity to gain valuable experience by working on issues arising from practice and in a practical setting from an academic perspective.

More and more FAU students and doctoral candidates are now completing Bachelor's, Master's and doctoral theses[1] at companies as part of such partnerships.

The term 'external Bachelor's/Master's thesis' is now commonly used to refer to papers that fall under this category and is the term that is used in this information sheet. An 'external' thesis is a thesis on a topic suggested by a company and/or that is completed while working at a company and is related to the company's work and data.

However, it must not be forgotten that 'external' theses are still FAU theses. The allocation of topics for and the supervision and processing of these academic theses raises many questions about legal issues and processes that affect all those involved (students, companies, supervisors[2], FAU).

[1] The principles described in this information sheet also apply to all other kinds of papers, written assignments and project work.
[2] Or the person authorised to accept papers according to the examination regulations.



A. General principles

1. Bachelor's and Master's theses

Bachelor's and Master's theses are university examination achievements. They must be completed in order to be awarded the Bachelor's or Master's degree that the student is working towards. The requirements for such a thesis stipulated in the Bavarian Higher Education Act (Bayerisches Hochschulgesetz) and the examination regulations must be adhered to in order for the thesis to be recognised as an examination achievement. This includes, in particular, the following:

a) The thesis must be completed under the supervision of an FAU lecturer. In certain cases the examination regulations may permit the topic of the thesis to be suggested by a third party – a company in this case. In such cases it must be ensured that the candidate is supervised by a suitable person in the company and that permission is given by an FAU examiner. Permission must also be given by the examinations committee.
The precise topic of the thesis and the entire formal process for this element of the thesis remain the sole responsibility of the FAU lecturer supervising the thesis. Good collaboration between the FAU supervisor, the company, and the person acting as supervisor there is essential.

b) It must be possible for the student to complete the Bachelor's or Master's thesis within the period specified in the examination regulations.

c) Neither a company nor any other external institution or person may be given the right to influence the topic or content of the Bachelor's or Master's thesis while it is being worked on. In accordance with the examination regulations, suggestions of this kind are non-binding suggestions for the FAU supervisor or the candidate. Neither the candidate nor the company has a right to the allocation of a specific topic.

d) In accordance with the examination regulations, only the candidate themselves has a right to inspect examination documentation associated with the evaluation of the thesis (notes, examiners' comments, etc.). The company is not permitted to inspect this documentation.

e) Due to reasons of competition and market policy, companies may require candidates completing their thesis while working at their company to maintain confidentiality with regard to internal and company-related data. Such obligations may only be agreed to if this does not affect the candidate's ability to work on the topic, i.e. they are able to complete the thesis as a university examination achievement within the given period and submit it to the appropriate body at FAU.

f) Publication of Bachelor's and Master's theses is not intended according to the examination regulations but is possible with the candidate's consent – subject to any agreements with the company.

2. Additional provisions for doctoral theses

Doctoral theses are also university examination achievements that must meet the requirements stipulated in the Bavarian Higher Education Act and the doctoral regulations.

a) The general principles given above – subject to the differences in the doctorate procedure – also apply here.

b) According to FAU's doctoral regulations[3] the doctoral thesis must be on a topic in an area represented by an FAU lecturer. The faculty doctoral regulations may permit part-time lecturers and individuals with doctoral degrees (who are able to continually supervise the doctoral proposal due to their employment at FAU or an institution associated with FAU) to be appointed as supervisors on an individual or general basis.[4]

c) Whether the doctoral thesis is completed at FAU or elsewhere is not of primary importance. It is therefore possible for theses completed outside the faculty to be submitted providing that they are discussed with an authorised advisor at FAU before submission and, in particular, that they are completed with continuous supervision.

d) Only the doctoral candidates have a right to inspect examination documentation.

e) Unlike for Bachelor's and Master's theses, doctoral theses do not have to be completed within a set period.

f) Furthermore, after completing the oral examination – and unlike other examination papers (e.g. Bachelor's/Master's theses) – the doctoral regulations stipulate that the approved version of the doctoral thesis must be published. This must be given particular consideration when entering into any agreements with companies (see B) as the doctorate procedure cannot be completed properly otherwise.

B. Important information for Bachelor's/Master's candidates and doctoral candidates

1. Contracts with companies

Candidates completing 'external' theses are usually given a contract by the company detailing aspects such as their role in the company, any obligation to maintain confidentiality regarding internal and company-related data, issues related to industrial property rights, exploitation rights and rights of use, liability, and, if applicable, remuneration. In order to protect themselves candidates should check that such contracts comply with the general principles given in section A and with the following points:

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3 See http://www.promotion.uni-erlangen.de/promotion/Rahmenordnung.shtml.

4 In addition, the specific provisions for doctoral degrees completed in co-operation with other universities in Germany or abroad must be adhered to (see Sections 18 and 19 of the General Doctoral Regulations).

a) Any ties to the company beyond the scope of the thesis itself and the time spent working on it should be considered carefully. Such ties may result in limitations and difficulties, for example:

- if the results of the work are used for profit, due to aspects of property rights or copyright law, for example
- if the topic of the thesis is investigated in more depth or breadth at a later date (e.g. as part of a doctoral thesis); here difficulties may occur if the candidate is obliged to transfer to the company or allow the company to use the results of any developments that build on the work in the thesis or if such developments may only be carried out with the company's consent
- when choosing a job after completing the Bachelor's, Master's or doctoral degree

b) The candidate should check carefully whether they are able to adhere to the obligations defined by the company. This includes granting rights of use for the results of the thesis. Companies may not be granted such rights or may not be granted exclusive rights if software owned by an FAU chair/institute or intellectual property owned by members of a chair/institute were used for the thesis.

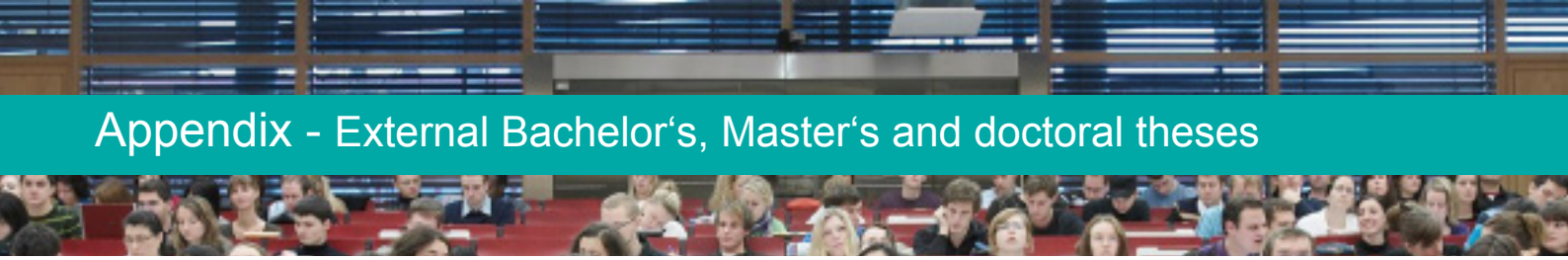
2. Insurance

Insurance should be discussed with the company in advance. Students should be aware that contracts usually stipulate that students are not covered by the company's social insurance and that the company is therefore not liable if a student has an accident at work. It is also recommended that students clarify the issue of health insurance coverage – especially if they will be spending time abroad while completing the thesis – in advance. As students are outside of the University's sphere of influence while working at companies or travelling, they are not covered by the University's statutory accident insurance, meaning that students working on 'external' theses do not have any statutory accident insurance coverage. They should therefore consider taking out private accident insurance during this period or arrange coverage by the company as part of its industrial accident insurance. Furthermore, it should be checked whether existing private liability insurance covers the risks associated with the thesis work. If this is not the case or if the student does not have private liability insurance it is strongly recommended that they take out suitable insurance.

3. Doubts

If the candidate is unsure of whether they are able to sign the contract given to them by the company governing the conditions for the thesis they should contact their supervisor or an appropriate contact person in the University Administration (see E).

C. Important information for FAU supervisors



1. Remuneration

For university lecturers allocating topics for and supervising 'external' theses, the issue of remuneration provided by the company may arise if the results of the thesis, which to a considerable extent are made possible through the lecturer's supervision and/or use of university resources (e.g. equipment, laboratory, software), are of commercial value for the company.

In such cases the following applies:
The supervision of academic theses is the University's responsibility and an official responsibility of professors appointed at the University as part of their professional duties [see Section 9 (1)(1)(4) of the Bavarian Law on Academic Personnel of Higher Education (Bayerisches Hochschulpersonalgesetz)].

Under consideration of this obligation it is therefore not permitted

- for those in secondary employment at the University to act as supervisors
- to request, agree to, or accept financial compensation for oneself or for the University for the supervision of the thesis or for arranging for the thesis to be completed. It is also not permitted to arrange for a thesis to be completed as the sole subject of a research and development contract for which payment will be received. However, it is permitted for a thesis to be completed as part of a research and development contract for which payment will be received providing that the work that is the subject of the contract is carried out by FAU staff and that no specific remuneration is calculated or requested for the completion/supervision of the thesis.

2. Recommendations

In light of the above, the following must be adhered to when allocating topics for 'external' theses:

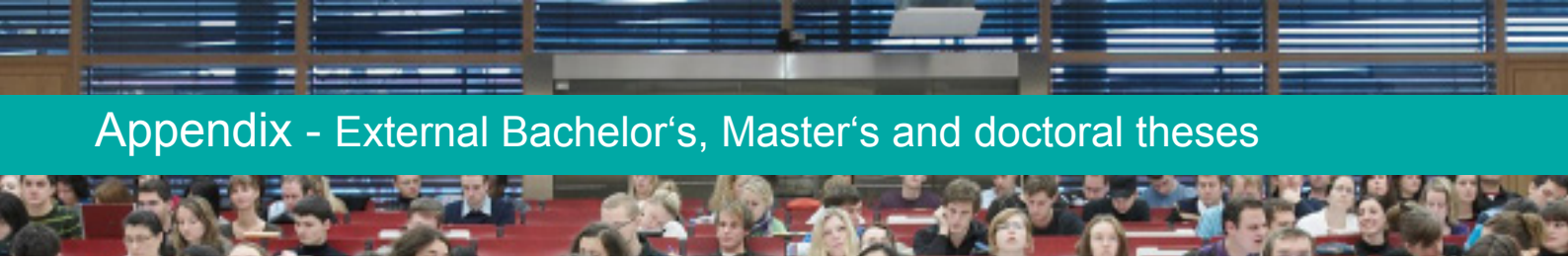
a) Supervisors may only accept suggested topics for 'external' theses that are within their area of expertise, i.e. that they are able to supervise as part of their official duties and for which no more than the normal amount of resources belonging to the chair/institute are required in order for supervision to take place.

Lecturers are advised to give students sufficient advanced notice of this requirement so as to ensure that rejection of suggested topics for 'external' theses that do not meet these basic principles is foreseeable and understandable. Neither the candidate nor the company has a right to the allocation of a specific topic.

b) During the evaluation of an 'external' thesis the supervisor only judges the academic quality of the work and not the company-related data used for the thesis. As discussed above, remuneration for supervision of a thesis is not permitted.

When allocating the topic of an 'external' thesis the supervisor must ensure that they inform the candidate and the company of these aspects of the evaluation and supervision.

c) It is permitted for the topic of a thesis to be allocated as part of a research and development contract between the company and FAU for which payment will be received providing that the work that is the subject of the contract is carried out by FAU staff and that no specific remuneration is calculated or requested for the organisation/supervision of the thesis. In such situations the funding/financial compensation is received for the research and/or for the work produced by the FAU staff and therefore, from the start, is not intended as remuneration for supervision of the thesis.



D. Copyright law and legal protection of inventions

1. Original

According to the examination regulations FAU holds certain rights regarding the original thesis. However, these rights apply only to the physical components of the thesis (e.g. models, plans, paper) and its use for the purposes specified in the examination regulations and doctoral regulations.

2. Copyright law

a) Theses – including software used and the presentation of academic and technical content – are considered written works under the German Copyright Act (Urheberrechtsgesetz). The protection of such a work is dependent on whether it is considered a personal intellectual creation. This decision can only be made on a case by case basis. The following applies when judging this issue:

Eligibility for protection by copyright law is not based on the content of the thesis. It is based only on the actual presentation and design, whereby everyday language, the structure, and presentation methods required by or commonly used according to academic conventions are not eligible for protection. The knowledge presented in the thesis, i.e. the academic content, is freely available and not eligible for protection. With regard to the scope of protection, copyright protection for a thesis which is eligible for protection is restricted due to the principle that academic knowledge should be freely available for academic discussion. Therefore, after publication of the thesis with the author's consent, the knowledge contained within it is freely available (Section 12 German Copyright Act), the thesis may be used as a source in the work of others (Section 24 German Copyright Act) and citations of the thesis of a length permissible by copyright law may be used (Section 51 German Copyright Act).

b) Copyright and the resulting exploitation rights and rights of use belong solely to the candidate as the author of the thesis. FAU, the supervisor, the examiner or third-parties (such as a company) are only entitled to rights of use if the author grants them such rights. An obligation to grant such rights only exists if previously agreed upon in a contract or if the candidate is also an employee of FAU and the thesis was completed as part of the duties specified in their employment contract.

3. Supervisor contribution

Any contribution from a supervisor that would be considered eligible for copyright protection would not be permissible due to the principle that candidates must complete their thesis independently and without significant assistance from others.

a) Suggestions, ideas and other minor forms of assistance are permissible. Such contributions do not affect copyright.

b) It would be contrary to the purpose of the thesis if the supervisor were to act as a contributing author, such as by writing parts of the thesis or making significant contributions during preparation work for the thesis. This is especially applicable to doctoral theses as they are a form of independent work associated with advancement in an academic career. The copyright for any preparation work for a thesis belongs to the author of the preparation work. Therefore, the supervisor is never entitled to copyright for the results of thesis work.

4. Patents

If a new technical idea is presented in a thesis, either in a written description or in drawings or diagrams, there is a possibility of applying for a patent for the invention. Applications must be submitted in line with regulations on patent protection. Please note that patent protection may only be granted if the invention is not available to the public. If the thesis is to be published the patent application must be submitted before publication.

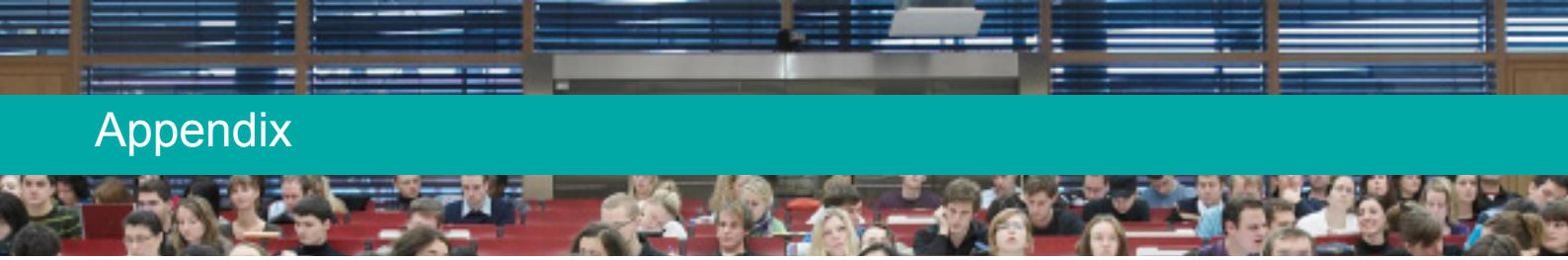
The fact that the candidate is the sole holder of copyright does not always mean that the supervisor is not considered the inventor or a co-inventor as the regulations for patent protection are different to those for copyright (see D.3 above; supervisors may be entitled to patent rights but are not entitled to copyright). If FAU submits a patent application for an invention contained in a thesis at the supervisor's request, the supervisor must inform the candidate before the application is submitted that they may also be entitled to (joint) rights to the patent.

E. Contacts in the University Administration

The following contacts in the University Administration are available to answer any questions related to 'external' theses:

Office	Areas of responsibility related to 'external' theses	Contact
L 1	▪ advice on examination law (for 'external' theses that are subject to relevant examination regulations, examination procedures, supervision procedures, etc.) ▪ copyright related to teaching ▪ checks of and advice on confidentiality agreements related to teaching	Ms Sybille Eberhardt (Oberregierungsrätin) Phone: 09131 8526509 sybille.eberhardt@fau.de
F 1	▪ advice on research and development contracts, including theses which may be completed as part of such contracts (in collaboration with L1 and other departments) ▪ copyright related to research ▪ checks of and advice on confidentiality agreements related to research	Mr Axel Klon (Regierungsdirektor) Phone: 09131 8526766 axel.klon@fau.de
F 2	▪ patents ▪ transfer of knowledge and technology ▪ further education	Ms Sybille Barth Phone: 09131 8525870 sybille.barth@fau.de

Last updated: February 2015



10.6 Language certificate guidelines

To prove your German language skills you can take the language proficiency test „Deutsche Sprachprüfung für den Hochschulzugang ausländischer Studienbewerber“ (DSH) for foreign students who intend to study at a German university. The prerequisite to register for the DSH examination is the certification of German language skills at the level B2 of the Common European Framework of Reference for Languages and the verification of a further German language course. The following certificates are accepted as a **certification of proficient language skills in order to register for the DSH examination:**

- Goethe-Zertifikat level B2 or higher
- telc-Zertifikat level B2 or higher
- ondaf-Zertifikat level B2 or higher
- ÖSD-Zertifikat level B2 or higher
- TestDaF-Score of 12 points or higher (without U 3 assessments)
- UNIcert level II or III
- DSH 1
- DSD II (Deutsches Sprachdiplom level II), if level C1 has not been met in all criteria

An exemption of the DSH examination is only given by the head of the Department of German as a Foreign Language (Language Centre) Dr. Frank Mielke (frank.mielke@fau.de). This exemption is usually only given to native German speakers. Having a degree in German studies is not a reason for the exemption from the DSH examination.

The DSH examination has three levels of evaluation, the second level being considered proficient German language skills for all study programmes. If you have already taken the DSH examination at a different German university, the certificate is accepted as a general rule (www.sz.fau.de/abteilungen/daf/pruefungen/dsh).

If you have one of the following **language certificates,** you are exempted **from the DSH examination**:

- Test Deutsch als Fremdsprache (TestDaF), if level 4 was achieved in all four exam sections (http://www.sz.uni-erlangen.de/abteilungen/daf/pruefungen/testdaf).

- KDS/GDS (Kleines/Großes Deutsches Sprachdiplom) of the Goethe Institute
- certificate Zentrale Oberstufenprüfung (ZOP) of the Goethe Institute
- German Language Diploma Level II (DSD II) from the German Standing Conference of Ministers of Education and Cultural Affairs, if the level C1 is reached in all sections
- German Proficiency Test II (DSP II) of the SDI in Munich

You can find more information regarding the certificates here: www.sprachnachweis.de.

Without the certificates DSH, TestDaf or an equivalent certificate you cannot enrol for a German-taught programme!

10.7 Notes on the notarization of documents in foreign languages

Official stamp required

Copies of certificates obtained abroad that you are required to submit with your application must be officially certified. In Germany, certified copies can be made by certain authorised public authorities, such as courts and local administrative bodies (Stadtverwaltung/Kreisverwaltung). However, not all local administrative bodies in Germany will certify copies of foreign-language documents.

Notaries are also authorised to certify copies of documents. However, lawyers, auditors, tax advisors and associations are not. Certified translators are only authorised to issue certified translations and not to certify copies of documents. Please note that copies of certificates from China must be certified by a Chinese notary.

Formalities for certification

An official certification must include the following:

- a statement specifying that the copy corresponds to the original (this statement must be written in German, English or French)
- a signature on behalf of the authority issuing the certification
- an official stamp

The official stamp should usually contain an emblem – a stamp showing only text is not sufficient. If a copy has several pages, it must be shown that each page is part of

the same certificate. It is sufficient for the statement and signature to be included on only one page provided that all pages are placed on top of one another, stapled together and stamped in such a way that part of the official stamp is visible on each page. Each page may also be certified individually. If this is the case, please ensure that your name is specified on each page of the original document. If this is not the case, it should be included in the statement. Statements must also include a comment on the type of certificate.

If a page is printed on both sides and the content of both sides is relevant, the statement must refer to both sides (for example: “Hiermit wird amtlich beglaubigt, dass die vor-/umstehende Kopie mit dem Original übereinstimmt” or ‘It is hereby certified that the copy above and overleaf corresponds to the original’). If this is not the case, both sides must be certified individually.

If the original document contains an embossed seal, this will usually not be visible on the copy. In this case, the statement should also specify that an embossed seal is present on the original certificate.

Documents cannot be accepted if the certification does not meet the requirements.

Having copies officially certified outside Germany

Outside Germany, copies of certificates can be officially certified by:

- German embassies and consulates
- the school or university that issued the certificate. In this case, copies must be certified by the school’s head teacher or the university’s dean/president and include an official stamp. An official stamp usually includes an emblem. A stamp showing only text is not sufficient. Certifications may not be issued by a secretary’s office.
- a notary who marks the copy with an apostille

Translations of documents must be made from the original documents.

Do not submit original documents!

Please only send us officially certified copies of certificates and certified translations. Do not send us your original certificates or original certified translations. The Office of Admissions and Scholarships accepts no liability for lost application documents.

Source:

https://www.fau.eu/international/international-applicants/important-information/notes-on-certification-of-documents/

10.8 Template: Form for final thesis paper, Transcript of Records, Certificate, Grade distribution table

Title

Master's Thesis in Medical Engineering

submitted
by

First Name Last Name

born Date of birth in Place of birth

Written at

Lehrstuhl für Mustererkennung (Informatik 5)
Department Informatik
Friedrich-Alexander-Universität Erlangen-Nürnberg

Advisor: *Advisor*

Started: *Start*

Finished: *End*

Appendix - Form for final thesis paper

III

Ich versichere, dass ich die Arbeit ohne fremde Hilfe und ohne Benutzung anderer als der angegebenen Quellen angefertigt habe und dass die Arbeit in gleicher oder ähnlicher Form noch keiner anderen Prüfungsbehörde vorgelegen hat und von dieser als Teil einer Prüfungsleistung angenommen wurde. Alle Ausführungen, die wörtlich oder sinngemäß übernommen wurden, sind als solche gekennzeichnet.

Die Richtlinien des Lehrstuhls für Studien- und Diplomarbeiten habe ich gelesen und anerkannt, insbesondere die Regelung des Nutzungsrechts.

Erlangen, den 18. Februar 2016

FRIEDRICH-ALEXANDER
UNIVERSITÄT
ERLANGEN-NÜRNBERG

Faculty of Engineering
www.fau.de

TRANSCRIPT OF RECORDS
Master of Science

Surname:	mmmmmmmmmm	Forename(s):	nnnnnnnn
Date of birth:	99999999	Gender:	female
Place of birth:	Wertingen		
Begin of studies:	October 01, 2013	Student ID:	357159682

Medical Engineering

	Title of module	Examination term*	Mark**	ECTS credits
MSG 74102	Ungraded Coursework Achievement: Medical Device Legislation Safety and Law in Medical Engineering	WTerm 12/13	P	2.5
20201	Examination (3 ECTS) Spanish: Elementary Course I	WTerm 12/13	1,0	5
TEC 45001	Finite Element Methods	STerm 13	1,0	5
383362	Biomechanics of motion	WTerm 13/14	1,3	5
746361	Ceramical Materials in Medicine	WTerm 13/14	1,7	2.5
MSG 74103	Economy and Innovation Grundlagen gesundheitsökonomischer Evaluationen	WTerm 13/14	P	2.5
TEC 23001	Photonics 1	WTerm 13/14	1,7	5
38270	Spanish Basic Course II	WTerm 13/14	1,3	5
TEC 45001	Lecture: Dynamics of Rigid Bodies	WTerm 13/14	1,3	7.5
TEC 52001	Polymer Processing	STerm 14	1,0	2.5
MSG 74201	Ungraded Coursework Achievement: Additional Focus on Medical Technology	STerm 14	P	2.5
MSG 76301	Photonics for Medical Applications	STerm 14	1,0	5
656231	Composites and nanomaterials in Medical Technology	STerm 14	1,0	2.5
TEC 72001	Lecture/Tutorial: Integrated Product Development	STerm 14	1,0	5
745818	Dental Biomaterials	WTerm 14/15	1,0	2.5

Erlangen, December 08, 2015

Appendix - Transcript of Records Master

Title of module	Examination term*	Mark**	ECTS credits
B41 1780 Specialisation Medicine			
B41 1781 Specialisation Modules Medicine	WTerm 14/15	1,0	10
B41 17803 Specialisation Modules :Medicine Eye diagnosis	WTerm 14/15	1,0	2.5
B41 17803 Specialisation Modules :Medicine Augenbeteiligung bei Allgemeinerkrankungen	WTerm 14/15	1,0	2.5
B41 17803 Specialisation Modules :Medicine Eye surgeries	WTerm 14/15	1,0	2.5
B41 17803 Specialisation Modules :Medicine Sehnervmorphologie und Echographie in der Augenheilkunde	WTerm 14/15	1,0	2.5
MSG 76402 Examination Achievement: Metallic Materials in Medical Technology	WTerm 14/15	2,0	2.5
MSG 74202 Ungraded Coursework Achievement: Additional Focus on Medical Technology Medical Devices of the Future	WTerm 14/15	1,0	2.5
B41 1850 Practical Skills Medical Technology	STerm 15	P	10
B41 18501 Laboratory Material Testing for Mechanical Engineering	STerm 14	P	2.5
B41 18503 Research Internship	WTerm 14/15	P	5
B41 18501 Laboratory Process Simulation	WTerm 14/15	P	2.5
TEC 71101 Lecture: Technical Product Design	STerm 15	1,0	5
B41 1899 Master Thesis Validierung und Vergleich verschiedener Methoden zur Beurteilung der lokalen Qualität von dimensionellen Computertomographie-Messungen	WTerm 15/16	1,0	30
Overall Grade and ECTS points acquired		1,1	120.0

Add-on module(s)			
Title of Module	Examination term*	Mark**	ECTS Credits
38271 Spanish: Elementary Course III	WTerm 14/15	2,0	5
41386 Nature, Technology and Medicine Fundamentals of Disease Detection	WTerm 13/14	2,0	5
41386 Nature, Technology and Medicine Audiology and Hearing Aid	WTerm 14/15	2,0	5
TEC 71001 Lecture: Mechanical Vibrations	STerm 14	2,3	5
464778 Cell-Materials-Interactions	WTerm 13/14	2,0	2.5

Appendix - Transcript of Records Master

Degree completed:	yes	Degree awarded: Master of Science
Date of last examination:	December 08, 2015	abbreviated notation: M.Sc.

Erlangen, December 08, 2015

A. Wierschem

Prof. Dr. Andreas Wierschem
Chairperson of examination board

Official seal

In this Transcript of Records, the bold entries are modules or module groups and the indented entries are the corresponding examinations or module sections.
The module marks and the overall grade are calculated according to the rules in the module handbook or in the examination regulations as amended from time to time.
* STerm = summer semester / WTerm = winter semester
** Mark/Grade scale: 1,0 to 1,2 = pass with distinction - above 1,2 to 1,5 = very good - above 1,5 to 2,5 = good - above 2,5 to 3,5 = satisfactory - above 3,5 to 4,0 = fair - (P) = passed (without grade)

Friedrich-Alexander-Universität Erlangen-Nürnberg
Technische Fakultät

Prüfungszeugnis

M.Sc. – Master of Science

im Studiengang

Medizintechnik

Friedrich-Alexander-Universität Erlangen-Nürnberg
Technische Fakultät

Prüfungszeugnis

Herr/Frau XXXXXXXXXXX
geboren am 12.12.12 in Dillingen a.d.Donau
hat am 1. Dezember 2015 die

Masterprüfung im Studiengang Medizintechnik

abgeschlossen.

Die einzelnen Module wurden wie folgt bewertet:	Bewertung	ECTS-Punkte
Studienrichtung Medizinelektronik		
M1 Medizinische Vertiefung	**1,5 = sehr gut**	**10**
Augendiagnostik	1,0 = sehr gut	2,5
Augenoperationen	1,0 = sehr gut	2,5
Sehnervenmorphologie und Echographie in der Augenheilkunde	2,0 = gut	2,5
Grundlagen der Krankheitserkennung	2,3 = gut	5
M2 Ingenieurwissenschaftliche Kernmodule	**2,1 = gut**	**20**
Vorlesung Halbleiterbauelemente	2,7 = befriedigend	5
Passive Bauelemente und deren HF-Verhalten	3,3 = befriedigend	5
Grundlagen der Nachrichtenübertragung - Nachrichtentechnische Systeme - Übertragungstechnik	2,3 = gut	5
Grundlagen der Elektrischen Antriebstechnik	1,3 = sehr gut	7,5
M3 Medizintechnische Kernmodule	**2,3 = gut**	**20**
Computerunterstützte Messdatenerfassung	3,7 = ausreichend	5
Medizinelektronik	1,0 = sehr gut	5
Elektromagnetische Verträglichkeit	1,7 = gut	5
Leistungselektronik	3,0 = befriedigend	5
M4 Medizintechnische Kernkompetenzen	**1,7 = gut**	**10**
Sicherheit und Recht in der Medizintechnik	bestanden	2,5
Grundlagen gesundheitsökonomischer Evaluationen	bestanden	2,5
Medizinethik	bestanden	2,5
Seminar Lasertechnik/Photonik	1,7 = gut	2,5

Zeugnis über die Masterprüfung im Studiengang Medizintechnik
vom

M5 Medizintechnische Vertiefungsmodule)	**1,5 = sehr gut**	**10**
Bildgebende Verfahren in der Medizin	2,0 = gut	2,5
Architekturen der digitalen Signalverarbeitung	1,7 = gut	5
Technik in der Kardiologie	1,3 = sehr gut	5
M6 Medizintechnische Praxiskompetenzen *	**bestanden**	**10**
Praktikum Photonik/Lasertechnik I	bestanden	2,5
AuD-Schein *	bestanden	5
Forschungspraktikum	bestanden	5
M7 Flexibles Budget	**1,5 = sehr gut**	**10**
Spanisch Elementarkurs I K	1,7 = gut	5
Betriebswirtschaftslehre für Ingenieure	1,3 = sehr gut	5
M8 Masterarbeit	**1,0 = sehr gut**	**30**
Konzeptionierung, Design und Aufbau eines entwicklungsbegleitenden Teststandes für Medizinprodukte		
Summe der ECTS-Punkte		**120.0**

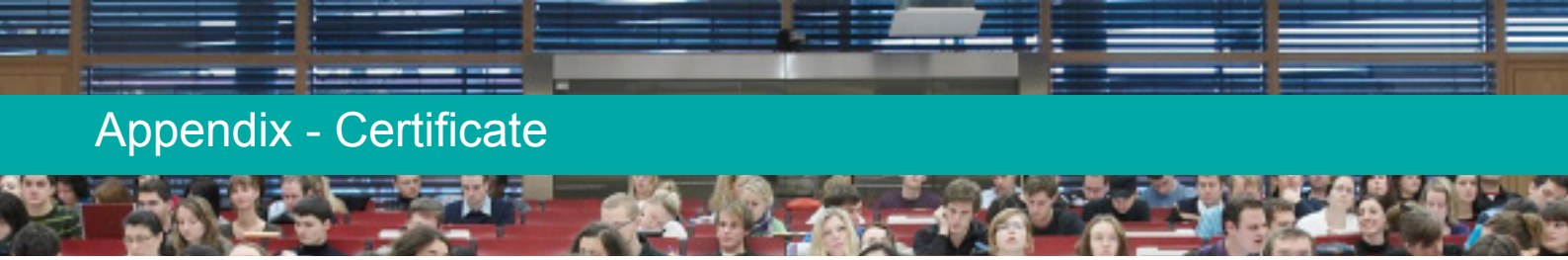
Gesamtnote: gut (1,6)

Der Vorsitzende
des Prüfungsausschusses

Erlangen, den 1. Dezember 2015

Prof. Dr. Andreas Wierschem

* = anerkannte Leistung ; Einzelheiten vgl. Transcript of Records



Appendix - Certificate

Das Transcript of Records ist Bestandteil dieses Zeugnisses.

Das Originalzeugnis trägt ein Wasserzeichen.

Die Berechnung der Noten ergibt sich aus der Prüfungsordnung / dem Modulhandbuch.

Die Gesamtnote der Abschlussprüfung lautet bei einem Durchschnitt bis 1,50 = sehr gut - über 1,50 bis 2,50 = gut - über 2,50 bis 3,50 = befriedigend – über 3,50 bis 4,0 = ausreichend. Bei einem Durchschnitt von 1,20 oder besser wird das Prädikat "Mit Auszeichnung" vergeben.

[illegible]

Appendix - Grade distribution table

FRIEDRICH-ALEXANDER UNIVERSITÄT ERLANGEN-NÜRNBERG

ECTS-Einstufungstabelle

Grade distribution table

Nachname/*Last name:*
Mustermann

Vorname(n)/*First name(s):*
Max

Geburtsdatum/*Date of birth:*
31. November 2015
31 November 2015

Geschlecht/*Gender:*
männlich
male

Geburtsort/*Place of birth:*
Pfefferdorf(Deutschland)/*Germany)*

Matrikelnummer/*Student registration number:*
22222222

Studiengang/*Degree programme:*
Medizintechnk
Medical Engineering

Gesamtnote/*Final grade:*
gut (x,x)
good

Akademischer Grad/*Degree type:*
XXXXXXX

Referenzzeitraum/*Reference period:*
00.April 9999 bis 00. März 9999
00 April 0000 to 00 March 9999

Zeugnisdatum/*Certificate date:*
44. Juli 9999

Abschlüsse pro Gesamtnote / *Degrees awarded per final grade*

im Studiengang/ *in the degree programme*
Medizintechnik / *Medical Engineering*

Gesamtnote *Final grade*	Anzahl *Number*	(I) *(I)*	(II) *(II)*
1,0	8	4%	4%
1,1	15	7.5%	11.5%
1,2	14	7%	18.5%
1,3	25	12.5%	31%
1,4	27	13.5%	44.5%
1,5	22	11%	55.5%
1,6	26	13%	68.5%
1,7	18	9%	77.5%
1,8	23	11.5%	89%
1,9	2	1%	90%
2,0	9	4.5%	94.5%
2,1	4	2%	96.5%
2,2	2	1%	97.5%
2,3	4	2%	99.5%
2,4	0	0%	99.5%
2,5	0	0%	99.5%
2,6	0	0%	99.5%
2,7	1	0.5%	100%
2,8	0	0%	100%
2,9	0	0%	100%
Anzahl der Abschlüsse *Number of degrees awarded*	200		

in der ISCED Gruppe/ *in the ISCED field*
Medical diagnostic and treatment technology

Gesamtnote *Final grade*	Anzahl *Number*	(I) *(I)*	(II) *(II)*
1,0	8	4%	4%
1,1	15	7.5%	11.5%
1,2	14	7%	18.5%
1,3	25	12.5%	31%
1,4	27	13.5%	44.5%
1,5	22	11%	55.5%
1,6	26	13%	68.5%
1,7	18	9%	77.5%
1,8	23	11.5%	89%
1,9	2	1%	90%
2,0	9	4.5%	94.5%
2,1	4	2%	96.5%
2,2	2	1%	97.5%
2,3	4	2%	99.5%
2,4	0	0%	99.5%
2,5	0	0%	99.5%
2,6	0	0%	99.5%
2,7	1	0.5%	100%
2,8	0	0%	100%
2,9	0	0%	100%
Anzahl der Abschlüsse *Number of degrees awarded*	200		

ECTS Einstufungstabelle über die YYYYYYprüfung im Studiengang Medizintechnik
von Herrn Max Mustermann geboren am 31. November 2015 in Pfefferdorf
(Deutschland)

Appendix - Grade distribution table

Gesamtnote *Final grade*	Anzahl *Number*	(I) *(I)*	(II) *(II)*
3,0	0	0%	100%
3,1	0	0%	100%
3,2	0	0%	100%
3,3	0	0%	100%
3,4	0	0%	100%
3,5	0	0%	100%
3,6	0	0%	100%
3,7	0	0%	100%
3,8	0	0%	100%
3,9	0	0%	100%
4,0	0	0%	100%
Anzahl der Abschlüsse *Number of degrees awarded*	200		

Gesamtnote *Final grade*	Anzahl *Number*	(I) *(I)*	(II) *(II)*
3,0	0	0%	100%
3,1	0	0%	100%
3,2	0	0%	100%
3,3	0	0%	100%
3,4	0	0%	100%
3,5	0	0%	100%
3,6	0	0%	100%
3,7	0	0%	100%
3,8	0	0%	100%
3,9	0	0%	100%
4,0	0	0%	100%
Anzahl der Abschlüsse *Number of degrees awarded*	200		

Anzahl der erfolgreich abgelegten Abschlüsse pro Gesamtnote in Relation zu der Zahl der Absolventen, die dieselbe Gesamtnote erzielt haben (I) bzw. die dieselbe oder eine bessere Gesamtnote erzielt haben (II)
Number of degrees awarded per final grade in relation to the percentage of total graduates in the reference period with the same grade (I) or the same or higher grade (II)

Erläuterungen

Für jede Gesamtnote wird im Rahmen des Bologna-Prozesses zusätzlich zur individuellen Benotung die Angabe der Notenverteilung sowie der Rangfolge in einer charakteristischen Vergleichsgruppe gefordert. Dies erleichtert die Vergleichbarkeit von Gesamtnoten, die an verschiedenen Universitäten erbracht wurden. Die Friedrich-Alexander-Universität Erlangen-Nürnberg verpflichtet sich mit dem im Folgenden dargestellten Vorgehen zu größtmöglicher Transparenz.

Der Gesamtnote wird die Häufigkeit ihres Auftretens in der jeweiligen Vergleichsgruppe gegenübergestellt. Die in den obenstehenden Tabellen ausgewiesenen Prozentzahlen geben an, wie viele Abschlüsse in der Vergleichsgruppe ebenso gut (I) bzw. ebenso gut wie oder besser als die zugeordnete(n) Note(n) (II) ausgefallen sind.

Die Vergleichsgruppe wird auf Basis des Abschlusssemesters der Absolventin / des Absolventen berechnet und umfasst sechs vorausgehende Semester. Die Vergleichsgruppe wird zum einen für den Abschluss und Studiengang des Studierenden ausgewiesen, zum anderen auf Basis der ISCED-Gruppe. Die Ausweisung der ECTS-Einstufungstabelle erfolgt jeweils ab einer Absolventenzahl größer als 50 im Vergleichszeitraum.

Explanatory notes

To simplify the comparison of final grades achieved at different universities in different countries, Friedrich-Alexander-Universität Erlangen-Nürnberg publishes grade distribution data in addition to students' final grades as part of higher education reform. The University is committed to ensuring maximum transparency and fairness for its students in this process.

Each grade in the local grading system is listed with the number of degrees which were awarded this grade in the reference group. The percentages shown in the grade distribution tables indicate how many degrees awarded in the reference group were as good as (I) or as good as or better than (II) the grade in the first column.

The reference groups are based on the degrees awarded in the student's degree programme and the degrees awarded in the ISCED field. Grade distribution data is calculated from the six semesters prior to the student's graduation semester. The grade distribution table can only be generated with final grade data for more than 50 graduates in the reference period.

Ausstellungsdatum/*Issue date:*
24. Juli 2017
24 July 2017

10.9 List of all departments involved in the study programme

Bachelor Degree Programme						
Both branches of study						
Institute	Course	Head of institute	Email	Phone number	Address	Website
Institute of Physiology and Pathophysiology	Anatomy and Physiology I/II	Prof. Dr. Christian Alzheimer	renate.beuscher@fau.de	09131 85-22298	Universitätsstraße 17, 91054 Erlangen	http://www.physiologie1.uni-erlangen.de/
Institute for Biomaterials	MT II	Prof. Dr.-Ing. habil. Aldo R. Boccaccini	aldo.boccaccini@ww.uni-erlangen.de	09131 85-28600	Cauerstraße 6, 91058 Erlangen	http://www.biomat.techfak.uni-erlangen.de/
Chair for Applied Mathematics III	Mathematics A1/A2/A3/A4	Prof. Dr. Eberhard Bänsch	baensch@am.uni-erlangen.de	09131 85-67200	Cauerstr. 11, 91058 Erlangen	https://www.mso.math.fau.de/applied-mathematics-3/
Chair of Biochemistry I	Molecular Medicine for Engineers	Prof. Dr. Anja-Katrin Bosserhoff	anja.bosserhoff@fau.de	09131 85-24190	Fahrstraße 17, 91054 Erlangen	http://www.biochem.uni-erlangen.de/
Institute of Electromagnetic Fields	GET I	Prof. Dr.-Ing. M. Albach	emf-sekretariat@fau.de	09131 85-28953	Cauerstraße 7, 91058 Erlangen	http://www.emf.eei.uni-erlangen.de/
Institute of Microwaves and Photonics (LHFT)	GET II	Prof. Dr.-Ing. Martin Vossiek	lhft@lhft.eei.uni-erlangen.de	09131 85-27214	Cauerstraße 9, 91058 Erlangen	http://www.lhft.eei.uni-erlangen.de/
Department of Computer Science 9 (Computer Graphics)	Algorithms for Continuous Systems	Prof. Dr. Günther Greiner	sekretariat@immd9.informatik.uni-erlangen.de	09131 85-29919	Cauerstraße 11, 91058 Erlangen	http://lgdv.cs.fau.de/
Chair of Pattern Recognition (LME)	AuD, MT I	Prof. Dr.-Ing. habil. Andreas Maier	info@i5.cs.fau.de	09131 85-27775	Martensstr. 3, 91058 Erlangen	http://www5.cs.fau.de/
Center for Medical Physics and Technology	Experimental Physics II	Prof. B. Fabry	biomed@biomed.uni-erlangen.de	09131 85-25630	Henkestr. 91, 91052 Erlangen	http://www.biomed.uni-erlangen.de/
Chair of Applied Mechanics	Statics and Structural Mechanics	Prof. Dr.-Ing. habil. P. Steinmann	paul.steinmann@ltm.uni-erlangen.de	09131 85-28501	Paul-Gordan-Str. 3, 91052 Erlangen	http://www.ltm.uni-erlangen.de/
Chair of Bioprocess Engineering	Bioreaction and Bioprocess Engineering	Prof. Dr. rer. nat. habil. Ronald Gebhardt	Ronald.Gebhardt@fau.de	09131 85-23003	Paul-Gordan-Str. 3, 91052 Erlangen	http://www.bvt.cbi.uni-erlangen.de/e_html/index.html

Appendix - List of all departments involved in the study programme

Branch of study Imaging Techniques:						
Institute	Course	Head of institute	Email	Phone number	Address	Website
Chair of Sensor Technology	GET III, Sensor Technology	Prof. Dr.-Ing. Reinhard Lerch	lse-info@fau.de	09131 85-23132	Paul-Gordan-Straße 3/5, 91052 Erlangen	http://lse14.e-technik.uni-erlangen.de/
Chair of Multimedia Communications and Signal Processing	Signals and Systems I/II	Prof. Dr.-Ing. André Kaup	Ute.Hespelein@fau.de	09131 85-27101	Cauerstr. 7, 91058 Erlangen	http://www.lms.lnt.de/
Chair of Medical Informatics	Information systems in healthcare	Prof. Dr. Hans-Ulrich Prokosch	ulli.prokosch@imi.med.uni-erlangen.de	09131 85-26720	Wetterkreuz 13, 91058 Erlangen-Tennenlohe	https://www.imi.med.fau.de
Institute of Electromagnetic Fields	GET I, EMF	Prof. Dr.-Ing. M. Albach	emf-sekretariat@fau.de:	09131 85-28953	Cauerstraße 7, 91058 Erlangen	http://www.emf.eei.uni-erlangen.de/
Institute of Microwaves and Photonics (LHFT)	GET II	Prof. Dr.-Ing. Martin Vossiek	lhft@lhft.eei.uni-erlangen.de	09131 85-27214	Cauerstraße 9, 91058 Erlangen	http://www.lhft.eei.uni-erlangen.de/
Institute for Electronics Engineering	Circuit Technology	Prof. Dr.-Ing. Dr.-Ing. habil. Robert Weigel	info@lfte.de	09131 85-27195	Cauerstraße 9, 91058 Erlangen	http://www.lte.e-technik.uni-erlangen.de/
Chair of Computer Science 12 (Hardware-Software-Co-Design)	Basics of Computer Engineering	Prof. Dr.-Ing. Jürgen Teich	teich@informatik.uni-erlangen.de	09131 85-25150	Cauerstr. 11, 91058 Erlangen	http://www12.informatik.uni-erlangen.de
Branch of study Device Engineering and Prosthetics:						
Institute	Course	Head of institute	Email	Phone number	Address	Website
Institute of Photonic Technologies	Production Technology VII, Lights in Medical Engineering	Prof. Dr.-Ing. Michael Schmidt	info@lpt.uni-erlangen.de	09131 85-23241	Konrad-Zuse-Straße 3/5, 91052 Erlangen	http://www.lpt.techfak.uni-erlangen.de/
Chair of Manufacturing Metrology	Fundamentals of Metrology, Quality Techniques for Product Development and Manufacturing	Prof. Dr.-Ing. habil. Tino Hausotte	fmt@fau.de	09131 85-20451	Nägelsbachstraße 25, 91052 Erlangen	http://www.fmt.tf.fau.de/

Appendix - List of all departments involved in the study programme

Institute of Engineering Design	TD I	Prof. Dr.-Ing. Sandro Wartzack	wartzack@mfk.fau.de;	09131 85-27986	Martensstraße 9, 91058 Erlangen	http://www.mfk.uni-erlangen.de
Institute I: General Materials Properties	Materials and their structures	Prof. Dr. Mathias Göken	ww1@ww.uni-erlangen.de	09131 8527501	Martensstraße 5, 91058 Erlangen	http://www.gmp.ww.uni-erlangen.de/
Institute for Biomaterials	Surfaces in Biomaterials	Prof. Dr.-Ing. habil. Aldo R. Boccaccini	aldo.boccaccini@ww.uni-erlangen.de	09131 85-28600	Cauerstraße 6 91058 Erlangen	http://www.biomat.techfak.uni-erlangen.de/
Chair of Applied Dynamics	Biomechanics	Prof. Dr.-Ing. habil. Sigrid Leyendecker	sigrid.leyendecker@ltd.uni-erlangen.de	09131 85-61000	Haberstrasse 1, 91058 Erlangen	http://www.ltd.tf.uni-erlangen.de/
Institute of Engineering Thermodynamics	Engineering Thermodynamics	Prof. Dr.-Ing. Stefan Will	sec@ltt.uni-erlangen.de	09131 85-29900	Am Weichselgarten 8, 91058 Erlangen	http://www.ltt.uni-erlangen.de/
Institute of Fluid Mechanics (LSTM)	Fluid Mechanics	Prof. Dr.-Ing. habil. Delgado	antonio.delgado@lstm.uni-erlangen.de	09131 85-29500	Cauerstraße 4, 91058 Erlangen	http://www.lstm.uni-erlangen.de/

Master´s Degree Programme					
All branches of study:					
Institute	Head of institute	Email	Phone number	Address	Website
Chair of Ear, Nose and Throat	Prof. Dr. med. Dr. h. c. Heinrich Iro	heinrich.iro@uk-erlangen.de	09131 85-33141	Waldstraße 1, 91054 Erlangen	http://www.hno-klinik.uk-erlangen.de/kontakt/
Institute of Medical Biotechnology	Prof. Dr.med.habil. Dr.rer.nat. Dipl. Phys. Oliver Friedrich	sekretariat@mbt.uni-erlangen.de	09131 85-23174	Paul-Gordan-Str. 3, 91052 Erlangen	http://www.mbt.tf.uni-erlangen.de
Institute of Physiology and Pathophysiology	Prof. Dr. Christian Alzheimer	renate.beuscher@fau.de	09131 85-22298	Universitätsstraße 17, 91054 Erlangen	http://www.physiologie1.uni-erlangen.de/
Chair of Diagnostic Radiology	Prof. Dr. med. Michael Uder	michael.uder@uk-erlangen.de	09131 85-36065	Maximiliansplatz 1, 91054 Erlangen	http://www.radiologie.uk-erlangen.de/
Institute of Engineering Design	Prof. Dr.-Ing. Sandro Wartzack	wartzack@mfk.fau.de	09131 85-27986	Martensstraße 9, 91058 Erlangen	http://www.mfk.uni-erlangen.de
Institute of Orthopaedics with Orthopaedic Surgery	Professor Dr. med. Raimund Forst	orthopaedie@wald-krankenhaus.de	09131 822-3303	Rathsberger Str. 57, 91054 Erlangen	http://www.orthopaedie.med.uni-erlangen.de/
Chair of Sensor Technology	Prof. Dr.-Ing. Reinhard Lerch	lse-info@fau.de	09131 85-23132	Paul-Gordan-Straße 3/5, 91052 Erlangen	http://lse14.e-technik.uni-erlangen.de/

Appendix - List of all departments involved in the study programme

Master´s Programme in Advanced Optical Technologies (MAOT)	Prof. Dr.-Ing. Bernhard Schmauß	bernhard.schmauss@fau.de	09131 85-27213	Cauerstr. 9, 91058 Erlangen	http://www.aot.uni-erlangen.de/
Radiation Clinic	Prof. Dr. med. Rainer Fietkau	sekretariat.strahlenklinik@uk-erlangen.de	09131 85-33405	Universitätsstraße 27, 91054 Erlangen	http://www.strahlenklinik.uk-erlangen.de/
Chair of Anatomy II	Prof. Dr. Friedrich Paulsen	unfallchirurgie.uk-erlangen.de	09131 85-33272	Universitätsstraße 19, 91054 Erlangen	http://www.anatomie2.med.uni-erlangen.de/
Chair of Anaesthesiology	Prof. Dr. med. Dr. h. c. Jürgen Schüttler	susanne.grothmaakkfa.imed.uni-erlangen.de	09131 85-33677	Krankenhausstraße 12, 91054 Erlangen	http://www.anaesthesie.uk-erlangen.de/
Branch of study Medical Image and Data Processing (German classes):					
Institute	Head of institute	Email	Phone number	Address	Website
Institute for Digital Communications	Prof. Dr.-Ing. Robert Schober	idc-sekr@fau.de	09131 85-27161	Cauerstr. 7 , 91058 Erlangen	http://www.idc.lnt.de/
Chair of Computer Science 1 (IT Security Infrastructures)	Prof. Dr.-Ing. Felix Freiling	felix.freiling@cs.fau.de	09131 85-69901	Martensstr. 3, 91058 Erlangen	http://www1.informatik.uni-erlangen.de
Chair of Computer Science 10 (System Simulation)	Prof. Dr. Ulrich Rüde	cs10-contact@fau.de	09131 85-28923	Cauerstraße 11, 91058 Erlangen	http://www10.informatik.uni-erlangen.de
Chair of Computer Science 11 (Software Engineering)	Prof. Dr. Francesca Saglietti	sekretariat@i11.informatik.uni-erlangen.de	09131 85-27877	Martensstraße 3, 91058 Erlangen	http://www11.informatik.uni-erlangen.de/
Chair of Computer Science 12 (Hardware-Software-Co-Design)	Prof. Dr.-Ing. Jürgen Teich	teich@informatik.uni-erlangen.de	09131 85-25150	Cauerstr. 11, 91058 Erlangen	http://www12.informatik.uni-erlangen.de
Chair of Computer Science 2 (Programming Systems)	Prof. Dr. Michael Philippsen	info@i2.informatik.uni-erlangen.de	09131 85-27621	Martensstr. 3, 91058 Erlangen	http://www2.cs.fau.de
Chair of Computer Science 3 (Hardware Architectures)	Prof. Dr. Dietmar Fey	Michaela.Krebs@cs.fau.de	09131 85-27003	Martensstr. 3, 91058 Erlangen	http://www3.informatik.uni-erlangen.de/
Chair of Computer Science 4 (Distributed Systems and Operating Systems)	Prof. W. Schröder-Preikschat	nopper@informatik.uni-erlangen.de	09131 85-27277	Martensstr. 1, 91058 Erlangen	http://www4.cs.fau.de

Appendix - List of all departments involved in the study programme

Chair of Computer Science 6 (Data Management)	Prof. Dr. Klaus Meyer-Wegener	cs6-office@fau.de	09131 85-27893	Martensstraße 3, 91058 Erlangen	http://www6.cs.fau.de
Department of Computer Science 9 (Computer Graphics)	Prof. Dr. Günther Greiner	sekretariat@immd9.informatik.uni-erlangen.de	09131 85-29919	Cauerstraße 11, 91058 Erlangen	http://lgdv.cs.fau.de/
Chair of Information Transmission	Prof. Dr. Johannes Huber		09131 852-7113	Cauerstraße 7, 91058 Erlangen	http://www.lit.lnt.de/
Chair of Medical Informatics	Prof. Dr. Hans-Ulrich Prokosch	ulli.prokosch@imi.med.uni-erlangen.de	09131 85-26720	Wetterkreuz 13, 91058 Erlangen-Tennenlohe	http://www.imi.med.fau.de
Chair of Multimedia Communications and Signal Processing	Prof. Dr.-Ing. André Kaup	Ute.Hespelein@fau.de	09131 85-27101	Cauerstr. 7, 91058 Erlangen	http://www.lms.lnt.de/
Chair of Pattern Recognition	Prof. Dr.-Ing. habil. Andreas Maier	info@i5.cs.fau.de	09131 85-27775	Martensstr. 3, 91058 Erlangen	http://www5.cs.fau.de/
Chair of Sensor Technology	Prof. Dr.-Ing. Reinhard Lerch	lse-info@fau.de	09131 85-23132	Paul-Gordan-Straße 3/5, 91052 Erlangen	http://lse14.e-technik.uni-erlangen.de/
Chair for Applied Mathematics III	Prof. Dr. Eberhard Bänsch	baensch@am.uni-erlangen.de	09131 85-67200	Cauerstr. 11, 91058 Erlangen	http://www.mso.math.fau.de/
Professorship for High Performance Computing	Prof. Dr. Gerhard Wellein	Gerhard.Wellein@rrze.uni-erlangen.de	09131 85-28136	Martensstraße 1, 91058 Erlangen	http://www.hpc.informatik.uni-erlangen.de/
Study of branch Medical Electronics:					
Institute	Head of institute	Email	Phone number	Address	Website
Chair of Electrical Drives and Machines	Prof. Dr.-Ing. Bernhard Piepenbreier	inst@eam.eei.uni-erlangen.de	9131 85-27249	Cauerstraße 9, 91058 Erlangen	http://www.eam.eei.uni-erlangen.de/
Institute of Electromagnetic Fields	Prof. Dr.-Ing. M. Albach	emf-sekretariat@fau.de	09131 85-28953	Cauerstraße 7, 91058 Erlangen	http://www.emf.eei.uni-erlangen.de/
Chair of Electron Devices	Prof. Dr. rer. nat. L. Frey	info@leb.eei.uni-erlangen.de	09131 85-28634	Cauerstraße 6, 91058 Erlangen	http://www.leb.eei.uni-erlangen.de/
Institute of Microwaves and Photonics (LHFT)	Prof. Dr.-Ing. Martin Vossiek	lhft@lhft.eei.uni-erlangen.de	09131 85-27214	Cauerstraße 9, 91058 Erlangen	http://www.lhft.eei.uni-erlangen.de/
Chair of Information Technologies with Focus on Communication Electronics	Prof. Dr-Ing. Albert Heuberger	like-info@fau.de	09131 85-2510	Am Wolfsmantel 33, 91058 Erlangen-Tennenlohe	http://www.like.eei.uni-erlangen.de/
Chair of Information Transmission	Prof. Dr. Johannes Huber		09131 852-7113	Cauerstraße 7, 91058 Erlangen	http://www.lit.lnt.de/

Appendix - List of all departments involved in the study programme

Chair of Materials for Electronics and Energy Technology (i-MEET)	Prof. Dr. Christoph J. Brabec	christoph.brabec@ww.uni-erlangen.de	09131 85-27633	Martensstraße 7, 91058 Erlangen	http://www.i-meet.ww.uni-erlangen.de/
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Chair of Pattern Recognition (LME)	Prof. Dr.-Ing. habil. Andreas Maier	info@i5.cs.fau.de	09131 85-27775	Martensstr. 3, 91058 Erlangen	http://www5.cs.fau.de/
Institute of Photonic Technologies	Prof. Dr.-Ing. Michael Schmidt	info@lpt.uni-erlangen.de	09131 85-23241	Konrad-Zuse-Straße 3/5, 91052 Erlangen	http://www.lpt.techfak.uni-erlangen.de/
Chair of Automatic Control	Prof. Dr.-Ing. habil. G. Roppenecker	LRT@fau.de	09131 85-27130	Cauerstraße 7, 91058 Erlangen	http://www.rt.eei.uni-erlangen.de/
Chair of Sensor Technology	Prof. Dr.-Ing. Reinhard Lerch	lse-info@fau.de	09131 85-23132	Paul-Gordan-Straße 3/5, 91052 Erlangen	http://lse14.e-technik.uni-erlangen.de/
Institute for Electronics Engineering	Prof. Dr.-Ing. Dr.-Ing. habil. Robert Weigel	info@lfte.de	09131 85-27195	Cauerstraße 9, 91058 Erlangen	http://www.lte.e-technik.uni-erlangen.de/
Branch of study Medical Production Technology, Device Engineering and Prosthetics:					
Institute	Head of institute	Email	Phone number	Address	Website
Institute for Factory Automation and Production Systems	Prof. Dr.-Ing Jörg Franke	Joerg.Franke@faps.fau.de	09131 85-27971	Egerlandstr. 7-9 , 91058 Erlangen	http://www.faps.de/
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Institute of Engineering Thermodynamics	Prof. Dr.-Ing. Stefan Will	sec@ltt.uni-erlangen.de	09131 85-29900	Am Weichselgarten 8, 91058 Erlangen	http://www.ltt.uni-erlangen.de/
Institute of Materials Simulation	Prof. Dr. Michael Zaiser	michael.zaiser@ww.uni-erlangen.de	0911 - 65078 / 65060	Dr.- Mack-Str. 77, 90762 Fürth	http://www.matsim.techfak.uni-erlangen.de/
Institute for Biomaterials	Prof. Dr.-Ing. habil. Aldo R. Boccaccini	aldo.boccaccini@ww.uni-erlangen.de	09131 85-28600	Cauerstraße 6, 91058 Erlangen	http://www.biomat.techfak.uni-erlangen.de/
Chair of Electrical Drives and Machines	Prof. Dr.-Ing. Bernhard Piepenbreier	inst@eam.eei.uni-erlangen.de	09131 85-27249	Cauerstraße 9, 91058 Erlangen	http://www.eam.eei.uni-erlangen.de/
Chair of Glass and Ceramics	Prof. Dr. rer. nat. Peter Greil	ww3mail@ww.uni-erlangen.de	09131 8527541	Martensstraße 5, 91058 Erlangen	http://www.glass-ceramics.uni-erlangen.de/
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Institute of Medical Biotechnology	Prof. **Dr.med.habil**. **Dr.rer.nat**. **Dipl. Phys**. Oliver Friedrich	sekretariat@mbt.uni-erlangen.de	09131 85-23174	Paul-Gordan-Str. 3, 91052 Erlangen	http://www.mbt.tf.uni-erlangen.de
Institute of Photonic Technologies	Prof. Dr.-Ing. Michael Schmidt	info@lpt.uni-erlangen.de	09131 85-23241	Konrad-Zuse-Straße 3/5, 91052 Erlangen	http://www.lpt.techfak.uni-erlangen.de/
Center for Medical Physics and Technology	Prof. B. Fabry	biomed@biomed.uni-erlangen.de	09131 85-25630	Henkestr. 91, 91052 Erlangen	http://www.biomed.uni-erlangen.de/
Institute for Polymer Materials	Prof. Dr. rer. nat. habil. Dirk W. Schubert	dirk.schubert@fau.de	09131 85-27752	Martensstrasse 7, 91058 Erlangen	http://www.lsp.uni-erlangen.de/
Chair of Process Technology and Machinery	Professor Dr.-Ing. E. Schlücker	sekretariat@ipat.uni-erlangen.de	09131 85-29451	Cauerstrasse 4, 91058 Erlangen	http://www.ipat.uni-erlangen.de/
Chair of Automatic Control	Prof. Dr.-Ing. habil. G. Roppenecker	LRT@fau.de	09131 85-27130	Cauerstraße 7, 91058 Erlangen	http://www.rt.eei.uni-erlangen.de/
Chair of Sensor Technology	Prof. Dr.-Ing. Reinhard Lerch	lse-info@fau.de	09131 85-23132	Paul-Gordan-Straße 3/5, 91052 Erlangen	http://lse14.e-technik.uni-erlangen.de/
Chair of Applied Dynamics	Prof. Dr.-Ing. habil. Sigrid Leyendecker	sigrid.leyendecker@ltd.uni-erlangen.de	09131 85-61000	Haberstrasse 1, 91058 Erlangen	http://www.ltd.tf.uni-erlangen.de/
Chair of Applied Mechanics	Prof. Dr.-Ing. habil. P. Steinmann	paul.steinmann@ltm.uni-erlangen.de	09131 85-28501	Paul-Gordan-Str. 3, 91052 Erlangen	http://www.ltm.uni-erlangen.de/
Chair of Metals Science and Technology (WTM)	Prof. Dr.-Ing. Robert F. Singer	Robert.singer@ww.uni-erlangen.de	09131 85-27530	Martensstraße 5, 91058 Erlangen	http://www.wtm.uni-erlangen.de/
Institute I: General Materials Properties	Prof. Dr. Mathias Göken	ww1@ww.uni-erlangen.de	09131 85-27501	Martensstraße 5, 91058 Erlangen	http://www.gmp.ww.uni-erlangen.de/
Institute of Manufacturing Technology	Prof. Dr.-Ing. habil. Marion Merklein	marion.merklein@fau.de	09131 85-27140	Egerlandstraße 11-13, 91058 Erlangen	http://www.lft.uni-erlangen.de/
Branch of study Medical Image and Data Processing (English classes):					
Institute	Head of institute	Email	Phone number	Address	Website
Master´s Programme in Advanced Optical Technologies (MAOT)	Prof. Dr.-Ing. Bernhard Schmauß	bernhard.schmauss@fau.de	09131 85-27213	Cauerstr. 9, 91058 Erlangen	http://www.aot.uni-erlangen.de/

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Chair of Ear, Nose and Throat	Prof. Dr. med. Dr. h. c. Heinrich Iro	heinrich.iro@uk-erlangen.de	09131 85-33141	Waldstraße 1, 91054 Erlangen	http://www.hno-klinik.uk-erlangen.de/en/
Chair of Multimedia Communications and Signal Processing	Prof. Dr.-Ing. André Kaup	Ute.Hespelein@fau.de	09131 85-27101	Cauerstr. 7, 91058 Erlangen	http://www.lms.lnt.de/
Chair of Pattern Recognition (LME)	Prof. Dr.-Ing. habil. Andreas Maier	info@i5.cs.fau.de	09131 85-27775	Martensstr. 3, 91058 Erlangen	http://www5.cs.fau.de/
Chair of Information Transmission	Prof. Dr. Johannes Huber		09131 852-7113	Cauerstraße 7, 91058 Erlangen	http://www.lit.lnt.de/
Department of Computer Science 9 (Computer Graphics)	Prof. Dr. Günther Greiner	sekretariat@immd9.informatik.uni-erlangen.de	09131 85-29919	Cauerstraße 11, 91058 Erlangen	http://lgdv.cs.fau.de/
Chair of Computer Science 2 (Programming Systems)	Prof. Dr. Michael Philippsen	info@i2.informatik.uni-erlangen.de	09131 85-27621	Martensstr. 3, 91058 Erlangen	http://www2.cs.fau.de
Chair of Computer Science 12 (Hardware-Software-Co-Design)	Prof. Dr.-Ing. Jürgen Teich	teich@informatik.uni-erlangen.de	09131 85-25150	Cauerstr. 11, 91058 Erlangen	http://www12.informatik.uni-erlangen.de
Chair for Applied Mathematics III	Prof. Dr. Eberhard Bänsch	baensch@am.uni-erlangen.de	09131 85-67200	Cauerstr. 11, 91058 Erlangen	http://www.mso.math.fau.de/
Chair of Computer Science 10 (System Simulation)	Prof. Dr. Ulrich Rüde	cs10-contact@fau.de	09131 85-28923	Cauerstraße 11, 91058 Erlangen	http://www10.informatik.uni-erlangen.de
Chair of Computer Science 3 (Hardware Architectures)	Prof. Dr. Dietmar Fey	Michaela.Krebs@cs.fau.de	09131 85-27003	Martensstr. 3, 91058 Erlangen	http://www3.informatik.uni-erlangen.de/
Chair of Computer Science 11 (Software Engineering)	Prof. Dr. Francesca Saglietti	sekretariat@i11.informatik.uni-erlangen.de	09131 85-27877	Martensstraße 3, 91058 Erlangen	http://www11.informatik.uni-erlangen.de/
Institute of Medical Biotechnology	Prof. **Dr.med.habil. Dr.rer.nat.** Dipl. Phys. Oliver Friedrich	sekretariat@mbt.uni-erlangen.de	09131 85-23174	Paul-Gordan-Str. 3, 91052 Erlangen	http://www.mbt.tf.uni-erlangen.de
Institute of Photonic Technologies	Prof. Dr.-Ing. Michael Schmidt	info@lpt.uni-erlangen.de	09131 85-23241	Konrad-Zuse-Straße 3/5, 91052 Erlangen	http://www.lpt.techfak.uni-erlangen.de/
Institute for Biomaterials	Prof. Dr.-Ing. habil. Aldo R. Boccaccini	aldo.boccaccini@ww.uni-erlangen.de	09131 85-28600	Cauerstraße 6, 91058 Erlangen	http://www.biomat.techfak.uni-erlangen.de/

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Institute for Factory Automation and Production Systems	Prof. Dr.-Ing Jörg Franke	Joerg.Franke@faps.fau.de	09131 85-27971	Egerlandstr. 7-9 , 91058 Erlangen	http://www.faps.de/
Chair of Computer Science 6 (Data Management)	Prof. Dr. Klaus Meyer-Wegener	cs6-office@fau.de	09131 85-27893	Martensstraße 3, 91058 Erlangen	http://www6.cs.fau.de
Institute for Digital Communications	Prof. Dr.-Ing. Robert Schober	idc-sekr@fau.de	09131 85-27161	Cauerstr. 7 , 91058 Erlangen	http://www.idc.lnt.de/
Chair of Nuclear Medicine	Prof. Dr. med. Torsten Kuwert	nu-info.uk-erlangen.de	09131 85-33411	Ulmenweg 18, 91054 Erlangen	http://www.nuklear-medizin.uk-erlangen.de/
Professur für Nanomedizin (Stiftungsprofessur der Else Kröner-Fresenius-Stiftung)	Prof. Dr. med. Christoph Alexiou	c.alexiou@web.de	09131 85-33156	Glückstraße 10a, 91054 Erlangen	http://www.hno-klinik.uk-erlangen.de/seon-nanomedizin/

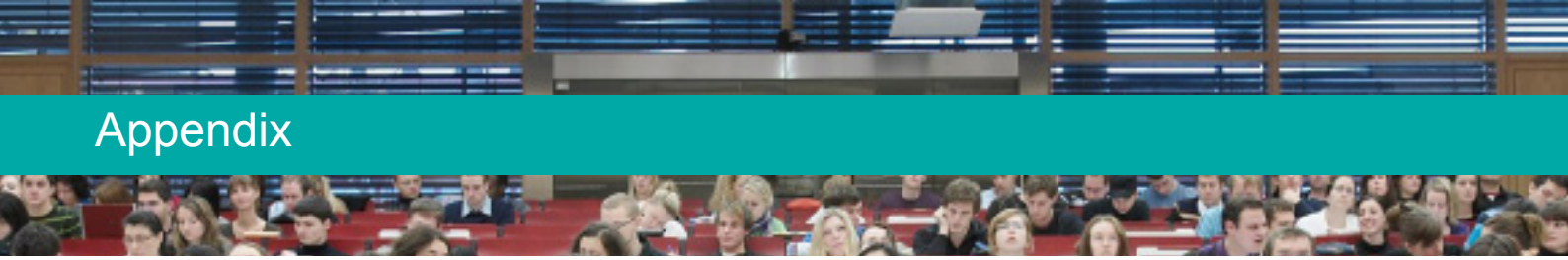

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Figure 3: ZiMT

Figure 4: Bastian Stahl

Figure 5: Claudia Barnickel

Figure 6: FAU

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