

## Medicine & Engineering

Our strong combination at FAU Erlangen-Nürnberg

# Welcome, Master's Students of Medical Engineering!

Master Welcome Day, SS 2022  
Claudia Barnickel

- 1. Welcome by Prof. Tobias Reichenbach**  
(Director of the Medical Engineering program)
- 2. Welcome by Mariana Méjica**  
(Central Institute of Medical Engineering/ZiMT)
- 3. Introduction to the Study Program**  
(Claudia Barnickel, Study Advisor & Coordinator Medical Engineering)  
**30 minute break/breakout sessions in zoom**
- 4. Welcome by FSI Medizintechnik**  
(Student Association Medical Engineering/FSI MedTech)

# The Diversity of Medical Engineering at FAU



- **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**





# Persons in Charge/Contact Persons



- **Director Medical Engineering Program**  
(Dep. Artificial Intelligence in Biomedical Engineering)  
Prof. Dr. Tobias Reichenbach



- **Central Institute of Medical Engineering**  
(ZiMT)



Mariana Méjica  
HMDA Coordinator



Dr. Lisa Walter  
Grant Coordinator



Victoria Goldberg  
Coordinator Sci Fi Program

# Study Advisor and Coordinator Medical Engineering

## Claudia Barnickel

Consultation via email, phone, zoom or **in the office (only with previous online registration: study program website → “Infocenter” – “Study Advisory Service” → booking tool)**

+49 9131 8567337

[studienberatung-medizintechnik@fau.de](mailto:studienberatung-medizintechnik@fau.de)



- all kinds of questions regarding your studies
- accreditation of coursework achievements
- support with formalities
- studying abroad (Erasmus+ program)
- help in situations of crisis

**→ Help with problems you cannot solve on your own.**

## Helga Jahreis

[helga.jahreis@fau.de](mailto:helga.jahreis@fau.de)



- managing exams, credits, grades online via the Mein Campus portal
- last-minute withdrawal from exams due to illness or other severe reasons
- If you were admitted with conditional subjects („Auflagen“): **report to Mrs. Jahreis about the completion of your conditional subjects!**



## Elisabeth Grosso

[elisabeth.baechle-grosso@fau.de](mailto: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 Immigration Office)**



Gisela Jakschik



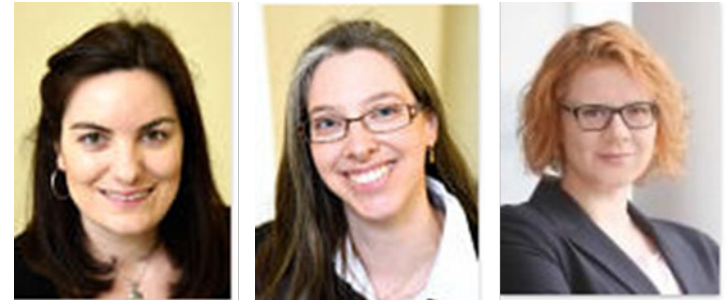
Christine Mohr

[tf-stib@fau.de](mailto:tf-stib@fau.de)

- General information and advice for (international) students
- Seminars for soft skills
- International partnership programs of the Faculty of Engineering (Non-Erasmus)
- Internships abroad

[career-service@fau.de](mailto:career-service@fau.de)

[www.career.fau.de](http://www.career.fau.de)



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

**Free of cost – definitely use this service during your studies!**

[gender-und-diversity@fau.de](mailto:gender-und-diversity@fau.de)

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



## Dr. Jürgen Gündel

[juergen.guendel@fau.de](mailto:juergen.guendel@fau.de)

- General advice and support (e.g. accessibility of buildings)
- Compensation of disabilities during examinations (e.g. more time)



## What counts as a...

- **disability?** All physical and mental impairments lasting at least 6 months
- **chronic disease?** Illnesses that require at least one medical treatment per quarter over the course of one year



Dipl.-Psych. **Elizabeth Provan-Klotz,**  
**Psychological Psychotherapist**

Martensstr. 3, Room 04.154  
+49 9131 85-27935

[elizabeth.provan-klotz@werkswelt.de](mailto:elizabeth.provan-klotz@werkswelt.de)



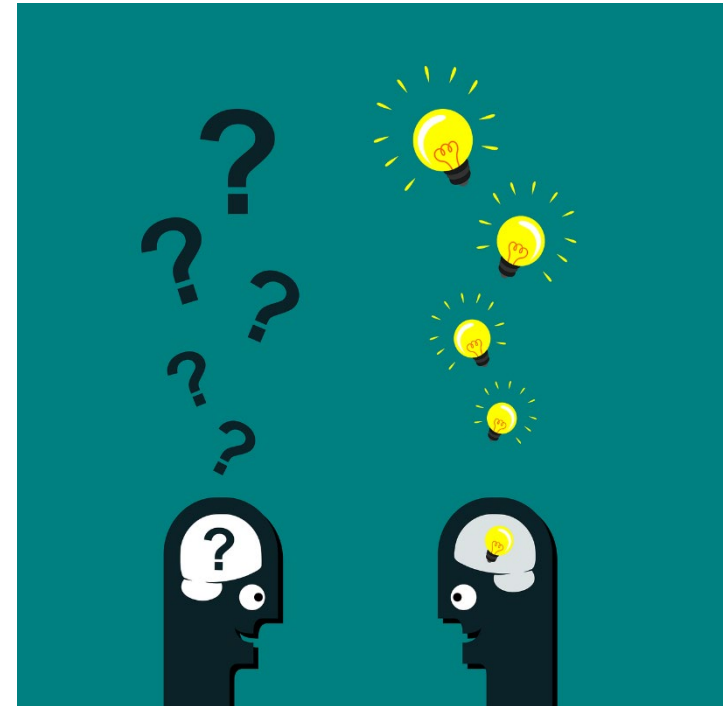
## Assistance with:

- Fear of speech, writing and exams
- Difficulties with learning, motivation problems
- Stress management
- Anger and impulse control problems
- Loneliness, depression, feelings of guilt, fears, thoughts of suicide
- Everyday studies with a chronic illness or disability
- Relationship, partner and family problems
- Identity and orientation problems
- Displacement from parents/home country
- Questions about addiction and addictions (e.g. nicotine, alcohol, internet)
- Integration and cultural difficulties

[rechtsberatung@werkswelt.de](mailto:rechtsberatung@werkswelt.de)

<https://www.werkswelt.de/rechtsberatung>

- Problems with rental contracts, work contracts, visa status etc.
- **Free of cost!**



# How to find information...

Your **24/7 source** for all medical engineering-related services and information:

- [www.medical-engineering.study.fau.eu](http://www.medical-engineering.study.fau.eu)
- [www.medizintechnik.fau.de](http://www.medizintechnik.fau.de)

**...including today's presentation!**

# Master's Program Medical Engineering Program Structure



- ***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:  $\approx$  30 of hours of work (in class & at home)
- 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

M1 - Medical Specialisation  
Modules (10 ECTS)

M4 - Advanced Seminar  
Medical Engineering  
(5 ECTS)

M6 – Practical (lab) Modules  
(10 ECTS)

M7 – Flexible Budget Faculty  
of Engineering (10 ECTS)  
(any engineering course on Master's level)

M8 – Free Choice Uni  
(5 ECTS)  
(any graded course, all faculties)

**M2, M3, M5 = Branches of Study  
(20+20+10 ECTS)**

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

M9 – Masters Thesis (30 ECTS)

**Master of Science (M.Sc.)**

120 ECTS in total

- Total of 120 ECTS credits *should* be evenly spread over four (or five) semesters; **no strict rule** but **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 (refer to video lectures: [www.fau.tv](http://www.fau.tv))
- Recommended time for going abroad: 3<sup>rd</sup> or 4<sup>th</sup> semester (start planning now)

- *Regular* duration of studies: 4 semesters/two years (can be extended to 5 semesters by re-registering + paying the semester fee), further extensions possible; prerequisite: you pass your conditions in the first year!
- Semester: lecture period (14 or 15 weeks) + lecture-free period ('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 (automatic + **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 day without a reason via Mein Campus – or later in case of illness/severe reasons (send medical/other certificate to Mrs. Jahreis)

# Semester & Exams

**Summer semester 22 (April 1st 2022- September 30th 2022):**

Lecture Period: **Apr 25th 2022- Jul 29th 2022**

Exam Registration: **May 27th – Jun 10th 2022**

**(Reminder via email!)**

Re-registration for summer 2022: **Jul 1st- Jul 8th 2022**

**(Reminder via email!)**

Semester break (no lectures): **Jul 30th – Oct 16th 2022**

**Exam periods: Aug 1st – Aug 12th & Sep 23rd – Oct 14th 2022**

[www.fau.eu/education/study-organisation/semester-dates/](http://www.fau.eu/education/study-organisation/semester-dates/)

[www.fau.eu/education/advice-and-services/examination-offices/examinations-office-faculty-of-engineering/](http://www.fau.eu/education/advice-and-services/examination-offices/examinations-office-faculty-of-engineering/)

- **Must be passed within one year (deadline: March 31<sup>st</sup> 2023).** Otherwise they will prevent successful re-registration for the 3<sup>rd</sup> semester.
- **After successful completion of conditional subjects: Actively inform** Mrs. Jahreis (Examinations Office)!
- **Examination results of the 2<sup>nd</sup> semester might be published late.**  
If this is your case, contact Mrs. Jahreis in due time to get a faster correction.
- The credits of conditional subjects are not a regular part of your Master’s program but you can use them in **M8 (Free Choice Uni)** if you wish.



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

- Grundlagen der Elektrotechnik II: SS
- Algorithmen und Datenstrukturen für MT: WS (exercise classes and exam also in SS)
- Mathematik A3: WS; Mathematik A4: SS; exam also in SS/WS respectively
- Engineering Mathematics: SS
- “Advanced C++ Programming” online course (WS+SS) at the **Virtual University Bavaria (VHB)\***: [www.vhb.org](http://www.vhb.org)  
→ \*Choose study program **“Gesundheitstechnik”** for the registration at VHB.

- V/L: Vorlesung/lecture – generally no registration, attendance not mandatory → **Just attend the first lecture.**
- Ü/E: Übung/Tutorium; exercise class/tutorial – accompany lectures, usually start in the 2<sup>nd</sup> week, further details in the 1<sup>st</sup> lecture, attendance usually not mandatory → **Just attend the 1<sup>st</sup> lecture.**
- P: Praktikum/practical course (lab course) – attendance mandatory, early registration (see UnivIS) – **not relevant/recommended for 1<sup>st</sup> semester**
- S: Seminar – attendance mandatory, early registration (see UnivIS) – **not relevant/recommended for 1<sup>st</sup> semester**

- **Prüfungsleistung (PL)/Graded course achievement (gCA)**
  - schriftlich/written
  - mündlich/oral
  - Seminar (presentation and paper)

**Most of the exams at FAU are on-site exams, very few online exams!**

- **Studienleistung (SL)/Ungraded course achievement (uCA)**
  - e.g. exercise classes or practical courses
  - Hochschulpraktikum/Academic Laboratory (M6.1)
  - Forschungspraktikum/Research Laboratory (M6.2)

Gruppe	Modulnummer	Module Modulbezeichnung (Veranstaltungsname)	Abkürzung	V+Ü+S+P	Gesamt				Studien- und Prüfungsleistungen	Department	Modulverantwortlicher / Dozent	WS/SS
					ECTS	1. Jahr	2. Jahr	3. Jahr				

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

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

Wahlkatalog	M 1 Medizinische Vertiefungsmodule												
	V+Ü+S+P	10	5	5	0	0	PL						WS/SS
M 1.1 <sup>1</sup>	Grundlagen der Anatomie & Physiologie für Nichtmediziner	AnaPhys_MI	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	
	<b>Liste der Lehrveranstaltungen für M1.2 bzw. M1.3</b>												
	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 Strahlenwirkung I		2+0+0+0	2,5	2,5	0	0	0	45 s		PD Dr. med. Luitpold Distel	SS	
	Grundlagen der biologischen Strahlenwirkung II		2+0+0+0	2,5	2,5	0	0	0	45 s		PD Dr. med. Luitpold Distel	WS	
	Grundlagen der Krankheitserkundung		4+0+0+0	5	5	0	0	0	90 s		Prof. Dr. med. Harald Mang	WS	
	Medizinische Biotechnologie		3+0+0+0	3	0	3	0	0	90 s		Prof. Dr. med. habil. Dr. Gert-Ludwig Frisch	WS	
	Audiologie und Hörgeräte												
	Medizinische Physik der Strahlentherapie												
	Cognitive Neurophysiologie												
	Augendiagnostik												
	Augenoperationen												
	Augenbeteiligung bei Allgemeinerkrankungen												
	Sehnervmorphologie und Echographie in der Augenheilkunde												
	<b>M 1 Medizinische Vertiefungsmodule</b>												
				10	5	5	0	0		PL	siehe Wahlpflichtkatalog für alle Studiennrichtungen		
Wahlkatalog	M 2 Ingenieurwissenschaftliche Kernmodule												
	V+Ü+S+P	20	10	10	0	0	PL						WS/SS
	M 2.1	Ereignisgesteuerte Systeme	EGS	2+2+0+0	5	5				90 s	INF	Dr.-Ing. Michael Gieß	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				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				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				90 s	EEL	Prof. Dr.-Ing. Walter Kellermann	WS	
	Übung												
	<b>Aufbaumodule / Advanced Modules (A)</b>												
M 2.7	Pattern Recognition	PR	3+0+0+0	5	5				30 m	INF	Prof. Dr.-Ing. Joachim Hornegger	WS	
M 2.8	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	STASIP	3+1+0+0	5	5				90 s	EEL	Prof. Dr.-Ing. Walter Kellermann	SS	
	Übung												

**Catalog for each  
branch of study**

# Where can I find 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 throughout your whole studies!
- Module catalogs are updated every semester!
- Please read the footnotes in the catalogs!

# What else can I find on the study program website?

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

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

- **Study Guide (German and English version)**
- **Today's presentation slides**
- Further information: on the Academic Lab & Research Lab, Master's Thesis, seminar, studying abroad, accreditation of coursework etc.
- Links to examination regulations (for the Medical Engineering program= FPO, for the Faculty of Engineering: ABMPO)
- Important forms
- **FAQ section**
- News & events

- independent execution of scientific tasks in Medical Engineering
  - **Prepare yourself early on:** e.g. lecture “Nailing your thesis” (WS/SS) can be used for Flexible Budget Faculty of Engineering (M 7)
- Prerequisites: 75 ECTS credits, completion of all conditional subjects and mandatory modules (see footnotes in catalogs)
- 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, ZiMT website, ask for personalized/non-advertised topics at the labs (professor, PhD students).
- Specific details, formalities, thesis form → Medical Engineering website



Sprachenzentrum (Language Center): [www.sz.fau.de](http://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 (open as of now): highly recommended for internships & future job!**
- Recommended languages to prepare for studying abroad:  
e.g. English, Spanish, Portuguese...
- Courses suitable for module group **M8 (Free Choice Uni)**
- **All German courses and most other language courses are taught on-site again.**

# What's next?

- 1. Compile your class schedule**  
→ UnivIS (guided session by student association later today)
- 2. Register for courses – only if needed (information in UnivIS):**  
usually via StudOn (**see registration link on the respective page in UnivIS**)  
**If registration is not required, simply join the first meeting.**
- 3. Register for exams** → Mein Campus (**end of May, reminder via email**)
- 4. Re-register for the next semester (1<sup>st</sup> week of July 2022)**  
→ bank transfer (**reminder and details via email**)
- 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)

# Important info for international students

- If you are still abroad you can study a **selection of courses online** – see list on Medical Engineering website → **“Information for new Master’s students starting in summer semester 22”**
- As most exams will take place on-site, you should travel to Germany **by July** at the latest.
- If you cannot travel to Germany due to **visa problems (and can prove it)** your examiners can offer you online exams. Please inform them in due time!
- If you are not vaccinated with an EU-approved covid vaccine yet: The **Erlangen vaccination center** offers drop-in sessions and consultation in different languages.

# Important info for (international) students

Everybody is talking about the covid vaccine (and rightly so), but have you ever heard about tick-borne encephalitis (TBE)? It is very common in Southern Germany and you can easily catch it just by hanging out outside in a park and getting bitten by a tick. Make sure to get vaccinated at any general practitioner's practice! The "tick vaccine" (FSME in German) is covered by your statutory health insurance.



ZECKEN.DE

## TBE in Germany

In Germany, tick-borne encephalitis (TBE) is predominantly confined to the south.

# Tips & tricks for successful studies

1. Be proactive, inform yourself, search online (**google!**), talk to people.
2. **Read the study guide.**
3. **Read the footnotes in your module catalog.**
4. If there is a problem, talk to your tutor/lecturer/study advisor/psychologic counselor **as soon as possible.**
5. Engage in campus life (student organizations:  
<https://stuve.fau.de/en/gruppen/>)
6. Take language classes, find a language buddy: <https://sz.fau.eu/departments-media-autonomous-learning/autonomous-language-learning/tandem/>
7. Build a MedTech network through the workshops, summer schools, hackathons etc. offered/promoted by ZiMT.
8. Organize study groups, whatsapp groups, zoom coffee hours etc., even from abroad. **Connection with fellow students is key!**

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**Thank you for your attention!**  
**Questions?**

**Have a great start of the  
semester!**  
**Stay healthy and connected!**