Medicine & Engineering

Our strong combination at FAU Erlangen-Nürnberg

Welcome, Master Students of Medical Engineering!

Master Welcome Day, October 2020
Felix Schmutterer & Tino Haderlein

□ **Welcome by Dr. Heike Leutheuser**

(Director of the Central Institute of Healthcare Engineering)

□ **Introduction to the Study Program**

(Study Coordinators for Medical Engineering)

□ **Welcome by FSI Medizintechnik**

(Student Association Medical Engineering)

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**

ZiMT
ZENTRALINSTITUT FÜR MEDIZINTECHNIK

FAU
FRIEDRICH-ALEXANDER
UNIVERSITÄT
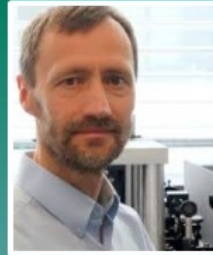ERLANGEN-NÜRNBERG
FACULTY OF ENGINEERING

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

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Please note:

All administrational institutions of FAU are closed for the public at the moment!

Please contact the persons introduced on the following pages by e-mail if necessary!

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MedTech Representatives

- **Program Director**

  (Machine Learning & Data Analytics)
    Prof. Dr. Björn Eskofier

- **Director of ZiMT**
    Dr.-Ing. 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.

← **not at the moment due to known reasons**

Appointments: Studienberatung-Medizintechnik@fau.de

← **preferred**

→ 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 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; **'Technical Faculty' = Faculty of Engineering**)

  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

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- ## Psychological Support:

  Psychologisch-Psychotherapeutische Beratungsstelle
  Computer Science Tower, Martensstr. 3, 91058 Erlangen, Room: 04.154
  Open consultation (anonymous drop-in sessions):

  Mon, 2:00–4:00 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

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How to Find Information

Weblink for 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…

Master's Program Medical Engineering Program Structure

What is ECTS?

- ***European Credit Transfer and Accumulation System***
  Assessment of student workload required for the learning outcomes of a program

  - ➢ 30 credits: recommended workload per semester
  - ➢ 1 credit: ≈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

Master's Program Medical Engineering: Structure

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 (10 cr.)
  - M 4: Advanced seminar Medical Engineering (5 cr.)
  - M 6: Medical engineering practical modules
    (academic laboratory, research laboratory; 10 cr.)
  - M 7: Flexible budget Faculty of Engineering (10 cr.):
    any *graded* course at the Faculty of Engineering
    on **Master's level → see info in UnivIS**
  - M 8: Free Choice Uni (5 cr.): any *graded* course at FAU or
    VHB **(on-site exam):** e.g. language course …
  - M 9: Master's thesis (30 cr.)
- **Modules specific to your branch of study: 50 credits**
  - M 2: Engineering core modules (20 cr.)
  - M 3: Medical Engineering core modules (20 cr.)
  - M 5: Medical Engineering specialisation modules (10 cr.)

Master Course Scheme
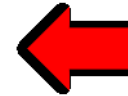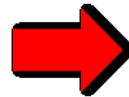
M1	Medizinische Vertiefungsmodule/Medical specialisation modules gemäß § 44a Abs. 1	10
M2	Ingenieurwissenschaftliche Kernmodule/Engineering core modules gemäß § 44a Abs. 2	20
M3	Medizintechnische Kernmodule/Medical Engineering core modules gemäß § 44a Abs. 3	20
M4	Hauptseminar Medizintechnik/Advanced 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

Master Program Medical Engineering: Structure

- 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)

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 or 15 weeks) + lecture-free period ('semester holidays', ≈12 weeks)
- Two exam periods: first 2 weeks and last 3 weeks **of the lecture-free period**
- 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

Winter semester 2020/21 (Oct. 1, 2020 – March 31, 2021):

Lecture Period: **Nov. 2, 2020 – Feb. 12, 2021**

Exam Registration: **Nov. 30, 2020 – Dec. 13, 2020**

(Reminder via e-mail!)

Re-registration for Summer 2021: **Feb. 1 – Feb. 8, 2021**

(Reminder via e-mail!)

Semester break (lecture-free): **Feb. 13 – April 11, 2021**

Exams: **to be announced**

www.fau.eu/education/study-organisation/semester-dates/

**Exact dates for the exams in Summer 2021:
Medical Engineering website → 'Exams'/'Prüfungen'**

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Conditional Subjects/'Auflagen'

- **Must be passed within one year
  (deadline: September 30, 2021)**
  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.

- **The credits of conditional subjects are not part of the
  120 credits for your Master program!**

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 C++ Programming" online course (WS+SS) at the **Virtual University Bavaria (VHB)*: www.vhb.de**

→ **can be used in module group M8 (Free Choice Uni)**

* Choose study program "Gesundheitstechnik".

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

Module Catalogs (Available on the Webpage)

'Grundcurriculum'/ common catalog *(for all branches taught in German)*

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

Catalog for each branch of study

Gruppe	Modulnummer	Module / Modulbezeichnung (Veranstaltungsname)	Abkürzung	V+Ü+S+P	Gesamt	1. Jahr WS	1. Jahr SS	2. Jahr WS	2. Jahr SS	Studien- und Prüfungsleistungen	Department	Modulverantwortlicher / Dozent	WS/SS
M 1		Medizinische Vertiefungsmodule		V+Ü+S+P	10	5	5	0	0	PL			
	M 1.1[1]	Grundlagen der Anatomie & Physiologie für Nichtmediziner	AnaPhys_MT	4+0+0+0	5	2,5	2,5			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				60 s	KLIN	N.N.	WS
	M 1.3	Medizinische Vertiefung 2			5		5			60 s	KLIN	N.N.	SS
		Liste der Lehrveranstaltungen für M1.2 bzw. M1.3											
		Interdisziplinäre Medizin		0+0+2+0	2	2				45 s		Prof. Dr. med. Harald Mang	WS
		IT-Unterstützung im Prozess der diagnostischen Bildgebung		1+0+0+0	1	1				45 s		Dr. Thomas Kauer	WS
		Grundlagen der b... Str... rkung		4+...								Dr. med. ...olf Dist...	SS
		Grundlagen der b... Sti...ler...rkung		2+...+0+0	2,5	2,5				45		Dr. med. ...Lui...olf Dist...	WS
		Grundlagen der Krankheitserkennung		4+0+0+0	5	5				90 s		Prof. Dr. med. Harald Mang	WS
		Medizinische Biotechnologie	MBT	3+1+0+0	5		5			120 s		Prof. Dr. med. habil. Dr. rer. nat. Oliver Friedrich	WS
		Audiologie und Hörgeräte		1+0+3+0	5	5				90 s		Prof. Dr.-Ing. Dr. rer. med. Ulrich Hoppe	WS
		Medizinische Physik ... rat...therap...											
		Cognitive Neurowissenschaften											
		Augendiagnostik											
		Augenoperationen											
		Augenbeteiligung bei Allgemeinerkrankungen											
		Sehnervmorphologie und Echographie in der Augenheilkunde											

Wahlkatalog für alle Studienrichtungen

		Ingenieurwissenschaftliche Kernmodule		V+Ü+S+P	20	10	10	0	0	PL			
M 2		Basismodule / Basic Modules (B)											
	M 2.1	Ereignisgesteuerte Systeme / Übung	EGS	2+2+0+0	5	5				90 s	INF	Dr.-Ing. Michael Glaß	WS
	M 2.2	Grundlagen der Systemprogrammierung (Systemprogrammierung 1) / Übung	GSP (SP 1)	2+2+0+0	5		5			90 s	INF	Prof. Dr.-Ing. Wolfgang Schröder-Preikschat	SS
	M 2.3	Digitale Übertragung / Digital Communications / Übung	DÜ / DiCo	3+1+0+0	5	5				90 s	EEI	Prof. Dr.-Ing. habil. Johannes Huber, Prof. Dr.-Ing. Robert Schober	WS: engl. SS: dt.
	M 2.4	Signale und Systeme II / Übung	SISY II	2,5+1,5+0+0	5		5			90 s	EEI	Prof. Dr.-Ing. André Kaup	SS
	M 2.5	Computergraphik / Computer Graphics / Übung	CG	3+1+0+0	5	5				30 m	INF	Prof. Dr.-Ing. Marc Stamminger, Prof. Dr. Günther Greiner	WS
	M 2.6	Digitale Signalverarbeitung / Digital Signal Processing / Übung	DSV	3+1+0+0	5	5				90 s	EEI	Prof. Dr.-Ing. Walter Kellermann	WS
		Aufbaumodule / Advanced Modules (A)											
	M 2.7[1]	Pattern Recognition	PR	3+0+0+0	5	5				30 m	INF	Prof. Dr.-Ing. Joachim Hornegger	WS
	M 2.8[1]	Pattern Analysis	PA	3+0+0+0	5		5			30 m	INF	Prof. Dr.-Ing. Elmar Nöth	SS
	M 2.9	Statistische Signalverarbeitung / Statistical Signal Processing / Übung	STASIP	3+1+0+0	5		5			90 s	EEI	Prof. Dr.-Ing. Walter Kellermann	SS

Where can I find all the catalogs?

Website of the Medical Engineering programme:

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

→ Studierende → Masterstudium → Überblick und Modulkataloge   FPO 2019

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

→ Current students → General Study Information Master's Program → General Study Information & Course Syllabus (FPO 2019)

Your FPO version remains valid for you!
Module 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) DELAYED**
- Today's presentation slides
- Module handbook with content descriptions of each course (generated via UnivIS) **DELAYED**
- 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

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.

- Upload a photo to create your student ID card (FAUcard); **it will be sent to your <u>semester address!</u>**

- Problems: service counter/'Service-Theke' RRZE (Computation Center): next to blue computer science tower (Martensstraße 1), 1st floor, rrze-zentrale@fau.de

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)
  - 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

What's next?

1. **Compile your class schedule**
   → UnivIS (guided session later on)

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 **(Nov. 30 – Dec. 13, 2020)**

4. **Re-register for the next semester**
   → 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!