

Medicine & Engineering

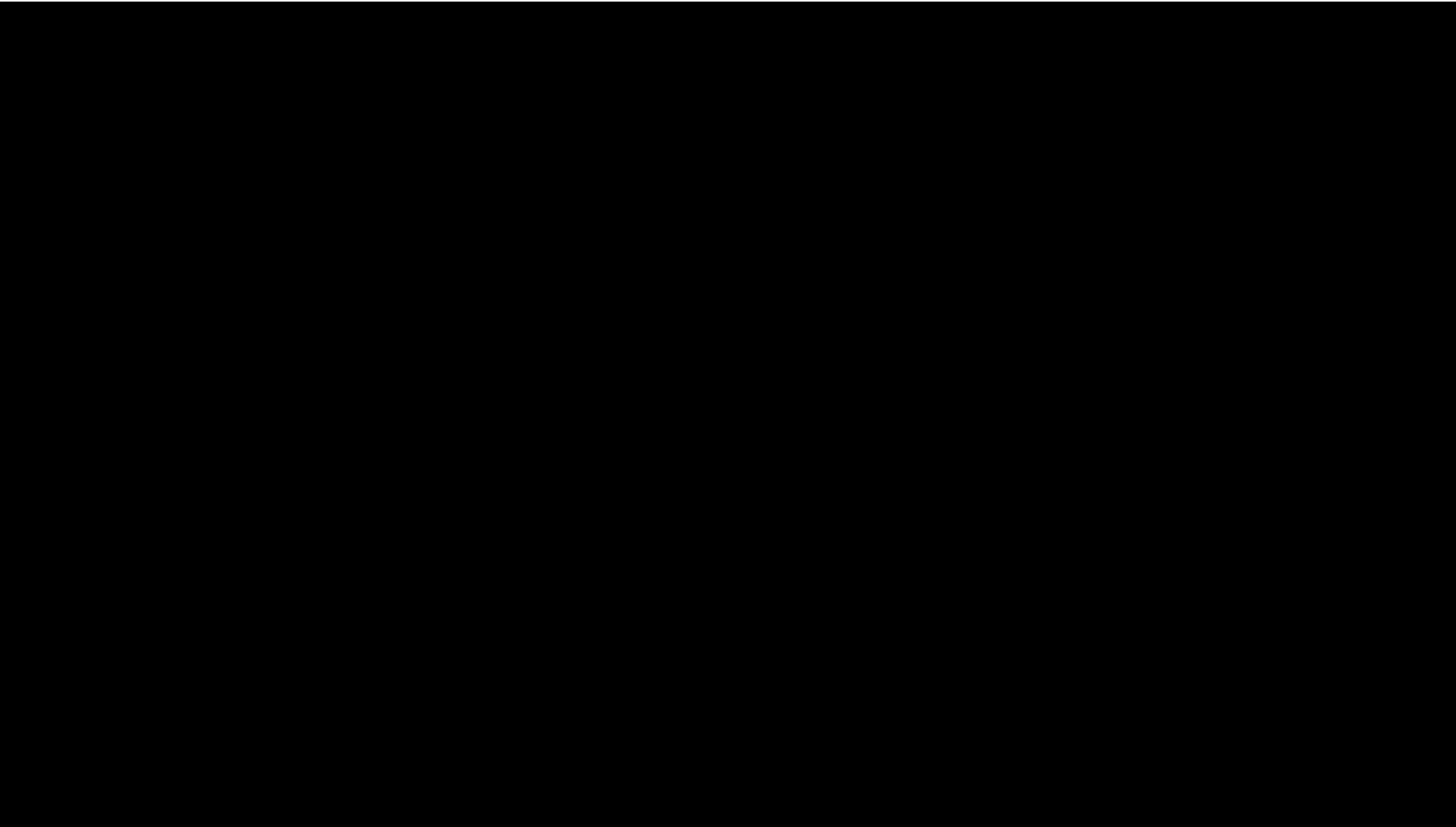
Our strong combination at FAU Erlangen-Nürnberg

Welcome, master's students of Medical Engineering!

Master Welcome Day, WS 22/23
Claudia Barnickel

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

Welcome by Prof. Tobias Reichenbach



The Diversity of Medical Engineering at FAU



- **Increase in population and diseases**

Demographical development until 2050:

More people, longer life expectancy:

- Diabetes: +50%
- Infarction: +100%
- Cancer: +50%

Dementia: +100%

Stroke: +100%

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



Persons in Charge/Contact Persons



- **Director Medical Engineering Program**

Prof. Dr. Tobias Reichenbach

Chair for Sensory Neuroengineering

Department Artificial Intelligence in Biomedical Engineering (AIBE)



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

Claudia.Barnickel@fau.de

(= the same recipient: Please only send one email to one of the two addresses!)



- 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 by reading our website, study guide or FAQs.**

Helga Jahreis

helga.jahreis@fau.de



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

Elisabeth Grosso

elisabeth.baechle-grosso@fau.de



- General study-related questions
- Advisor for all engineering programs
- **Student visa issues (certificate for Immigration Office)**



Gisela Jakschik



Christine Mohr

tf-stib@fau.de

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

career-service@fau.de

www.career.fau.de



- Help with your job search (also student jobs)
- Support with application
- 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

- 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

- 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



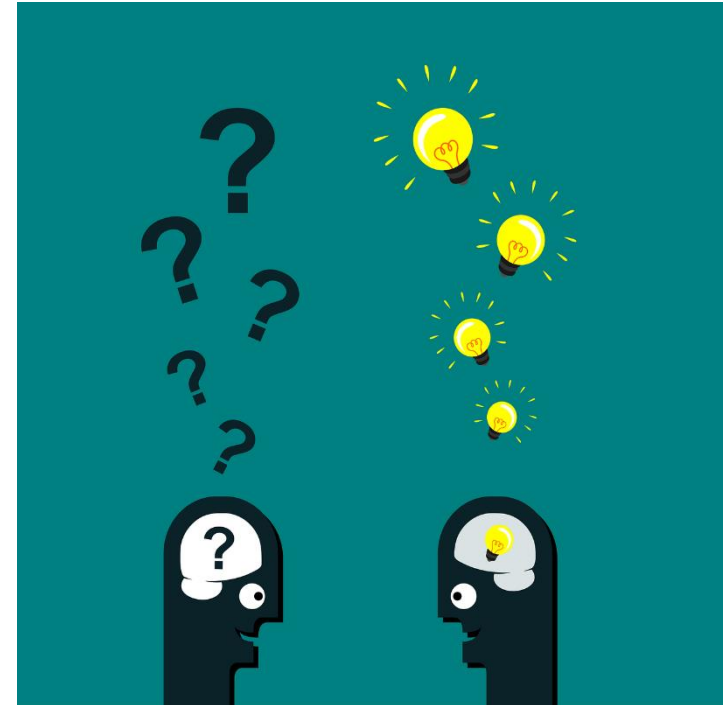
Assistance with:

- 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

<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
- www.medizintechnik.fau.de

...including today's presentation!

Why we expect you to look up information on your own:

FAU is a public university. → You don't pay tuition fees.
Everything is paid for by the German tax payer.

→ Staff is limited. What does this mean?

1300 students in the Medical Engineering program, 1 study advisor; if only 20 % of the students contact their study advisor with a question that generates 10 min. of work:
 $260 \times 10 = 2600 \text{ min.} = 43 \text{ hours of work (more than one work week)}.$

In short: Taking care of yourself is the “price“ you pay for not paying for your studies.

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 Campo, 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)
- Medical Robotics (English)

M9 – Masters Thesis (30 ECTS)

Master of Science (M.Sc.)

120 ECTS in total

***exception: HMDA, see HMDA catalog!**

- Total of 120 ECTS credits *should* be evenly spread over 4-5 semesters; there is no minimum or maximum amount of ECTS per semester but we recommend:

20-30 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)
- Recommended time for going abroad: 3rd or 4th semester (start planning now, see website)

- *Regular* duration of studies: 4 semesters/two years (can be extended to 5 semesters simply by re-registering + paying the semester fee), further extensions to a 6th or 7th semester and beyond 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' (also mandatory registration, but max. 2 chances, i.e. 1 year!)**
- **You can/must only take exams if you register for them. Exam registration is independent from course participation.**
- **Withdrawal** from registered exams: until 3 working days (Mon-Fri) before the exam day without a reason via Campo – or later in case of illness/severe reasons (send medical/other certificate to Mrs. Jahreis)

Winter semester 22/23 (October 1st 2022- March 31st 2023):

Lecture Period:	Oct 17th 2022- Feb 10th 2023
Exam Registration:	November 21st – Dec 11th 2022

(Reminder via email!)

Re-registration for summer 2022:	Feb 1st- Feb 8th 2023
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(Reminder via email!)

Semester break (no lectures):	Feb 10th – Apr 17th 2023
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Exam periods: Feb 13th – Feb 25th & Mar 23rd – Apr 15th 2023

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

www.fau.eu/education/advice-and-services/examination-offices/examinations-office-faculty-of-engineering/

- **Must be passed within one year (deadline: September 30th 2023).** Otherwise you cannot continue your studies in the 3rd semester.
- **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 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; exam also in WS
- 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: WS; exam also in SS
- Probability and Stochastic Processes: SS (starting in SS 23)
- Algorithms, Programming and Data Representation: WS, exam also in SS
- Fundamentals of Electrical Engineering: SS; exam also in WS
- Dynamical systems and control: SS; exam also in WS

- 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 2nd week, further details in the 1st lecture, attendance usually not mandatory → **Just attend the 1st lecture.**
- P: Praktikum/practical course (lab course) – attendance mandatory, early registration (see Campo) – **not relevant/recommended for 1st semester**
- S: Seminar – attendance mandatory, early registration (see Campo)- **not relevant/recommended for 1st 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)

Module Catalogs

Gruppe	Modulnummer	Module	Modulbezeichnung (Veranstaltungsname)	Abkürzung	V+Ü+S+P	Gesamt ECTS	1. Jahr WS SS	2. Jahr WS SS	Studien- und Prüfungs- leistungen	Department	Modulverantwortlicher / Dozent	WS/SS
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Wahlkatalog	M 1 Medizinische Vertiefungsmodule											
	M 1.1 ¹	Grundlagen der Anatomie & Physiologie für Nichtmediziner	AnaPhys_M1	4+0+0+0	5	2,5	2,5	0	0	60 s	VORKLIN	Prof. Dr. Clemens Forster
		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
	M 1.2	Medizinische Vertiefung 1			5	5	0	0	0	60 s	KLIN	N.N.
	M 1.3	Medizinische Vertiefung 2			5	0	5	0	0	60 s	KLIN	N.N.
	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
		IT-Unterstützung im Prozess der diagnostischen Bildgebung		1+0+0+0	1	1	0	0	0	45 s		Dr. Thomas Kauer
		Grundlagen der biologischen Strahlenwirkung I		2+0+0+0	2,5	2,5	0	0	0	45 s		PD Dr. med. Luitpold Distel
		Grundlagen der biologischen Strahlenwirkung II		2+0+0+0	2,5	0	2,5	0	0	45 s		PD Dr. med. Luitpold Distel
		Grundlagen der Krankheitsentwicklung		4+0+0+0	5	5	0	0	0	60 s		Prof. Dr. med. Harald Mang
		Medizinische Biotechnologie		3+0+0+0	3	0	3	0	0	45 s		Prof. Dr. med. Harald Mang
		Audiologie und Hörgeräte		3+0+0+0	3	0	3	0	0	45 s		Prof. Dr. med. Harald Mang
		Medizinische Physik der Strahlentherapie		3+0+0+0	3	0	3	0	0	45 s		Prof. Dr. med. Harald Mang
		Cognitive Neurowissenschaften		3+0+0+0	3	0	3	0	0	45 s		Prof. Dr. med. Harald Mang
		Augendiagnostik		3+0+0+0	3	0	3	0	0	45 s		Prof. Dr. med. Harald Mang
		Augenoperationen		3+0+0+0	3	0	3	0	0	45 s		Prof. Dr. med. Harald Mang
		Augenbeteiligung bei Allgemeinerkrankungen		3+0+0+0	3	0	3	0	0	45 s		Prof. Dr. med. Harald Mang
		Sehnmorphologie und Echographie in der Augenheilkunde		3+0+0+0	3	0	3	0	0	45 s		Prof. Dr. med. Harald Mang
					M 1 Medizinische Vertiefungsmodule							
					10	5	5	0	0	PL	siehe Wahlpflichtkatalog für alle Studiennrichtungen	

**‘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**

Ingenieurwissenschaftliche Kernmodule				V+Ü+S+P							PL				
Business Module / Basic Modules (B)					20	10	10	0	0						
Wahlkatalog	M 2.1	Ereignisgesteuerte Systeme Übung	EGS	2+2+0+0	5	5					90 s	INF	Prof. Dr.-Ing. Michael Gieß	WS	
	M 2.2	Grundlagen der Systemprogrammierung (Systemprogrammierung 1) Übung	GSP (SP 1)	2+2+0+0	5	0	5	0	0		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	EEL	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	0	5	0	0		90 s	EEL	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	EEL	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	0	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	EEL	Prof. Dr.-Ing. Walter Kellermann	SS		

Where can I find the catalogs?

Website of the Medical Engineering programme:

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

→ Studierende → Masterstudium → Überblick und
Modulkataloge **FPO 2022**

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

→ Current students → General Study Information Master's
Program → General Study Information & Course
Syllabus **(FPO 2022)**

- 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. through lectures “Nailing your thesis”, „Scientific Writing“ etc. (see Medical Engineering website).
- 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, 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

- 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**: **highly recommended for daily life, student jobs & future job!**
- Recommended languages to prepare for studying abroad:
e.g. English, Spanish, Portuguese, Italian, Finnish,...
- Language courses suitable for module group **M8 (Free Choice Uni)**
- **Most language courses are taught on-site again. Two online German beginner's courses available for Medical Engineering students who are still abroad.**

Online Tools



www.idm.fau.de

- 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 semester address (in Germany).**
- Problems with FAUcard: card@fau.de
- Problems with IdM account: service counter/‘Service-Theke’
RRZE: rrze-zentrale@fau.de **(in this building, 1st floor)**

www.idm.fau.de

Email address:

- An FAU email address has been generated for you.
- It is used as default recipient for emails 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 email address. Make sure you receive and read it!

Look up the courses from your module catalog

- Find out about their contents & lecturers.
- Find out about time and place (Pay attention to WS/SS!).



Select courses and compile your course schedule

- Instructions later today and on the Medical Engineering website

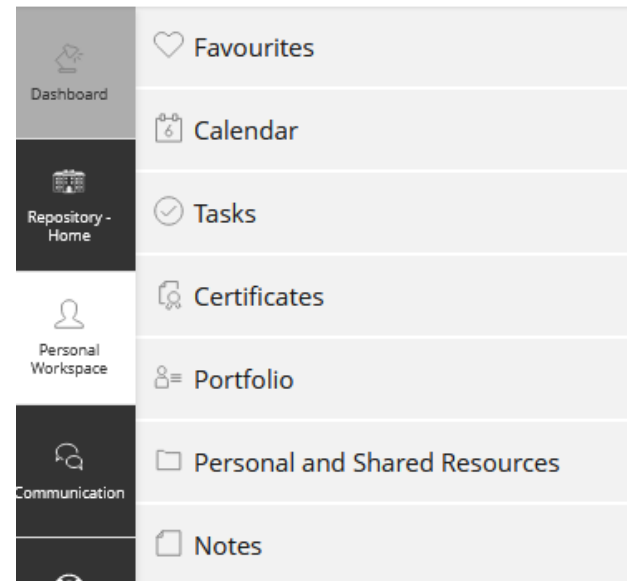
Exams

- Exam registration (mid-November)
- Withdrawal from exams
- Overview of registered exams
- Overview of grades and acquired ECTS credits

Certificates, administration

- Enrollment certificate, re-registration for SS 23

- <https://www.studon.fau.de>
- Often used for courses that require registration (seminars, practical courses)
- Generally used for sharing course materials, communication between lecturers and students



What's next?

1. **Compile your class schedule**
→ Campo (guided session by student association later today)
2. **Register for courses (**only if needed**)**, usually via StudOn (**see link on the respective page in Campo**)
If registration is not required, simply join the first lecture meeting. If you encounter problems with the StudOn course → contact your lecturer!
3. **Register for exams** → Campo (mid-November, reminder via email)
4. **Re-register for the next semester (1st week of February 2023)**
→ Campo, 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 winter semester 22/23**”
- As most exams will take place on-site, you should travel to Germany **by February** 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.

How to FAIL in your studies (fast and effectively)

1. Wait for others to tell you what to do. Be passive, don't inform yourself, don't search online, don't talk to people.
2. Direct emails from your study advisor to your spam folder.
3. **Don't read the study guide.**
4. **Don't read the FAQs on the study program website.**
5. **Don't read the footnotes in your module catalog.**
6. If there is a problem (e.g. last exam attempt), ignore it and deal with it as late as possible. Don't tell your tutor/lecturer/study advisor/psychologic counselor.
7. Don't engage in campus life (student organizations etc.)
8. Don't take language classes.
9. Don't organize study groups, whatsapp groups, zoom coffee hours from abroad etc. **Avoid contact with other students!**

Thank you for your attention!
Questions?

**Have a great start of the
semester!**

Stay healthy, curious and connected!