

Medicine & Engineering

Our strong combination at FAU Erlangen-Nürnberg

Welcome, Master students of Medical Engineering!

Master Welcome Day, April 23, 2019
Felix Schmutterer & Tino Haderlein



- ❑ **Welcome by Prof. Björn Eskofier**
(Program Director)
- ❑ **Welcome by Heike Leutheuser**
(Director of the Central Institute for Medical Engineering)
- ❑ **Introduction to the study program**
(Study Coordinators for Medical Engineering)
- ❑ **Group quiz: Fun facts about Erlangen and your studies**
- ❑ **Welcome by FSI Medizintechnik**
(Student association Medical Engineering)

≈3:40–4:00 p.m.: Coffee break

- ❑ **Group quiz: Solutions and prizes**
- ❑ **Introduction to computer pools & creating your class schedule**
(blue computer science tower, room 01.155)

- ❑ **5:30 p.m.: Guided campus tour**
(starting point: round bench in front of “Mensa”/canteen, red square)
Get-together with drinks (same bench)

The Diversity of Medical Engineering at FAU



Growth Market Medical Technology

- **Increase in population and diseases**

- Demographical development until 2050:
More people, longer life expectancy:

- | | |
|---------------------|-----------------|
| ● Diabetes: +50% | Dementia: +100% |
| ● Infarction: +100% | Stroke: +100% |
| ● Cancer: +50% | |

- **Increasing demand for diagnostic and therapeutic treatment**



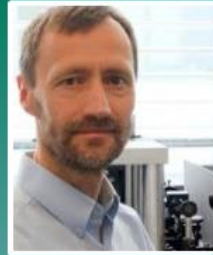
Central Institute of Medical Engineering (ZiMT)



Prof. Dr. med. Dr. h. c.
Jürgen Schüttler

Medicine

65 Clinics, Chairs and
Institutes



Prof. Dr. Ben Fabry

Science

60 Chairs in 5
Departments



Prof. Dr. Björn Eskofier

Engineering

58 Chairs in 5
Departments

Central Institute of Medical Engineering

Persons in Charge Contact Persons



MedTech Representatives

- **Program Director**
(Machine Learning & Data Analytics)
Prof. Dr. Björn Eskofier



- **Director of ZiMT**
Dipl.-Phys. Heike Leutheuser



- **Study Coordinators**

PD Dr. Tino Haderlein

Dr. Felix Schmutterer



blue computer science tower (Martensstr. 3), room 02.158

Open consultation (drop-in without appointment):

Mon–Thu, 1–4 p.m.

Appointments: Studienberatung-Medizintechnik@fau.de

- advice for your studies
- accreditation of coursework achievements
- support with formalities
- all kinds of questions regarding your studies

- **General Study Advisory** (Informations- und Beratungszentrum, IBZ)
Elisabeth Bächle-Grosso, Halbmondstr. 6-8, 91054 Erlangen, Room: 1.031
elisabeth.baechle-grosso@fau.de
 - general study-related problems
 - information about changing your study program (advisor for all engineering programs)
 - student visa issues (certificate for foreigners office)
- **Examinations Office Faculty of Engineering**
(Prüfungsamt TechFak)
Helga Jahreis, Halbmondstr. 6, 91054 Erlangen, Room: 1.042,
helga.jahreis@fau.de
 - managing exams, credits, grades online by „mein campus“ or by paper certificates („Scheine“)
 - withdrawal from exams (due to illness etc.)
 - **Report on conditional subjects/“Auflagen“!**

● International Office Faculty of Engineering

Christine Mohr, Erwin-Rommel-Str. 60, 91058 Erlangen, Room: U 1.250
(basement), christine.mohr@fau.de

- Information about studies/internship abroad
- General help and support for international students

● Career Service

career-service@fau.de ; www.career.fau.de

- Help with your job search (also student jobs)
- Support with applications
- Check of application documents
- Simulation of job interviews
- Useful workshops and seminars

● Office for Gender and Diversity

Bismarckstraße 6, 91054 Erlangen

gender-und-diversity@fau.de

- Advice for students with children
- Help for students with a migratory background
- Support for women (in cases of violence, harassment)
- Support for students experiencing discrimination of any kind (due to gender, ethnicity, religion, sexual orientation etc.)

- **Advice for students with disabilities or chronic diseases**

Dr. Jürgen Gündel, Schloßplatz 3/Halbmondstr. 6, 91054 Erlangen, Room: 1.032, juergen.guendel@fau.de

→ General advice and support (e.g. accessibility of buildings)

→ Compensation of disabilities during examinations (e.g. more time)

Disability: all physical and mental impairments lasting at least 6 months

Chronic diseases: illnesses that require at least one medical treatment per quarter over the course of one year

Psychological support:

Psychologisch-Psychotherapeutische Beratungsstelle
Computer Science Tower, Martensstr. 3, 91058 Erlangen, Room: 04.154

Open consultation (anonymous drop-in sessions):

Tue, 1:00–2:00 p.m.

+49 9131 85-27935

E-Mail: elizabeth.provan-klotz@werkswelt.de

- Help with exam anxiety, procrastination, loneliness, stress...
- Consultation in German and English

Legal advisory service Studentenwerk:

Hofmannstraße 27, 2nd floor, Room 201

See website for consultation hours:

www.werkswelt.de

How to Find Information

One weblink – all medical engineering-related services and information:

- www.medical-engineering.study.fau.eu
- www.medizintechnik.fau.de

...including today's presentation!

How to Find Information

**General information on the internet:
search the web for “FAU“ + key word**

e.g. FAU + language courses

FAU + examinations office

FAU + psychological services

FAU + semester dates...

Program Structure



What is “ECTS”?

- ***European Credit Transfer and Accumulation System***
Student workload required for the learning outcomes of a program
 - 30 credits: **recommended** workload per semester
 - 1 credit: \approx 30 working hours
- You will find information on ECTS in the module catalogs, in the online information system UnivIS, on your Master’s certificate/Transcript of Records

Structure Master's Program Medical Engineering

**Medical specialisation
modules (10 credits)**

**Advanced Seminar
Medical Engineering
(5 credits)**

**Practical (lab) modules
(10 credits)**

**Flexible budget Faculty of
Engineering (10 credits)**

**Free choice Uni
(all faculties)
(5 credits)**

Branches of Study (50 credits)

- Medical Electronics (German)
- Medical Image and Data Processing (German or English)
- Medical Production Technology, Device Engineering and Prosthetics (German)
- Health & Medical Data Analytics and Entrepreneurship (English)

Master's Thesis (30 credits)

Master of Science (M. Sc.)

120 credits in total

- **Modules for all students:** **70 credits**
 - M 1: Medical specialisation modules
 - M 4: Advanced seminar Medical Engineering
 - M 6: Medical engineering practical modules (academic laboratory, research laboratory)
 - M 7: Flexible budget Faculty of Engineering: any **graded** course at the Faculty of Engineering on **Master's level** → see info in **UnivIS**
 - M 8: Free Choice Uni: any **graded** course at FAU or VHB (**on-site exam**): e.g. language course ...
 - M 9: Master's thesis
- **Modules specific to your branch of study:**
 - M 2: Engineering core modules **20 credits**
 - M 3: Medical Engineering core modules **20 credits**
 - M 5: Medical Engineering specialisation modules **10 credits**

Master Course Scheme



M1	Medizinische Vertiefungsmodule/Medical specialisation modules gemäß § 44a Abs. 1	10
M2	Ingenieurwissenschaftliche Kernmodule/Engineering core modules gemäß § 44a Abs. 2	20
M3	Medizintechnische Kernmodule/Medical Engineering core modules gemäß § 44a Abs. 3	20
M4	Hauptseminar Medizintechnik/Advanced Seminar Medical Engineering gemäß § 44a Abs. 4	5
M5	Medizintechnische Vertiefungsmodule/Medical Engineering specialisation modules gemäß § 44a Abs. 5	10
M6	Medizintechnische Praxismodule/ Medical Engineering practical modules gemäß § 44a Abs. 6	10
M7	Flexibles Budget Technische Fakultät/Flexible budget Faculty of Engineering	10
M8	Freie Wahl Uni/Free choice Uni	5
M9	Masterarbeit/Master's thesis	30
Summe ECTS-Punkte		120

Semesters & Exams

- Regular duration of studies: 4 semesters/two years
(**can be extended to 5 by re-registering + paying the fee**)
- Semester: lecture period (14/15 weeks) + lecture-free period (\approx 12 weeks)
- Two exam periods: first 2 weeks and last 3 weeks
of the lecture-free period (“holidays”)
- Failing an exam: **2nd + 3rd chance** in the **following** two semesters (**mandatory** registration) – **exception: conditions/”Auflagen” (max. 2 chances, i.e. 1 year!)**
- You can/must only take exams if you **register** for them.
- **Withdrawal** from registered exams: until 3 working days (Mon – Fri) before the exam without a reason – or later in case of illness/severe reasons (medical/other certificate)

Semesters & Exams

Summer semester 2019 (April 1, 2019 – Sept. 30, 2019):

Lecture Period: **April 23, 2019 – July 27, 2019**

Exam Registration: **May 27, 2019 – June 14, 2019, 12:00
(noon; Reminder via e-mail!)**

Re-Registration for WS 19/20: **Beginning of July, 2019
(Reminder via e-mail!)**

Semester break (lecture-free): **July 28, 2019 – Oct. 15, 2019**

Exams: **July 29 – Aug. 10 and Sept. 20 – Oct. 12, 2019**

www.fau.eu/study/current-students/semester-dates/

Exact dates for the exams in Summer 2019:

Medical Engineering website → “Exams“/“Prüfungen“

Conditional Subjects/”Auflagen”

- **Must be passed within one year (deadline: March 31, 2020).**
Otherwise they will prevent successful re-registration for the 3rd semester. **No exceptions!**
- **After successful completion of conditional subjects: Actively inform** Mrs. Jahreis (Examinations Office)!
- **Examination results of the 2nd semester might be published late.**
If this is your case, contact your lecturer to get a faster correction.

Conditional Subjects/”Auflagen”

Lectures that are usually offered only once a year in summer semester (SS) or winter semester (WS):

- Grundlagen der Elektrotechnik II: SS, exam also in WS
 - Algorithmen und Datenstrukturen für MT: WS
(exercise classes and exam also in SS)
 - Mathematik A3: WS
 - Engineering Mathematics: SS, exam also in WS (contact lecturer for course materials and study on your own)
 - Advanced Programming Techniques: WS →
help: **C++ Programming online course at the Virtual University Bavaria (VHB): www.vhb.de**
- can be used in module group M8 (Free Choice Uni)**

Module Catalogs (www.medizintechnik.studium.fau.de)

Typ	Modulnummer	Modulbezeichnung (Veranstaltungsname)	Abkürzung	V+Ü+S+P	Gesamt				Studien- und Prüfungsleistungen	Department	Modulverantwortlicher / Dozent	WS/SS	
					WS	SS	WS	SS					
M 1 Medizinische Vertiefungsmodule													
	M 1.1'	Grundlagen der Anatomie & Physiologie für Nichtmediziner	AnaPhys_MIT	4+0+0+0	5	2,5	2,5	0	0	60 s	VORKLIN	Prof. Dr. Clemens Forster	WS/SS
		Clinical Applications of Optical Technologies and Associated Fundamentals of Anatomy	OMED/CA	4+0+0+0	5		5			45 s	KLIN	Prof. Dr. med. Michael Eichhorn	SS
	M 1.2	Medizinische Vertiefung 1			5	5	0	0	0	60 s	KLIN	N.N.	WS
	M 1.3	Medizinische Vertiefung 2			5	0	5	0	0	60 s	KLIN	N.N.	SS
	Liste der Lehrveranstaltungen für M1.2 bzw. M1.3												
		Interdisziplinäre Medizin		0+0+2+0	2	2	0	0	0	45 s		Prof. Dr. med. Harald Mang	WS
		IT-Unterstützung im Prozess der diagnostischen Bildgebung		1+0+0+0	1	1	0	0	0	45 s		Dr. Thomas Kauer	WS
		Grundlagen der biologischen Stromerzeugung		4+0+0+0	5	5	0	0	0	45 s		Prof. Dr. med. habil. Luitpold Distl	SS
		Grundlagen der biologischen Stromerzeugung		2+0+0+0	2,5	2,5	0	0	0	45 s		Prof. Dr. med. Luitpold Distl	WS
		Grundlagen der Krankheitserkennung		4+0+0+0	5	5	0	0	0	90 s		Prof. Dr. med. Harald Mang	WS
		Medizinische Biotechnologie	MBT	3+1+0+0	5	5	0	0	0	120 s		Prof. Dr. med. habil. Dr. rer. nat. Oliver Friedrich	WS
		Audiologie und Hörgeräte		1+0+3+0	5	5	0	0	0	90 s		Prof. Dr.-Ing. Dr. rer. med. Ulrich Hoppe	WS
		Medizinische Physik / Medizintechnik											
		Cognitive Neurowissenschaften											
		Augendiagnostik											
		Augenoperationen											
		Augenbeteiligung bei Allgemeinerkrankungen											
		Sehnervmorphologie und Echographie in der Augenheilkunde											
	M 2 Ingenieurwissenschaftliche Kernmodule												
	Basismodule / Basic Modules (B)												
	M 2.1	Ereignisgesteuerte Systeme	EGS	2+2+0+0	5	5	0	0	0	90 s	INF	Dr.-Ing. Michael Glaß	WS
		Übung											
	M 2.2	Grundlagen der Systemprogrammierung (Systemprogrammierung 1)	GSP (SP 1)	2+2+0+0	5	0	5	0	0	90 s	INF	Prof. Dr.-Ing. Wolfgang Schröder-Preikschat	SS
		Übung											
	M 2.3	Digitale Übertragung / Digital Communications	DÜ / DiCo	3+1+0+0	5	5	0	0	0	90 s	EEL	Prof. Dr.-Ing. habil. Johannes Huber, Prof. Dr.-Ing. Robert Schober	WS: engl SS: dt
		Übung											
	M 2.4	Signale und Systeme II	SISY II	2,5+1,5+0+0	5	0	5	0	0	90 s	EEL	Prof. Dr.-Ing. André Kaup	SS
		Übung											
	M 2.5	Computergraphik / Computer Graphics	CG	3+1+0+0	5	5	0	0	0	30 m	INF	Prof. Dr.-Ing. Marc Stamminger, Prof. Dr. Günther Greiner	WS
		Übung											
	M 2.6	Digitale Signalverarbeitung / Digital Signal Processing	DSV	3+1+0+0	5	5	0	0	0	90 s	EEL	Prof. Dr.-Ing. Walter Kellermann	WS
		Übung											
	Aufbaumodule / Advanced Modules (A)												
	M 2.7'	Pattern Recognition	PR	3+0+0+0	5	5	0	0	0	30 m	INF	Prof. Dr.-Ing. Joachim Hornegger	WS
	M 2.8'	Pattern Analysis	PA	3+0+0+0	5	5	0	0	0	30 m	INF	Prof. Dr.-Ing. Elmar Nöth	SS
	M 2.9	Statistische Signalverarbeitung / Statistical Signal Processing	STASIP	3+1+0+0	5	5	0	0	0	90 s	EEL	Prof. Dr.-Ing. Walter Kellermann	SS
		Übung											

'Grundcurriculum' /common catalog (for all students)

An updated version is published at the beginning of every semester!

Catalog for each branch of study

Structure – Master Medical Engineering

- Total of 120 ECTS credits **should** be evenly spread over four (or five) semesters; no strict rule but **highly recommended: ≈30 ECTS credits per semester**
- Few compulsory modules (conditional subjects, some mandatory subjects in the catalog, **see footnotes there!**)
- Mostly free choice within the list for each module group
- Not all lectures are offered in winter and summer (see catalog), time slots may differ from semester to semester; there might be time overlaps
(→ video lectures: www.video.fau.de)
- Recommendation for going abroad: 3rd or 4th semester (start planning now)

Types of Courses

- V/L: Vorlesung/lecture – generally no registration, attendance not mandatory
- Ü/E: Übung/Tutorium; exercise class/tutorial – usually start in the 2nd week, further details in the 1st lecture, attendance usually not mandatory
- P: Praktikum/Practical course (lab course) – attendance mandatory, early registration (see UnivIS) – not relevant for 1st semester
- S: Seminar – attendance mandatory, early registration (see UnivIS) – not relevant for 1st semester

Types of exams/course achievement

- **Prüfungsleistung (PL)/Graded course achievement (gCA)**
 - schriftlich [written]
 - mündlich [oral]
 - Seminar (presentation and paper)
- **Studienleistung (SL)/Ungraded course achievement (uCA)**
 - e.g. exercise classes or practical courses
 - Hochschulpraktikum/academic laboratory
 - Forschungspraktikum/research laboratory

Where can I find all the catalogs?

Website of the Medical Engineering programme:

<http://www.medizintechnik.studium.fau.de/>

→ Studierende → Master → Überblick und Modulkataloge
FPO 2018

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

→ Current students → General Study Information Master's
Program → General Study Information & Course Syllabus
(FPO 2018)

**Catalogs are updated every semester!
Read the footnotes in the catalogs!**

What else is on the study programme website?

<http://www.medizintechnik.studium.fau.de/>

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

- **Study Guide (updated usually every semester)**
- Today's presentation slides
- Module handbook with content descriptions of each course (generated via UnivIS)
- Further information: on modules, Master's Thesis, studying abroad, accreditation of coursework etc.
- Links to examination regulations (FPO, ABMPO)
- important forms
- exam dates
- **FAQ section**

M 9: Master's Thesis

- **independent execution of scientific tasks in Medical Engineering**
 - ➔ **prepare yourself early on:** e.g. lecture „Nailing your thesis“ (SS) can be used for Flexible Budget Faculty of Engineering (M 7)
- Prerequisites: 75 ECTS credits, completing all conditional subjects and mandatory modules (footnotes in catalogs/exam regulations!)
- to be completed within 6 months
- Look for your topic **in due time** (end of your penultimate semester at the latest)!
 - **Select your modules in preparation of your thesis topic.**
- Look for thesis topics on the labs' websites, ask for personalized/non-advertised topics at the labs (professor, PhD students).
- Specific details, formalities, thesis form → Medical Engineering website

Foreign Language Training

Sprachenzentrum (Language Center), Bismarckstraße 1

www.sz.fau.de

- Courses during the lecture period are **free of cost**.
- Intensive courses (with a fee) during the semester break
- **Registration** required for all courses
- Registration for **German courses**: online + in person (**open as of now**); **highly recommended for internships & future job!**
- Recommended languages to prepare for studying abroad:
e.g. English, Spanish, Portuguese
- Courses also suitable for module group **M8/Free Choice Uni**

Online Tools



UnivIS



IdM portal: www.idm.fau.de Manage your personal data!

- An IdM login is required for nearly all personalized online services at FAU.
- Activate your **IdM Portal account** with the activation password mailed to you → guided session later on
- Upload a photo to generate your student ID card – **it will be sent to your semester address!**
- Problems: service counter/“Service-Theke“ RRZE (Computation Center): next to blue computer science tower (Martensstraße 1), 1st floor

IdM portal: www.idm.fau.de Manage your personal data!

E-mail Address

- An FAU e-mail address has been generated for you.
- It is used as default recipient for e-mails from the university.
To relay: IdM Portal → Self Service → Email → Click on the “...”-button → Field “Relay to“
- **All important information regarding your studies will be sent to your FAU e-mail address!**

MeinCampus: Manage Your Exams

- **Login**

- <https://www.campus.fau.de>
- “Single Sign-On”



- **Prüfungen (*Exams*)**

- Exam registration
(when active – registration: May 27 – June 14, 2019)
- Withdrawal from exams **until three working days** before the exam date (Mon–Fri)
- Overview of registered exams
- Overview of grades and acquired ECTS credits

→ **Detailed instructions: see Medical Engineering website**

StudOn: E-learning platform

- <https://www.studon.fau.de>
- Often used for courses that require registration (seminars, practical courses)
- Platform for sharing course materials

The screenshot shows the StudOn user interface. At the top, there is a navigation bar with the StudOn logo, a search bar, and a 'Abmelden' (Logout) button. Below the navigation bar, there is a section titled 'Übersicht' (Overview) with a message indicating that certain sidebars are hidden for performance reasons. The main content area is divided into three columns:

- Nachrichten - Letzte 6 Monate** (1-5 von 14) weiter: A list of recent messages, including a Wiki update for 'Wiki für Korrekturen zum Skript Hauptseite' (20. Jul 2014, 14:42), a forum post 'Forum: Studierendenforum 36 Beiträge hinzugefügt.' (18. Jul 2014, 15:10), and a course update 'Kurs: Forensische Informatik Es wurden 37 Dateien hinzugefügt. Es wurden 5 Dateien aktualisiert.' (10. Jul 2014, 00:57).
- Ausgewählte Angebote**: A list of selected offers, each with a folder icon and an 'Aktionen' (Actions) dropdown menu. The offers are: 'Vorlesung', 'Übungen', 'Berufspädagogik', and 'Einführung in die Erwachsenen- und Weiterbildung'.
- Kalender**: A calendar section with an 'iCal' button. Below it, there is a 'Mail' section showing '0 Mail(s)'.

What's next?

1. **Compile your class schedule**
→ UnivIS (guided session later on today)
2. **Register for courses – only if needed (information in UnivIS):**
usually via StudOn (**see registration link on the respective lecture page in UnivIS**)
If registration is not required, simply go the first meeting.
3. **Register for exams** → MeinCampus (**May 27 – June 14, 2019**)
4. **Re-register for WS 2019/20**
→ bank transfer – details via **e-mail (t.b.a.)**
5. **Study & pass exams** → study groups, time management, practice with old exams from FSI, get advice from our psychologist if needed
6. **Actively report on your conditional subjects**
→ Examinations Office (Mrs. Jahreis)

Tips & Tricks

1. Be proactive, inform yourself, talk to people, search online. → **Search, read, ask.**
2. **Read the study guide + examination regulations.**
3. **Read the footnotes in your module catalog.**
4. If there is a problem, talk to your tutor/lecturer/study advisor/psychologic counsellor **as soon as possible.**
5. Engage in campus life (student organisations, parties, university sports, study groups, buddy program).
6. Take language classes/speak German in daily life.
7. Build a network through the workshops, summer schools, hackathons etc. offered/promoted by ZiMT.

Thank you very much!

