MASTER O-PHASE WELCOME AT KIT

Fachschaft MACH/CIW
(Student Council
Mechanical Engineering/Chemical and Process Engineering)

IMPORTANT INFO

- You can receive your registration ribbon this evening or in the cosultation hours
  → **Bring a certificate of enrollment or letter of admission (not KIT ID)**

- Up to date information can be found on the website:

https://www.fs-fmc.kit.edu/master_o-phase

O-PHASE TIMETABLE

Program

You can find all of our events in the calendar.

Following events will be a part of Master O-Phase:

- Tue 21.10. Champagne Reception
- Wed 22.10. Information events
- Wed 22.10. Kühler Krug
- Thu 23.10. Bavarian Breakfast
- Thu 23.10. Meet the Fachschaft
- Fri 24.10. Flunkyball/Gurkyball
- Fri 24.10. Game night
- Sun 26.10. Hiking
- Tue 28.04. Pub crawl
- Wed 29.10. Master consulting hour

https://www.fs-fmc.kit.edu/en/o-kalender

INFO FOR THE WEIßWURST BREAKFAST

- Please bring your own plates and cutlery

Thanks !

WHAT IS THE JOB OF THE STUDENT COUNCIL?

study

Previous Exams

1,0

Interested?

Get to know the
Student Council Mechanical Engineering/Chemical and Process Engineering
on 23.10.2025 at „Meet the Fachschaft“

Field Trips

Counseling

Partys

Crew Mailing List
https://www.fs-fmc.kit.edu/helfen

MASTER MATERIAL SCIENCES AND ENGINEERING

Information for first semester students

ALL SLIDES WILL BE UPLOADED AFTERWARDS!

→ FMC-Homepage: Navigate to „Studium“ and then „Downloads“

TECHNICAL DATA

- **Regular period of studies**
  - 4 semester
- **Total credit points:**
  - 120 ECTS
- **Maximum study time:**
  - 7 semester

TIMETABLE

Deutsch

Semester / Fach	WS 1 29 LP	SS 2 33 LP	WS 3 28 LP	SS 4 30 LP	Summe 120 LP
Materialwiss. Vertiefung	Thermodynamik und Kinetik 7 LP, mPr	Simulation 6 LP, mPr Eigenschaften 7 LP, mPr		Masterarbeit 30 LP	20 LP
Spezialisierung *	Schwerpunkt 40 LP, 10 m/sPr Wahlmöglichkeit: 1 oder 2 Schwerpunkt(e)				40 LP
	Schwerpunkt I 20 LP, 5 m/sPr	Schwerpunkt II 20 LP, 5 m/sPr			
Interdisziplinäre Ergänzung	Überfachliche Qualifikationen 2 LP, SL		MINT Wahlmodul 12 LP, 3 m/sPr Technik und Gesellschaft 4 LP, SL		18 LP
			Berufspraktikum 12 LP, SL		12 LP

English

Semester / Subject	WS 1 29 credits	SS 2 33 credits	WS 3 28 credits	SS 4 30 credits	Total 120 credits
Materialwiss. Vertiefung (Materials Science Major Course)	Properties 7 credits, mPr	Simulation 6 credits, mPr Thermodynamics und Kinetics 7 credits, mPr		Master's thesis 30 LP	20 credits
Spezialisierung * (Specialization)	Specialization 40 credits, 10 m/sPr Choice: 1 or 2 Specialization module(s)				40 credits
	Specialization I 20 credits, 5 m/sPr	Specialization II 20 credits, 5 m/sPr			
Interdisziplinäre Ergänzung (Interdisciplinary Complementation)	Key Competencies 2 credits, SL		MINT Elective Module 12 credits, 3 m/sPr Technology and Society 4 credits, SL		18 credits
			Internship 12 credits, SL		12 credits

OUTLINE

1. Statutes and regulations
2. Module Overview
3. Formalities at KIT
4. Further information

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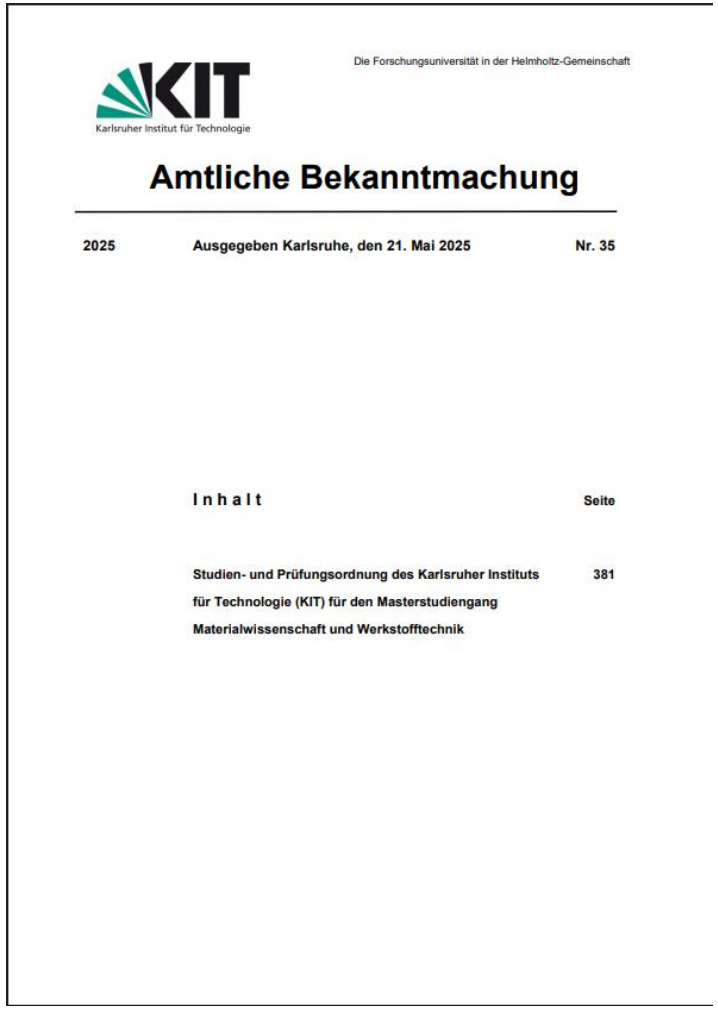
Studien- und Prüfungsordnung (Studies and Examination Regulations)



Karlsruher Institut für Technologie

Die Forschungsuniversität in der Helmholtz-Gemeinschaft

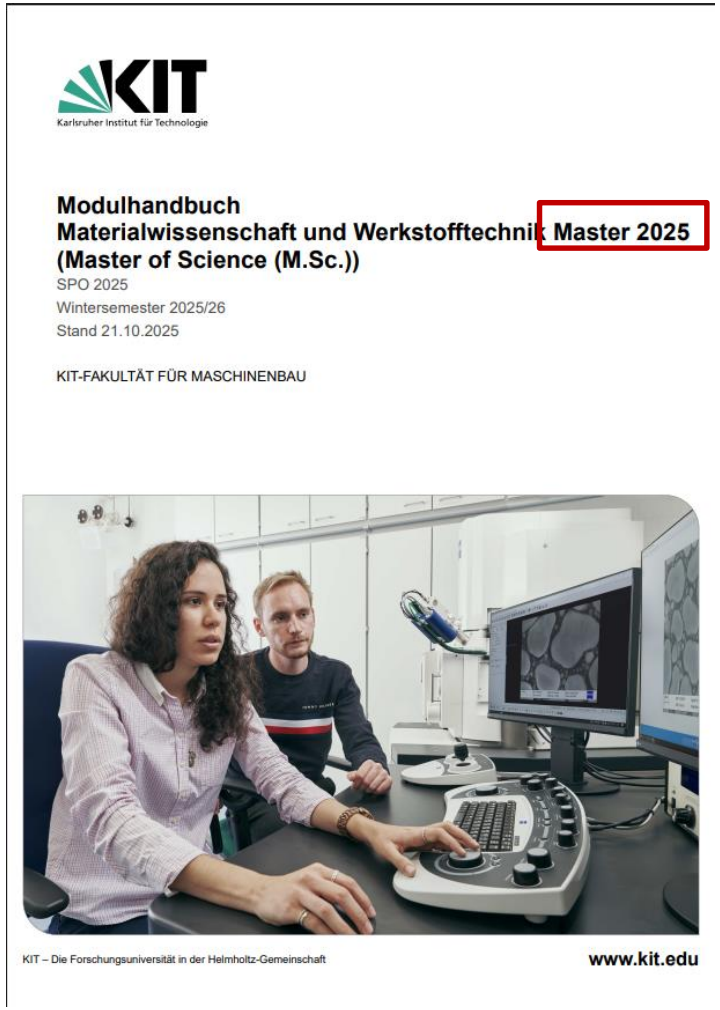
Amtliche Bekanntmachung

2025 Ausgegeben Karlsruhe, den 21. Mai 2025 Nr. 35

Inhalt Seite

Studien- und Prüfungsordnung des Karlsruher Instituts für Technologie (KIT) für den Masterstudiengang Materialwissenschaft und Werkstofftechnik 381

Modulhandbuch (Module Handbook)



Karlsruher Institut für Technologie

Modulhandbuch
Materialwissenschaft und Werkstofftechnik Master 2025
(Master of Science (M.Sc.))

SPO 2025
Wintersemester 2025/26
Stand 21.10.2025

KIT-FAKULTÄT FÜR MASCHINENBAU

KIT – Die Forschungsuniversität in der Helmholtz-Gemeinschaft www.kit.edu

IMPORTANT OFFICES AND PEOPLE

§

Prüfungsausschuss PA (examination committee)

- Examination matters
- Legally binding statements
- recognitions
- extensions
- second repetition

Studienbüro (Student office)

- matriculation
- deregistration

Performance coordinator

- Registration for examinations
- recognition

OUTLINE

1. Statutes and regulations
2. Module Overview
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MODULE OVERVIEW

Materials Sciene Major Course (20 ECTS)	Specialization (40 ECTS)	Interdisciplinary Complementation (18 ECTS)	Internship (12 ECTS)	Master‘s Thesis (30 ECTS)
Themodynamics And Kinetics (7 ECTS)	Focus 1 (20 ECTS)	Key Competencies (2 ECTS)	Internship (12 ECTS)	Master thesis (30 ECTS)
Properties (7 ECTS)	Focus 2 (20 ECTS)	Technology and Society (4 ECTS)		
Simulations (6 ECTS)	OR	MINT Elective Module (12 ECTS)		
	Big Focus (40 ECTS)			

LECTURES

- Lectures
  - Offered either in winter *or* summer
  - Compulsory courses are offered in every semester, alternating in German and English

- Exams:
  - Offered once every semester

→ Getting an early overview

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Simulations (6 ECTS)	OR	MINT Elective Module (12 ECTS)		
	Big Focus (40 ECTS)			

Compulsory Subjects

COMPULSORY SUBJECTS

- Compulsory courses: must be done by everyone

Deutsch	Englisch
Winter semester: - Thermodynamik und Kinetik Summer semester: - Gefüge-Eigenschafts-Beziehungen - Simulation	Winter semester: - Microstructure-Property Relationships Summer semester: - Applied Materials Simulation - Thermodynamics and Kinetics

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Specialisation

FOCAL COURSES

Focal courses: (3 Choises)

- Structural Materials
- Computational Materials Science
- Functional Materials

Choose either 2 small or one big Focus ☺

FOCAL COURSES

Focal Courses:

- 1 or 2 Focal Courses to choose
- Choose lectures from the list in the Module Handbook or CAMPUS

SP2: Computational Materials Science Coordinator: Professor Nestler

Course number	Course	Lecturer	SWS	Credits	Control of success	Sem	Language
2183717	Seminar Werkstoffsimulation / Seminar Materials Simulation (mandatory)	Gumbsch / Nestler / Böhlke	4	8	PA	WS/SS	D/E
2181740	Atomistische Simulation und Partikeldynamik	Gumbsch	3	4	mPr	SS	E
2181745	Auslegung hochbelasteter Bauteile	Aktaa	2	4	mPr	WS	D
6215903 / 6215904	Bruch- und Schädigungsmechanik	Seelig	4	6	mPr	SS	D
4023161+ 4023162	Computational Condensed Matter Physics	Wenzel	6	12	mPr	SS	E
2161250+ 2161147	Computational Elasticicty	Böhlke / Langhoff	4	6	mPr	WS	E
2162296+ 2162297	Computational Inealsticity	Böhlke / Langhoff	4	6	mPr	SS	E
4023021+ 4023022	Computational Photonics	Rockstuhl	4	6	mPr	WS	E
2182741	Data Science and Scientific Workflows	Gumbsch / Weygand	3	4	SL, mPr	SS	D
2162282+ 2162257	Einführung in die Finite-Elemente-Methode	Böhlke / Langhoff	3	6	sPr	SS	D
2182732	Einführung in die Materialtheorie	Kamlah	2	4	mPr	SS	D
2305263+ 2305265	Electromagnetics and Numerical Calculation of Fields	Dössel	3	4	sPr	WS	E
2181720	Grundlagen der nichtlinearen Kontinuumsmechanik	Kamlah	2	4	mPr	WS	D
2182310	Grundlagen der Phasenfeldmodellierung	Schneider	3	4	mPr	WS	D
2183721	High Performance Computing	Nestler / Selzer	2	4	sPr	WS/SS	D
2162280 +2162281	Mathematische Methoden der Mikromechanik	Böhlke	3	6	sPr	SS	D
2183702	Mikrostruktursimulation	Nestler / Weygand / August	3	4	mPr	WS	D
2142875	Mikrosystem Simulation	Korvink	3	4	sPr	SS	E
2162344	Nonlinear Continuum Mechanics	Böhlke	3	4	mPr	SS	E
2183705	Phasenfeldmethode in der Thermodynamik	Prahs	3	4	mPr	WS	D
4023141+ 4023142	Simulation nanoskaliger Systeme	Wenzel	3	6	mPr	SS	D
4023151+ 4023152	The ABC of DFT	Wenzel	3	6	mPr	SS	E
2182740	Werkstoffmodellierung: Versetzungsbasierte Plastizität	Weygand	2	4	mPr	SS	D
2181738	Wissenschaftliches Programmieren für Ingenieure	Weygand / Gumbsch	2	4	mPr	WS	D

Passing of the partial achievement "Seminar Werkstoffsimulation" (can be taken in German or English) is mandatory in focal course SP2. The remaining credits may be chosen from the list of other controls of success / partial achievements.

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	Big Focus (40 ECTS)			

Key Competences

KEY COMPETENCES

SpZ

Studium Generale
Forum Wissenschaft
und Gesellschaft

FORUM

HoC
House of Competence

KEY COMPETENCES

- House of Competence (HoC)
  - Key Competences
- Studium Generale. Forum Wissenschaft und Gesellschaft (FORUM)
  - Key Competences + Studium Generale
- Sprachenzentrum (SpZ)
  - Language courses

→Registration periods shortly before the start of each semester

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	Big Focus (40 ECTS)			

Technology and Society

TECHNOLOGY AND SOCIETY

- Choose lectures from a list:

M-MACH-106939 – Technology and Society	CO	German/English	4.0
T-WIWI-114140 – Emissions into the Environment	CE: Technology and Society		3.0
T-WIWI-114139 – Energy and Environment	CE: Technology and Society		3.0
T-MACH-113903 – Ethics of Technology	CE: Technology and Society		2.0
T-MACH-113883 – Introduction to Philosophy of Technology	CE: Technology and Society		2.0
T-WIWI-113886 – Managing New Technologies	CE: Technology and Society		4.0
T-INFO-114132 – Human-Machine-Interaction in Anthropomatics: Basics	CE: Technology and Society		4.0
T-MACH-114855 – Ressources for the Energy Transition	CE: Technology and Society		2.0
T-GEISTSOZ-113951 – History of Technology and the Environment for Mechanical Engineering Students	CE: Technology and Society		4.0
T-ETIT-111923 – Ethics of Technology - ARs ReflecTIonis	CE: Technology and Society		2.0
T-MACH-113884 – Technology Assessment and its Normative Basis	CE: Technology and Society		2.0
T-WIWI-114119 – Transport Economics	CE: Technology and Society		4.0
T-WIWI-114396 – Environmental and Resource Policy	CE: Technology and Society		2.0

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Simulations (6 ECTS)	OR	MINT Elective Module (12 ECTS)	**MINT Elective Module**	
	Big Focus (40 ECTS)			

MINT ELECTIVE MODULE

- MINT: Mathematics, Informatics, Natural Sciences, Engineering
- Choose lecture from a long list
- Also good to do them in an exchange semester

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Properties (7 ECTS)	Focus 2 (20 ECTS)	Technology and Society (4 ECTS)	**Internship**	
Simulations (6 ECTS)	OR	MINT Elective Module (12 ECTS)		
	Big Focus (40 ECTS)			

INTERNSHIP

Internship:

- SPO:
  - At least 9 weeks (in the industry)
  - Must cover certain fields of activity

It may be chosen among the following areas:
- Werkstoffentwicklung (materials development)
- Werkstoffprüfung / Qualitätskontrolle (materials testing / quality control)
- Materialsynthese (materials synthesis)
- Werkstoffauswahl im Produktentstehungsprozess (materials selection in the product development process)
- Metallurgie / Pulvermetallurgie (metallurgy / powder metallurgy)
- Urformtechnik (molding)
- Umformtechnik (forming)
- Oberflächentechnik (surface treatment)
- Wärmebehandlung (thermal treatment)
- andere werkstofftechnische Tätigkeitsgebiete (nach Rücksprache mit dem Praktikantenamt der KIT-Fakultät für Maschinenbau) (other areas of materials engineering (upon agreement with the Internship Office of the KIT Department of Mechanical Engineering)).

- Recognition by Dr. Patric Gruber
  - Short presentation about the activities during the internship and report (mostly presentation slides)
  - Bring original employer‘s reference

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Simulations (6 ECTS)	OR	MINT Elective Module (12 ECTS)		
	Big Focus (40 ECTS)			

Masterthesis

MASTER THESIS

Master thesis:

- 30 ECTS
  - 6 months! Extension (can be applied for at the PA) only in exceptional cases (broken test-bench, illness, etc.)
- Prerequisite:
  - At least 75 LP completed
  - Completed internship

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FORMALITIES AT KIT

Exam registration:

- Examinations must be **registered** in the CAMPUS Management Portal

- Exams must be **deregistered** if they are not examined after all

FORMALITIES AT KIT

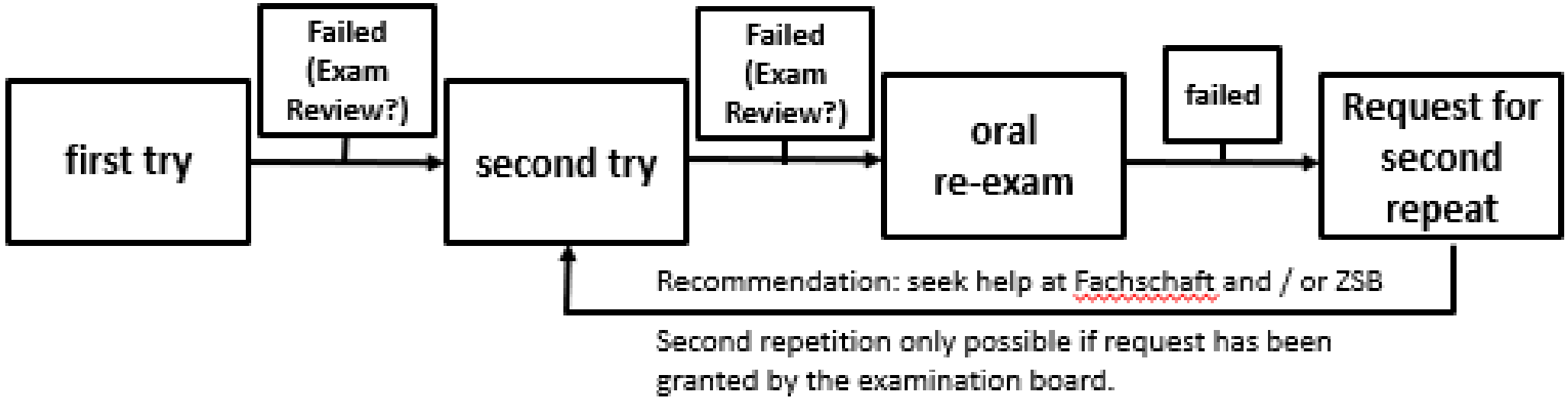
<u>Deadlines and time limits:</u>

- Exam cancellation:
  - Written examination: the latest in the examination room
  - Oral examination: 3 working days before examination

- Recognition likely in the first semester (or directly after return/exchange) at the examination board

- Do not forget to re-register for the coming semester → Mid-February and Mid-August (You‘ll receive an email)

REPETITION OF WRITTEN EXAMS



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WHERE CAN I FIND INFORMATION?

Website FS Mach/CIW: fs-fmc.kit.edu

Website of the study programme: www.mach.kit.edu/1982.php

Master‘s WhatsApp-Group:

Remember to register to our E-Mail distribution list:
www.fs-fmc.kit.edu/semesterverteiler

CONTACT

- PA MatWerk (examination board):
  - for all problems and questions concerning admission to examination
  - can make legaly binding statements
  - Official: pa-matwerk@mach.kit.edu
  - Recommended: matwerk.mpa@fs-fmc.kit.edu

Prof. Dr. Hans Jürgen Seifert

Direktor, Institutsleiter

Raum: 226
CN 681

Tel.: +49 721 608-23895

hans seifert∂kit edu

- Studierendenservice/Study Office:
  - Enrolement
  - Admission
  - Exmatrikulation

- Performance Coordinator:
  - Registration for examinations
  - Recognitions

Dr.-Ing. Johannes Schneider

Akad. Dir.

Room: 104

Phone: +49 721 608-41460

Fax: +49 721 608 941460

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SEMESTER ABROAD

Various possibilities

- ERASMUS+
- Direktkooperation
- Freemover
- Kentucky
- …

Sarah Witte

Raum: Geb. 10.23, Zi . 706

Tel.: 47716

sarah witte∂kit edu

International Studieren im Maschinenbau (ISIM)

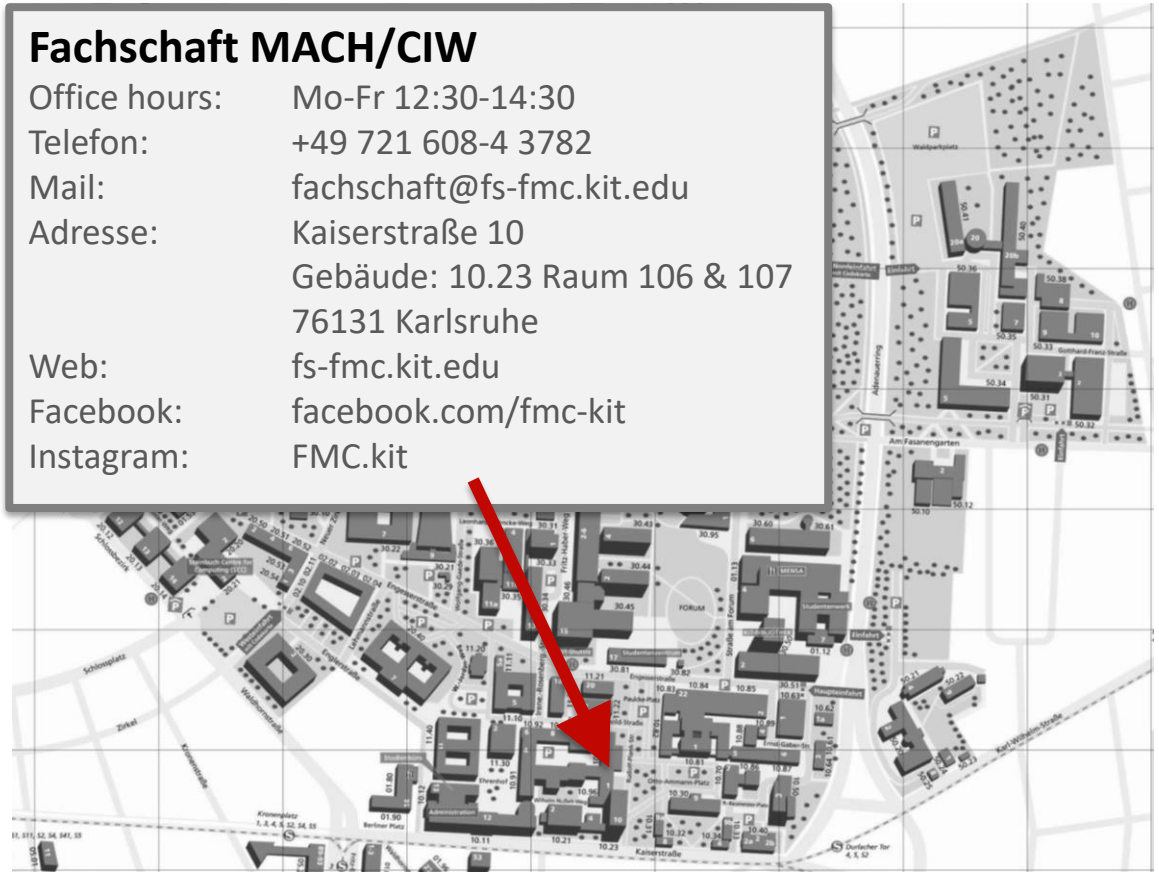
Important

- Inform immediately and be early
- IStO und ISIM coordinate the abroad stays

CONTACT

Fachschaft MACH/CIW

Office hours:	Mo-Fr 12:30-14:30
Telefon:	+49 721 608-4 3782
Mail:	fachschaft@fs-fmc.kit.edu
Adresse:	Kaiserstraße 10 Gebäude: 10.23 Raum 106 & 107 76131 Karlsruhe
Web:	fs-fmc.kit.edu
Facebook:	facebook.com/fmc-kit
Instagram:	FMC.kit



BESIDE STUDIES

Discovering new things by looking beyond the horizon

Abroad studies, university groups, social commitment

- Student co-determination in/at the university
  - Student Council
  - ASTA
- University groups
- HiWi-Job
- Sports

→ Entry possible at every time (except for sports)

SUMMARY

- Get a general overview
- Early registration for exams
- Recognition likely within the first semester
- Master thesis maximum 6 months
- Plan your stay abroard early