

# Hitchhiker's Guide through Masters



TECHNISCHE  
UNIVERSITÄT  
DARMSTADT

[DON'T PANIC]



**MASCHINENBAU** FSMB  
We engineer future

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# Agenda

1. Get to Know Each Other
2. Intro to the German University System
3. Linktree
4. How to Master Masters?
5. Locations
6. Learning Materials
7. University Offerings
8. Housing
9. Free Time Activities

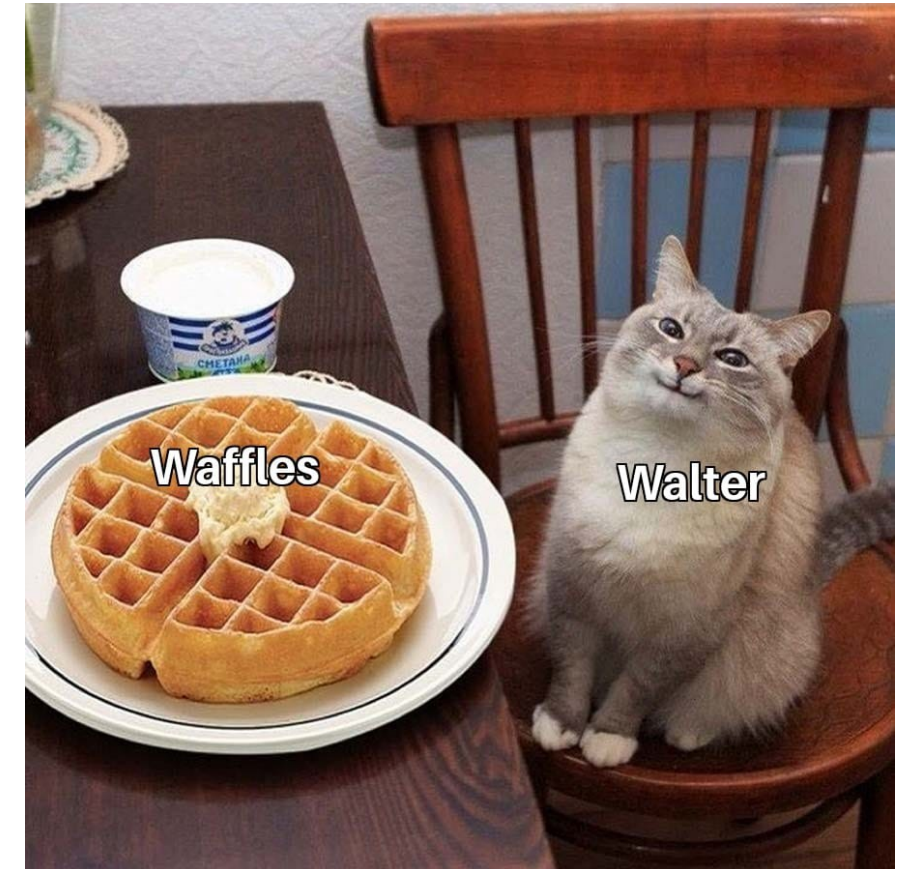


# Get to know each other

Hello my name is...

- Your Name
- Your Master Program
- The University you graduated at
- A dish/ ingredient/drink with the same first letter than you name

e.g.: Walter Waffles from University of Applied Sciences Catsborough



# INTRO TO THE GERMAN UNIVERSITY SYSTEM

# How Money Rules Education - Society

- Education is tax-based in Germany
- Professional School vs. University
- The federal state Hesse pays ~30 K€ per engineering master student

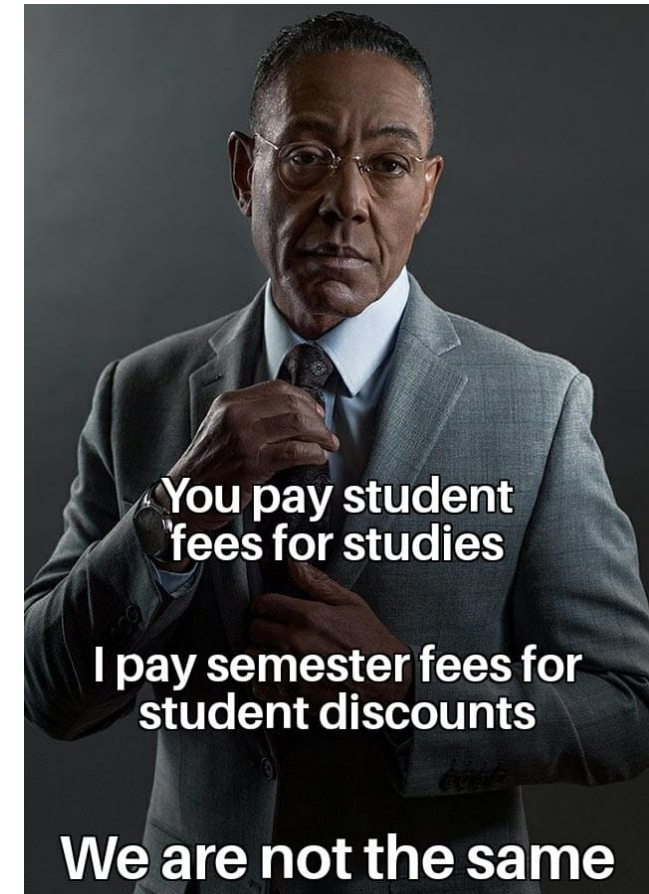
Budget	
281,3	Millionen Euro Grundfinanzierung vom Land Hessen (inklusive Baumittel, ohne LOEWE)
33,2	Millionen Euro Mittel aus dem Bund-Länder-Hochschulpakt 2020 und Zukunftsvertrag Studium und Lehre
18,3	Millionen Euro Landessondermittel
2,4	Millionen Euro Sonstige Einnahmen
249,1	Millionen Euro Drittmittel (inklusive LOEWE)





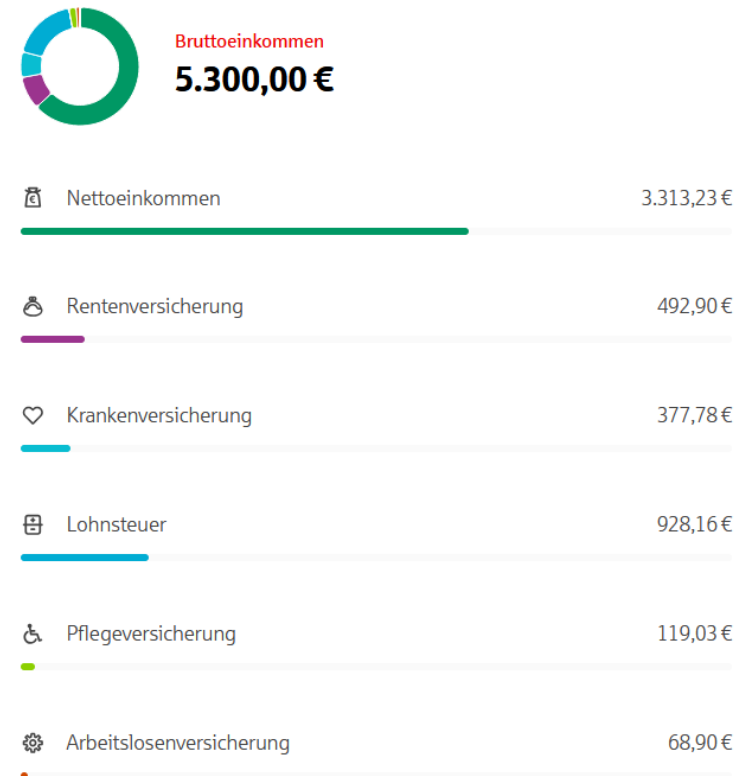
# But wait, I have paid a semester fee!

- What is the **semester fee** for?
  - Studierendenwerk 103€
  - Administration Fee 50€
  - Semesterticket 176,4€
  - Student Body 18,78€
- TU Darmstadt does not see your money!
- „TU Darmstadt does not care how you study!“
- Many offers are only possible due to voluntary work, not just @ TU Darmstadt



# How Money Rules Education - Companies

- Engineers are expensive for companies
- IGM Hesse 2024 engineer gross salary:
  - ~5300€ (EG10 per month)
  - -> ~3300 net wage
  - ~1000€ Income Tax
- The system works because the investment the state makes in education is paid back through the future tax income of working engineers



Assumption: Steuerklasse I

# What does that mean for my studies?

How long does the Master Program take?

- majority of students needs more than 4 semesters:
  - Additional lectures, more preparation time for exams to gain better grades
  - ADP needs more time than expected
  - Internships, Summer Schools, Exchange
  - Personal Reasons: Freetime activities, Family, adapting to the new environment
  - **Finance** living and studies!

ME BECOMING AN  
AEROSPACE ENGINEER



Average GPA in the Master: 1.5 – 1-8



# HOW TO MASTER MASTERS?

# Linktree



## MASCH.PLUS/

Most important redirects:

- **/lz** → study center
- **/fsmb** → student council
- **/moodle** → student council moodle
- **/forum** → Maschinenbauerforum
- **/mechcenter** → study office MechCenter
- **/lichtwiese** or **/liwi** → campus map for Lichtwiese
- **/stadtmittle** or **/mitte** → campus map for city center
- **/masterplan** → master's timetable
- **/faq** → frequently asked questions
- **/insta** → Instagram
- **/wa** → WhatsApp channel
- **/meme** → 😊



# How to make a study plan? (Masch.plus/mechcenter)

There is a simple scheme for planning your studies:

1. Write down all the courses you are interested in and in which semester they are lectured (WiSe/SoSe). The information about courses can be found on the Department website within the downloads.
2. Look up in the module handbook, whether the subjects have any prerequisites for participation
3. Make a study plan for 4 semesters + 1 buffer semester (in case you are not going to finish your master in time)

## Masterstudiengang Maschinenbau

- ↓ Regulations of the M.Sc. programme "Mechanical Engineering"
- ↓ Study plan (overview of courses)
- ↓ Module overview in compulsory elective areas
- ↓ Module Handbook
- ↓ Supplement to the Module Handbook\_Tutorials
- ↓ Module Handbook (Archive)
- ↓ Notes on study and examination planning
- ↓ Recommended modules in the Bachelor WPB for specialisations and Master Aerospace Engineering
- ↓ Studium Generale - Offers from other departments
- ↓ Studium Generale - German as a Foreign Language
- ↓ Notes on the final grade calculation
- ↓ Equivalence table (only for external Master's applicants)



## Master's programme Aerospace Engineering

- ↓ Module descriptions (specific AE modules)
- ↓ Module descriptions (complete)
- ↓ Ergänzung zum Modulhandbuch\_Tutorials
- ↓ Module overview in Electives Areas
- ↓ Notes on study and examination planning
- ↓ Empfohlene Module im Bachelor-WPB für Schwerpunkte und Master Aerospace Engineering
- ↓ Studium Generale - Angebote anderer Fachbereiche
- ↓ Studium Generale - Mögliche Englischkurse

# Masters timetable (Masch.plus/masterplan)

In the Master “Maschinenbau” and Master “Aerospace Engineering”, courses are offered from different elective areas. In order to avoid a possible overlap of courses, it is good to know when and where which lecture will take place. The table is updated every semester.

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Summer term 2022/2023									
Legend				Location:		Form:			
Electives Area I:		Fundamentals				S	City Campus	vt	Lecture
Electives Area II:		Digitalisation				L	Uchtlwiese Campus	vt	Practical
Electives Area III:		Core Electives from Mechanical Engineering		Aerospace Engineering subjects from Electives Area II		B	Botanik Garden	vt	Project work
Electives Area III:		Electives from Natural Science and Engineering		Aerospace Engineering subjects from Electives Area III					
Subjects in German are marked with a "D".									
Deviating times are listed separately for the events concerned in the table									
Time	Monday			Tuesday			Wednesday		
8:00 - 8:45	Virtual Product Development C L101-24K vt	Systemic Evaluation of Air Traffic L101-401 vt	Lightweight Engineering I L101-24K vt	Manufacturing and Joint-Integrated Cost Components L402-203 vt	Mechanical production processes D L101-24K vt	Digitalisation in production L402-101 vt	Lightweight Construction Materials S402-101 vt	User Interface Design formalised and implemented in interfaces D L101-73 vt	
8:55 - 9:40									
9:50 - 10:35	Advanced Test Transfer L402-202 vt	Introduction to Turbulence L101-228K vt	Circular economy and recycling D S105-083 vt	Economical optimisation of energy supply for energy intensive production units D L101-24K vt	Formic technology L101-24K vt	Flight Mechanics II L402-202 vt	Fluid energy machines D L101-73 vt	Dynamics of interface flows D L205-403 vt	
10:45 - 11:30									
11:40 - 12:25	Virtual Product Development D L402-201 vt	Energy Systems I L101-24K vt	Machine Tools and Robots L402-202 vt	Digital Letters L101-24K vt	Aerodynamics I L101-24K vt	Basics of Economics for Engineers D L402-201 vt	Transport Phenomena I L101-24K vt	Lightweight Engineering I L402-101 vt	Mechatronic Systems I L402-201 vt
12:35 - 13:20									
13:30 - 14:15	Automotive mechatronics and assistance systems L402-202 vt	Work Organization in Mechanical Context L101-24K vt	Mathematical Methods in Fluid Mechanics L101-24K vt	Modeling of Turbulent Flows L101-24K vt	Nano- and Microfluidics II L205-100 vt	Joining Technology D S402-101 vt	High-Accuracy Methods for Computational Fluid Dynamics L101-228K vt	Advanced Methods for Flow Simulation D S410-1 vt	Design, Building, Commissioning and Operation of Large-scale Parts L402-201 vt
14:25 - 15:10									
15:20 - 16:05	Energy Systems II L101-24K vt	Energy Systems II L101-24K vt	Flight Propulsion L101-24K vt	Flight Propulsion L101-24K vt	Numerical Methods of Applied Dynamics L101-24K vt	Structural Design of internal Combustion Engines I D L101-401 vt	Design, Building, Commissioning and Operation of Large-scale Parts L402-201 vt	Mechatronic Systems I L402-201 vt	Modeling of Turbulent Flows L101-24K vt
16:15 - 17:00	Transport Phenomena L402-202 vt								
17:10 - 17:55									
18:05 - 18:50									

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Legende:			Wintersemester 2022/2023								
Wahlbereich I:			Grundwissen			Standort			Vorlesung		
Wahlbereich II:			Digitalisierung			S			Stadtmitte		
Wahlbereich III:			Kernkompetenzen			L			Lichtsource		
Wahlbereich IV:			Wahlfächer aus Natur- und Ingenieurwissenschaft			B			Botanischer Garten		
Abweichende Uhrzeiten stehen extra bei den betroffenen Veranstaltungen in der Tabelle											
Montag			Dienstag								
Zeit											
8:00 - 8:45	Grundlagen der Mechanik										
8:55 - 9:40	L294-100										
9:50 - 10:35	Advanced Fluid Mechanics I	Future Air Transportation Systems									
10:40 - 11:30	vt	vt	Grundlagen der Papertechnik								
11:40 - 12:25	Mathematical Modelling A	Theory of Elastic Stability	S120-6	Marketing Technology - Basics and Applications							
12:30 - 13:20	vt	vt	vt	vt							
13:30 - 14:15	Fabrikation und Fabrikation	13:30 - 15:10	Grundlagen der Mechanik	Nano- und Mikrosk							
14:20 - 15:10	L39-1401	vt	L39-1402	L19-1404	L294-101						
15:20 - 16:05	vt	Schadenkunde	vt	Rhetoric in Industry	Nano- und Mikrosk						
16:10 - 17:00	Energy Systems I	S402-101	vt	Rhetoric in Industry	vt	Grundlagen des CAD/CAM	Entwicklung in der chemischen Verfahrenstechnik mit Programmiermethoden	Energieeffizienz und Energieflexibilität in der Produktion	Energieversorgung und Umweltschutz		
17:10 - 17:55	L402-201	vt	vt	L110-104	L394-101	L402-202	L401-204	vt	Mittelwertentwurf		
18:00 - 18:50	vt	vt	vt	vt	vt	vt	vt	vt	vt		



# How to prepare for a written exam?

So, lecture time is over and now you are entering exam phase.  
Here is my strategy for preparing for a written exam:

- make a **recap** or read your (or not your) summary
- if there are any **exercises** solve them one more time
- solve the **old exams and exam protocols**
- try to solve an exam **in a given time**, set a **timer** for it
- while solving write down **everything you didn't understand** and ask about it:
  - In your **learning group**
  - In the **Maschinenbauer Forum**
  - In the **moodle course**
  - In the **consulting hours** of the institute





# How to prepare for an oral exam?

So, lecture time is over and now you are entering exam phase.  
Here is my strategy to prepare for an oral exam:

- Search for **examination protocols**
- Find **friends** to take the exam together
- Make an **examination appointment**
- Find out about **exam structure**: time, in groups, written parts etc.
- Make a **recap** or read your (or not your) summary
- Solve the **old exams and exam protocols** with friends
- Talk about topics you did not understand, ask and look for further information
- Make your **own test questions** and go through it
- Help others: upload your examination protocol



# How to tutorial (Tutorium)

The tutorial is a practical module. You may take **only one tutorial**, so choose wisely, especially if you've chosen a **specialisation or study AE**. Tutorials vary greatly depending on institute.

They can:

- be offered **once a year** or **every semester**
- be only in **german, english** or **both**
- require **extra registration** besides TUCaN
- be stretched over the **whole semester** or only over a **1-2 weeks** with fully load time
- require some **prerequisites**
- be focused on **experiments, simulation or modeling**
- be done **alone** or in a **team**



# How to ADP (Advanced Design Project)

## Find a topic and team

Topics are frequently posted on institute's websites, bulletin boards and Maschinenbauer-forum

Teams consist of **4 to 6 people**. You can find team members in Maschinenbauer-forum

## Work together

Advanced Design Project is basically a **thesis in a group**. You work together, plan your own time frame for the project and schedule meetings with your supervisor to keep them updated.

## Get things done

There are four main possible project types:

- simulation
- construction
- theory/research
- experiments

as well as their mixes. **Every point of the task definition must be completed**

## Write a report and present your results

A report has to be written in scientific language with all necessary citations. After report submission a presentation will be held. Each team member must be present during the presentation.

## Side Note: ADP Expectations

- Be honest if you do not know the answer/ have the skill (yet)
- You have other required skills for the project, so look for task you are good at or motivated for -> be active!
- We study to acquire new skills: Be motivated to learn and try new things
- Cheating/Plagiarism and doing nothing are absolute no-gos
- Your supervisor is not a school teacher, they are there to give feedback and advice but not instructions
- The group is the driving force of the project
- It is important to be aware of different communication styles for effective communication within the group (eg. sugarcoating vs. direct feedback)

# External Project Work

## Background:

- Instead of a second ADP you can do an internship
- At least 12 weeks at a company doing something related to engineering
- Working student positions can also count
- You need to find and apply by yourself
- You need to hand in a report to the Mechcenter afterwards

## Notes:

- German CV format
- Ask friends for feedback and help with the bureaucratic issues
- Salary is not mandatory for an internship but often included
- Most Companies require 35-40 hours per week



# Exchange Opportunities

- Information how to apply can be found on the university websites
- Great opportunity to see further countries and university systems
- Meet new friends from the whole world
- A little bit of bureaucratic work, but worth it
- List of previously recognized modules on Mechcenter website (You can also do others)
- Possibility of scholarships
- Further opportunities:
  - Summer Schools
  - ADPs



# LOCATIONS

# Room numbering system

At the TU Darmstadt we have a internal buildings and room numbering system:

## Campus:

**S**: Citycenter

**L**: Lichtwiese

**H**: Hochschulstadion

**W**: Wind Tunnel

**B**: Botanic Garden

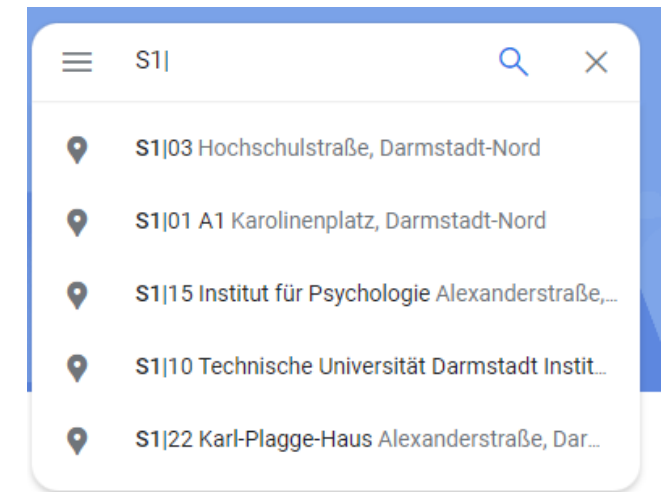
## Building number

**L 3 | 01 – A99**

## Room number

## Section or quarter.

Exception: **S4** describes all buildings in the city center, which don't belong to the remaining sections



Google Maps is familiar with the building numbering system, just google the building

# Citycenter vs Lichtwiese

## Campus Citycenter:

- + All pubs are nearby
- + Library in exam phase open 24/7
- + Most of buildings are old and beautiful
- + Herrngarten
- + Hogwarts-similar floors in the old main building
- + Studying in the castle
- You have no influence on the side dish portion size in the canteen
- No ACs in the rooms



## Campus Lichtwiese:

- + fancy new tram line with a loop of honor
- + a “scientific campus” with some modern buildings
- + Fachschaft and MechCenter are here
- + You can build a Pisa Tower out of fries in the canteen
- + Really nice study center that is open 365/24/7
- No ACs in the rooms
- Currently undergoing major construction
- No shops, restaurants close by





# Important buildings Lichtwiese



The Maschinenbaugebäude  
(Mechanical Engineering Building)  
L1|01

The Hörsaal und Medienzentrum  
(HMZ)  
L4|02



The Architekturgebäude  
(Architecture Building)  
L3|01



# Important buildings Stadtmitte



The Karo 5  
S1|01

The Altes Hauptgebäude  
(Old Main Building)  
S1|03



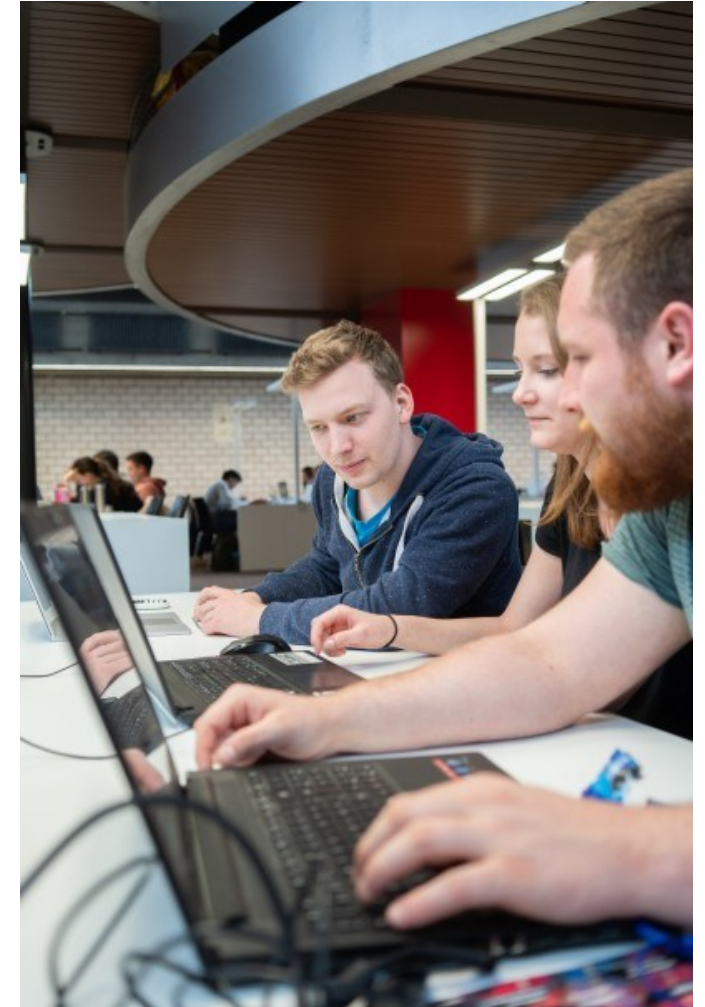
The Mensa Stadtmitte  
S1|11

# LEARNING MATERIALS AND WHERE TO FIND THEM

# Study center LZMB (Lernzentrum Maschinenbau)

10 reasons to choose LZMB as your study spot:

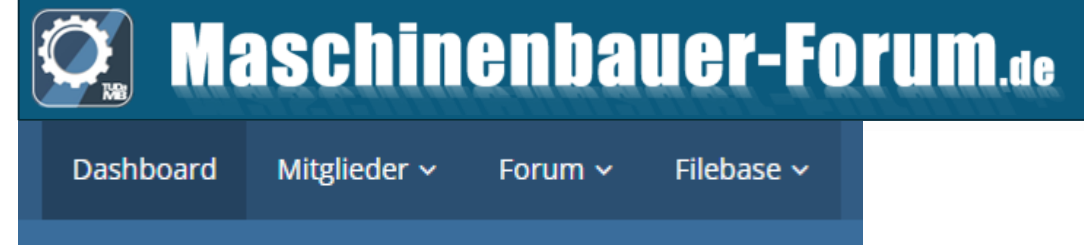
1. You can study with friends and don't have to be silent (but not too loud either)
2. There are old exam papers and/or exam protocols as well as scientific literature
3. Open 24/7 (access on holidays with Athena Card)
4. Cozy couches and armchairs upstairs
5. Print/Copy/Scan
6. You can rent a locker for up to 6 months
7. Bulletin boards with offers for master-thesis, internships and jobs
8. You can buy coffee, softdrinks, beer and more in the student council room nextdoor
9. You can eat and drink anything you like unlike in the library
10. There are Pub Quizzes sometimes



**The LZ will be moving during this year into a new location.**



# What is the Maschinenbauer Forum?



Maschinenbauerforum is a website run by a former student council member. Now it is independent from the student council. After **registration with your student email** (...@stud.tu-darmstadt.de) you can get access to the **filebase**, where you can find:

- Old exam papers
- Exam protocols
- Summaries and „recipes“
- Exercises
- Lecture notes

**SHARING IS CARRYING**

Please upload your own protocols and summaries to help fellow students!

# Software & IT Infrastructure

- WiFi: Eduroam
- Webmail: Roundcube
- VPN-Client: Cisco AnyConnect
- Online Meetings: Zoom
- Cloud Storage: Hessenbox
- Software from the HRZ/ University:
  - Microsoft Windows and Office 365
  - Matlab
  - CAD: Siemens-NX



**There are instructions on how to install and run everything given by the HRZ on their website.**



## UNIVERSITY OFFERS YOU CAN'T REFUSE



# Athena Card



Athena Card is a multifunctional chip card for TU Darmstadt members. It is an **\*\*INTERNAL\*\*** access and payment card and **not an official identification card!**

With this card you can:

- pay in the university canteens and cafeterias
- use printers in the pc pools
- access the Hochschulstadion
- borrow books and use lockers in the ULB library

## How to get it?

Just upload an ID photo to **IDM portal**. You will receive the Athena Card **via post**

## How to power it up?

There are **terminals** (in the canteens and university libraries) where you can reload it with cash or EC Card. In case of loss, credit left on Athena Card can't be refunded

# Deutschlandticket

Deutschlandticket is a Germany-wide ticket for travel on **local and regional public transport** (i.e. except IC(E)/EC trains). It is included in the semester fee and **must be activated** and **issued digitally**. More information and FAQ on the AStA Website



**What about Airliner?**  
The Airliner is not fully included and requires an additional fee of 3.80€



# UNIVERSITY OFFERS YOU CAN REFUSE



# Campus canteens

There are two prices in canteens: for students and for guests. You can only purchase for student prices with your Athena Card. If you purchase using cash you have to pay guests' price, which is around 1,50€ more expensive per dish

We have two main canteen locations at the university:

- **S1|11** Mensa & Bistro Stadtmitte
- **L4|01** Mensa & Bistro Lichtwiese

as well as additional cafeterias:

- **S1|01** TUBAR
- **S1|20** LesBAR
- **L4|02** LichtBAR

and of course

- **L4|01** Studi-Biergarten „Lichtwiesn“



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There is a canteen app „**Mensa Darmstadt**“, where you can see a menu for the week ahead. Also you can check how much money you still have on your Athena Card





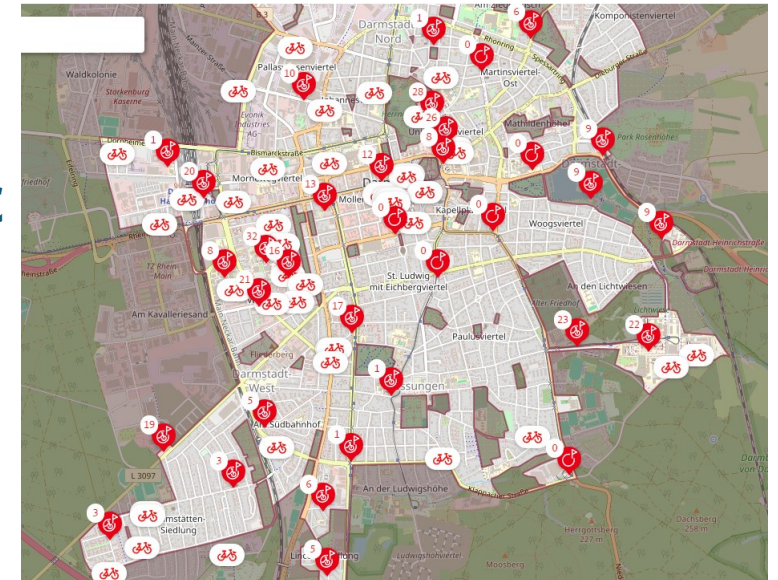
# Call a Bike rental system

*"If you don't have a bike - get one ASAP!"* - Alexander Salge

Call a Bike is a useful rental system for those, who don't own a bike. As a student you get a special pricing model after registration with your student E-Mail (..@stud.tu-darmstadt.de). This allows you:

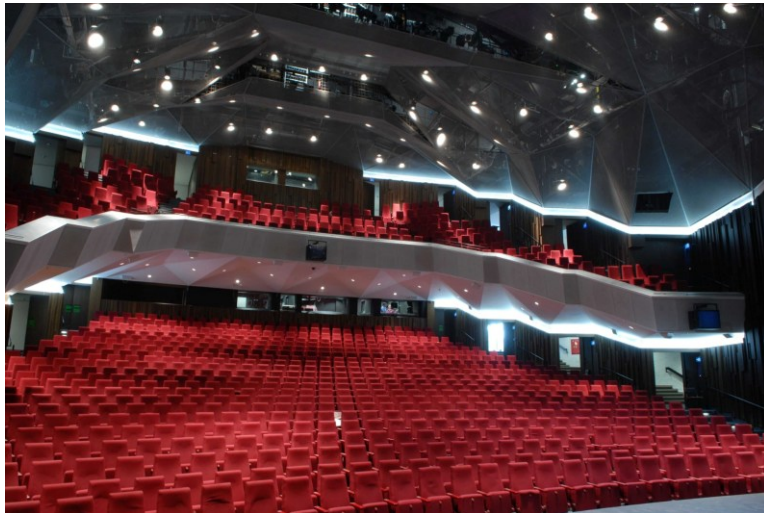


- rent up to **three bikes** at the same time
- rent bikes **as often as you want**
- use them up to **one hour** completely free
- from 61st minute you have to pay **0,08€ per minute**
- you must **hand back** the bike at one of the 30 **Call a Bike stations**



# Staatstheater, Moller Haus and Hessisches Landesmuseum

- You can get unsold tickets for free in both the Staatstheater and Theater Moller Haus shortly before or at the box office
  - Details on the AStA website
- Free admission to the permanent collections of the Hesse State Museum (Hessisches Landesmuseum)
  - Temporary exhibitions may cost admission





TECHNISCHE  
UNIVERSITÄT  
DARMSTADT

# Housing

# Housing – General Remark and Apartments

## General Remarks:

- You must register your residential address with the city
- Housing in Darmstadt is expensive, also check the surrounding area
- Where to look for:
  - Studierendenwerk
  - WG-Gesucht
  - Internet: ImmoScout, ImmoWelt, Kleinanzeigen; Bauverein, Vonovia
  - Bulletin Boards
  - Peers
  - Newspaper

## About your Application Letter for a Flat:

- Landlord: punctual rent payment, good apartment condition
- Ask friends for feedback for your application
- Never send documents like ID and financial documents in your first message, just state who you are, what you're doing and that you are a nice and reliable person



# Housing – Shared Apartment (WG)

## About your Application Letter:

- It is better to write proper English than poor German.
- Ask friends for feedback
- Never send documents like ID and financial documents in your first message
- Your potential flatmates care about how well you fit into the social structure of the WG, not just the financials

## Remarks for WG gesucht:

- Offer by roommates -> Use “Du/Euch” in German
- What do you and they expect from the WG
- What are their names and hobbies, what do you have in common?
- Write some background information about you, do you have WG-experience
- Be fast, they'll have up to 100 applicants

# FREE TIME ACTIVITIES

# Free time activities at TU

## University Sport Center (USZ):

- [UniGym](#) (S1|03)
- [UniFit](#) (H1|03)
- many other [sport activities](#)

You can enter Hochschulstadion (with swimming in the summer) for free with Athena Card



## Examples for Student Clubs:

- Akaflieg Darmstadt
- Choir TU Darmstadt
- Erasmus Student Network
- Konaktiva
- Sailing Team
- Studentischer Filmkreis
- Reiterverein (Riding Club)
- Racing Team
- TUDSaT (Space Technology)
- ... and others



Here is the whole [overview of university groups](#)

# Free time activities in Darmstadt and nearby

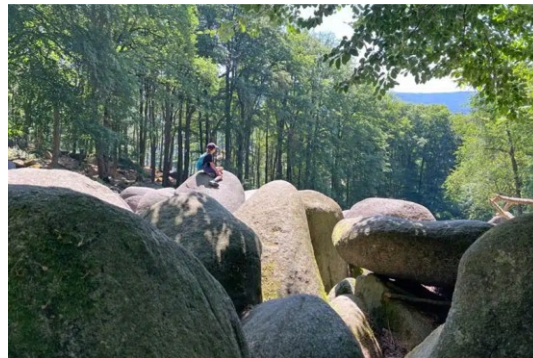
## Museums:

- Hessisches Landesmuseum
- Bahnwelt (train museum)
- Jagdschloss Kranichstein
- Schlossmuseum



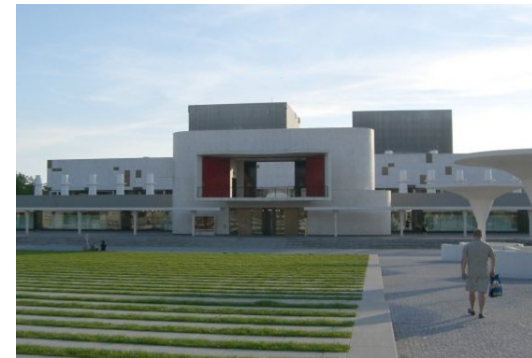
## Hiking and biking:

- Rosenhöhe
  - Ludwigshöhe
  - Mathildenhöhe
  - Odenwald
  - Felsenmeer
  - ..and many others,
- You can use Komoot - App to search for other routes



## Cinema and theaters:

- Kinopolis (near central station)
- Citydome (citycenter)
- Staatstheater
- Theater Moller House
- Comedy Hall & Kikeriki Theater



## Other fun:

- Jugendstilbad (swimming & wellness)
- Nordbad
- Herrngarten
- Orangerie
- Schlosskeller
- Zoo Vivarium
- Kletterwald





# Questions?

# Questions?



## MASCH.PLUS/

Most important redirects:

- [/lz](#) → study center
- [/fsmb](#) → student council
- [/moodle](#) → student council moodle
- [/forum](#) → Maschinenbauerforum
- [/mechcenter](#) → study office MechCenter
- [/lichtwiese](#) or [/liwi](#) → campus map for Lichtwiese
- [/stadtmitte](#) or [/mitte](#) → campus map for city center
- [/masterplan](#) → master's timetable
- [/faq](#) → frequently asked questions
- [/insta](#) → Instagram
- [/wa](#) → WhatsApp channel
- [/meme](#) → 😊

