Friedrich-Alexander-Universität
Technische Fakultät

FAU

Medicine & Engineering

Our strong combination at FAU Erlangen-Nürnberg

Welcome, master‘s students of Medical Engineering!

Master Welcome Day, SS 23
Claudia Barnickel

Agenda

1. **Welcome by Prof. Tobias Reichenbach**
   (Director of the Medical Engineering program)
2. **Rotating Introduction to 3 Important Aspects of your Studies**
   (everybody will attend all 3 parts, but in different orders)
   - **Introduction to the Program Structure and Rules**
     Claudia Barnickel (Study Advisor & Coordinator Medical Engineering), this lecture hall (H4)
   - **Getting to know FAU and its Services**
     FSI Medizintechnik, seminar room, 2nd floor,computer science tower
   - **Introduction to the Student Association (FSI Medizintechnik) and FAU‘s Online Portals**
     FSI Medizintechnik, computer room, 1st floor, computer science tower
3. **Final get-together with question session in this lecture hall (H4)**

Growth Market Medical Technology

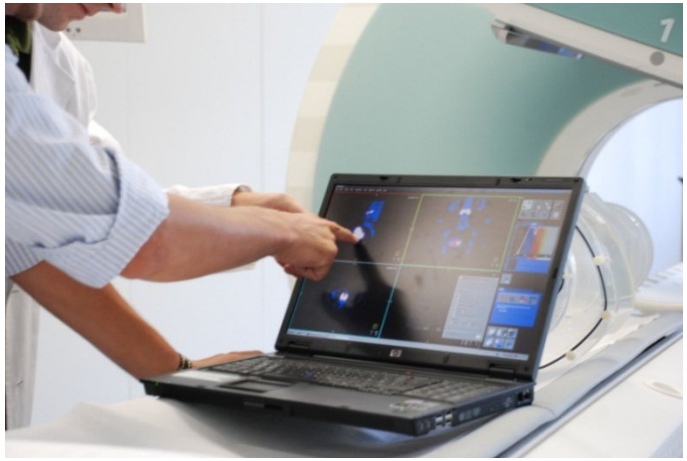
- **Increase in population and diseases**

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

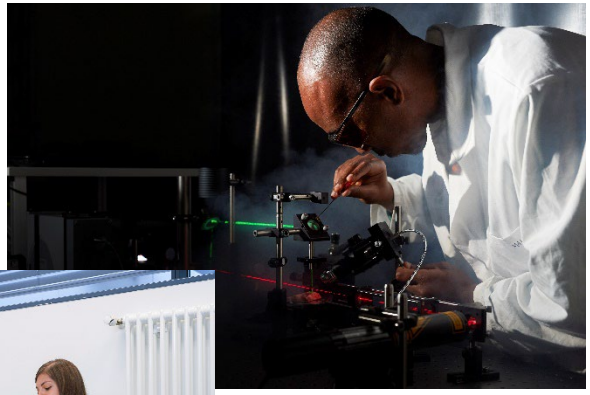
  - Diabetes: +50%
  - Infarction: +100%
  - Cancer: +50%

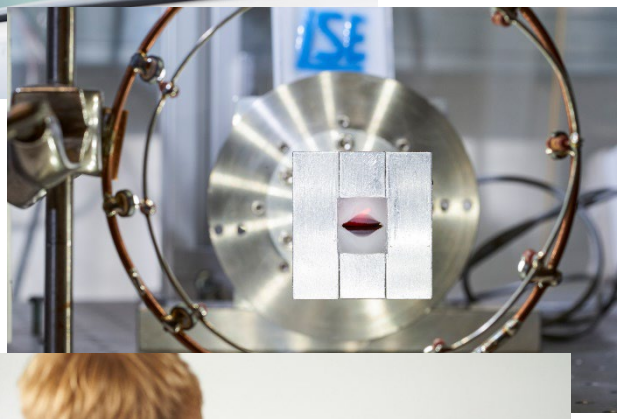
  Dementia: +100%
  Stroke: +100%

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



The Diversity of Medical Engineering at FAU





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 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 & some economics courses*)

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 and/or English)
- Health & Medical Data Analytics and Enterpreneurship (English)
- Medical Robotics (English)

M9 – Master‘s Thesis (30 ECTS)

Master of Science (M.Sc.)

120 ECTS in total

*exception: HMDA, see HMDA catalog!

Master Program Medical Engineering: Structure

- 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)

Semester & Exams

- *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 in justified cases; prerequisite: you pass your conditions in the first year (if you have any)!
- 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, exams take place once per semester in one of the two exam periods (not both).
- **You can/must only take exams if you are registered for them. Exam registration is independent from course participation.**
- Failing an exam: **2nd + 3rd chance** in the **following two semesters** (automatic + **mandatory** registration for repeat exam), 3 chances in total; **failed 3rd attempt = end of studies**
- Exception: conditions/'Auflagen' (also mandatory registration for repeat exam, but max. 2 chances; **hard 1 year-deadline**, even in case of illness etc.!)
- **Withdrawal** from registered exams: until 3rd working day (Mon-Fri; without public holidays) before the exam day without giving any reasons (self-deregistration via Campo portal) – or later in case of illness/severe reasons (send medical/other certificate to Mrs. Jahreis of the Examinations Office)

Semester & Exams

Summer semester 2023 (April 1st 2023 - September 30th 2023):

Lecture Period:	**Apr 17th - Jul 21st 2023**
Exam Registration:	**May 29th - Jun 18th 2023**
(Reminder via email!)	
Re-registration for winter 2023/24:	**Jul 1st – Jul 8th 2023**
(Reminder via email!)	
Semester break (no lectures):	**Jul 22nd – Oct 15th 2023**

Exam periods: **Jul 24th - Aug 5th & Sep 22nd - Oct 14th 2023**

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

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

Conditional Subjects/‘Auflagen‘

- **Must be passed within one year (deadline: March 31st 2024),** otherwise you cannot continue your studies in the 3rd semester (deregistration from the program). **The one-year deadline is defined by law and cannot be extended (not even in case of illness etc.)**
  - Concentrate above all else on passing your conditions!
  - If you don’t pass your conditions in your 1st semester, you have one last chance in your 2nd semester. → International students: Apply in parallel to another English-taught Master’s program for the subsequent semester as a backup plan. If you don’t pass your conditions and don’t have admission for another program, you lose your visa and have to leave the country!
- **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 to.

Conditional Subjects/‘Auflagen‘

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; exam also in WS
- 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

Types of Courses

- 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

Types of Exams/ Course Achievements

- **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

uppe	Modulnummer	Module: Modulbezeichnung (Veranstaltungsname)	Module: Abkürzung	V+Ü+S+P	Gesamt ECTS	1. Jahr WS ECTS	1. Jahr SS ECTS	2. Jahr WS ECTS	2. Jahr SS ECTS	Studien- und Prüfungs-leistungen	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	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	0	0	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 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	45 s		PD Dr. med. Luitpold Distel	WS
		Grundlagen der Kra[illegible]erkunde		4+0+0+0	5	5				90 s		Prof. Dr. med. Harald Mang	WS
		Medizinische Biote[illegible]nologie		3+0+0+0	5		5			120 s		Prof. Dr. med. habil. Dr. [illegible] Oliver Friedrich	WS
		Audiologie und Hörgeräte											
		Medizinische Physik der Strahlentherapie											
		Cognitive Neurowissenschaften											
		Augendiagnostik											
		Augenoperationen											
		Augenbeteiligung bei Allgemeinerkrankungen											
		Sehnervmorphologie und Echographie in der Augenheilkunde											

Wahlkatalog

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

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

Catalog for each branch of study

M 1	**Medizinische Vertiefungsmodule**				10	5	5	0	0	PL	siehe Wahlpflichtkatalog für alle Studienrichtungen		
M 2	**Ingenieurwissenschaftliche Kernmodule**			V+Ü+S+P	20	10	10	0	0	PL			
	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	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	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	0	5	0	0	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

Wahlkatalog

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

M9: Master‘s Thesis

- 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** (in 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): **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.
- **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.**

What‘s next?

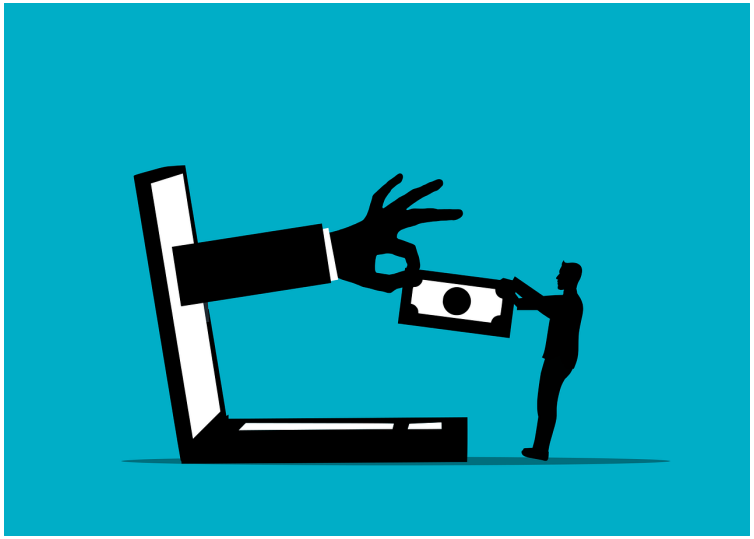
1. **Compile your class schedule**
   → Campo (guided session by student association today)
2. **Register for courses (only if needed),** usually via StudOn **(see link on the respective page in Campo)**
   If registration is not required, simply join the first lecture meeting. If you encounter problems with the StudOn course → contact your lecturer!
3. **Register for exams** → Campo **(end of May, reminder via email)**
4. **Re-register for the next semester (1st week of July)**
   → Campo, bank transfer **(reminder and details via email)**
5. **Study continuously from the beginning & pass exams** → study groups, time management, practice with old exams from FSI, establish a good system to study *in parallel* for different exams
6. **Actively report the completion of your conditional subjects**
   → Examinations Office (Mrs. Jahreis)

Important info for (international) students

- Make an appointment with a general medical practitioner and get all the recommended vaccines (among others: tick-borne encephalitis, TBE)!
- If you are not vaccinated with an EU-approved covid vaccine yet, you can also get vaccinated by any general practitioner.
- All recommended vaccines are covered by your health insurance (i.e they are free of cost).

Important info for all students

- **Beware of scams!** No university employee or professor will ever ask you to buy things for them (e.g. google play cards) or send them money. If this happens to you, the respective email account has been hacked. Please report to our Computer Center!



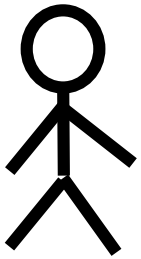
- Don‘t share your **personal data and passwords**!
- **Intellectual property** (e.g. citing in scientific publications), **authorship** of lecture recordings/materials, **personal ownership and rights** (regarding photos etc.) are taken extremely seriously! **Never use/share without asking/citing correctly!**

Success or problems in your studies don‘t just “happen“ to you…

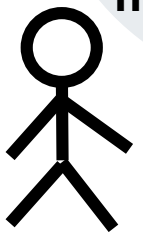
failed 3rd exam attempt
= deregistration from
the study program!

Most of the problems you will encounter are caused by a series of small bad decisions:

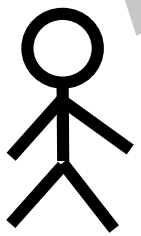
I won‘t read the study guide. I‘ll have random students explain to me what they think they understood about the program.



Should I look this up on the Medical Engineering website? Nah..I‘ll rather go with my gut feeling!

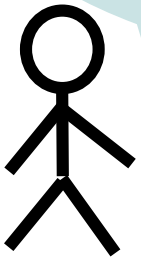


I don‘t need to socialize with other students. I am here to concentrate on my studies only.

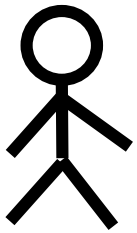


Success is built through a series of small good decisions:

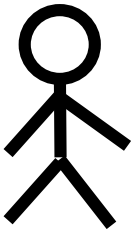
Let‘s attend a Medical Engineering event, so we can talk to students from higher semesters and learn about their experience. We might even meet PhD students and find a master‘s thesis?!



I‘ll sign up for a university sports course. This will keep me healthy and motivated for my studies.



I feel a little embarassed about this problem, but I better talk to my study advisor about it.



Many small steps set you up for success:

1. Be active. Inform yourself constantly, make use of all the official resources.
2. Read emails from your study advisor and the FAU administration thoroughly (relay FAUmail to personal email in the IdM portal).
3. Read the Medical Engineering study guide.
4. Read the Medial Engineering study program website.
5. Read the footnotes in your module catalog.
6. If there is a problem (e.g. last exam attempt) talk about it with your tutor/lecturer/study advisor/psychologic counselor as early as possible.
7. Engage in campus life (sports, student organizations, trips, fairs etc.).
8. Take language classes and soft skills workshops.
9. Organize study groups, whatsapp groups, coffee hours in the cafeteria etc. Find your peer group and build a network!
10. Be kind. Treat people at the university like you want to be treated.

Thank you for your attention!
Questions?

The challenge of the German university system is its freedom.The beauty of the German university system is its freedom. The challenge of the German university system is its freedom.The beauty of the German university system is its freedom. The challenge of the German university system is its freedom.The beauty of the German university system is its freedom. The challenge of the German university system is its freedom.The beauty of the German university system is its freedom. The challenge of the German university system is its freedom.The beauty of the German university system is its freedom. The challenge of the German university system is its freedom.The beauty of the German university system is its freedom. The challenge of the German university system is its freedom.The beauty of the German university system is its freedom. The challenge of the German university system is its freedom.The beauty of the German university system is its freedom. The challenge of the German university system is its freedom.The beauty of the German university system is its freedom. The challenge of the German university system is its freedom.The beauty of the German university system is its freedom.

Have a great start of the semester!
Stay active, curious and connected!