universität ulm

Master Programmes in English

Content


PUPPE
POUPÉE
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INSECTE
GARTEN
JARDIN
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BIJOUX
NEST
NID
FARBIGE ORDNUNG
SURFACE ORGANISÉE

Creative spirit. Human touch.

In 2017 Ulm University was again ranked first among “Young Universities” in Germany. Ulm University is an outstanding university in the area of research and science. Today about 10,000 students are enrolled at the four faculties:

- Natural Sciences
- Mathematics and Economics
- Engineering, Computer Science and Psychology
- Medicine

All students receive a profound mentoring during their studies.

Study out of the ordinary - Study PLUS

Creative spirit and human touch - that is what Ulm University stands for. Modern learning-techniques and latest equipment make your studies an interesting and a worthwhile experience.
No matter what kind of support you need for succesful studies - we offer a wide range of additional and supportive tutoring events. The campus infrastructure is excellent because lecture halls, libraries and canteens are all close together and can easily be reached within some minutes walk. The campus is well connected thanks to many different bus lines.

Research & links to economy

Right from the beginning, Ulm University asserted its claim as a research university. Thanks to its interdisciplinary and cooperative working methods, the University has been able to establish numerous research concentrations and Collaborative Research Centres both in basic and applied research, achieving successful results.
Our research focus is:

- Trauma Sciences
- Molecular mechanisms of ageing
- Quantum Science and Technology
- Energy Conversion and Storage
- Interdisciplinary Data Science and Artificial Intelligence

Bonds between research at Ulm University and the regional economy are strong. Numerous successful cooperations are awarded annually with the so-called “University/Industry Cooperation Award“. But also students profit from these research networks as scientific results are transferred to daily study routine.

⇢ Studies: https://www.uni-ulm.de/en/study/study-at-ulm-university

⇢ Study programmes: https://www.uni-ulm.de/en/study/study-at-ulm-university/study-programmes/

⇢ Mentoring & tutoring: https://www.uni-ulm.de/en/study/study-at-ulm-university/studienlernwerkstatt/

⇢ Research: https://www.uni-ulm.de/en/research

Your future. Your choice. Your university.

Ulm feels good

The City of Ulm is a friendly and safe place in the South of Germany. It is situated on the Danube River, in between the city Stuttgart and the Bavarian hot spot. About 170,000 people live in the city area of Ulm and Neu-Ulm.

The region is well-known for its economic strengths and high standard of living. Ulm and the region offer many events among them various traditional customs like “Nabada” – a water festival during the summer time – but also museums, galleries, bars and shopping facilities. Last but not least, the regional “Swabian” food is delicious – enough reasons to come and get to know Ulm and Ulm University!

⇢ City of Ulm:
https://chancengerechtigkeitundvielfalt.ulm.de/
⇢ Ulm University:
https://www.uni-ulm.de/en
⇢ International Office:
https://www.uni-ulm.de/en/io
⇢ Application and enrolment:
https://www.uni-ulm.de/en/study/application-and-enrolment
⇢ Student service Office:
https://studierendenwerk-ulm.de

Facts & Figures about Ulm University

- About 10,000 students
- More than 60 study programmes
- 4 Faculties
- More than 200 professors
- 2,000 academic employees
- University sports with about 100 courses
- Over 20 leisure groups
- More than 20 students representation groups
- 9 student dormitories offered by the Student Service Office
- Bus connections to campus, city and dormitories

Internationality

Coming from abroad and you want to study in Ulm? No problem! We offer a wide range of programmes and are well networked with universities worldwide. In order to learn German and to get into touch with German students, who will help you during your start at Ulm University, we offer a Buddy Programme. Furthermore, several introduction events and trips will make your stay in Ulm a valuable experience. There are many options for accommodation and further support offered by our International Office as well as by the Student Administration and Examinations Office.

Faculty of Engineering, Computer Science and Psychology

- Cognitive Systems
- Communication and Information Technology

Master of Science in Cognitive Systems

Our cognitive functions allow us to interact with the environment, to smoothly adapt and react to external influences, and to gain knowledge. We do so by using various senses and relying on previous experiences from other contextual situations and our ability to learn, reason and plan future actions. Technical systems that implement or imitate the cognitive functions of humans are what we call cognitive systems. In order to implement such functionalities, systems must be equipped with capabilities for

- perception and cognition,
- planning and reasoning for action control and problem solving,
- learning and memory, as well as
- interaction.

The programme is completely taught in English and introduces students to the theoretical and empirical foundations of cognitive skills, which serve as the basis for the development of models. These models allow for connecting neuro-biological mechanisms, theoretically well-founded concepts, and cognitive behaviour and for analysing this in psychophysical studies and psychological tests. The results build the foundation for various applications, e.g., a new generation of assistance and companion systems, intelligent robots, vehicles, gadgets and games, or even intelligent cities, with the goal of supporting and improving human performance.

Overview

- Standard period of study programme: 4 semesters
- Programme start: winter semester
- Admission requirements: Restricted admission
  Bachelor‘s degree with examinations in study programmes in psychology, computer science, or cognitive science.
  Proof of a bachelor’s degree with an overall grade of 2.5 or better.
  Graduates of other subjects, in particular engineering, physics, biology with a focus on neuroscience, and mathematics, can also be considered, provided that the subject-specific suitability for the degree programme is convincingly laid out by the candidate.
- Language skills: Good proficiency of English
  (at level C1 or with a min. of 95 points in the internet-based TOEFL or IELTS with an overall band score of at least 7.0)
- Fees: please see page 47
- Online application period: April 1st to May 15th
- Application procedure:
  For German applicants and applicants enrolled in an Ulm University programme: https://www.uni-ulm.de/index.php?id=56317
  For applicants with foreign nationality: https://www.uni-assist.de

Semester						Credit Points 120
1st	Basic subject / Comp Sci / Statistics 6 CP	Basic subject 6 CP	Basic subject 6 CP	Interdiscipl. subject 6 CP	Interdiscipl. subject 6 CP	30 CP
2nd	Basic subject 6 CP	Interdisciplinary subject 6 CP	Applied subject 8 CP	Special subject 4 CP	Special subject 6 CP	30 CP
3rd	Applied subject 8 CP	Applied subject 8 CP	Special subject 4 CP	Special subject 4 CP	Special subject 6 CP	30 CP
4th	Master's Thesis 30 CP					30 CP

- Contact
  cogsys@uni-ulm.de
- More information
  https://www.uni-ulm.de/en/study/study-at-ulm-university/study-programmes/course-information/course/cognitive-systems-master/

Master of Science in Communication and InformationTechnology

As the global economy transitions from the industrial to the information age, a broadband and omnipresent communications infrastructure becomes each nation‘s most vital resource, creating new and exciting professional opportunities everywhere on the planet. A global workplace for highly qualified engineers of tomorrow develops, which requires

- a deep understanding of the concepts that fuel the rapid technological change in the field,
- as well as a solid appreciation of the non-technical issues which so often make the difference between success and failure

The Master of Science Programme in Communication and Information Technology at Ulm University is uniquely designed to meet these demands. Established as Communications Technology in 1998, it was among the first educational programmes in Germany taught exclusively in English, and designed specifically for foreign students.

We are devoted to giving you the right education to help shape communication and information systems of the future.

Our curriculum offers you a high degree of flexibility to select contents according to your personal interests, while providing you experienced guidance for your career.

Overview

- Standard period of study programme: 4 semesters
- Programme start: summer semester
- Admission requirements: Above-average performance in the completed degree. Willingness to work in and integrate into a challenging, multi-cultural environment. For foreign students: B.Sc. or B.Eng. (or higher degree), usually of four years duration, in Electrical Engineering or Electronics or a closely related field.
  For German students: A Bachelor or equivalent degree from a University or a University of Applied Sciences in one of the above subjects.
- Language skills: Good proficiency of English (at level C1 or with a min. of 95 points in the internet-based TOEFL or IELTS with an overall band score of at least 7.0)
- Fees: please see page 47
- Application period:
  August 15 to September 30
- Application procedure:
  For applicants with a foreign education certificate:
  https://www.uni-assist.de
  For applicants with a German education certificate:
  https://www.uni-ulm.de/index.php?id=97250

Semester	Module 1	Module 2	Module 3	Module 4	Module 5	ASQ*	Credit Points 120
1st	Compulsory Module 7 CP	Compulsory Module 5 CP	Specialisation Modules 14 CP			German 1 4 CP	30 CP
2nd		Compulsory Module 6 CP	Specialisation Modules 15 CP	Practical Module 5 CP		German 2 4 CP	30 CP
3rd		Compulsory Module 5 CP	Specialisation Modules 12 CP	Practical Module 5 CP	Complementary Modules 8 CP		30 CP
4th	Master's Thesis 30 CP						30 CP

- the modules are individually selectable

* ASQ: Additional Transferable Skills

- Contact
  ci-tech@uni-ulm.de
- More information
  https://www.uni-ulm.de/en/study/study-at-ulm-university/study-programmes/course-information/course/communication-and-information-technology-master


fujitsu
.GDAXI
TRLN | Financial Chart
TRLN 70.550000 -0.3100 -0.44%
TRLN SMA3
TRLN ROC 14 4.976
TRLN VOL 50,521
June 2019
July 2019
August 2019
September 2019
October 2019
1D 5D 1M 3M 6M YTD 1Y 2Y 5Y 10Y 20Y Max WTD MTD QTD
MENU
ECO
INPUT
AUTO

Faculty of Mathematics and Economics

- Finance

Master of Science in Finance

focuses on...
... actuarial science, financial mathematics and financial economics. These areas are central to research and teaching of our faculty.
... quantitative state-of-the-art techniques that give you a competitive edge in the job market. There are many finance programs in the world but few of them are as flexible and quantitative as ours.

The program is quantitative, flexible and very practical. It allows you to specialize in Financial Mathematics, in Financial Economics or in Actuarial Science. The program involves

- advanced quantitative methods in order to solve practical problems.
  Example applications are portfolio optimization, the pricing and risk
  analysis of credit derivatives, asset-backed securities and insurance
  products, or bankruptcy prediction.
- GARP's Financial Risk Manager or the professional examination of the German Actuarial Society (DAV).
- an alumni network, a career fair as well as industry contacts that will
  help you to start into your career. Many theses, for example, are written in co-operation with industry partners

Overview

- Standard period of study programme: 4 semesters
- Programme start: winter semester
- Admission requirements: Bachelor in Mathematics, Physics, Engineering, Computer Science, Economics with a quantitative focus and other degrees in a quantitative subject.
- Language skills: Good proficiency of English (IELTS: 5.5 min. or TOEFL: 72 min.). Applicants who have completed a Bachelor taught in English or whose native language is English do not need to present a test certificate.
- Fees: please see page 47
- Online application period: January 15th to March 15th
- Application procedure: https://www.uni-ulm.de/en/study/application-and-enrolment/masters-programmes/finance-master/

	Specialization		
Modules	Financial Mathematics	Financial Economics	Actuarial Science
Discrete Time Financial Mathematics 4 CP	✓	Optionally	✓
Continuous Time Financial Mathematics 4 CP	✓	Optionally	Optionally
Stochastic Analysis 4 CP	✓	Optionally	Optionally
Asset Pricing 7 CP	✓	✓	Optionally
Derivatives 7 CP	Optionally	✓	✓
Electives	47 CP in Mathematics and in Financial Economics (Minimum of 32 CP in Mathematics and Minimum of 11 CP in Financial Economics)	32 CP in Financial Economics, 20 CP in Mathematics or in Quantitative Methods	25 CP in Actuarial Science, 16 CP in Mathematics, 7 CP in Financial Economics 7 CP in any area
Two seminars 8 CP	✓	✓	✓
Project Class in Asset Management (PAM) 4 CP	Optionally	✓ (PAM or PFE)	Optionally
Practical Financial Engineering (PFE) 4 CP	✓		✓ (PFE or RMR)
Risk Management Roundup (RMR) 4 CP	✓	✓	
Practical Actuarial Science 4 CP	-	-	✓
Additional Key Qualifications 8 CP	✓	✓	✓
Master's Thesis 30 CP	✓	✓	✓

Note: Within the area "Financial Economics" you can also choose courses from Actuarial Science.

- Contacts
  mscfinance@uni-ulm.de
- More information
  https://www.uni-ulm.de/mawi/master-in-finance/

Faculty of Medicine

- Molecular Medicine
- Molecular and Translational Neuroscience

Master of Science in Molecular Medicine

In todays post-genomic world, researchers and scientists in the field of molecular medicine are transforming the way we understand, treat, and cure diseases. Germany is a prominent leader in this fast-moving field and is spearheading many of the latest innovations and cutting-edge approaches.

This exciting degree programme enables students to expand and enhance their

- understanding of the molecular pathways that lead to the proliferation, differentiation, and death of cells,
- knowledge of the physiology of cells and organs,
- insights into the pathophysiology of diseases,
- practical laboratory skills.

Students in this programme have the opportunity to specialise in the research areas Molecular Oncology or Toxicology. Another highlight is the possibility to take part in a Double Degree programme with partner universities in Padua (Italy) and Oulu (Finland). They can spend one or two semesters at one of the partner universities and complete their studies with an international Double Degree Master‘s degree.

A Master‘s degree in molecular medicine equips students with the knowledge and skills necessary to undertake scientific projects in the field of molecular medicine and to review and critically discuss published data related to this research area. Students profit from our professors’ professional ties with nearby hospital partners, other researchers, healthcare providers, and industry specialists.

Overview

- Standard period of study programme: 4 semesters
- Programme start: winter semester
- Admission requirements: Admission requirements: Proof of a Bachelor‘s degree in Molecular Medicine or another degree programme with essentially the same content (e.g. Biochemistry, Biomedicine, Human Biology, Molecular Biology, Molecular Biotechnology, Molecular Life Science). Final grade of the bachelor‘s degree of 2.5 or better.
- Language skills: English language skills at level C1 of the Common European Framework of Reference for Languages (CEFR). Further information and recognised language certificates can be found in the FAQ section on the website of the Master‘s degree programme in Molecular Medicine
- Fees: please see page 47
- Online application period: April 1st to May 15th
- Application procedure: www.uni-ulm.de/index.php?id=19429

Semester					Credit Points 120
1st	Current Concepts in Stem Cell Biology and Regenerative Medicine (6 CP)*	Bioinformatics and Systems Biology (6 CP)*	New Drug Discovery, Development and Evaluations (6 CP)*	Practical Training in Laboratory Methods (9 CP)	30 CP
	Translational Imaging (3 CP)*	Additional compulsory elective course(s) of other study programmes (3 CP / 6 CP)*			
2nd	Block "Molecular Oncology": 4 weeks research internship, seminar with integrated lecture (12 CP)	Bioethics, Philosophy and Good Practice of Science (6 CP)	Block "Trauma and Infection": 4 weeks research internship, seminar with integrated lecture (12 CP)		30 CP
3rd	Block "Cell Biology": 4 weeks research internship, seminar with integrated lecture (12 CP)	Clinical Trials, Project Management and Funding (6 CP)	Block "Molecular Oncology II" or "Toxicology": 4 weeks research internship, seminar with integrated lecture (12 CP)		30 CP
4th	Master's Thesis and Disputation including Journal Club and Progress Report (30 CP)				30 CP

* Compulsory elective modules. You must choose courses with 21 CP out of these options (further modules are listed in the module handbook).

- Contact
  studiendekanat.molmed@uni-ulm.de
- More information
  https://www.uni-ulm.de/en/medizinische-fakultaet/studium-und-lehre/studienangebot/molecular-medicine-master/

Master of Science in Molecular and Translational Neuroscience

The MTN programme is a research-oriented Master's degree designed to provide students with advanced education in both basic research and clinically and therapeutically oriented neuroscience. The primary objective is to enhance the diagnosis and treatment of neurological and psychiatric disorders.

At the beginning the cellular and molecular processes in the nervous system that can lead to disorders are taught. The theoretical, methodological and practical basic knowledge is then applied to potential new diagnostic and therapeutic procedures and clinical applications. The focus is on understanding and researching molecular mechanisms and neurological and psychiatric diseases with the aim of improving diagnostics and developing drugs and therapeutic procedures against the diseases, in addition to basic research.

- Cooperation with the pharmaceutical industry partner Boehringer Ingelheim who shows the way from basic research to the development of therapeutics
- Excellent supervision in small student groups
- Training in modern laboratories of Ulm University and University Hospital Ulm
- Wide range of elective courses and individual focuses
- International environment

Overview

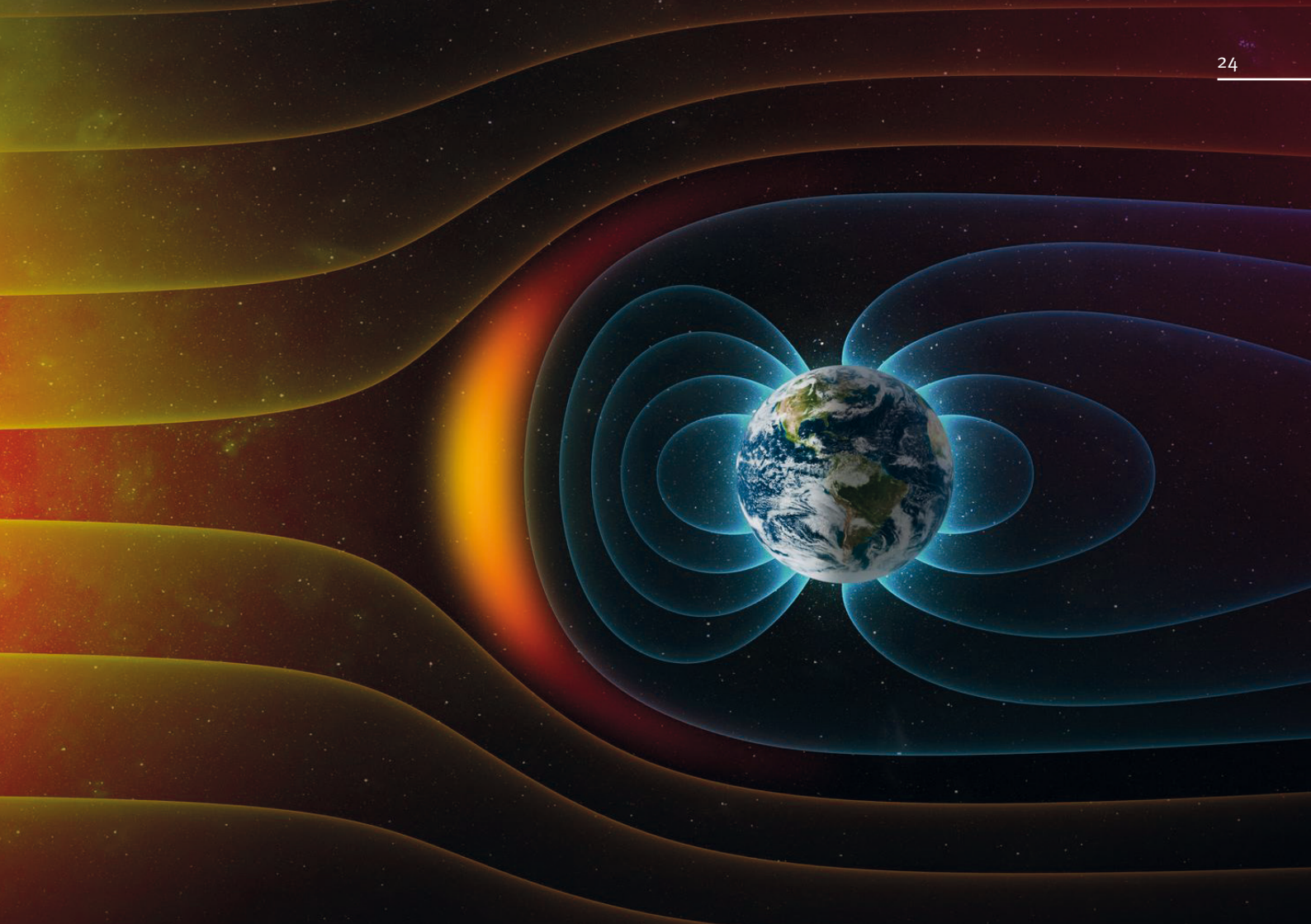
- Standard period of study programme: 4 semesters
- Programme start: winter semester
- Admission requirements: Proof of a Bachelor‘s degree in a Life sciences program such as Biology, Biochemistry, Molecular Medicine, Physiological Chemistry or another degree program with essentially the same content.
  Final grade of the Bachelor‘s degree of 2,7 or better.
- English language proficiency at level C1 CEFR (Common European Framework of Reference for Languages). Accepted tests see MTN website FAQ section.
- Fees: please see page 47
- Online application period: April 1st - May 15th
- Application procedure: www.uni-ulm.de/?id=63846

Semester				CP
1.	Introduction to Molecular and Translational Neuroscience (18 CP) - Introduction to Human Neuroanatomy - Introduction to Human Neurophysiology - Molecular and Translational Neuroscience - Practical Training in Laboratory Methods		Compulsory elective modules to Introduction in MTN (min. 12 CP)	30
2.	From Basic Research to Product (6 CP) - Lecture - Seminar		Compulsory elective modules for Advanced MTN (min. 21 CP)	27
3.	Advanced Molecular and Translational Neuroscience (17 CP) - Molecular and Translational Neuroscience Advanced Lecture - Molecular and Translational Neuroscience Advanced Seminar - Molecular and Translational Neuroscience Advanced Practical Training	Neurological Diseases (3 CP)	Advanced Methods in Molecular and Translational Neuroscience (10 CP)	30
1.–4.	Complementary area (min. 3 CP)			3
4.	Masterthesis incl. Disputation			30

■ Compulsory courses ■ Compulsory Elective Courses CP (credit points) = ECTS (∑ min. 120)

■ Contact
mtn@uni-ulm.de

■ More information
https://www.uni-ulm.de/en/study/study-at-ulm-university/study-programmes/course-information/course/molecular-and-translational-neuroscience-master/



Faculty of Natural Sciences

- Biology
- Biophysics
- Chemistry
- Chemical Engineering
- Energy Science and Technology
- Physics
- Quantum Engineering

Master of Science in Biology

You will...
... design your studies individually by combining the modules on offer and thus set your own specialisation.

... learn how to contribute to scientific questions based on known technologies and to document your results confidently and accurately, in accordance with the Guidelines of Research Integrity and Good Scientific Practice.

In addition to your biological focus, you will receive detailed training in basic application subjects such as data analysis and scientific integrity as well as in a medical subject. Complete your training by selecting additional courses outside of the field such as language courses, computer science, psychology, or philosophy, and become a truly well-rounded scientist.

Overview

- Standard period of study programme: 4 semesters
- Programme start: winter semester (above 2.5 GPA in German grades)
- Admission requirements: Qualified Bachelor's degree in biology or biochemistry. Strong academic records
- Language skills: Good proficiency of English (IELTS: 5.5 min. or TOEFL: 72 min.)
- Fees: please see page 47
- Online application period: February 1st - March 15th
- Application procedure: www.uni-ulm.de/index.php?id=84682

- Contact
  stephanie.wittig-blaich@uni-ulm.de
- More information
  https://www.uni-ulm.de/studium/studieren-an-der-uni-ulm/studiengaenge/studiengangsinfo/course/biology-master/

<table>
<tr><td rowspan="2">Semester</td><td rowspan="2">Compulsory
54 CP</td><td colspan="4">Compulsory elective
57 CP</td><td rowspan="2">Complementary
9 CP</td><td rowspan="2">Credit points
120</td></tr>
<tr><td>Reseach focus Biology</td><td>Advanced topics in biological resilience</td><td>Biology in Praxis</td><td>Research focus Medicine</td></tr>
<tr><td>1st</td><td>Biology in Ulm: Stress response and resilience of biological systems</td><td rowspan="3">e.g.
· Molecular biology of Archaea
· Advanced microbiology
· Cell biology & genetics
· Endocrinology
· Conservation genomics
· Applied Molecular Ecology and Evolution
· Neurobiology & Behaviour
· Adaptation and diversity in tropical ecosystems
· Tropical Ecology in Costa Rica
· From tree biology to forest ecology
· Molecular plant biology</td><td rowspan="3">Lectures of modules of the area "Research focus Biology" & other offered courses in Biology</td><td rowspan="3">· Excursions
· Career perspectives in life science
· Career exploration in Quality Assurance</td><td rowspan="3">· Human genetics
· Virology
· Pharmacology & Toxicology
· Clinical Neuroscience</td><td rowspan="3">Additional, elective courses offered in other study programmes at Ulm University
e.g.
Language courses</td><td>30 CP</td></tr>
<tr><td>2nd</td><td>Advanced skills in life sciences</td><td>30 CP</td></tr>
<tr><td>3rd</td><td>Advanced methods in Biology</td><td>30 CP</td></tr>
<tr><td>4th</td><td colspan="6">Master thesis</td><td>30 CP</td></tr>
</table>

Master of Science in Biophysics

Biophysics is an exciting and rapidly growing field where physical methods are used to analyze and understand the complexity of life at all levels.

Our innovative Master's programme in Biophysics offers you a strong foundation in practical skills and cutting-edge research, and a flexible, interdisciplinary curriculum. The first year emphasizes lab experiments and lectures, while the second year focuses on an extensive research phase. Dive into a dynamic learning environment, where you are trained in quantitative thinking as well as state-of-the-art experimental techniques and instrumentation, closely aligned with Ulm University's pioneering research initiatives.

Key areas of focus include:

- Biophysics and Advanced Imaging Technologies
- Biochemistry
- Data Science Software Engineering
- Physics
- Chemistry
- Biology

Gain expertise at the forefront of science and open doors to diverse career opportunities in academia, industry, and beyond.

Overview

- Standard period of study programme: 4 semesters
- Programme start: winter semester, summer semester
- A qualified Bachelor's degree in either Physics, Econophysics, Chemistry, Biochemistry, Molecular Medicine, Biology or Biotechnology or an equivalent study course. Please see website for details: https://www.uni-ulm.de/en/study/application-and-enrolment/masters-programmes/master-biophysics-englisch/
- Language skills: Good proficiency of English B2 Niveau. Applicants who are native speakers do not need to submit any English certificate.
- Application procedure: External applicants must complete an online registration.
- Online application period: Summer semester: 1 December - 15 January. Winter semester: 1 April - 15 May
- Application procedure: https://www.uni-ulm.de/index.php?id=97254
- Fees: please see page 47

<table>
<tr><th>Semester</th><th>A – Compulsory

69 CP</th><th>B1 – Adaptation

9 CP</th><th>B2 – Biophysics Electives

6 CP</th><th>B3 – Internship

15 CP</th><th>B4 – Specialization

18 CP</th><th>C – Complementary

3 CP</th><th>Credit Points

120 CP</th></tr>
<tr><td>1st</td><td>Biophysics: lecture series, seminar and Laboratory
18 CP</td><td>Introductory biophysics and lectures for students from different backgrounds.</td><td rowspan="2">Biophysics lectures
6 CP</td><td></td><td></td><td>ASQs (Additional transferable skills)

Language courses</td><td>30 CP</td></tr>
<tr><td>2nd</td><td>Biophysics laboratory
6 CP</td><td></td><td rowspan="2">Research internship
15 CP</td><td rowspan="2">Chose advanced modules e.g. from biology, physics, data science and/or chemistry.</td><td rowspan="2"></td><td>30 CP</td></tr>
<tr><td>3rd</td><td colspan="3">Biophysics research project
15 CP</td><td>30 CP</td></tr>
<tr><td>4th</td><td colspan="6">Master’s Thesis
30 CP</td><td>30 CP</td></tr>
</table>

- Contacts
  biophysics.msc@uni-ulm.de
- More information
  https://www.uni-ulm.de/studium/studieren-an-der-uni-ulm/studiengaenge/studiengangsinfo/course/biophysics-master/

Master of Science in Chemistry

Chemistry is without a doubt a fascinating science – a progressive future would be unthinkable without it. It is used in research laboratories to develop new materials and substances which accompany us in daily life as seemingly invisible helpers. Chemical reactions are found both in the biotic (living) and abiotic (non-living) world. The art of transferring knowledge derived from nature into research and development never ceases to inspire researchers all around the world. Chemistry provides a richness of perspectives, professional variety and is an important component of the sustainable development of our social prosperity. Especially the production, conversion and storage of energy are fundamentally important chemical issues for current and future generations.

Right from the beginning of the Master's programme you get to choose your focus. The existing range of teaching and research fields to choose from offers maximum flexibility. Students can select courses from seven major fields of Chemistry and specialize in one of the following four content-related profiles:

- Chemistry of Energy Storage and Conversion
- Sustainable, Green and Environmental Chemistry
- Chemistry of Molecular Materials Light Matter Interaction
- Chemistry of Healthcare and Biomaterials

Overview

The following list provides some information about some of the highlights our institutes and cooperation partners offer:

- Batteries, Photo-/Bioelectrochemistry
- Interfacial Chemistry, Electrochemical Energy Storage
- Photocatalysis, Heterogeneous catalysis, further types of catalysis
- Solar cell applications, Organic Electronics
- Synthesis of mesoporous materials with controlled morphology
- Infrared sensor technology and spectroscopy, NMR Spectroscopy
- Molecular Recognition, Ultra-trace analysis
- Nanomaterials, biomaterials, energy materials
- Applications of photonics and biomedicine
- New ways for structure formation
- Transport trajectories in Chemical Reactors
- Additive Manufacturing in Process Engineering

- Contact
  christian.vogl@uni-ulm.de
- More information
  https://www.uni-ulm.de/nawi/naturwissenschaften/studium/studiengaenge/studiengang/course/chemistry-master/

Structure			CP in semester				Exam
Areas / Modules	CP	SWS	1	2	3	4	Number of exams
Examination area A: Compulsory modules ("Pflichtmodule")	**45**						
A - Master's Thesis	**45**						
Preparatory Seminar for the Master's Thesis	15	3 Months			15		LN
Master's Thesis	30	6 Months				30	MA
Examination area B: Compulsory elective modules ("Wahlpflichtmodule")	**66-72**						
B1 - Subject-related electives in Chemistry	**min. 54**						
Inorganic Chemistry	min. 18	i.e. 6S + 12P		18			3+LN
Organic Chemistry	min. 18	i.e. 6S + 12P		18			3+LN
Physical Chemistry	min. 18	i.e. 6S + 12P		18			3+LN
Analytical Chemistry	min. 18	i.e. 6S + 12P		18			3+LN
Macromolecular Chemistry	min. 18	i.e. 6S + 12P		18			3+LN
Theoretical Chemistry	min. 18	i.e. 6S + 12P		18			3+LN
Energy Technology	min. 18	i.e. 6S + 12P		18			3+LN
B2 - Topic-related electives in Chemistry	**min. 12**						
Electives in all subjects of Chemistry and chemistry-related subjects	min. 12	i.e. 12S		18			4-6
Examination area C: Complementary modules ("Ergänzungsmodule")	**3-9**						
C - Transferable Skills, Language Skills, other subjects	**min. 3**						
Transferable/Language skills ("ASQ")	3	i.e. 2V or 2S					1
Other subjects	-	depends on choice					1-2
	120		**30**	**30**	**30**	**30**	

Legend

SWS = weekly attendance hours ("Semesterwochenstunden"), LN = Study achievement ("Leistungsnachweis")
V = lecture ("Vorlesung"), S = Seminar, P = lab course and/or project ("Praktikum"), Ü = Übung (exercise)
CP = credit points ("Leistungspunkte")

Compulsory elective Area ("Wahlpflichtmodule")

Please choose three subjects in area B1. Two out of those three subjects must be Inorganic, Organic or Physical Chemistry. There is a free choice of the third subject. In each subject, a project work has to be carried out as a study achievement and several graded modules have to be taken to achieve at least 18 CP in every chosen subject.
Further, choose modules as you wish from the offered selection of all chemical subjects as well as chemistry-related subjects in area B2. Here, you must achieve at least 12 CP. **Together with area C you must achieve a total of at least 75 CP.**

Complementary Area ("Ergänzungsmodule")

In addition to the soft skills and the non-chemical minor subject, modules from the entire range of courses at Ulm University can be taken or modules as part of a mobility. **Together with area B you must achieve a total of at least 75 CP.**

Subject-related or topic-related Profiles

Depending on your choice of electives it is possible to be awarded a certificate of up to two selected chemical profiles together with your final degree. Please check the website of the Department of Chemistry for further information.

Master of Science in Chemical Engineering

focuses on...
... chemical conversion of materials and the related technical processes and equipment.
... modern methodological procedures like mathematical modelling of chemical processes.
... chemical reaction engineering techniques for energy storage and conversion and related technologies.

Students learn in a truly international environment and work together with fellows from other countries, cultures and backgrounds. Joint work in tutorials, labs and project groups will broaden the horizon and enable to interact respectfully in international teams and organizations.
At Ulm University students will profit from small groups and excellent tutoring during their studies. Additionally, there exist cooperations between Ulm University and industry partners as well as research centers such as Helmholtz Institute and Center for Solar Energy and Hydrogen Research.
Chemical engineers participate in major industrial corporations, small and medium-sized enterprises and the civil service. Due to broadly based training, chemical engineers match the multifaceted needs of the modern job market. Professional activity is not restricted to the chemical industry, but extends to many associated industries.

Overview

- Standard period of study programme: 4 semesters
- Programme start: winter and summer semester
- Admission requirements: Qualified Bachelor's degree in chemical engineering or equivalent programmes.
- Language skills:5.5 points or more (IELTS IELTS Academic (IELTS online) or IELTS Indicator); if both score and CEFR level are indicated, the higher indicated language proficiency level will be recognised 72 points or more in the Test of English as a Foreign Language internet-based (TOEFL iBT or TOEFL iBT home edition)
- Fees: please see page 47
- Online application period: For winter semester: 15.02. until 15.03.
  For summer semester: 15.10. until 15.11.
- Application procedure:
  https://www.uni-ulm.de/en/study/application-and-enrolment/masters-programmes/chemical-engineering-master/

- Contact
  chemical.engineering@uni-ulm.de
- More information
  https://www.uni-ulm.de/en/study/application-and-enrolment/masters-programmes/chemical-engineering-master/

Semester	Compulsory Modules	Elective Modules	Specialisation Modules	Laboratory/ASQ*	Credit Points 120
1st	Chemical Reaction Engineering II 5 CP Simulation and Modelling 5 CP Thermal Process Engineering II 5 CP		Energy Science and Technology I 5 CP	Advanced Laboratory Chemical Engineering 5 CP External Engineering Internship 5 CP	30 CP
2nd	Mechanical Process Engineering II 5 CP Simulation and Modelling of Multi-Phase-Reactors 5 CP	Elective Modules Chemical Engineering 6 CP	Energy Science and Technology II 5 CP	Energy Technology Laboratory I 9 CP	30 CP
3rd		Elective Modules Chemical Engineering 4 CP	Energy Science and Technology Seminar 2 CP Energy Science and Technology III (Batteries and Fuel Cells) 5 CP	Energy Technology Laboratory II 4 CP Research Internship 12 CP ASQ 3CP	30 CP
4th	Master's Thesis 30 CP				30 CP

* ASQ: Additional Transferable Skills

Master of Science in Energy Science and Technology

This program offers a comprehensive education in advanced energy conversion and storage, focusing on cutting-edge technologies like fuel cells and batteries. Students gain hands-on experience through laboratory work and project-based learning in chemistry, materials science, and energy technology. The program also provides a dynamic research environment, blending fundamental and applied research with industrial collaboration to address real-world energy challenges.

Key Collaborations Include:

- Center for Solar Energy and Hydrogen Research (ZSW)
- Helmholtz Institute for Electrochemical Energy Storage (HIU)

The programme features courses taught by experts from our natural science and engineering departments, as well as professionals from our partner research institutes and companies.

Overview

- Standard period of study programme: 4 semesters
- Programme start: winter semester
- Admission requirements: Qualified Bachelor‘s degree in Chemistry or Chemical Engineering or equivalent with basic experience in chemical laboratories, chemistry, mathematics and physics. See website for more information.
- Language skills: Detailed information regarding the required level of English can be retrieved in the currently valid admission statutes.
- Fees: please see page 47
- Online application period: February 1st to March 15th
- Application procedure: https://www.uni-ulm.de/index.php?id=97257

- Contact
  nawi.energy-sci-tech@uni-ulm.de
- More information
  https://www.uni-ulm.de/studium/studieren-an-der-uni-ulm/studiengaenge/studiengangsinfo/course/energy-science-and-technology-master/

<table>
<tr><td>Semester</td><td colspan="3">A – Compulsory

90 CP</td><td>B – Electives

22 CP</td><td>C – Complementary

8 CP</td><td>Credit Points

120 CP</td></tr>
<tr><td>1st</td><td>Chemistry
17 CP</td><td>Materials Science
10 CP</td><td rowspan="3">Energy Science and Technology
33 CP

Lectures, laboratories, seminar and project work</td><td rowspan="3">Electives in Chemistry

Electives in Energy Science and Technology</td><td>ASQs (Additional transferable skills)

Language courses</td><td>30 CP</td></tr>
<tr><td>2nd</td><td></td><td></td><td></td><td>30 CP</td></tr>
<tr><td>3rd</td><td></td><td></td><td></td><td>30 CP</td></tr>
<tr><td>4th</td><td colspan="4">Master’s Thesis
30 CP</td><td>30 CP</td></tr>
</table>

Master of Science in Physics

The goals of physics are to gain a deep understanding of the universe at its most fundamental levels and to extend such knowledge to more complicated systems ranging from the subatomic to the cosmological scale. Physics can then be considered the basis for all natural sciences and the bearing structure of any modern technological development.
Students completing the programme in Physics will
... have a profound research-oriented education in physics as well as a deep knowledge and expertise in current scientific methods and techniques,
... develop a broad range of skill such as quantitative and analytical thinking, problem solving abilities, advanced computational methods, data analysis, design of electronic equipment, communication of complex ideas.

At Ulm University students will broaden their background in general physics by choosing one of the following exciting specialization areas:

- Biophysics and soft matter
- Condensed matter physics and nano sciences
- Econophysics
- Plasma physics
- Quantum information and technologies
- Quantum optics and atomic physics

Overview

- Standard period of study programme: 4 semesters
- Programme start: summer and winter semester
- Admission requirements: A qualified Bachelor's degree in Physics or an equivalent study course with essentially the same content. Final grade of Bachelor's degree of 2.4 or better (in German grades)
- Sufficient knowledge of experimental and theoretical physics and mathematics
- Language skills: Good proficiency of English B2 Niveau.
- Fees: please see page 47
- Online application period: 1 April - 15 May for winter semester, 15 October - 15 November for summer semester
- Application procedure: https://www.uni-ulm.de/en/study/application-and-enrolment/masters-programmes/master-physics-englisch/

<table>
<tr><th>Semester</th><th>A1 – Physics

45 CP</th><th>A2 – Research period

30 CP</th><th>B1 – Physics Electives

27 CP</th><th>B2 – Specialization

12 CP</th><th>C – Complementary

6 CP</th><th>Credit Points

120 CP</th></tr>
<tr><td>1st</td><td>Advanced: physics laboratory, seminar, and quantum mechanics</td><td rowspan="2"></td><td rowspan="2">Biophysics, condensed matter, econophysics, plasma physics, quantum technologies</td><td rowspan="2">Elective Master modules</td><td rowspan="2">ASQs (Additional transferable skills)

Language courses</td><td>30 CP</td></tr>
<tr><td>2nd</td><td></td><td>30 CP</td></tr>
<tr><td>3rd</td><td colspan="2">Methodology and Project Planning I
15 CP</td><td colspan="3">Methodology and Project Planning II
15 CP</td><td>30 CP</td></tr>
<tr><td>4th</td><td colspan="5">Master’s Thesis
30 CP</td><td>30 CP</td></tr>
</table>

- Contact
  physics.msc@uni-ulm.de
- More information
  https://www.uni-ulm.de/en/study/study-at-ulm-university/study-programmes/course-information/course/physics-master/

Master of Science in Quantum Engineering

This interdisciplinary masters programme prepares you for the rapidly evolving field of quantum technologies. It combines quantum physics with engineering, offering courses in areas such as Quantum Sensing and Metrology, Quantum Computing, Quantum Communication and Quantum Engineering.

The program features foundational modules, advanced coursework, and hands-on experience. Students have the opportunity to engage in research and industry internships within Ulm's Science City and finish their degree with the completion of a six-month thesis.

Key Collaborations Include:

- Center for Integrated Quantum Science and Technology (IQST)
- German Aerospace Center of Quantum Technologies (DLR-QT)
- Helmholtz Institute Ulm (HIU)
- Center for Solar Energy and Hydrogen Research (ZSW)

Graduates are well-prepared for careers in academia, industry, and government, contributing to fields like AI, national security, and medical technologies.

Overview

- Standard period of study programme: 4 semesters
- Programme start: winter semester, summer semester
- Admission requirements: A qualified Bachelor's degree in either physics, electrical engineering, nanotechnology, quantum technology, aerospace technology, or an equivalent study course. Additionally, solid competences inmath as well as physics or electrical engineering and the ability to work independently in a scientific manner. Please see website for details. https://www.uni-ulm.de/en/study/study-at-ulm-university/study-programmes/course-information/course/quantum-engineering-master/
- Language skills: Good proficiency of English B2 Niveau.
- Fees: please see page 47 (bitte ggf. anpassen)
- Online application periods: Summer semester: 1 December - 15 January. Winter semester: 1 April - 15 May
- Application procedure: https://www.uni-ulm.de/index.php?id=97251

<table>
<tr><th>Semester</th><th>A – Compulsory

51 CP</th><th>B1 – Adaptation

12 CP</th><th>B2 – Quantum Physics

18 CP</th><th>B3 – Electrical Engineering

18 CP</th><th>B4 – Mobility/ Specialization

15 CP</th><th>C – Complementary

6 CP</th><th>Credit Points

120 CP</th></tr>
<tr><td>1st</td><td>Interdisciplinary aspects of quantum technologies</td><td rowspan="2">e.g.

Quantum mechanics

Quantum engineering</td><td rowspan="2">e.g.

Quantum optics, computing, information, electronics, machine learning.</td><td rowspan="2">e.g.

Advanced quantum engineering, quantum sensing, optical communication.</td><td rowspan="2"></td><td rowspan="2">ASQs (Additional transferable skills)

Language courses</td><td>30 CP</td></tr>
<tr><td>2nd</td><td>Advanced Seminar Quantum Engineering</td><td>30 CP</td></tr>
<tr><td>3rd</td><td colspan="2">Research Project
15 CP</td><td colspan="3">Mobility and specialization

Research/industrial internship or selected lectures
15 CP</td><td>30 CP</td></tr>
<tr><td>4th</td><td colspan="6">Master’s Thesis
30 CP</td><td>30 CP</td></tr>
</table>

- Contact
  quantum.engineering@uni-ulm.de
- More information
  https://www.uni-ulm.de/en/study/study-at-ulm-university/study-programmes/course-information/course/quantum-engineering-master/

School of Advanced Professional Studies

- Artificial Intelligence for Connected Industries
- Sensorsystemtechnik (Sensor Systems Engineering)

Master of Science in Artificial Intelligence for Connected Industries (AI4CI)*

The Master's program Artificial Intelligence for Connected Industries (AI4CI), hosted by the School of Advanced Professional Studies at Ulm University, will start in Winter Term 2025/26. It is an internationally oriented, part-time, and flexible structured program that combines innovative teaching formats with practice-oriented content, especially designed for working professionals. The program provides graduates with the skills to independently address high-level academic challenges in the fields of artificial intelligence and network systems. It integrates advanced knowledge in computer science, engineering, and data science, enabling individual specializations tailored to the demands of modern connected technologies and industrial applications.

The program covers:

- Fundamentals of artificial intelligence and machine learning applied to networked systems,
- Advanced automation systems for industrial networks and robotics,
- Modern network architectures, IoT, and computer systems.

The program is further enriched by hands-on project work focused on current industrial applications and interdisciplinary challenges.

Through collaboration with international partner universities and close ties to industry, the AI4CI program provides an excellent foundation for careers in research-intensive or application-oriented fields.

Overview

- Standard period of study program: part-time 6 terms
- Program start: winter term and summer term
  Partner universities are:
  - Conservatoire National des Arts et Métiers und CNAM Grand Est (France),
  - Avignon Université (France),
  - Universitat Politècnica de Catalunya (Spain),
  - National Technical University of Ukraine (Ukraine),
  - Universitatea Babeș-Bolyai (Romania).
- Admission requirements: academic degree (in Computer Science, Computer Engineering, Telecommunications Engineering, Automation Engineering, Electrical Engineering oder Industrial Engineering) with 210 ECTS + one year of qualified professional experience or academic degree with 180 ECTS + two years of qualified professional experience
- Administrative fee: about 155.00€ will be charged each term, no module fees during project time
- Online application period: For winter term: 01.06. until 15.07.; summer term 01.12. until 15.01.
- Application procedure: https://www.uni-ulm.de/en/study/application-and-enrolment/masters-programmes

	Area/Modules	CP
A	Compulsory Modules	36
A1	Master Thesis	30
A2	Artificial Intelligence Basics	6
B	Compulsory Elective Modules	54
B1	Systems and Networks	min. 12
B2	Automatics and Robots	min. 12
B3	Processes and Data Management	min. 12
B4	Free Elective Modules	min. 6
C	Supplementary Modules	optional
	∑ Credit Points	90

- Contact
  School of Advanced Professional Studies
  Rebecca Schöninger, Steffen Moser | saps@uni-ulm.de
- More information: https://ai4ci.eu/ or https://short.saps-ulm.de/ai4ci

***The program is currently under development; changes may occur.**

NEW PROGRAM
Starts: Winter Term 2025/26
@School of Advanced Professional Studies

Sensorsystemtechnik (Sensor Systems Engineering)

Sensor technology lies at the heart of the Master's program in Sensor Systems Engineering and represents one of the most transformative key technologies of our time. This program provides a comprehensive foundation in the design and development of sensor-based embedded systems, combining advanced knowledge in control, communication, and information technologies. These disciplines empower students to manage the growing complexity of systems that process sensor data, make intelligent decisions, and control cyber-physical systems that shape our everyday lives. From autonomous vehicles to medical devices and industrial automation, sensor systems are revolutionizing industries by enabling real-time data analysis, resource-efficient operation, and enhanced safety and performance.

The program also emphasizes cutting-edge expertise in high-frequency technologies and chip design, equipping graduates to develop next-generation sensor systems with optimized performance and miniaturized form factors. This focus on hardware-level innovation complements the program's strong foundation in embedded systems and opens opportunities in areas like wireless communication, IoT devices, and advanced medical implants.

In addition to technical expertise, the program fosters essential skills in systems engineering, including project management, risk assessment, and quality assurance. Graduates excel at integrating sensor components, optimizing embedded system designs, and applying cutting-edge methods to solve real-world challenges. This interdisciplinary approach positions them as leaders in driving innovation in industries such as automotive, healthcare, environmental monitoring, and beyond.

- Standard period of study program: part time 6 semesters
- Program start: winter and summer semester
- Admission requirements: academic degree with 210 ECTS + one year of qualified professional experience or academic degree with 180 ECTS + two years of qualified professional experience
- Language skills: Proof of English language skills (B2 level) or German Abitur.
- Administrative/Study Fee: The fees for the entire Master's program depend on the selected modules. Costs are estimated to range between approximately 12 200€ and 14 900€.
- Online application period: For winter term: 01.06. until 15.07.; summer term 01.12. until 15.01.
- Application procedure: https://www.uni-ulm.de/en/study/application-and-enrolment/masters-programmes

Compulsory Elective Groups	Fundamentals of Systems Engineering	Control Systems Theory and Control Engineering (6 CP) Modeling and Identification of Dynamic Systems (6 CP) Pattern Recognition and Deep Learning (6 CP) Signals and Systems (6 CP) Systems Engineering (6 CP)	≥ 12 CP	Total: 60 CP
	Sensors	Biochemical Sensors (6 CP) Introduction to Image Processing and Computer Vision (6 CP) Radar Sensors (4 CP) Sensor Principles and Integrated Interface Circuits (6 CP) Solid-State Sensors (6 CP) Wireless Sensor Networks (6 CP)	≥ 12 CP	
	System Design	Design Methodology of Embedded Real-Time Systems (6 CP) High-Frequency Microsystems (6 CP) Mixed Signal CMOS Chip Design (6 CP) Monolithic Microwave IC Design (6 CP) Using the Advanced Design System in Electronic Design (4 CP) Wireless Sensor Networks (6 CP)	≥ 12 CP	
	Management Aspects	Business Process Management (6 CP) Management Aspects of System Engineering I (6 CP) Management Aspects of System Engineering II (6 CP) Project Management – Processes, Activities and Practices (6 CP)	≥ 12 CP	
	Master's Research	Master's Thesis	30 CP	

- Contact
  School of Advanced Professional Studies
  Steffen Moser | saps@uni-ulm.de
- More information
  https://short.saps-ulm.de/sst-en

Additional Transferable Skills

Accompanying the core curriculum of the programmes which are stated in this brochure, Ulm University offers many additional courses to its students. We are convinced that young people need more than just best professional knowledge, but also soft-skills in order to enhance their communication skills and social competencies.
These so-called “additional transferable skills” (ASQs) are divided into four main areas:

Basic skills
Course choice from e.g. presentation techniques, business etiquettes, time management and many more.

Practical skills
Course choice from e.g. creative writing, legal basics, project management and many more.

Orientation skills
Course choice from various ethical, ecological and anthropological subjects.

Languages and intercultural skills
Course choice from a wide range of languages courses and social subjects to learn more about cultures and gain deeper insights und understanding of those.

Further Information
Roman Yaremko
ASQ – Coordinator
Humboldt-Studienzentrum
Pavillon 1
Albert-Einstein-Allee 5
89081 Ulm
Etage 1 / Raum 36
Tel.: 0731 50-23464
Fax: 0731 58718
https://www.uni-ulm.de/einrichtungen/humboldt-studienzentrum-fuer-philosophie-und-geisteswissenschaften/

- Administrative fee of about 155.00€ will be charged each semester
- international students will have to pay semester tuition fees of 1,500.00€ per semester
- German students in their second degree course will have to pay 650.00€ per semester
- further fees can be charged by study programmes individually, please contact the advisor for more information or check out https://www.uni-ulm.de/en/study/application-and-enrolment/

Advisory and Support Services

In order to get in touch with Ulm University and to hand in your applications, please contact the responsible persons stated for each programme in this brochure.

For further coordination and support, the **international office** will be glad to assist you
international@uni-ulm.de
https://www.uni-ulm.de/en/io.html

For housing and financial issues you can contact the **Studierendenwerk“** (student services) https://studierendenwerk-ulm.de

While you are studying, our so-called **course advisors** can help you concerning your schedules or with technical queries
www.uni-ulm.de/en/study/student-advisory-services/course-advisors

For general support, for handicapped students and for students with children the **“Zentrale Studienberatung“** (central student advisory service) can assist you
www.uni-ulm.de/en/study/student-advisory-services/zentrale-studienberatung-central-student-advisory-services

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