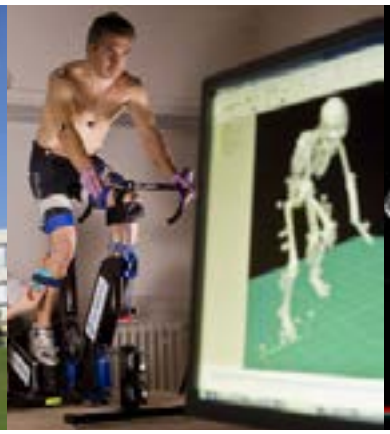
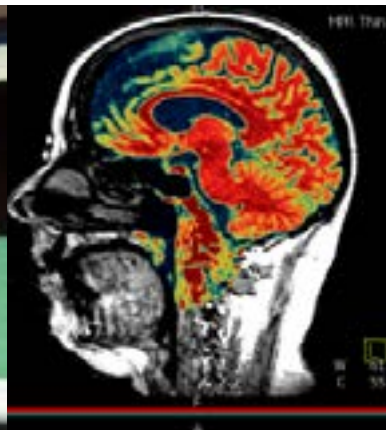
FRIEDRICH-ALEXANDER
UNIVERSITÄT
ERLANGEN-NÜRNBERG

TECHNISCHE FAKULTÄT

Master degree programme

Medical Engineering



Study guide
WS 2018/2019

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 2018 - study begin: 1st October 2018 or later)**. Master´s students of the old degree programme and examination regulations (FPO version 2011 or 2013) 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 wish you many “aha”-moments while reading our guide and good luck with your studies!

Claudia Barnickel

Study Advisory Medical Engineering

Last updated: August 2018

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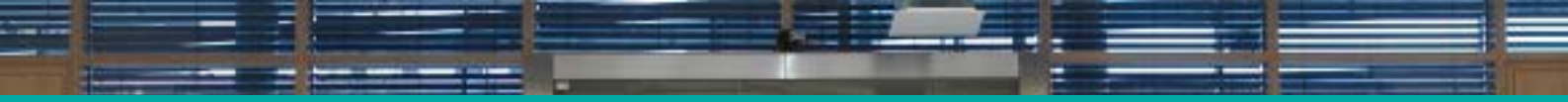


Content

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.

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

First orientation

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 2017, the overall 1,500 German medical engineering manufacturers produced a revenue growth of approximately 9% and were able to obtain a total revenue of 30.6 billion €. The domes-tic revenue for 2017 grew 3%, accumulating a turnover of 10.9 billion euros. The international sector recorded a growth of approximately 6%, with an international revenue worth 19.7 billion euro. The export ratio of German companies is 65 percent. The number of medical engineering employees is approximately 210,000 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 and Waldkrankenhaus hospital in Erlangen, 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 750 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, 73 newly-admitted students enrolled in the Master´s degree programme.

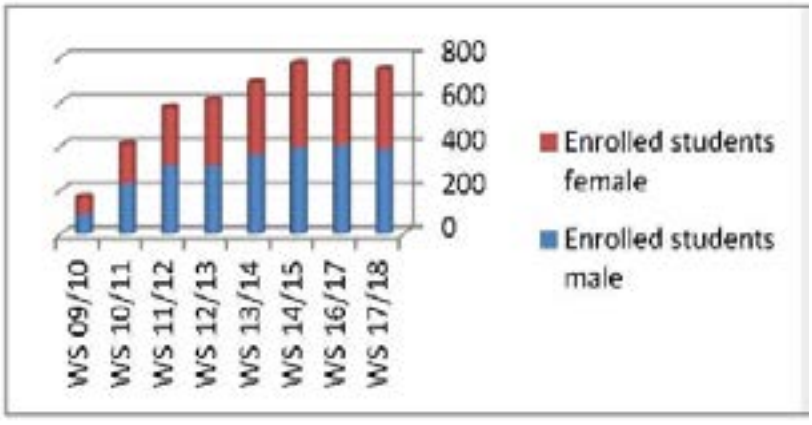


Figure 1: Development of the students numbers (Bachelor´s and Master´s) since the beginning of the degree programme until the winter semester 2017/2018

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 and our Faculty of Medicine, students have the opportunity to learn about medicinal processes and anatomic-physiological connections and develop medical terminology skills. Additionally, they can prepare themselves 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 within the soft skills section of their studies.

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.

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 Faculty of Engineering´ module students are free to take any module offered on Master´s level at the Faculty of Engineering. In the `Free Choice Uni´ 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.

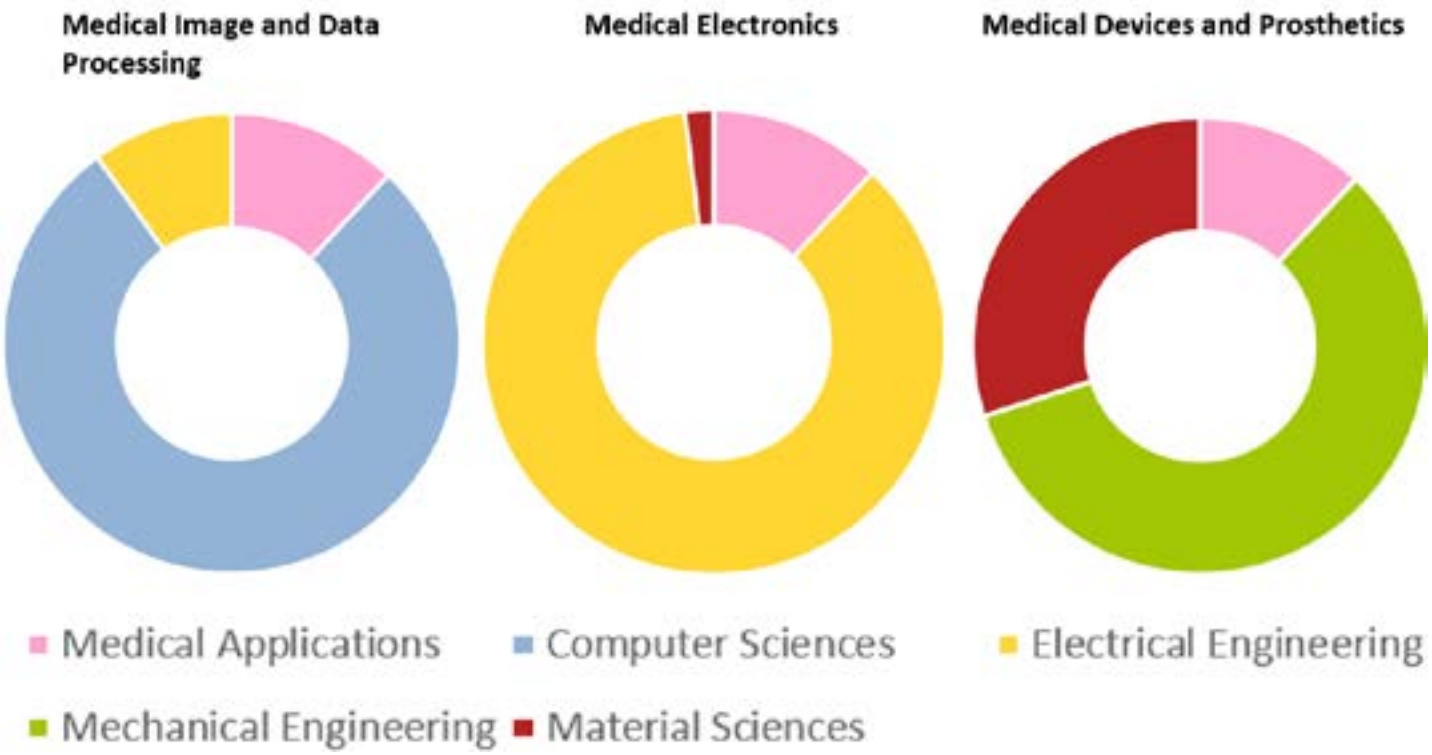


Figure 2: Subject distribution within the Master´s branches of study

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. In oder to get a general idea whether the programme is suitable for you, we highly recommend that you take our online self-assessment test.

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 available)
- 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 80, paper based TOEFL: at least 547, computer based TOEFL: at least 210, IELTS: at least 5.5, Cambridge Certificate in English (FCE) or Business English Certificate (BEC) Vantage, 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/study/from-abroad/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 on the Medical Engineering website), 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**

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 Mas

ter´s degree programme to pass these classes, which are included into the total workload of 120 ECTS credits. If you believe that you already possess the respective knowledge and can prove this with a module description from your Bachelor´s programme, you are welcome to contact your study advisor and file a petition for accreditation. Your module description will be checked by the responsible lecturer of the FAU module, who decides if accreditation is possible. If they give their permission you are free to skip the respective “obligatory compulsory module” and choose other modules of the same module group instead. Please note that your credits and grades from your Bachelor´s module cannot be accredited (=accounted for your Master´s studies), as you are legally required to build up new competencies in your Master´s studies with regard to your Bachelor´s studies.

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 if they are fluent in both languages.

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. **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 nine modules. Modules M 1 (Medical Specialisation Modules), M 4 (Medical Engineering Core Skills), M 6 (Medical Engineering Practical Skills), M 7 (Flexible Budget), M 8 (Free Choice Uni) and M9 (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 (https://www.medical-engineering.study.fau.eu/current-students/general-study-information-masters-programme/).

Appendix 2: Master's study plan template Medical Engineering

No.	Module groups	ECTS credits	Recommended semester distribution [1]				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 [2] [3]	10	5	5			**EA**: written examination (Klausur) 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 (Klausur) 60/90 min. /oral examination 30 min.
M 3	**Medical Engineering core modules** according to catalogue of elective modules for specific branch of study [2] [3]	20	10	10			**EA**: written examination (Klausur) 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 [2]	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 [2] [3]	10		5	5		**EA**: written examination (Klausur) 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 [2]	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 [5]	120	30	30	30	30	

PfE portfolio examination
EA examination achievement
gCA graded course achievement
uCA ungraded course achievement

Figure 3: Master´s study plan template

In the Master´s studies, there are very few mandatory classes. You can choose classes from 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.

Advanced Seminar Medical Engineering (M4)

For the seminar module, students can choose between different options from the seminar catalogue (p. 10.2 Seminar Catalogue Bachelor and Master´s Programme Medical Engineering).You can either attend one seminar with workload of 5 ECTS ot two different seminars worth 2,5 ECTS each. In the seminar, you will give a presentation and write a report on a special topic, which can either be assigned to you by your lecturer or chosen by yourself from a list of potential topics.

Medical Engineering Practical Skills (M 6)

This module is composed of two, non-graded practical achievements, which are both carried out at the university. (Please don´t confuse these practical modules with business internships. There is no business internship included in our Master´s curriculum.)

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.

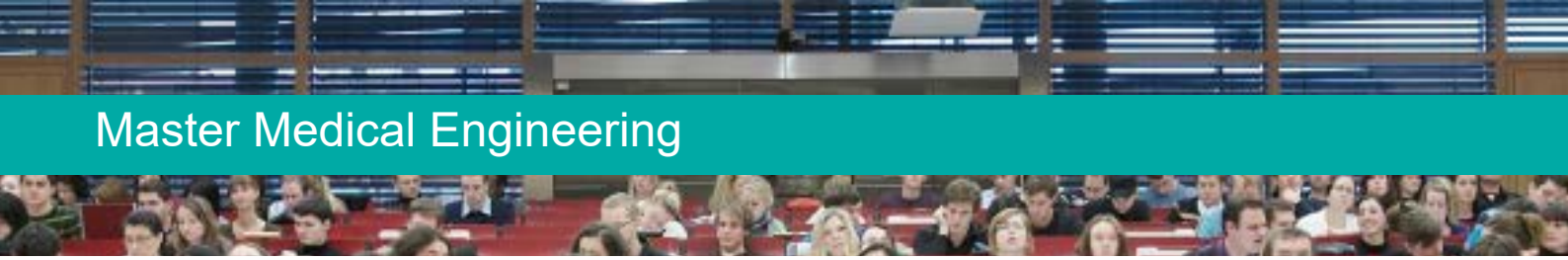
You can search specifically for laboratory trainings in UnivIS by selecting “Lecture list” for the search, clicking on “expert search” and searching for “Praktikum” as the type of class. If you select English as your language (“Sprache”), you will receive a list of trainings with English language supervision.

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: https://www.medical-engineering.study.fau.eu/files/2016/07/bescheinigung_forschungspraktikum_eng_dt.pdf.



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 **graded** course offered on **Master´s** level at the **Faculty of Engineering**. Please note that your conditional subjects don´t fall into this category, as they are Bachelor´s courses. 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).

Free Choice Uni (M8)

For this module you are allowed to take any class offered at the different faculties of our university (e.g. language courses, psychology, technical or medical engineering courses) as well as 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 5 ECTS credit points. The only condition is that the class is **graded.** If the total amount of workload exceeds 5 ECTS credits, you can still use these classes for the ‘Free Choice Uni’ 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). 5 credits of the workload acquired in your conditional subjects can be used for ‘Free Choice Uni’. In this case, you should be satisfied with the grades you have received in your conditional subject, otherwise you will lose the opportunity to improve your overall grade with different classes.

Master´s thesis(M 9)

Once you have achieved 75 ECTS credits and completed possible conditions (see p. 2.2.1 Admission requirements) and your compulsory electives (see 2.3.1 Conditions and “obligatory compulsory electives”), 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 engineering core curriculum and engineering specialisations of the Medical Engineering Bachelor´s or Master´s degree programme (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 will not grade your paper, but proofreads 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 register 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: https://www.medical-engineering.study.fau.eu/current-students/thesis-paper/

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 lab/chair. If the lab/chair 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. I**n 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 **(mostly 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. If you wish modules which were not considered in your Master´s examination can be included here. They will be listed under the category “Additional modules”. Again, the transcript 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. Your semester number and failed attempts at exams do not appear on your final certification.

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: Visit 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 Medical 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: https://www.medical-engineering.study.fau.eu/prospective-students/masters-study-contents/). 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 7 and M 8 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 the 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 (e.g. at the Faculty of Medicine) 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 likely 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 exam 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.

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 always 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 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 and Erlangen.

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:

- You are already registered at www.campo.fau.de. Please generate a request for enrolment and book an appointment for personal enrolment through the portal. The dates for enrolment are published progressively. Hence, 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 at least one week before your personal enrolment.
- 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 and surrounding villages) 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 midway 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". Please make to enter your full name and student number in the bank transaction. If you fail to do so your transaction cannot be allocated to your student account and you will get de-registered.

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 corresponding 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 “Free Choice Uni” (M8) 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 Free Choice Uni (M 8) 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 correction. 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 and measures will be taken.

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.eu/study/current-students/exam

ination-matters/examinations-office-faculty-of-engineering/ under the category “Information and forms”). If on the day of the examination you cannot attend an examination or an unable to sit an examination for reasons out of your control (e.g. traffic, accident or disruption to public transport), you must report this immediately to the Examination Office. This certificate for examination inability 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 your exam due to physical or psychological distress after you have received your exam documents, do so immediately after you realize the precarious situation, leave the exam and visit a university appointed doctor, a list of such doctors can be found here: https://www.fau.eu/study/current-students/examination-matters/examinations-office-faculty-of-engineering/

If you finish an exam although you are not feeling well your result will count, meaning that you won’t be able to withdraw from the exam retrospectively.

Important!!

If you complete the examination as normal, you confirm that you are in good health and are able to sit the examination – you cannot submit an application for special consideration retrospectively (even with medical certificates).

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 or any other certificate for examination inability), 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. Jahreis 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.

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!!

You cannot de-register from repetition exams. You can generally only withdraw from them with a doctor´s certificate or any other certificate for examination inability.

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 Master´s 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 can be listed (the ones that were not part of your final grade are listed in the category “Add-on modules” if you wish so).

3.14 Calculation of grades

MeinCampus calculates the current total grade of the Master´s and the module groups (e.g. “Medical specialisation modules/M1”) with every new entry. The individual modules are incorporated into an average grade according to their ECTS value. The average grade of a module group is incorporated into the Master’s exam according to the ECTS value of the group. This grade is not rounded, but takes only the first decimal into account.

Should you have rendered more achievements than the ECTS credits required in a certain 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.

The Master´s final grade is also not rounded up but cut after the first decimal.

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 https://www.medical-engineering.study.fau.eu/current-students/study-abroad/.

As the Master´s curriculum is very flexible, 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: https://www.medical-engineering.study.fau.eu/current-students/study-abroad/ . 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), the professor 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 studies at FAU.

In cases of studying abroad, students and the study advisory commit to a so called “learning agreement, a document which defines which courses from abroad can be accredited for which modules at FAU. These modules must generally correspond with the contents and learning outcomes at FAU. 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 electives (Flexible Budget Faculty of Engineering/M7, Free Choice Uni/M8) can be handled more flexibly. Please ask your study advisor. In the “Study abroad”-section of the Medical Engineering website you can download 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 your study advisor 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 your study advisor.

If the lecturer responsible for the module gives 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/ “vacation semester“

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. **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).

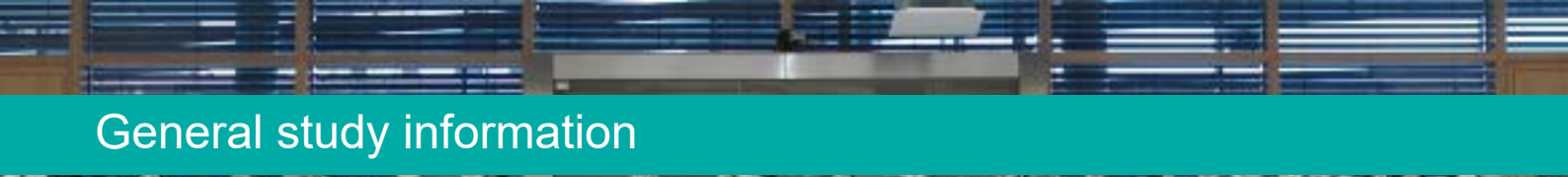
We recommend to compare the content description of your external achievement with the FAU Medical Engineering module and highlight the identical elements. If 80% of the material is identical, there is a realistic chance of an accreditation. It is always possible to accredit your achievements for the Free Choice Uni 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 module.

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.

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 Free Choice Uni 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.

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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. 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. Disabilities are categorized by physical, mental or psychological impairments with symptoms lasting longer than six months. This includes mental conditions or dyslexia. As chronic diseases include all impairments that have been receiving at least one medical treatment per Quarter for one year (e.g., migraine).

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 at the latest 6 weeks before the beginning of the examination period. 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.

Additional tips and assistance as well as independent advice centers can be found here: http://www.werkswelt.de/index.php?id=studieren-mit-behinderungen-und-chronischen-krankheiten www.barrierefrei-studieren.de/beratungsstellen

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.

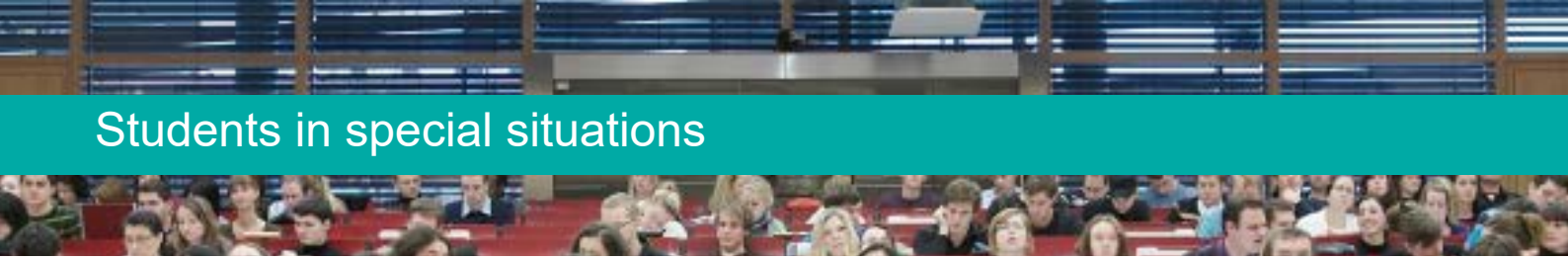
4.3 Psychological consultation

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), that has also an office at the Technische Fakultät. 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.



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

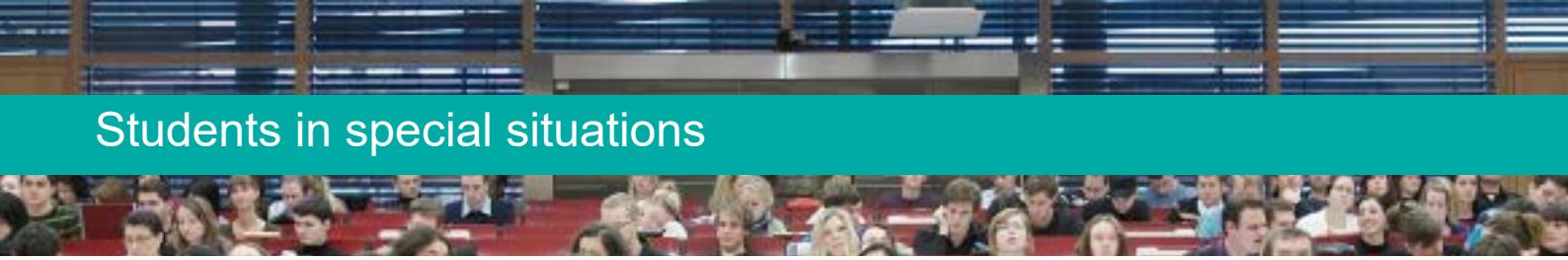
5.1 IdM-Portal

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.

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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: https://www.medical-engineering.study.fau.eu/current-students/general-study-information-masters-programme/ .

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 https://www.medical-engineering.study.fau.eu/files/2016/07/prsentation-meincampus.pdf.

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 prefer studying 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 “Free Choice Uni/M8”.”.

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: https://www.medical-engineering.study.fau.eu/current-students/general-study-information-masters-programme/. 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: https://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 (https://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 module catalogues from former semesters that can become helpful at the end of your studies to decide which module can be used for which module group. When in doubt, consult the archive to see which module group a module belonged to at the moment when you gave the first exam attempt.

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).

Glossary

Electives

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

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.

Glossary

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.

Glossary

SWS

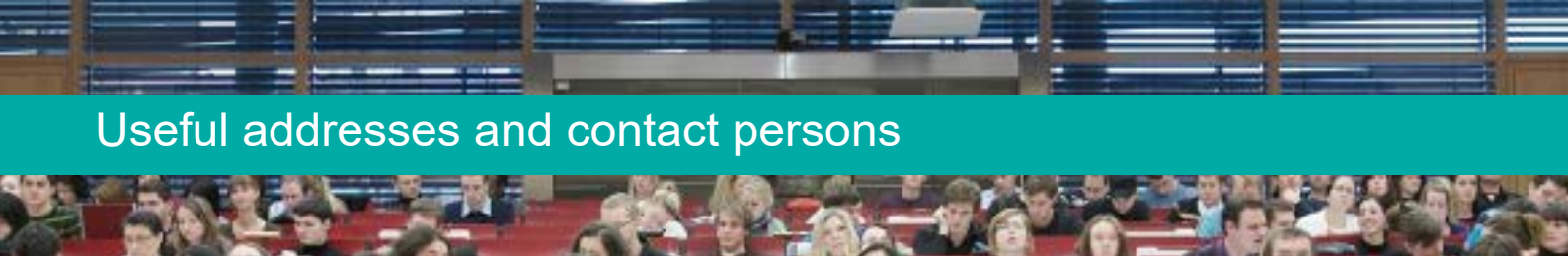
SWS stand for the weekly lecture hour and indicates the duration of a class. A SWS is equal to 45 minutes, many lectures consists of 2 SWS units, but longer periods for tutorials and internships are possible. By successfully completing a class of 2 SWS units (through an written exam or otherwise) you 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. In ZiMT (Medical Valley Center) often takes place interesting events such as Hackathons.



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

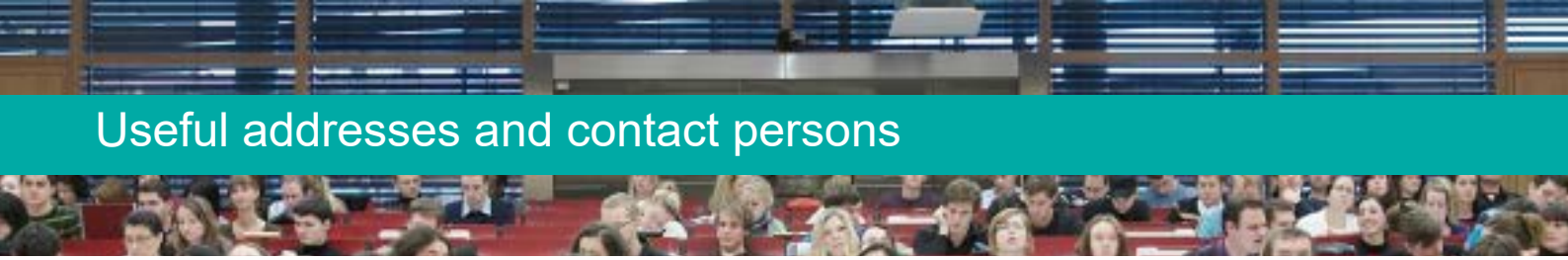
Central Institute of Healthcare Engineering (ZiMT)
Henkestrasse 91
91052 Erlangen
https://www.zimt.fau.eu/
phone: 09131 8526861
fax: 09131 8526862

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

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)

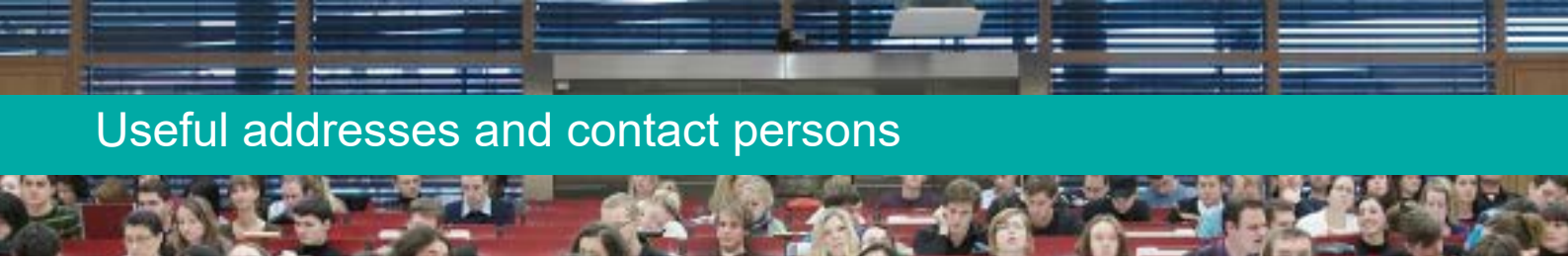
FSI Medical Engineering
rooms 01.150-113
Martensstraße 3
91058 Erlangen
email: fsi-medtech@cs.fau.de
find us on Facebook: FSIMedizintechnikErlangen
www.medtech.fsi.fau.de (in German)

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)

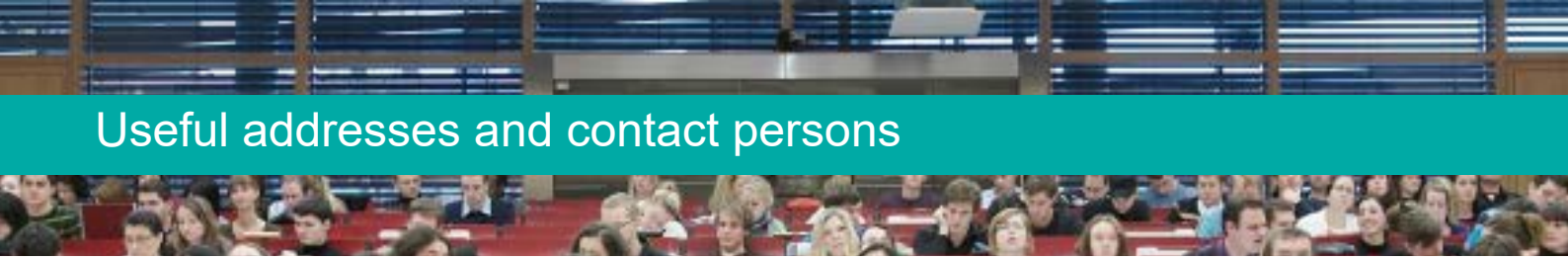
Lost and found (Faculty of Engineering)
https://www.tf.fau.de/infocenter/fundbuero/
(in German)

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:
https://www.gender-und-diversity.fau.de/files/2017/06/richtlinien_sexuelle-belstigung_2017_04_20.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&set-lang=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

Counseling Cener - Technical Faculty
Elizabeth Provan-Klotz, Diplom-Psychologin,
Psychologische Psychotherapeutin
Südcampus Erlangen, Martensstraße 3,
Wolfgang-Händler-Hochaus (Raum 04.154)

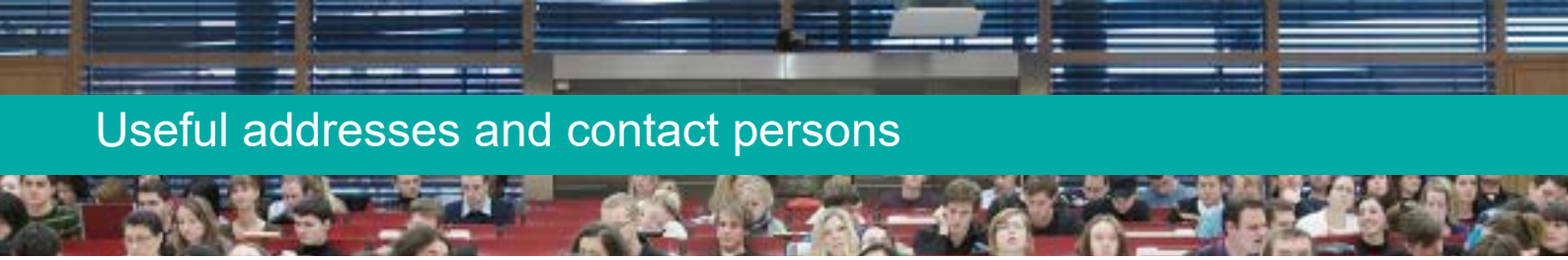
Open consultationo hours:
Thursday 13:00-14:00 Uhr (anonymous, without appointments)
Phone talk time:
Wednesday von 8:30 bis 9:30 Uhr

Further appointments via e-mail or telefon
phone: 09131/8527935
email: elizabeth.provan-klotz@werkswelt.de

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



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

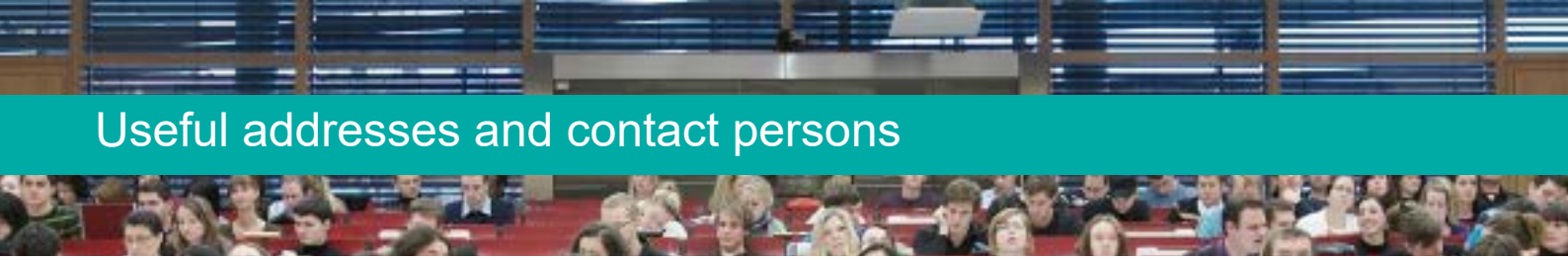
Alexander Ditter (Master CE)
Raum 07.155
Martensstraße 3
91058 Erlangen
Tel: 09131 85 27998
email: alexander.ditter@fau.de

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
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email: frauke.gross@fau.de
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9 Map

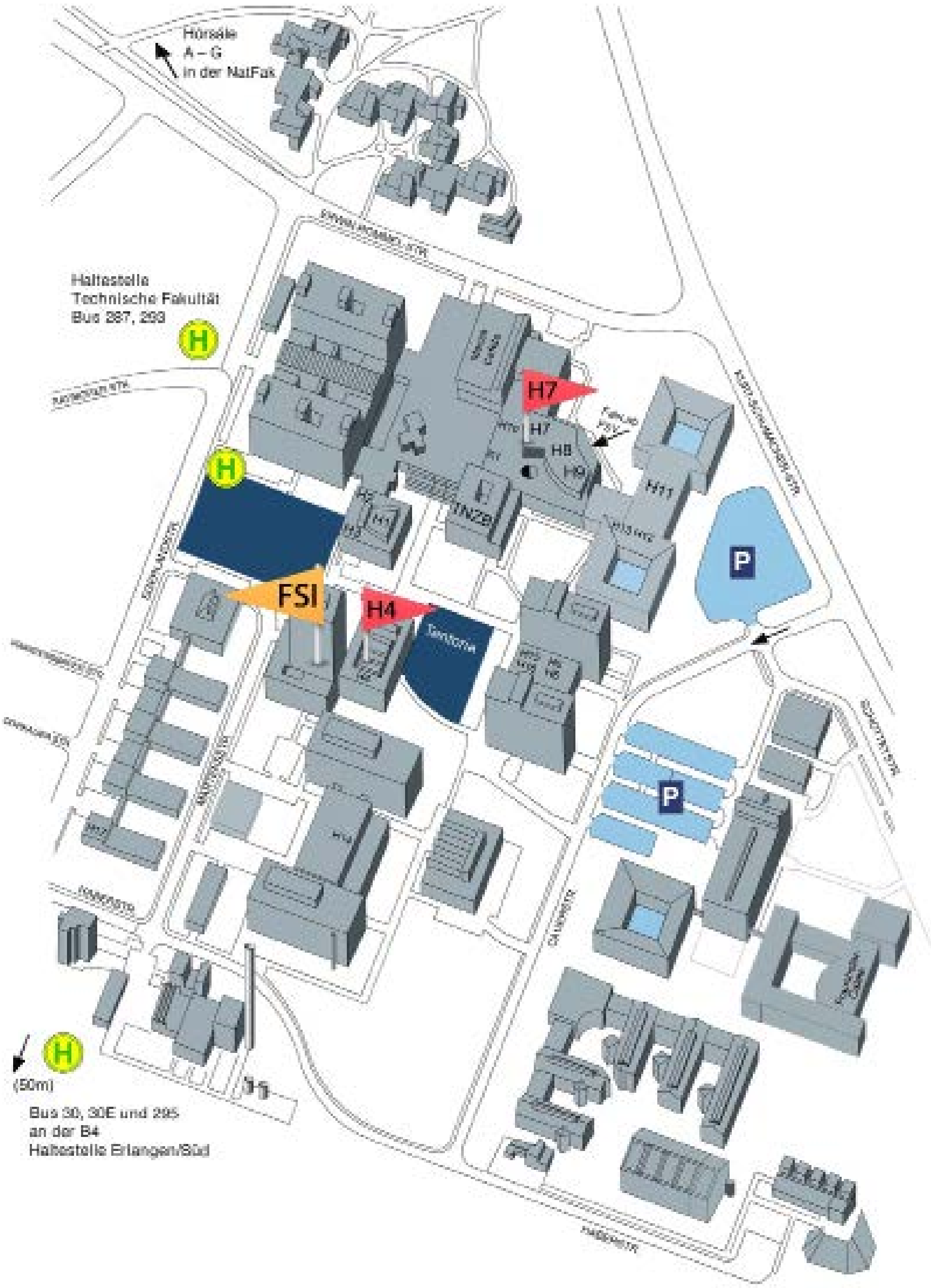


Figure 6: Map

10 Appendix

10.1 Module Catalogue Master´s Programme Medical Engineering

Module Catalog Master Program Medical Engineering - FPO 2018
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
	M 1.10	Medical Communications	MedCom	2+0+0+0	2,5	2,5	0	0	0	EN	gCA	MED	Lehrstuhl für Innere Medizin II	WS/SS

[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 Exercise	DÜ / DiCo	3+1+0+0	5	5	0	0	0	WS: EN SS: GER	gCA	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] Exercise	PR	3+1+0+0	5	5	0	0	0	EN	gCA	INF	Lehrstuhl für Informatik 5 (Mustererkennung)	WS
M 2.11	Pattern Analysis[1] Exercise	PA	3+1+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 2.14	Parallele Systeme / Parallel Systems Exercise	PSYS-VU	2+2+0+0	5	0	5	0	0	DE/EN	gCA	INF	Lehrstuhl für Informatik 12 (Hardware-Software-Co-Design)	SS
M 2.17	Reconfigurable Computing Exercise	RC	2+2+0+0	5	5	0	0	0	EN	gCA	INF	Lehrstuhl für Informatik 12 (Hardware-Software-Co-Design)	WS
M 2.19	Informationstheorie und Codierung / Information Theory and Coding Exercise	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 2.20	Channel Coding Exercise	ChCo	3+1+0+0	5	0	5	0	0	EN	gCA	EEI	Lehrstuhl für Informationsübertragung (LIT)	SS
M 2.22	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 2.23	Applied Visualization Exercise	AppVis	2+2+0+0	5	0	5	0	0	EN	gCA	INF	Lehrstuhl für Informatik 9 (Graphische Datenverarbeitung)	SS
M 2.24	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 2.26	Dependable Embedded Systems **Currently not offered!** Exercise	DES	2+2+0+0	5	5	0	0	0	EN	gCA	INF	Lehrstuhl für Informatik 12 (Hardware-Software-Co-Design)	WS
M 2.27	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 2.28	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 2.29	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 2.32	Heterogene Rechnerarchitekturen Online	HETRON	4+0+0+0	5	VHB (online)				EN	gCA	VHB	Virtuelle Hochschule Bayern (VHB)	WS/SS
M 2.35	Deep Learning [4] Exercise	DL	2+2+0+0	5	5	0	0	0	EN	gCA	INF	Lehrstuhl für Informatik 5 (Mustererkennung)	WS/SS

M 2.36	Sprach- und Audiosignalverarbeitung / Speech and Audio Signal Processing Exercise	SAV	3+1+0+0	5	0	5	0	0	EN	gCA	EEI	Lehrstuhl für Multimediakommunikation und Signalverarbeitung (LMS)	SS
M 2.37	Maschinelles Lernen für Zeitreihen / Machine Learning for Time Series Exercise	MLTS	2+2+0+0	5	5	0	0	0	EN	gCA	INF	Lehrstuhl für Informatik 14 (Maschinelles Lernen und Datenanalytik)	WS

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

[2] Very profound knowledge of mathematics required.

[3] Yearly change between German and English.

[4] In 2018 this Module is also offerd in SS, usually it is just offerd in WS.

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	4+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	Magnetic Resonance Imaging 2	MRI2	2+0+0+0	2,5	0	2,5	0	0	DE/EN	gCA	INF	Lehrstuhl für Informatik 5 (Mustererkennung)	SS
M 3.8	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 3.9	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 3.11	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 3.12	Wearable and Implantable Computing Exercise	WIC	2+2+0+0	5	0	5	0	0	EN	gCA	MED	Lehrstuhl für eHealt/mHealth	SS

M 4	**Advanced Seminar Medical Engineering**		**L+E+S+P**	**5**	**0**	**0**	**5**	**0**					
	Seminar Medical Engineering		0+0+2+0	5			5		EN	SA		see Seminar Catalogue	WS/SS

M 5	**Medical Engineering Specialisation Modules**		**L+E+S+P**	**10**	**0**	**5**	**5**	**0**					
M 5.6	Test and Analysis Techniques for Software Verification and Validation Exercise	TestAn-SWE	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 Exercise	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 Exercise	MolCom	3+1+0+0	5	0	0	5	0	EN	gCA	EEI	Lehrstuhl für Digitale Übertragung	WS
M 5.26 MEL[6]	Architekturen der digitalen Signalverarbeitung / Architectures for Digital Signal Processing Exercise	ADS	2+2+0+0	5	0	0	5	0	EN	gCA	EEI	Lehrstuhl für Technische Elektronik (LTE)	WS

[6] Modules from the branches of study "Medical Devices, Manufacturing Engineering and Prosthetics" (GPP) and "Medical Electronics" (MEL): only a maximum of 5 ECTS of these modules can be used.

M 6	**Medical Engineering Practical Modules**			**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 14 (Maschinelles Lernen und Datenanalytik)	WS/SS

M 7	**Flexible Budget Faculty of Engineering**			**10**	**0**	**0**	**10**	**0**					
	Flexible Budget Faculty of Engineering any **graded** lecture / course at the Faculty of Engineering			10	0	0	10	0		gCA		only graded modules of the Faculty of Engineering on Master's level (no conditional subjects)	

M 8	**Free Choice Uni**			**5**	**5**	**0**	**0**	**0**					
	Free Choice Uni any **graded** lecture / course at the university			5	5	0	0	0		gCA		graded modules of all Faculties	

M 9	**Master's Thesis**			**30**	**0**	**0**	**0**	**30**					
M 9.1	Master's Thesis			27,5	0	0	0	27,5		PfE			
M 9.2	Advanced Seminar Master's Thesis			2,5	0	0	0	2,5					

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

Please note that the modules in your module group M5 marked with "MEL" or "GPP" are English-taught modules, which belong to the branches of study "Medical Electronics" and "Medical Production

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
SA Seminar Achievement (usually a presentation and written report)
w written
o oral
online online (Virtual University Bavaria, www.vhb.org)

10.2 Seminar Catalogue Bachelor and Master´s Programme Medical Engineering

Bachelor- und Masterstudiengang Medizintechnik / Bachelor and Master Program Medical Engineering - FPO 2018
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-Konferenzseminar[1]	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 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 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
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 Hauptseminar Fertigungsautomatisierung und Produktionssystematik	SEM FAPS	2,5	DE	MB	Lehrstuhl für Fertigungsautomatisierung und Produktionssystematik (FAPS)	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 for Clinical Navigation using Smart Devices[2]	AdvancedMI	5	EN	ZiMT	Zentralinstitut für Medizintechnik (ZiMT)	WS/SS
Advanced Context Recognition[3]	ACR	5	EN	MED	Lehrstuhl für Digital Health	WS/SS
Iron Man Suit[3]	IMS	5	EN	MED	Lehrstuhl für Digital Health	WS/SS

[1] Im WS für Bachelorstudierende, im SS für Masterstudierende angeboten

[2] Nur für Masterstudierende empfohlen / recommended for Master students only

3 Nur für Masterstudierende / only for Master students

*** Wenn Sie im Rahmen des Seminars Medizintechnik ein Projekt bearbeiten, dessen Umfang über den ECTS-Wert des Moduls hinausgeht, können die restlichen ECTS im Bachelor Medizintechnik im Wahlvertiefungsbereich B8 oder im Master Medizintechnik im Modul "Hochschulpraktikum" eingebracht werden. Hierfür muss der Dozent einen zweiten Schein mit dem Seminartitel und dem Vermerk "Zusatzleistung" ausstellen.**

*** If you work on a project in the framework of the Seminar Medical Engineering which exceeds the ECTS-workload of the module you can use to use the additional ECTS in the module group Academic Laboratory. In order to do so, your professor must issue a second certificate including the title of the seminar and the note "Zusatzleistung" (additional achievement).**

BESCHLUSS Stuko – 10.07.2018

Regulations on leave from studies at Friedrich-Alexander Universität Erlangen-Nürnberg

1. General information

   (1) According to Section 48 (2) to (4) of the BayHSchG (Bavarian Higher Education Act), students may be granted leave from their studies upon request due to an important reason. The period of leave therefore applies to the future and must be requested before the start of the lecture period. If the reason for leave arises after the start of the lecture period, leave may still be granted in certain circumstances (see 5). Leave may not be be taken in the first subject semester or during doctoral studies other than for the purpose of maternity leave, paternity leave or to care for a relative. Leave cannot be granted retrospectively for semesters which have already ended. The reasons for taking leave must be presented in writing and suitable documents must be provided as proof. The period of leave should generally be no longer than two semesters; this does not apply to periods of maternity leave or paternity leave or periods spend caring for a relative according to Section 48 (4) of BayHSchG.

   (2) More detailed regulations on leave are given in Sections 9 to 10 of Friedrich-Alexander-Universität Erlangen-Nürnberg's agreement on enrolment, re-registration, leave and de-registration dated 28 November 2006, which is available at http://www.fau.de/universitaet/rechtsgrundlagen/regelungen-zum-studium/ (German only). Leave is generally granted for one semester; you must therefore re-register at the beginning of the following semester.

2. Consequences of leave

   (1) During a semester of leave, no course or examination achievements may be obtained; a semester of leave therefore does not count as a subject semester.
   Some examination regulations also prohibit registration for examinations which take place during the following semester. However, it is possible, and usually mandatory according to the examination regulations, to resit failed examinations, because the deadline by which the resit examination must be taken is not postponed by leave or by de-registration. Postponed examinations which are taken at a later date – for example, due to approved withdrawal from the examination – are not included in the exception regarding resit examinations; it is therefore not possible to take a postponed examination during a semester of leave. If a student is on leave due for

maternity leave or paternity leave or for the purpose of caring for a relative, the above regulations on course and examination achievements do not apply and course and examination achievements may be obtained during this time.

(2) Student's rights and obligations remain otherwise unaffected; they are still members of the University and therefore have the right to use its facilities and to vote. Benefits usually remain unaffected, although it is possible that they may be withdrawn depending on the reason for leave. In particular, in the case of child allowance, the authority responsible assesses cases individually.

3. Reasons for leave

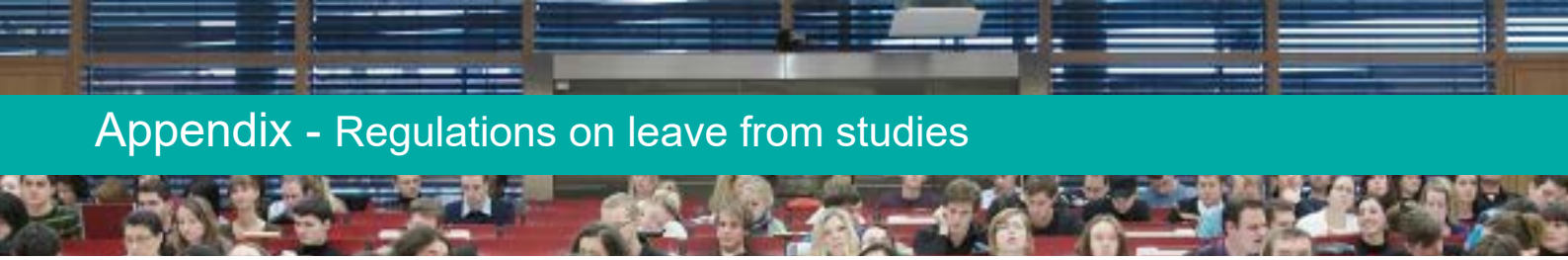
(1) The following are considered important reasons for leave:

a) Severe illness
b) Placement/internship/residence abroad as a language assistant
c) Studying abroad
d) Pregnancy/parental leave
e) Co-operative degree programme
f) Caring for a close relative
g) Other reasons

(2) Applications for leave due to an illness which prevents proper study must be submitted with a doctor's certificate. Leave may be granted for more than two semesters in serious cases. If a student is permanently unable to study, an interruption of studies according to Section 9 (3) of the enrolment regulations should be considered. In such cases, the University approves an interruption of studies (de-registration) for a longer period and guarantees that the student may re-enrol later once they are able to study again.

(3) Leave may be granted due to one of the forms of employment given above if at least seven weeks during the lecture period are required for this purpose. Leave may only be granted for a placement/internship once.

(4) If a student wishes to complete a work placement/internship which is **not** required according to the degree programme and examination regulations (voluntary placement/internship) and which will take up at least seven weeks of time during the lecture period, leave shall be granted for a continuous placement/internship upon request.

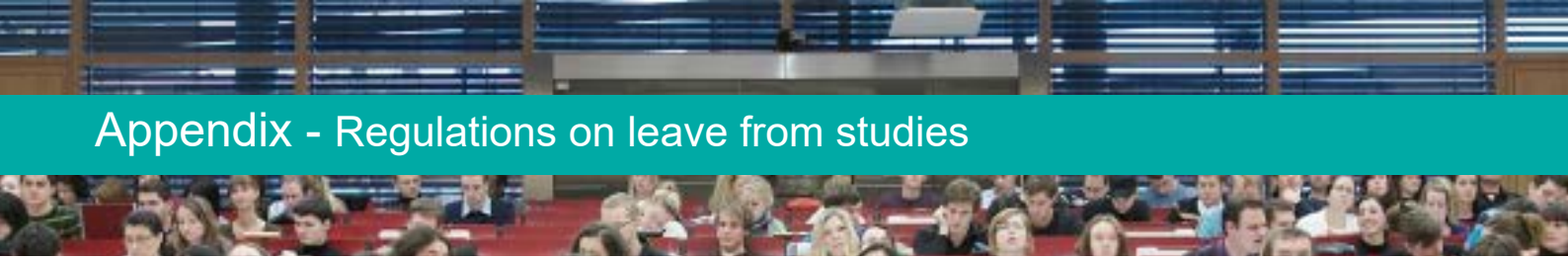


(5) Students studying a teaching degree (Lehramt) with one or more modern foreign languages as their school subject may request leave for a period spent abroad as a language assistant. Language assistantships usually last one year.

(6) If requesting leave in order to study abroad, which is usually granted for a maximum of two semesters, the certificate of enrolment at the host university must be submitted with the request. For questions about accreditation of course and examination achievements obtained while studying abroad, please contact the relevant Examinations Office. According to the examination regulations, a sufficient amount of accredited credits are required in order for a subject semester to be accredited (to progress to a higher subject semester). This does not affect the status of your leave according to the enrolment regulations.

(7) During pregnancy and parental leave, according to the Mutterschutzgesetz (Maternity Protection Act) and BEEG (Law on Parental Allowance and Parental Leave), leave from studies shall be granted upon request and shall not count towards the total amount of leave permitted for other reasons. Leave for pregnancy is generally limited to one semester. Leave may be granted to mothers and fathers up until the child's fourth birthday (or up until the children's sixth birthday in the case of twins). It is also possible for both parents to take leave at the same time. 24 months (4 semesters) of this parental leave may be postponed until a later date and taken up until the child's ninth birthday. In deviation from the rules which otherwise apply, leave may be granted for maternity leave or paternity leave during the first semester upon request.
Also in deviation from the rules which otherwise apply, according to Section 48 (4) of the BayHSchG, course and examination achievements may be obtained during periods of parental leave. The deadlines for taking examinations do not apply during leave.

(8) There are 3 possible versions of co-operative degree programmes. Version 1 begins with a one-year training block at the company; during this time the student is also enrolled at FAU and is granted leave for this period. In version 2 the one-year training block is in the second year of the programme; the student is granted leave for this period. In version 3 the students does not require leave as they complete their training at the company outside the lecture period.



(9) Leave for the purpose of caring for a relative

Students who care for relatives in the sense of Section 7 (3) and (4) of the PflegeZG (Caregiver Leave Act) are granted leave. Confirmation of the level of care according to

Section 15 (1) of SGB 11 (German Federal Law Gazette 11) is required. Also in deviation from the rules which otherwise apply, according to Section 48 (4) of the BayHSchG, course and examination achievements may be obtained during periods of leave for the purpose of caring for a relative. The deadlines for taking examinations do not apply during leave.

(10) Leave for other reasons

Other than for the reasons given above, leave shall only be granted after a strict assessment of the individual case. Reasons which may be considered include exceptional strain due to caring for a close relative or caring for children.

Requests for leave due to financial or economic reasons, in particular employment, or in order to complete Bachelor's or Master's theses or research papers will **not** be considered. Similarly, preparation for State Examinations is also not a valid reason for leave.

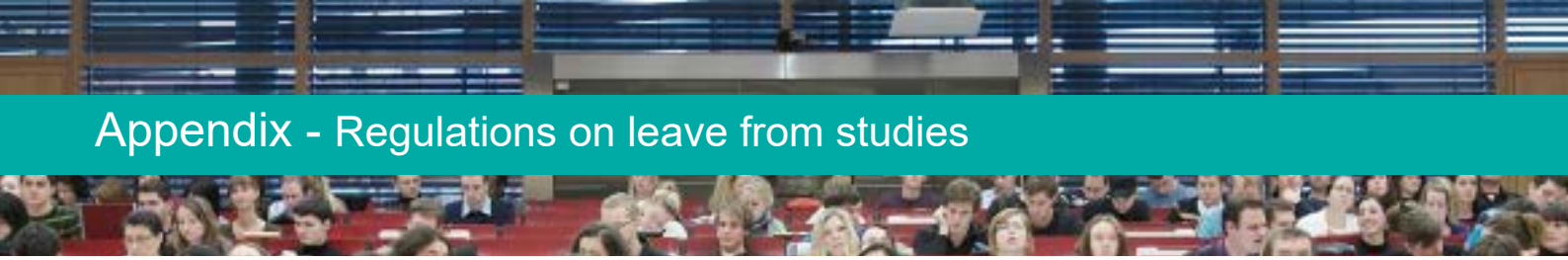
4. Duration of leave

In general, the duration of leave – including leave for multiple reasons – is limited to a total of two semesters. Periods of maternity and paternity leave and periods spent caring for a relative are not counted. However, in the case of severe illness or other serious reasons, leave may be granted for more than two semesters. For study abroad or periods spent abroad as a language assistant, the duration of two semesters may not be exceeded. Leave for a work placement/internship is limited to one semester. In addition, semesters of leave must be requested in time and the duration of leave must be within the standard duration of studies. Leave shall only be granted outside of the standard duration of studies in exceptional cases.

5. Procedure for requesting leave

If the reason for leave is foreseeable, leave must be requested before re-registration. If you request leave for two semesters at the same time, such as for study abroad, this will be noted. In this case, you must still re-register by the set re-registration deadline by transferring your semester fees.

If the reason for leave does not arise until after re-registration, you can still usually request leave before the start of the lecture period. In this case, it is also possible to



request leave for the following semester at the same time if the reason for leave continues and there is no cause for leave to be denied.

You may also request leave in the case of an unforeseen reason for leave which first arises during the lecture period, although you must do this no later than two months after the start of the lecture period. It is not possible for leave to be granted after this time.

Leave for the following semester should be handled as described in the paragraph above.

To request leave, please use the form available at http://www.fau.de/studium/im-studium/die-studierendenverwaltung-der-fau/. Please then send the required documents by post to the Student Records Office.

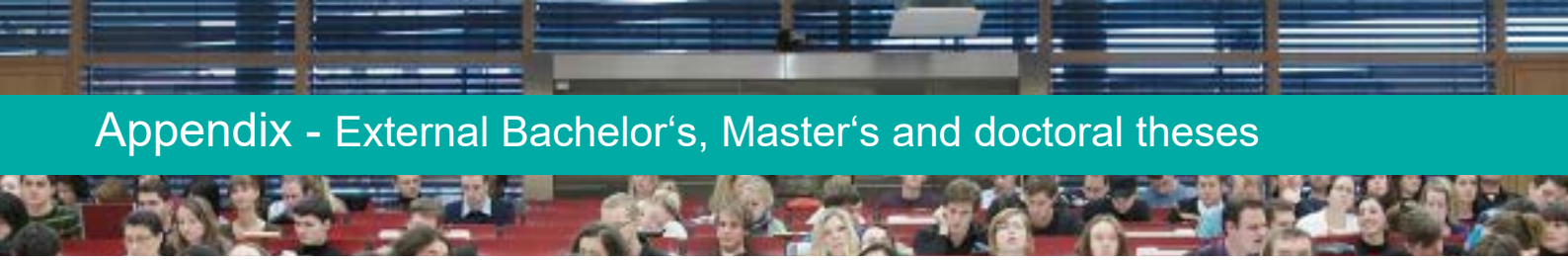
Version: June 2016

10.4 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

Table of contents



Appendix - External Bachelor‘s, Master‘s and doctoral theses

Introductory remarks

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

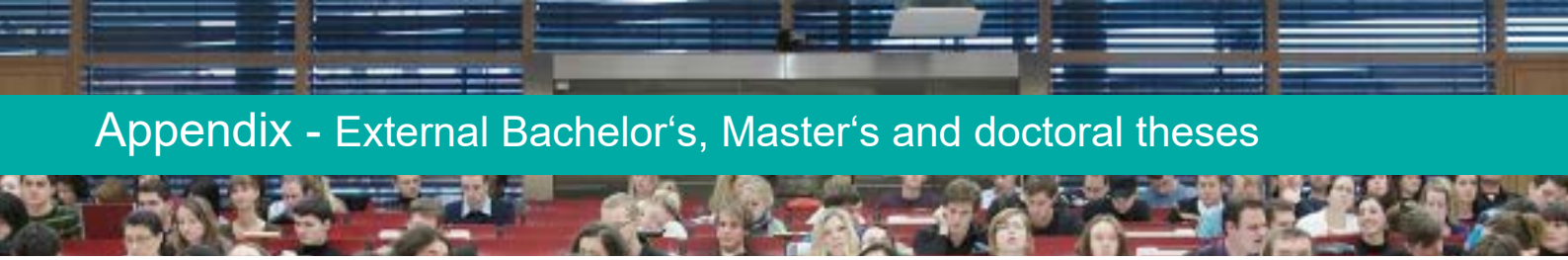
One of the reasons behind these application-orientated partnerships is that companies are interested in contributing to students' academic training while students wish to take advantage of the opportunity to gain valuable experience by working on issues arising from practice and in a practical setting 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, lecturers acting as 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 theses according to the examination regulations.



Appendix - External Bachelor‘s, Master‘s and doctoral theses

A. General principles

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

1. Supervision by a university lecturer

a) Bachelor's and Master's theses

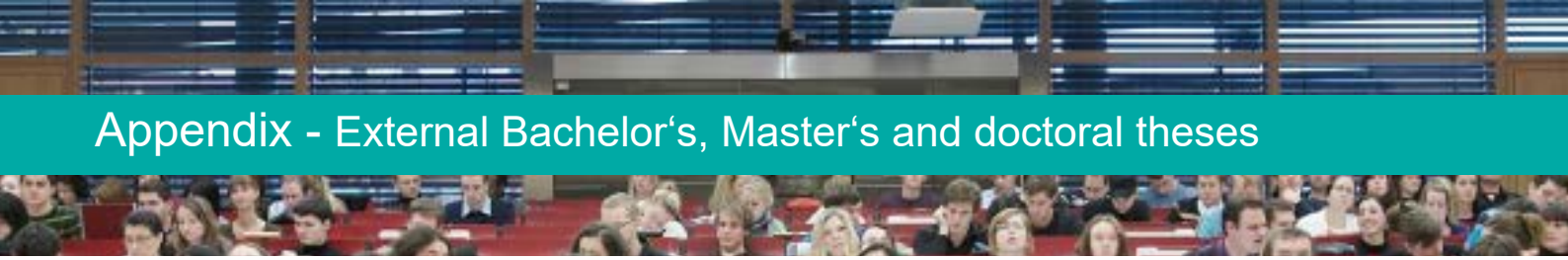
The thesis must be completed under the **supervision of an FAU lecturer**. In certain cases the **examination regulations** may permit the topic of the thesis to be suggested by a third party – a company in this case. In such cases it must be ensured that the candidate is supervised by a suitable person 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) Doctoral theses

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 examiner at FAU before submission and, in particular, that they are completed with continuous supervision.

[3] Please see: https://www.fau.de/graduiertenzentrum/promotion/promotionsordnungen/.
[4] In addition, the specific provisions for doctoral degrees completed in co-operation with other universities in Germany or abroad and joint doctoral degrees must be adhered to (see Sections 18 and 19 of the General Doctoral Regulations).



2. Timeline for completion

a) Bachelor's and Master's theses

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

b) Doctoral theses

Unlike Bachelor's and Master's theses, doctoral theses **do not have to be completed within a set period**. If completion is delayed unreasonably, however, the candidate may no longer be entitled to supervision and lose the right to submit a thesis.

3. Allocation of topics

a) Bachelor's and Master's theses

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. 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.

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.

b) Doctoral theses

Neither a company nor any other external institution or person may be given the right to influence the topic or content of the doctoral thesis. In accordance with the examination regulations, suggestions of this kind are **non-binding suggestions** for the FAU supervisor or the doctoral candidate.

4. Inspection of examination papers, confidentiality and publication

a) Bachelor's and Master's theses

In accordance with the examination regulations, only candidates themselves have 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.

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. Supervisors are permitted to sign a confidentiality agreement if so required by a company, but there is no real need for this, as supervisors are already subject to confidentiality obligations under their employment contract and public service law.

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.

b) Doctoral theses

Only the doctoral candidates themselves have a right to **inspect** examination documentation.

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 (e.g. **confidentiality agreements**) 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:

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.

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.

C. Important information for FAU supervisors

1. No remuneration for supervising the thesis

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 university employees to take on supervision as a form of secondary employment
- 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.

2. Thesis as part of a research and development contract

It is permitted for the thesis to be completed within the framework and context of a research and development contract. The **research and development contract** must be executed by FAU staff. The Bachelor’s or Master’s candidate must be employed as a student assistant or as a research assistant in order to be able to transfer the results of the work they have conducted according to instructions (but only this!) from FAU to the company. Student assistants and research assistants are subject to the same obligations as research associates in this respect. These staff must also sign an employment contract with FAU in order to be able to transfer the results of their work to the company.

No extra remuneration may be calculated or demanded for completing/supervising the **thesis**. The thesis as such may not be transferred by FAU to the company, as FAU does not obtain any rights of use or exploitation rights to the thesis, see D.2.a) below.

D. Ownership, copyright, rules for good academic practice, inventions

1. Property rights to the (physical) 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. Intellectual property rights (copyright)

a) Theses – including software used and the presentation of academic and technical content – are considered written **works under the German Copyright Act (Urheberrechtsgesetz)**.

Copyright and the resulting **exploitation rights and rights of use** belong **solely** to the candidate as the author of the thesis. Third parties (such as a company) may only obtain rights of use if the author grants them such rights independently on the basis of a contract. FAU, the supervisor and the examiner cannot acquire rights of use, as the thesis is an achievement governed by examination regulations. The results are the sole property of the examinee and the university and its examiners are obliged to treat them as confidential. Higher education law does not allow for rights to be assigned to the institute conducting the examination. Taking the examination situation in account, and the fact that the candidate is dependent on

the structures within the university, it would scarcely be possible for the candidate to assign rights at their own free will.

C2 shall apply if a research and development contract stipulates that results of the thesis are to be transferred to a company.

b) As the holder of the copyright, candidates decide themselves whether to publish the results of the thesis or not. For example, they may grant their **consent to having the thesis published in the chair’s library**. After the thesis has been published with the author’s consent, the knowledge it contains is freely available and the thesis may be cited to an extent compatible with the purpose (Section 51 UrhG).

c) The **FAU guidelines for safeguarding good academic practice** dated 13 May 2002 state, irrespective of copyright regulations, that:

- Research findings and ideas from other researchers and relevant publications can be cited in a suitable manner [(4) (1)].
- If the manuscript cites or uses unpublished research achievements from other people, their consent should be sought, subject to any other recognised practices common in that particular field [(4)(4)].

3. Supervisor as co-author?

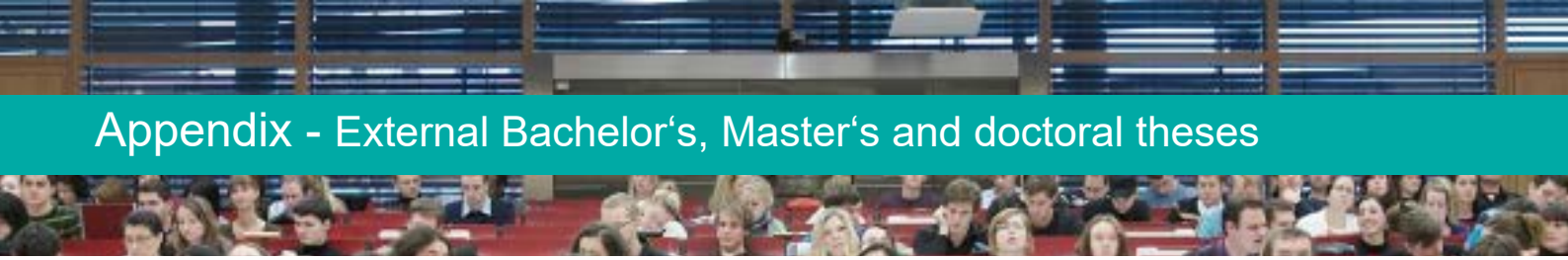
a) The supervisor may of course provide **support** in the way of suggestions, ideas, criticism etc. This does not lead to any particular status being obtatined under copyright law and is permissible under examination regulations.

b) Any contributions going significantly beyond this would be **contrary to the purpose of the examination**. The supervisor may **not** act as a **co-author**, for example by writing **parts** of the thesis or making **significant contributions** during preparation work for the thesis. The copyright for any preparation work for a thesis belongs to the author of the preparation work.

4. Inventions

If a thesis describes an invention, it may be worth **applying for protection by patent**. Please note that patent protection can only be granted if the invention is not yet 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). The supervisor is obliged to report any invention to the employer, FAU. If the invention in question has been invented together with the



candidate, the supervisor should inform the candidate in good time before filing the application that the candidate may be entitled to a (joint) right 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 Silke Bergmann (Regierungsrätin) Phone: 09131 8526476 silke.bergmann@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 training programmes	Ms Sybille Barth Phone: 09131 8525870 sybille.barth@fau.de

Status: July 2018

10.5 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 C1
- *ondaf*-Zertifikat with a level C1 result
- Goethe-Zertifikat with a level B2 and further German language skills
- *ondaf*-Zertifikat with a level B2 result and further German skills

Since 2015 the DSH certificates acquired at FAU Erlangen-Nürnberg are for technical reasons issued a month after the exam. However, it is possible to enrol at FAU since the results are directly communicated to the Student Records Office.

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).
- Goethe certificate level C2: exam *Großes Deutsches Sprachdiplom* (GDS) (must have achieved at least 60 points in the categories comprehension, Writing and Speaking; since January 1, 2012)
- German section of the assessment test of a German preparatory education institution (*Feststellungsprüfung at Studienkolleg*). This test is a verification of proficient German language skills for all study programmes.

- 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!

10.6 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. Certified copies can be made by certain authorised public authorities in Germany, 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/

10.7 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

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:	**mmmmmmmmm**	Forename(s):	**nnnnnnnnn**
Date of birth:	**999999999**	Gender:	female
Place of birth:	Wertingen		
Begin of studies:	October 01, 2013	Student ID:	**357159682**

Medical Engineering

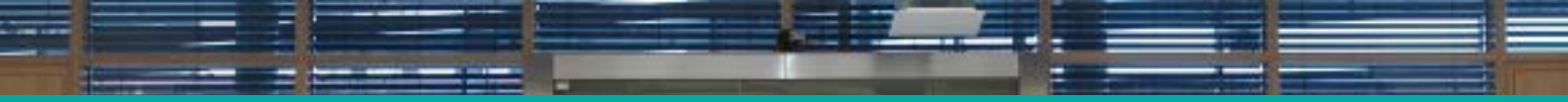
	Title of module	Examination term*	Mark**	ECTS credits
MSC 74102	**Ungraded Coursework Achievement: Medical Device Legislation** Safety and Law in Medical Engneering	**WTerm 12/13**	**P**	**2.5**
20201	**Examination (5 ECTS)** Spanish: Elementary Course I	**WTerm 12/13**	**1,0**	**5**
TEC 45501	**Finite Element Methods**	**STerm 13**	**1,0**	**5**
383362	**Biomechanics of motion**	**WTerm 13/14**	**1,3**	**5**
746365	**Ceramical Materials in Medicine**	**WTerm 13/14**	**1,7**	**2.5**
MSC 74103	**Economy and Innovation** Grundlagen gesundheitsökonomischer Evaluationen	**WTerm 13/14**	**P**	**2.5**
TEC 23901	**Photonics 1**	**WTerm 13/14**	**1,7**	**5**
30270	**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 52601	**Polymer Processing**	**STerm 14**	**1,0**	**2.5**
MSC 74201	**Ungraded Coursework Achievement: Additional Focus on Medical Technology**	**STerm 14**	**P**	**2.5**
MSC 76501	**Photonics for Medical Applications**	**STerm 14**	**1,0**	**5**
656231	**Composites and nanomaterials in Medical Technology**	**STerm 14**	**1,0**	**2.5**
TEC 72501	**Lecture/Tutorial: Integrated Product Development**	**STerm 14**	**1,0**	**5**
745618	**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
641 1700 Specialisation Medicine			
641 1701 Specialisation Modules Medicine	**WTerm 14/15**	**1,0**	**10**
641 17003 Specialisation Modules :Medicine Eye diagnosis	WTerm 14/15	1,0	2.5
641 17003 Specialisation Modules :Medicine Augenbeteiligung bei Allgemeinkrankheiten	WTerm 14/15	1,0	2.5
641 17003 Specialisation Modules :Medicine Eye surgeries	WTerm 14/15	1,0	2.5
641 17003 Specialisation Modules :Medicine Sehnervmorphologie und Echographie in der Augenheilkunde	WTerm 14/15	1,0	2.5
MSC 76402 Examination Achievement: Metallic Materials in Medical Technology	**WTerm 14/15**	**2,0**	**2.5**
MSC 74202 Ungraded Coursework Achievement: Additional Focus on Medical Technology Medical Devices of the Future	**WTerm 14/15**	**1,0**	**2.5**
641 1850 Practical Skills Mecical Technology	**STerm 15**	**P**	**10**
641 18501 Laboratory Material Testing for Mechanical Engineering	STerm 14	P	2.5
641 18503 Research Internship	WTerm 14/15	P	5
641 18501 Laboratory Process Simulation	WTerm 14/15	P	2.5
TEC 71101 Lecture: Technical Product Design	**STerm 15**	**1,0**	**5**
641 1999 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**
30271 Spanish: Elementary Course III	**WTerm 14/15**	**2,0**	**5**
41506 Nature, Technology and Medicine Fundamentals of Disease Detection	**WTerm 13/14**	**2,0**	**5**
41506 Nature, Technology and Medicine Audiology and Hearing Aid	**WTerm 14/15**	**2,0**	**5**
TEC 71901 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

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

Zeugnis über die Masterprüfung im Studiengang Medizintechnik
von

Friedrich-Alexander-Universität Erlangen-Nürnberg
Technische Fakultät

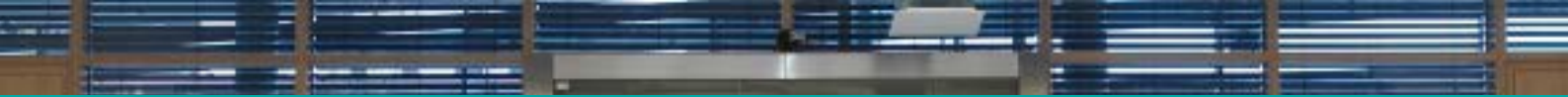
Prüfungszeugnis

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
Sehnervmorphologie 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



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

Prof. Dr. Andreas Wierschem

Erlangen, den 1. Dezember 2015

* = 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.

Appendix - Diploma Supplement

Diploma Supplement

This Diploma Supplement model was developed by the European Commission, Council of Europe and UNESCO/CEPES. The purpose of the supplement is to provide sufficient independent data to improve the international 'transparency' and fair academic and professional recognition of qualifications (diplomas, degrees, certificates etc.). It is designed to provide a description of the nature, level, context, content and status of the studies that were pursued and successfully completed by the individual named on the original qualification to which this supplement is appended. It should be free from any value judgements, equivalence statements or suggestions about recognition. Information in all eight sections should be provided. Where information is not provided, an explanation should give the reason why.
.

1. HOLDER OF THE QUALIFICATION

1.1 Family Name, First Name
<Nachname>, <Vorname>

1.2 Date, Place, Country of Birth
<Geburtsdatum>, <Geburtsort>, <Geburtsland>

1.3 Student ID Number or Code
<Matrikelnummer>

2. QUALIFICATION

2.1 Name of Qualification
(full, abbreviated; in orginal language)
Please select the type of degree programme.

Title Conferred
(full, abbreviated; in orginal language)
see above

2.2 Main Field(s) of Study
Please enter the name of the degree programme.

2.3 Institution Awarding the Qualification
(in orginal language)
Friedrich-Alexander-Universität Erlangen-Nürnberg

Status (Type / Control)
University / Free State of Bavaria

2.4 Institution Administering Studies
(in orginal language)
Friedrich-Alexander-Universität Erlangen-Nürnberg
Please select Faculty.

Status (Type / Control)
University / Free State of Bavaria

2.5 Language(s) of Instruction / Examination
e. g. German / English / ...

3. LEVEL OF THE QUALIFICATION

3.1 Level
Please select the level of qualification.

3.2 Official Length of the Programme
Please select the standard duration of study.
Please select the number of ECTS credits awarded.

3.3 Access Requirements
[For Bachelor's degree programmes, teaching degree programmes and State Examinations] University entrance qualification and other requirements for the degree programme according to the examination regulations.
[For Master's degree programmes] First degree programme or equivalent and passing the qualification assessment process according to the examination regulations and other relevant regulations.
[Master's degree programmes for prof. development] First degree programme or equivalent and passing the qualification assessment process according to the examination regulations and other relevant regulations in addition to X years of relevant employment.

4. CONTENTS AND RESULTS GAINED

4.1 Mode of Study
Please select the mode of study.

4.2 Programme Requirements / Qualification Profile of the Graduate
[Description of the competencies gained in the degree programme, up to 3,000 characters. The entire length of the Diploma Supplement must be no longer than four pages.]

4.3 Programme Details
view Transcript of Records

4.4 Grading Scheme
[Entries as in Transcript of Records/Final academic record; see description in the examination regulations]

4.5 Overall Classification (in orginal language)
<Note> (<Notentext>)

Appendix - Diploma Supplement

5. FUNCTION OF THE QUALIFICATION

5.1 Access to Further Study

[For Bachelor's degree programmes:] Qualifies the graduate to apply for a Master's degree programme. [For Master's degree programmes:] Qualifies the graduate to apply for a doctoral degree.

5.2 Professional Status

[Example:] This Bachelor's degree entitles the graduate to use the academic degree "Bachelor of Arts" and qualifies them to work in the fields of ... or ... . OR [Example:] This Master's degree entitles the graduate to use the academic degree "Master of Science" and qualifies them to work in the fields of ... or ... .

6. ADDITIONAL INFORMATION

6.1 Additional Information

This degree programme is accredited.

6.2 Further Information Sources

About the University: www.fau.eu

7. CERTIFICATION

This Diploma Supplement refers to the following original documents:

Urkunde über die Verleihung des <Abschluss>grades vom <Datum>

Prüfungszeugnis vom <Datum>

Transcript of Records vom <Datum>

Certification Date: <Ausstellungsdatum>

Official Stamp

<Name>
Chairperson Examination Committee

8. NATIONAL HIGHER EDUCATION SYSTEM

The information on the national higher education system on the following pages provides a context for the qualification and the type of higher education that awarded it.

8. INFORMATION ON THE GERMAN HIGHER EDUCATION SYSTEM[1]

8.4 Types of Institutions and Institutional Status

Higher education (HE) studies in Germany are offered at three types of Higher Education Institutions (HEI).[2]

- *Universitäten* (Universities) including various specialized institutions, offer the whole range of academic disciplines. In the German tradition, universities focus in particular on basic research so that advanced stages of study have mainly theoretical orientation and research-oriented components.

- *Fachhochschulen* (Universities of Applied Sciences) concentrate their study programmes in engineering and other technical disciplines, business-related studies, social work, and design areas. The common mission of applied research and development implies an application-oriented focus of studies, which includes integrated and supervised work assignments in industry, enterprises or other relevant institutions.

- *Kunst- und Musikhochschulen* (Universities of Art/Music) offer studies for artistic careers in fine arts, performing arts and music; in such fields as directing, production, writing in theatre, film, and other media; and in a variety of design areas, architecture, media and communication.

Higher Education Institutions are either state or state-recognized institutions. In their operations, including the organization of studies and the designation and award of degrees, they are both subject to higher education legislation.

8.5 Types of Programmes and Degrees Awarded

Studies in all three types of institutions have traditionally been offered in integrated "long" (one-tier) programmes leading to *Diplom-* or *Magister Artium* degrees or completed by a *Staatsprüfung* (State Examination).

Within the framework of the Bologna-Process, one-tier study programmes are successively being replaced by a two-tier study system. Since 1998, two-tier degrees (Bachelor and Master) have been introduced in almost all study programmes. This change is designed to provide enlarged variety and flexibility to students in planning and pursuing educational objectives, they also enhance international compatibility of studies.

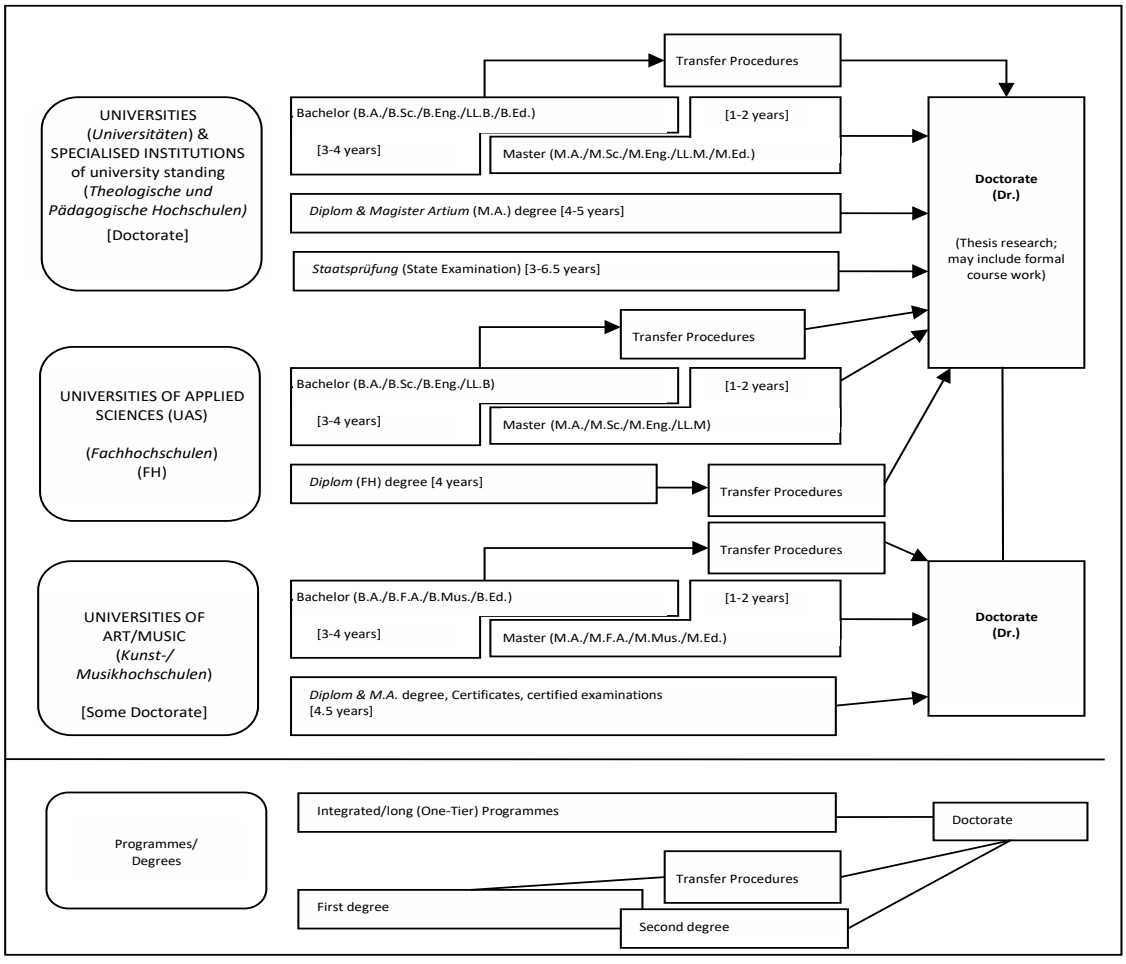
The German Qualifications Framework for Higher Education Degrees[3], the German Qualifications Framework for Lifelong Learning[4] and the European Qualifications Framework for Lifelong Learning[5] describe the degrees of the German Higher Education System. They contain the classification of the qualification levels as well as the resulting qualifications and competencies of the graduates.

For details cf. Sec. 8.4.1, 8.4.2, and 8.4.3 respectively. Table 1 provides a synoptic summary.

8.6 Approval/Accreditation of Programmes and Degrees

To ensure quality and comparability of qualifications, the organization of studies and general degree requirements have to conform to principles and regulations established by the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* in the Federal Republic of Germany (KMK).[6] In 1999, a system of accreditation for programmes of study has become operational under the control of an Accreditation Council at national level. All new programmes have to be accredited under this scheme; after a successful accreditation they receive the quality-label of the Accreditation Council.[7]

Table 1: Institutions, Programmes and Degrees in German Higher Education



Appendix - Diploma Supplement

8.7 Organization and Structure of Studies

The following programmes apply to all three types of institutions. Bachelor's and Master's study courses may be studied consecutively, at various higher education institutions, at different types of higher education institutions and with phases of professional work between the first and the second qualification. The organization of the study programmes makes use of modular components and of the European Credit Transfer and Accumulation System (ECTS) with 30 credits corresponding to one semester.

8.4.1 Bachelor

Bachelor degree study programmes lay the academic foundations, provide methodological skills and lead to qualifications related to the professional field. The Bachelor degree is awarded after 3 to 4 years.
The Bachelor degree programme includes a thesis requirement. Study courses leading to the Bachelor degree must be accredited according to the Law establishing a Foundation for the Accreditation of Study Programmes in Germany.[viii]
First degree programmes (Bachelor) lead to Bachelor of Arts (B.A.), Bachelor of Science (B.Sc.), Bachelor of Engineering (B.Eng.), Bachelor of Laws (LL.B.), Bachelor of Fine Arts (B.F.A.), Bachelor of Music (B.Mus.) or Bachelor of Education (B.Ed.).
The Bachelor degree corresponds to level 6 of the German Qualifications Framework / European Qualifications Framework.

8.7.2 Master

Master is the second degree after another 1 to 2 years. Master study programmes may be differentiated by the profile types "practice-oriented" and "research-oriented". Higher Education Institutions define the profile.
The Master degree study programme includes a thesis requirement. Study programmes leading to the Master degree must be accredited according to the Law establishing a Foundation for the Accreditation of Study Programmes in Germany.[ix]
Second degree programmes (Master) lead to Master of Arts (M.A.), Master of Science (M.Sc.), Master of Engineering (M.Eng.), Master of Laws (L.L.M.), Master of Fine Arts (M.F.A.), Master of Music (M.Mus.) or Master of Education (M.Ed.). Master study programmes which are designed for continuing education may carry other designations (e.g. MBA).
The Master degree corresponds to level 7 of the German Qualifications Framework / European Qualifications Framework.

8.7.3 Integrated "Long" Programmes (One-Tier): *Diplom degrees, Magister Artium, Staatsprüfung*

An integrated study programme is either mono-disciplinary (*Diplom* degrees, most programmes completed by a *Staatsprüfung*) or comprises a combination of either two major or one major and two minor fields (*Magister Artium*). The first stage (1.5 to 2 years) focuses on broad orientations and foundations of the field(s) of study. An Intermediate Examination (*Diplom-Vorprüfung* for *Diplom* degrees; *Zwischenprüfung* or credit requirements for the *Magister Artium*) is prerequisite to enter the second stage of advanced studies and specializations. Degree requirements include submission of a thesis (up to 6 months duration) and comprehensive final written and oral examinations. Similar regulations apply to studies leading to a *Staatsprüfung*. The level of qualification is equivalent to the Master level.

- Integrated studies at *Universitäten (U)* last 4 to 5 years (*Diplom* degree, *Magister Artium*) or 3 to 6.5 years (*Staatsprüfung*). The *Diplom* degree is awarded in engineering disciplines, the natural sciences as well as economics and business. In the humanities, the corresponding degree is usually the *Magister Artium* (M.A.). In the social sciences, the practice varies as a matter of institutional traditions. Studies preparing for the legal, medical and pharmaceutical professions are completed by a *Staatsprüfung*. This applies also to studies preparing for teaching professions of some *Länder*.
The three qualifications (*Diplom*, *Magister Artium* and *Staatsprüfung*) are academically equivalent and correspond to level 7 of the German Qualifications Framework/ European Qualifications Framework.
They qualify to apply for admission to doctoral studies. Further prerequisites for admission may be defined by the Higher Education Institution, cf. Sec. 8.5.

- Integrated studies at *Fachhochschulen (FH)*/Universities of Applied Sciences (UAS) last 4 years and lead to a *Diplom (FH)* degree which corresponds to level 6 of the German Qualifications Framework/ European Qualifications Framework.
While the *FH*/UAS are non-doctorate granting institutions, qualified graduates may apply for admission to doctoral studies at doctorate-granting institutions, cf. Sec. 8.5.

- Studies at *Kunst- and Musikhochschulen* (Universities of Art/Music etc.) are more diverse in their organization, depending on the field and individual objectives. In addition to *Diplom/Magister* degrees, the integrated study programme awards include Certificates and certified examinations for specialized areas and professional purposes.

8.8 Doctorate

Universities as well as specialized institutions of university standing and some Universities of Art/Music are doctorate-granting institutions. Formal prerequisite for admission to doctoral work is a qualified Master (UAS and U), a *Magister* degree, a *Diplom*, a *Staatsprüfung*, or a foreign equivalent. Comparable degrees from universities of art and music can in exceptional cases (study programmes such as music theory, musicology, pedagogy of arts and music, media studies) also formally qualify for doctoral work. Particularly qualified holders of a Bachelor or a *Diplom (FH)* degree may also be admitted to doctoral studies without acquisition of a further degree by means of a procedure to determine their aptitude. The universities respectively the doctorate-granting institutions regulate entry to a doctorate as well as the structure of the procedure to determine aptitude. Admission further requires the acceptance of the Dissertation research project by a professor as a supervisor.
The doctoral degree corresponds to level 8 of the German Qualifications Framework / European Qualifications Framework.

8.9 Grading Scheme

The grading scheme in Germany usually comprises five levels (with numerical equivalents; intermediate grades may be given): "*Sehr Gut*" (1) = Very Good; "*Gut*" (2) = Good; "*Befriedigend*" (3) = Satisfactory; "*Ausreichend*" (4) = Sufficient; "*Nicht ausreichend*" (5) = Non-Sufficient/Fail. The minimum passing grade is "*Ausreichend*" (4). Verbal designations of grades may vary in some cases and for doctoral degrees.
In addition, grade distribution tables as described in the ECTS Users' Guide are used to indicate the relative distribution of grades within a reference group.

8.10 Access to Higher Education

The General Higher Education Entrance Qualification (*Allgemeine Hochschulreife*, *Abitur*) after 12 to 13 years of schooling allows for admission to all higher educational studies. Specialized variants (*Fachgebundende Hochschulreife*) allow for admission at Fachhochschulen (UAS), universities and equivalent higher education institutions, but only in particular disciplines. Access to study programmes at *Fachhochschulen* (UAS) is also possible with a *Fachhochschulreife*, which can usually be acquired after 12 years of schooling. Admission to study programmes at Universities of Art/Music and comparable study programmes at other higher education institutions as well as admission to a study programme in sports may be based on other or additional evidence demonstrating individual aptitude.
Applicants with a vocational qualification but without a school-based higher education entrance qualification are entitled to a general higher education entrance qualification and thus to access to all study programmes, provided they have obtained advanced further training certificates in particular state-regulated vocational fields (e.g. *Meister/Meisterin im Handwerk, Industriemeister/in, Fachwirt/in (IHK und HWK), staatlich geprüfte/r Betriebswirt/in, staatliche geprüfte/r Gestalter/in, staatlich geprüfte/r Erzieher/in*). Vocationally qualified applicants can obtain a *Fachgebundende Hochschulreife* after completing a state-regulated vocational education of at least two years' duration plus professional practice of normally at least three years' duration, after having successfully passed an aptitude test at a higher education institution or other state institution; the aptitude test may be replaced by successfully completed trial studies of at least one year's duration.[x]
Higher Education Institutions may in certain cases apply additional admission procedures.

8.11 National Sources of Information

- *Kultusministerkonferenz (KMK)* [Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* in the Federal Republic of Germany]; Graurheindorfer Str. 157, D-53117 Bonn;
  Fax: +49[0]228/501-777; Phone: +49[0]228/501-0
- Central Office for Foreign Education (ZaB) as German NARIC; www.kmk.org; E-Mail: zab@kmk.org
- German information office of the *Länder* in the EURYDICE Network, providing the national dossier on the education system; www.kmk.org; E-Mail: eurydice@kmk.org
- *Hochschulrektorenkonferenz (HRK)* [German Rectors' Conference]; Ahrstrasse 39, D-53175 Bonn; Fax: +49[0]228/887-110; Phone: +49[0]228/887-0; www.hrk.de; E-Mail: post@hrk.de
- "Higher Education Compass" of the German Rectors' Conference features comprehensive information on institutions, programmes of study, etc. (www.higher-education-compass.de)

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1 The information covers only aspects directly relevant to purposes of the Diploma Supplement. All information as of January 2015.

2 *Berufsakademien* are not considered as Higher Education Institutions, they only exist in some of the *Länder*. They offer educational programmes in close cooperation with private companies. Students receive a formal degree and carry out an apprenticeship at the company. Some *Berufsakademien* offer Bachelor courses which are recognized as an academic degree if they are accredited by a German accreditation agency.

3 German Qualifications Framework for Higher Education Degrees. (Resolution of the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* in the Federal Republic of Germany of 21 April 2005).

4 German Qualifications Framework for Lifelong Learning (DQR). Joint resolution of the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* in the Federal Republic of Germany, the German Federal Ministry of Education and Research, the German Conference of Economics Ministers and the German Federal Ministry of Economics and Technology (Resolution of the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* in the Federal Republic of Germany of 15 November 2012). More information at www.dqr.de

5 Recommendation of the European Parliament and the European Council on the establishment of a European Qualifications Framework for Lifelong Learning of 23 April 2008 (2008/C 111/01 – European Qualifications Framework for Lifelong Learning – EQF).

6 Common structural guidelines of the *Länder* for the accreditation of Bachelor's and Master's study courses (Resolution of the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* in the Federal Republic of Germany of 10.10.2003, as amended on 04.02.2010).

7 "Law establishing a Foundation 'Foundation for the Accreditation of Study Programmes in Germany'", entered into force as from 26 February 2005, GV. NRW. 2005, No. 5, p. 45 in connection with the Declaration of the *Länder* to the Foundation "Foundation: Foundation for the Accreditation of Study Programmes in Germany" (Resolution of the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* in the Federal Republic of Germany of 16 December 2004).

viii See note No. 7.

ix See note No. 7.

x Access to higher education for applicants with a vocational qualification, but without a school-based higher education entrance qualification (Resolution of the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* in the Federal Republic of Germany of 6 March 2009).

Appendix - Grade distribution table

FRIEDRICH-ALEXANDER UNIVERSITÄT ERLANGEN-NÜRNBERG

ECTS-Einstufungstabelle

Grade distribution table

Nachname/*Last name:*
XXXXXX

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

Geburtsdatum/*Date of birth:*
31.Februar 1994
31 February 1994

Geschlecht/*Gender:*
XXXXXX
female

Geburtsort/*Place of birth:*
XXXXX,(Deutschland/*Germany)*

Matrikelnummer/*Student registration number:*
123123123

Studiengang/*Degree programme:*
Medizintechnik
Medical Engineering

Gesamtnote/*Final grade:*
sehr gut (1,0)
very good

Akademischer Grad/*Degree type:*
Master of Science

Referenzzeitraum/*Reference period:*
1. April 2015 bis 31. März 2018
1 April 2015 to 31 March 2018

Zeugnisdatum/*Certificate date:*
29. Juni 2018
29 June 2018

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	9	2.98%	2.98%
1,1	19	6.29%	9.27%
1,2	26	8.61%	17.88%
1,3	36	11.92%	29.8%
1,4	35	11.59%	41.39%
1,5	32	10.6%	51.99%
1,6	37	12.25%	64.24%
1,7	30	9.93%	74.17%
1,8	27	8.94%	83.11%
1,9	7	2.32%	85.43%
2,0	17	5.63%	91.06%
2,1	7	2.32%	93.38%
2,2	8	2.65%	96.03%
2,3	6	1.99%	98.01%
2,4	1	0.33%	98.34%
2,5	1	0.33%	98.68%
2,6	1	0.33%	99.01%
2,7	1	0.33%	99.34%
2,8	0	0%	99.34%
2,9	0	0%	99.34%
Anzahl der Abschlüsse *Number of degrees awarded*	302		

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

Gesamtnote *Final grade*	Anzahl *Number*	(I) *(I)*	(II) *(II)*
1,0	9	2.98%	2.98%
1,1	19	6.29%	9.27%
1,2	26	8.61%	17.88%
1,3	36	11.92%	29.8%
1,4	35	11.59%	41.39%
1,5	32	10.6%	51.99%
1,6	37	12.25%	64.24%
1,7	30	9.93%	74.17%
1,8	27	8.94%	83.11%
1,9	7	2.32%	85.43%
2,0	17	5.63%	91.06%
2,1	7	2.32%	93.38%
2,2	8	2.65%	96.03%
2,3	6	1.99%	98.01%
2,4	1	0.33%	98.34%
2,5	1	0.33%	98.68%
2,6	1	0.33%	99.01%
2,7	1	0.33%	99.34%
2,8	0	0%	99.34%
2,9	0	0%	99.34%
Anzahl der Abschlüsse *Number of degrees awarded*	302		

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Appendix - Grade distribution table

Gesamtnote *Final grade*	Anzahl *Number*	(I) *(I)*	(II) *(II)*
3,0	1	0.33%	99.67%
3,1	1	0.33%	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*	302		

Gesamtnote *Final grade*	Anzahl *Number*	(I) *(I)*	(II) *(II)*
3,0	1	0.33%	99.67%
3,1	1	0.33%	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*	302		

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.

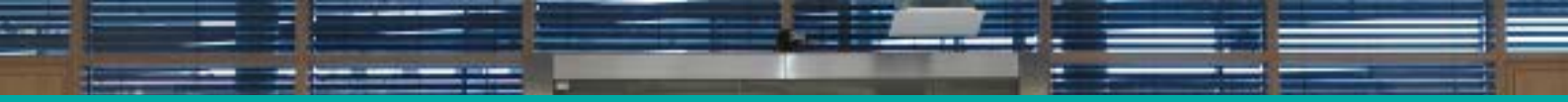
Explanatory notes

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.

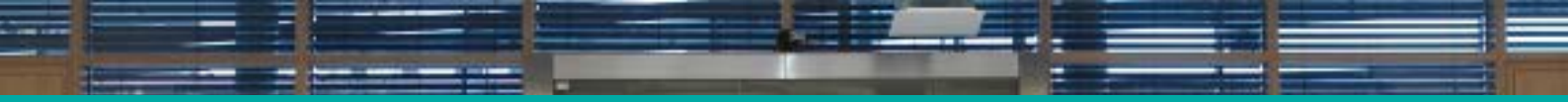
The reference groups are based on the degrees awarded in the student's degree programme and the degrees awarded in the ISCED field. Grade distribution data is calculated from the six semesters prior to the student's graduation semester. The grade distribution table can only be generated with final grade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

Ausstellungsdatum/*Issue date:*
29. Juni 2018
29 June 2018



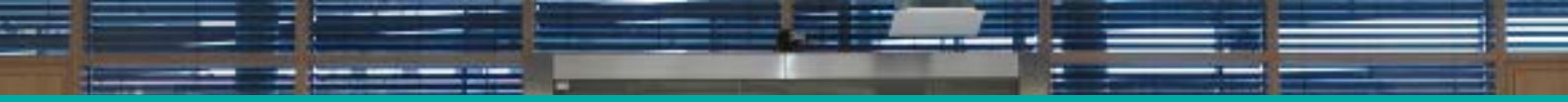
10.8 List of all departments involved in the study programme

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	physiologie1-studentensekretariat@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. Uwe Sonnenwald	uwe.sonnewald@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. Marc Stamminger	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. Dr Bernhard Hensel	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	Egerlandstraße 5, 91058 Erlangen	http://www.ltm.uni-erlangen.de/
Chair of Bioprocess Engineering	Bioreaction and Bioprocess Engineering	Prof. Dr. Kathrin Castiglione	kathrin.castiglione@fau.de	09131 85-23003	Paul-Gordan-Str. 3, 91052 Erlangen	https://www.bvt.tf.fau.de/



Appendix - List of all departments involved in the study programme

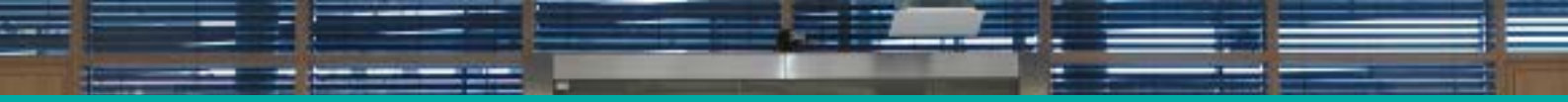
Branch of study Imaging Techniques:						
Institute	Course	Head of institute	Email	Phone number	Address	Website
Chair of Sensor Technology	GET III, Sensor Technology	Prof. Dr.-Ing. Reinhard Lerch	lse-info@fau.de	09131 85-23132	Paul-Gordan-Straße 3/5, 91052 Erlangen	http://lse14.e-technik.uni-erlangen.de/
Chair of Multimedia Communications and Signal Processing	Signals and Systems I/II	Prof. Dr.-Ing. André Kaup	Walburga.summersammer@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	Wetterkreuz 15, 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

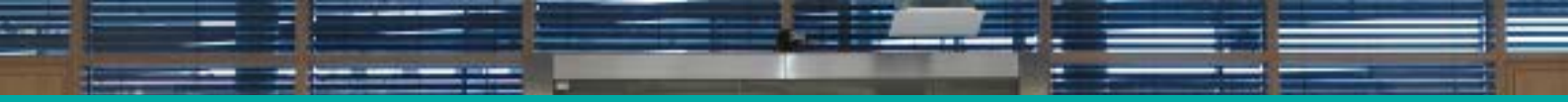
Institute of Engineering Design	TD I	Prof. Dr.-Ing. Sandro Wartzack	wartzack@mfk.fau.de;	09131 85-27986	Martensstraße 9, 91058 Erlangen	http://www.mfk.uni-erlangen.de
Institute I: General Materials Properties	Materials and their structures	Prof. Dr. Mathias Göken	ww1@ww.uni-erlangen.de	09131 8527501	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/



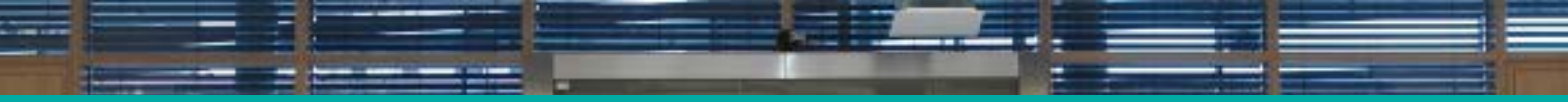
Appendix - List of all departments involved in the study programme

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	christine.kirsch@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. Marc Stamminger	sekretariat@immd9.informatik.uni-erlangen.de	09131 85-29919 09131 85-28990	Cauerstraße 11, 91058 Erlangen	http://lgdv.cs.fau.de/
Department of Computer Science 14 (Machine Learning & Data Analytics)	Prof. Dr. Björn Eskofier	irene.steinheimer@fau.de	09131 85-28990	Immerwahrstr. 2 a, 91058 Erlangen	www.mad.tf.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. Ingo Hahn	ingo.hahn@fau.de	9131 85-27615	Konrad-Zuse-Straße 3-5, 91052 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	sekretariat@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/



Appendix - List of all departments involved in the study programme

Chair of Information Technologies with Focus on Communication Electronics	Prof. Dr-Ing. Albert Heuberger	like.tf@fau.de	09131 85-25100	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/
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/
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/
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
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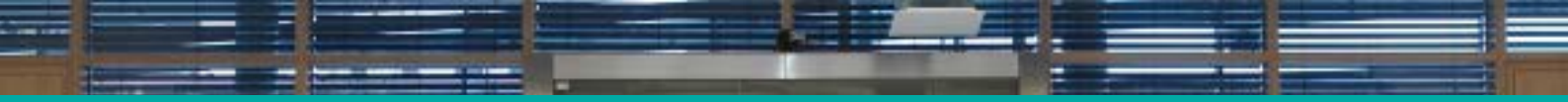
Chair of Manufacturing Metrology	Prof. Dr.-Ing. habil. Tino Hausotte	fmt@fau.de	09131 85-20451	Nägelsbachstraße 25, 91052 Erlangen	http://www.fmt.tf.fau.de/
Institute of Engineering Thermodynamics	Prof. Dr.-Ing. Stefan Will	sec@ltt.uni-erlangen.de	09131 85-29900	Am Weichselgarten 8, 91058 Erlangen	http://www.ltt.uni-erlangen.de/
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/



Appendix - List of all departments involved in the study programme

Chair of Electrical Drives and Machines	Prof. Dr.-Ing. Ingo Hahn	ingo.hahn@fau.de	09131 85-27543	Cauerstraße 9, 91058 Erlangen	http://www.eam.eei.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 85-23003	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/

Appendix - List of all departments involved in the study programme

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/
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
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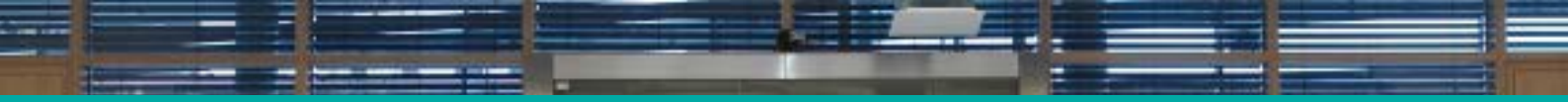
Chair of Computer Science 10 (System Simulation)	Prof. Dr. Ulrich Rüde	cs10-contact@fau.de	09131 85-28923	Cauerstraße 11, 91058 Erlangen	http://www10.informatik.uni-erlangen.de
Chair of Computer Science 3 (Hardware Architectures)	Prof. Dr. Dietmar Fey	Michaela.Krebs@cs.fau.de	09131 85-27003	Martensstr. 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



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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/
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 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/

Appendix

List of Figures

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FAU/David Hartfiel; FAU; Kurt Fuchs; Chimaera/Dieter Hahn

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Figure 1: FAU

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Figure 3: ZiMT

Figure 4: Bastian Stahl

Figure 5: Claudia Barnickel

Figure 6: FAU

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