Info session M. Sc. Materials Science and Engineering

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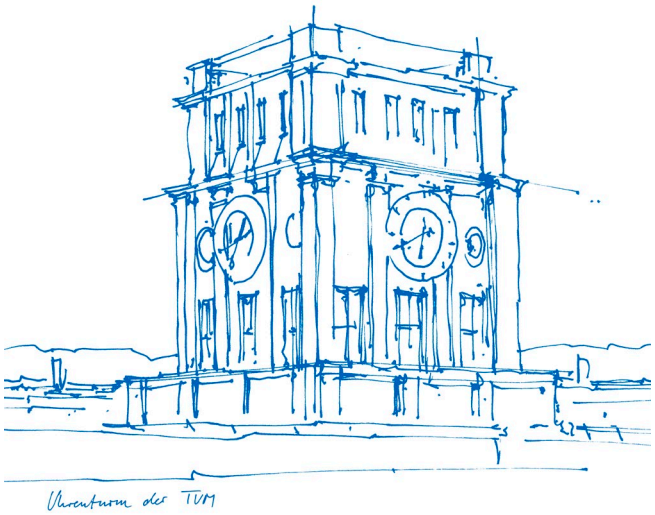
Agenda

- The TU Munich & the TUM School of Engineering and Design

- **M. Sc. Materials Science and Engineering**
  - What is the M. Sc. MS&E all about? / Key data
  - The MS&E‘s curriculum: mandatory modules / electives
  - The MS&E‘s four focus areas
  - MS&E: how to achieve the required 120 credits
  - Where to find what
  - Our wiki as your first point of contact
  - The application process
  - How are applicants selected for admission?



Important note for international students

Tuition Fees for Students from Non-EU Countries

At the Technical University of Munich (TUM), tuition fees are charged for international students from third countries who newly enroll in a degree program starting in the winter semester of 2024/25.

https://www.tum.de/en/studies/fees/tuition

Waiver scholarships, exemptions and waivers for international students

for persons who are required to pay tution fees

Waiver scholarships

for particularly high-achieving and needy students

(in the amount of the tuition fees, no payment is being made)

Exemption from tuition fees

possible under certain circumstances: for students

- in cooperative study programs
- with an established domestic connection
- during a leave of absence
- with a disability
- in ongoing asylum proceedings with a special protection quota

Waiver of fees

for financial, personal or social reasons

https://www.tum.de/en/studies/fees/tuition/scholarships-and-waivers

Scholarships

TUM:

- **Scholarship Deutschlandstipendium**
  - **For**: currently enrolled undergraduates and graduates with university entrance certificates from Germany or abroad
  - (€ 300 per month)
- **Scholarship for International Students**
  - **For**: currently enrolled undergraduates and graduates with non-German university entrance certificates
  - (one-time financial aid of € 500 to € 1500 per semester)
- **Oskar Karl Forster Scholarship for books and learning materials**
  - **For**: currently enrolled undergraduate and graduate students who have completed at least two semesters at TUM
  - (Grants for books and learning materials from € 100 to € 500)

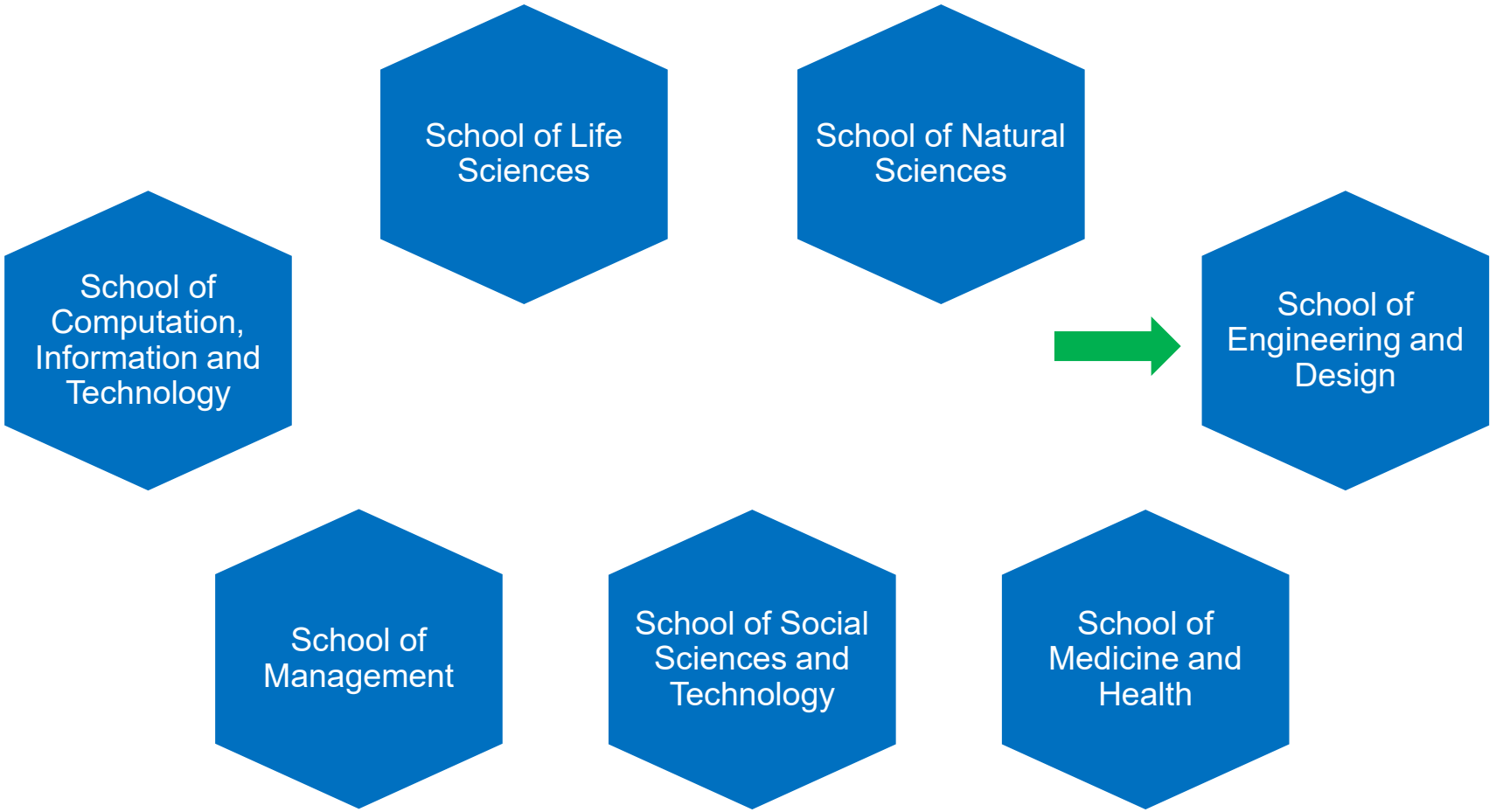
External:

- **Stipendium Plus**
  - Grants for gifted students supported by the Federal Ministry of Education and Research
  - (usually € 300 + up to € 855 **depending** on **income and parents**, similar to BAföG)
- **mystipendium.de**
  - FREE database of private companies with more than 1,200 funding opportunities
- **european-funding-guide.eu**
  - Scholarship database within Europe

https://www.tum.de/en/studies/fees-and-financial-aid/scholarships

The TU Munich &
the TUM School of Engineering and Design

The TU Munich: 7 schools

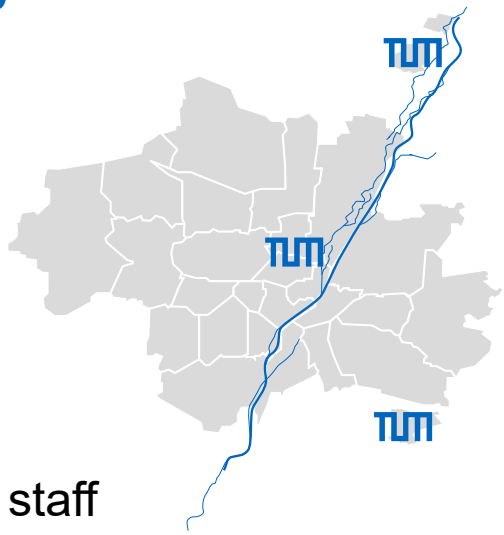


The TUM School of Engineering and Design

more than 13,000
B. Sc. and M. Sc. students

more than 40
degree programs

approx. 500
academic support staff members



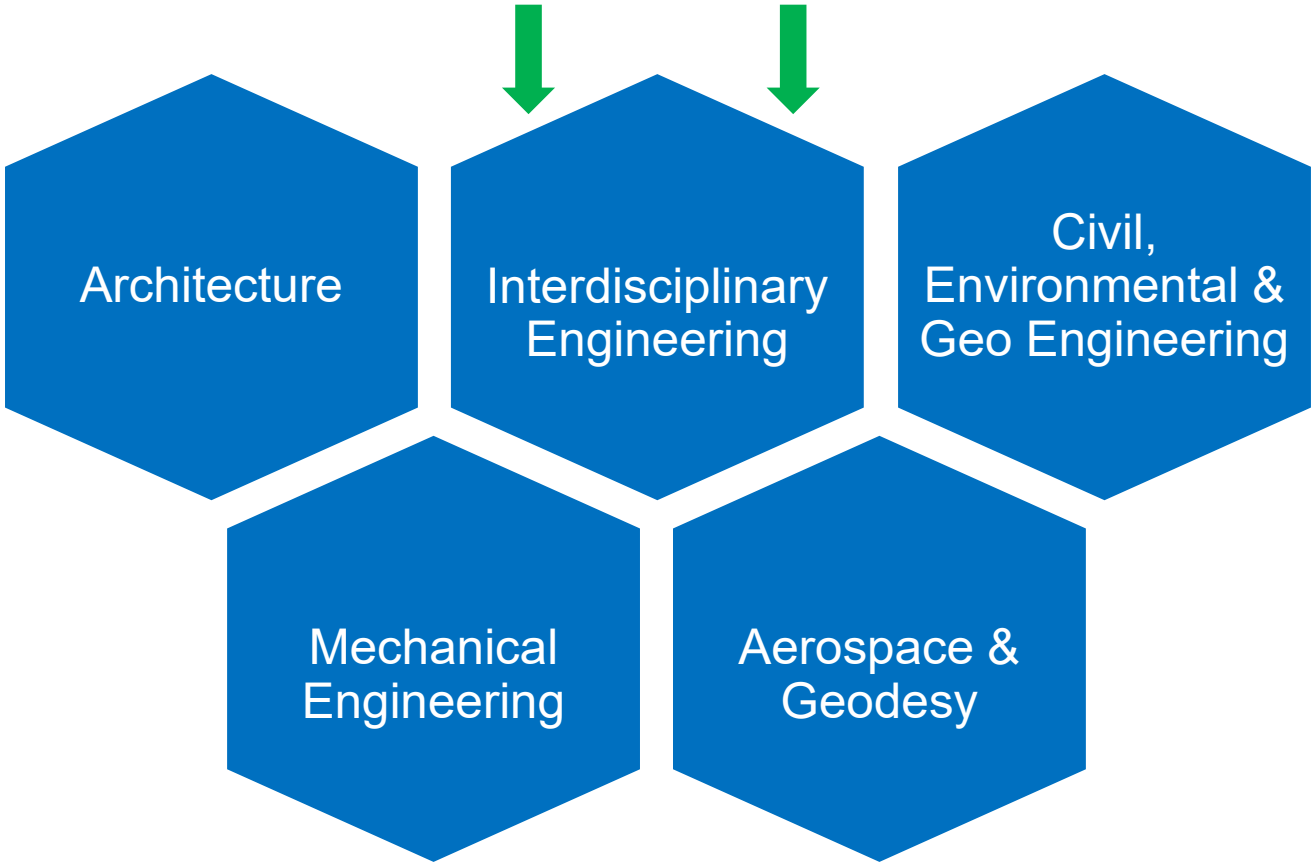
approx. 4,700 newly enrolled students per year (both B. Sc. and M. Sc. students)

currently **approx. 133** professors

approx. 1,700
academic staff members

https://www.ed.tum.de/en/ed/home-1/

The TUM School of Engineering and Design



M. Sc. Materials Science and Engineering

What is the M. Sc. MS&E all about?

Image: Tobias Hase / TUM

- intertwining of expertise in the natural and engineering sciences
- the M. Sc. in MS&E is primarily science- and fundamentals-oriented including interdisciplinary training
- the program will enable you to physically and mathematically model complex technical-physical processes and systems accounting for the materials to be employed

Key data

Academic degree
Master of Science (M. Sc.)

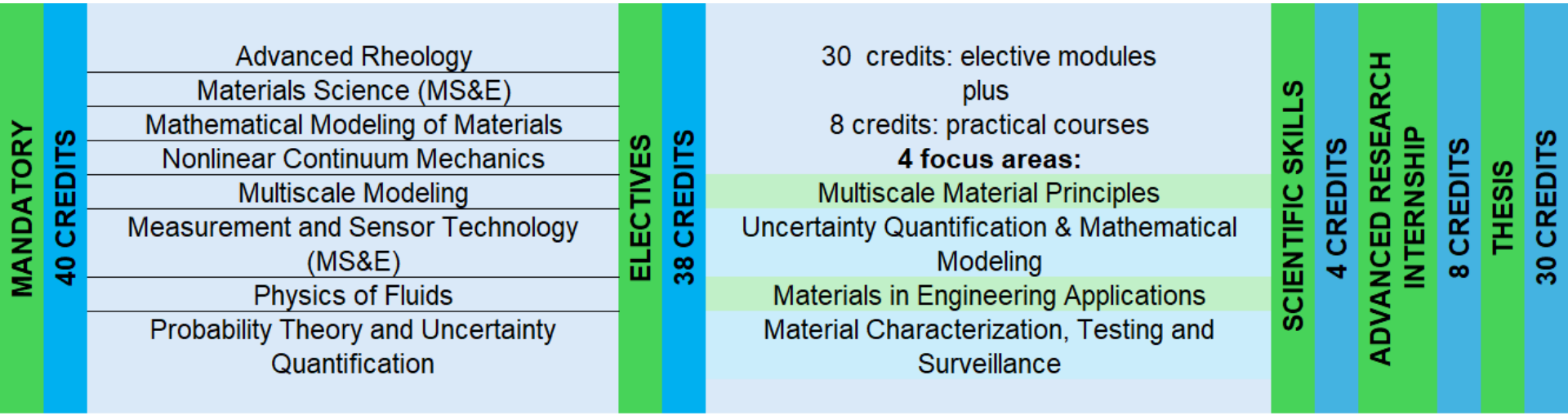
Main locations
Garching & Garching Hochbrück campus as well as the main campus in Munich

Language of instruction
English

Credits
120 credits

Standard period of study
4 semesters (full-time)

M. Sc. Materials Science & Engineering: how to achieve the required 120 credits



40 credits + 38 credits + 4 credits + 8 credits + 30 credits = **120 credits**

The MS&E‘s four focus areas

During your second and third semester you will begin to focus your studies and specialize in one of the following four areas:

- Multiscale Material Principles
- Uncertainty Quantification & Mathematical Modeling
- Materials in Engineering Applications
- Material Characterization, Testing & Surveillance

MS&E: how to achieve the required 120 credits

mandatory/required modules (40 credits):

- cover the core competencies
- 8 modules at 5 credits each

Required Modules		40
[VK] [BGU35016] Advanced Rheology		5
[VK] [PH9031] Materials Sciences (MS&E)		5
[VK] [MA9805] Mathematical Modeling of Materials		5
[VK] [PH9032] Measurement and Sensor Technology (MS&E)		5
[VK] [MW2359] Multiscale Modeling		5
[VK] [MW2368] Nonlinear Continuum Mechanics		5
[VK] [MW2361] Physics of Fluids		5
[VK] [MW2360] Probability Theory and Uncertainty Quantification		5

MS&E: how to achieve the required 120 credits

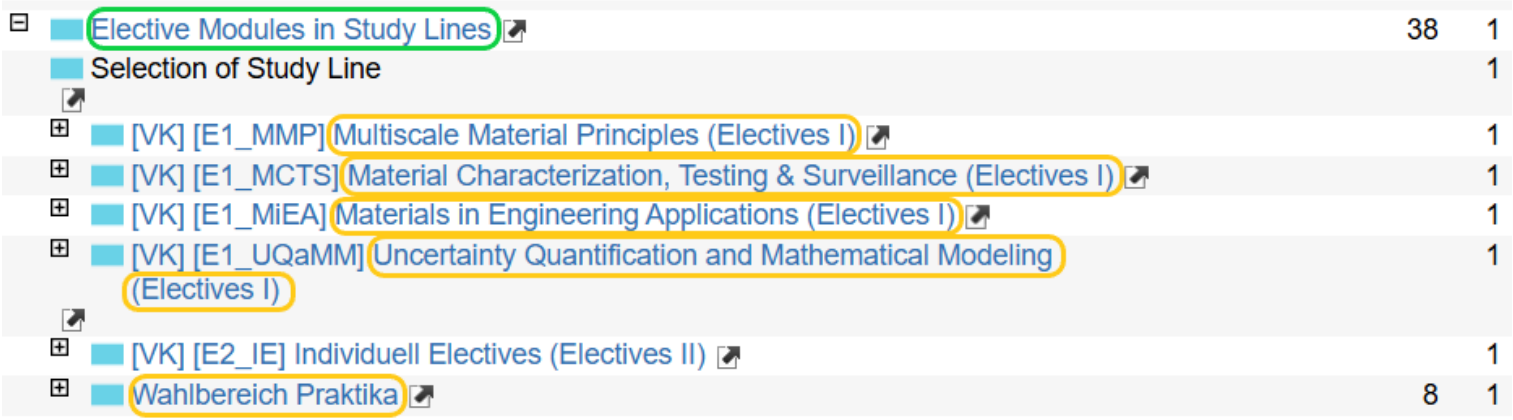
choice of specialization: as explained beforehand, students are supposed to choose one of four possible focus areas and their corresponding electives – please see your mentor to discuss this towards the end of your first semester

electives I and II (30 credits)

a minimum of 15 credits must be obtained from the electives I of your chosen focus area

practical courses (8 credits)

a minimum of 4 credits must be obtained from the practical courses of your chosen focus area



MS&E: how to achieve the required 120 credits

Advanced Research Internship (8 credits)

Advanced Research Internship (ARI) in Germany or abroad [SE0208]

- Students will be supported by their mentor when pursuing their ARI. The internship can be completed at the TUM, another university or a research institution cooperating with the TUM, and it can be completed either in Germany or abroad.
- The ARI should be pursued during the 3rd semester, ideally to prepare for the Master's Thesis.
- The form for ARI registration and evaluation can be found on the page Dokumente / Documents – M.Sc. MSE
- The description of the module can be found here.
- Partial financing is possible for internships abroad within Europe through the ERASMUS program

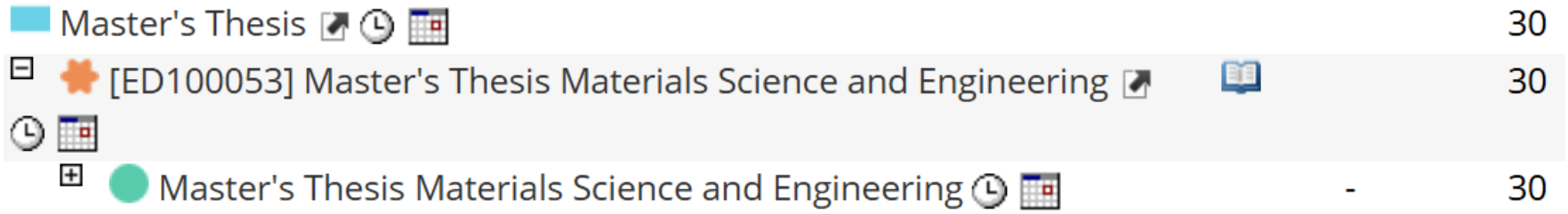
MS&E: how to achieve the required 120 credits

Scientific skills (4 credits) - to be chosen from a list of courses offered at the TU Munich

e. g.

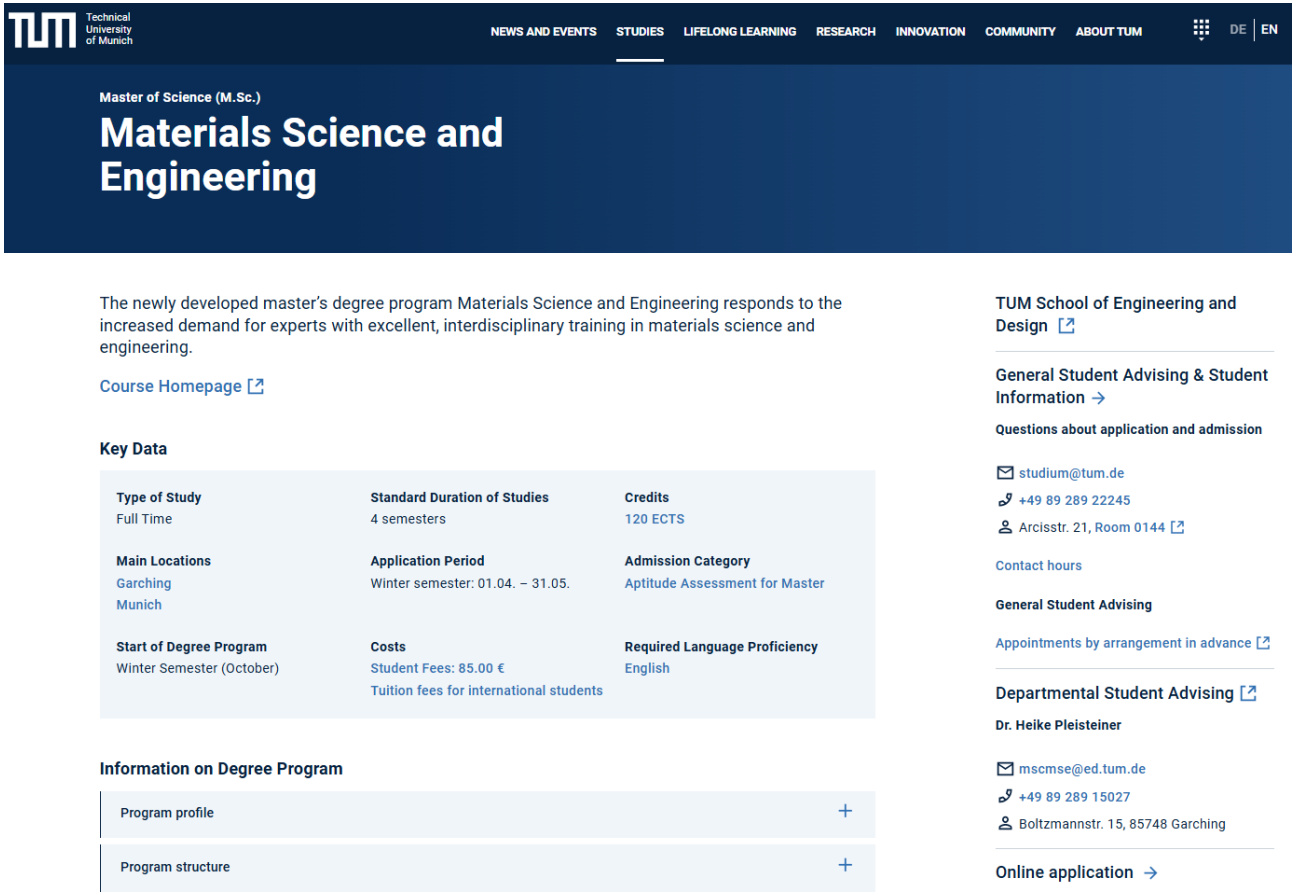
MS&E: how to achieve the required 120 credits

Master Thesis (30 credits)



Where to find what

The pages provided by the TU Munich:
https://www.tum.de/en/studies/degree-programs/detail/materials-science-and-engineering-master-of-science-msc

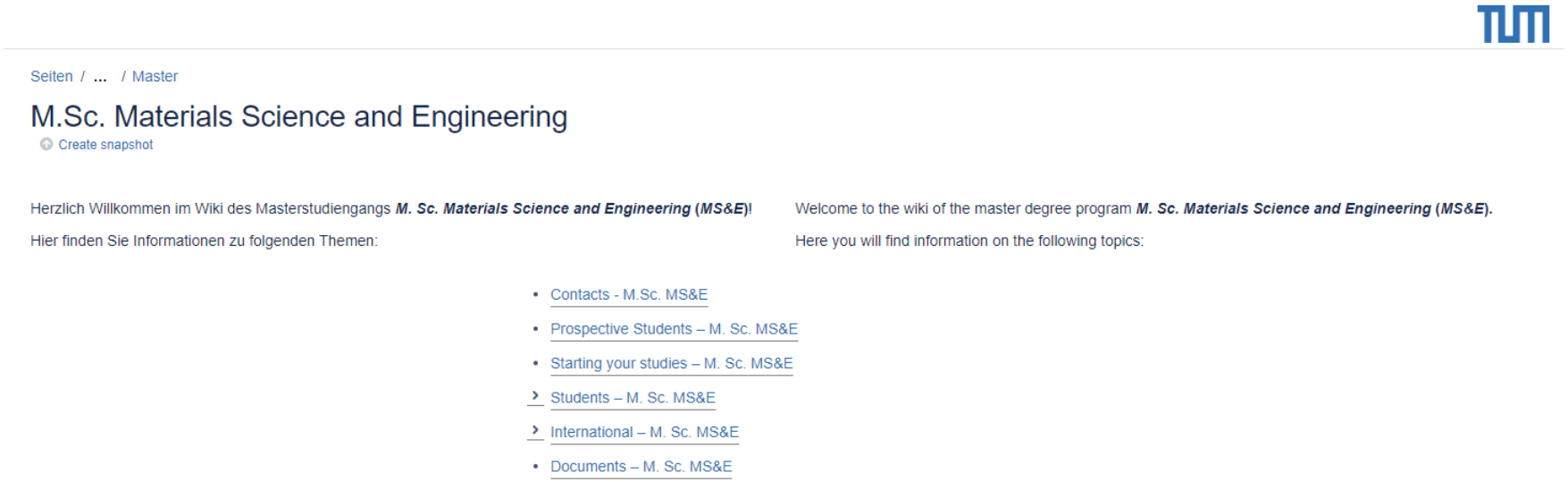


Where to find what

The ED‘s (School of Engineering and Design‘s) website:
https://www.ed.tum.de/en/ed/studies/degree-programs/materials-science-and-engineering-m-sc/

Where to find what

Our wiki:
https://wiki.tum.de/display/edschooloffice/M.Sc.+Materials+Science+and+Engineering



Seiten / ... / Master

M.Sc. Materials Science and Engineering

Create snapshot

Herzlich Willkommen im Wiki des Masterstudiengangs ***M. Sc. Materials Science and Engineering (MS&E)***!

Hier finden Sie Informationen zu folgenden Themen:

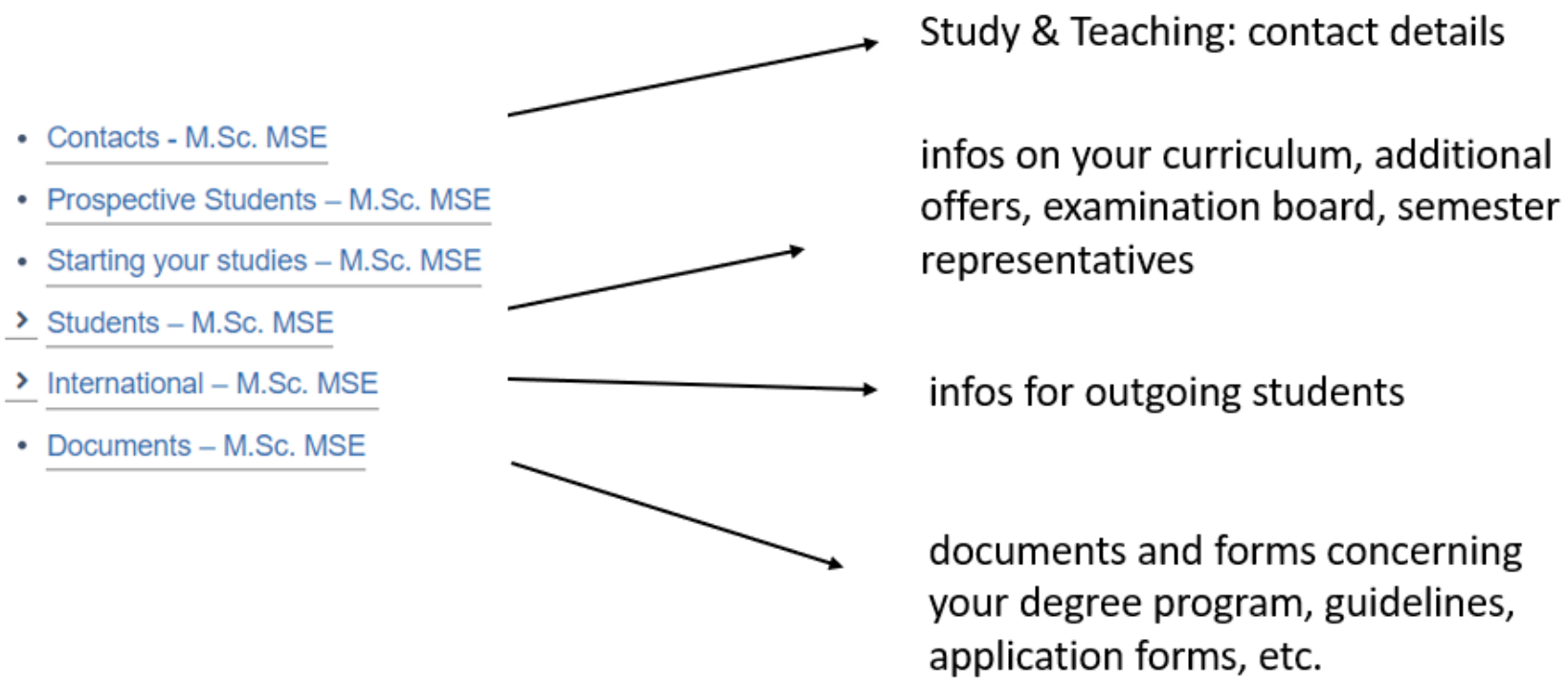
Welcome to the wiki of the master degree program ***M. Sc. Materials Science and Engineering (MS&E)***.

Here you will find information on the following topics:

- Contacts - M.Sc. MS&E
- Prospective Students – M. Sc. MS&E
- Starting your studies – M. Sc. MS&E
- Students – M. Sc. MS&E
- International – M. Sc. MS&E
- Documents – M. Sc. MS&E

Our wiki as your first point of contact

Our wiki:
https://wiki.tum.de/display/edschooloffice/M.Sc.+Materials+Science+and+Engineering



Your application: key facts

Start of the degree program
intake only once a year, i. e. for the winter semester (in October each year)

Application period for the winter semester
1 April through to 31 May each year

Admission category
aptitude assessment for the TU‘s master degree programs

Required language proficiency
English

Your application: key facts

Minimum requirements to apply for a master degree program at the TU Munich

a recognized undergraduate degree (e. g. a bachelor‘s degree) + successfully completing the aptitude assessment procedure

How do I apply?

you apply through the TUMonline application portal (which is only open during the application period)

Which prerequisites do I have to fulfill?

a bachelor's degree of at least six semesters, obtained at a German or foreign university (or an equivalent qualification)

Which subjects regarding my undergraduate degree are suitable?

Engineering Science, *Civil Engineering*, *Mechanical Engineering*, *Electrical Engineering*, *Computer Engineering*, *Physics*, *Materials Science* etc.

Your application: which documents you need to submit during the online application procedure

Degree certificate and diploma or subject and grade transcript of studies to date

other degrees such as a master‘s degree or diploma can also qualify you for our master degree program

Transcript of records (ToR)

the TOR is listing all your successfully accomplished modules and corresponding grades

Proof of English language proficiency

for more detailed information on which forms of verification of language skills are required please refer to https://www.tum.de/en/studies/application/application-info-portal/admission-requirements/language-certificates

Abstract (of your bachelor‘s thesis) in English

Your application: which documents you need to submit during the online application procedure

Curricular analysis listing your best 120 credits

content and results of prior examinations and modules accomplished

Letter of Motivation (in English)

describing both your academic and personal motivation for your choice of degree program

Complete and current CV/résumé

Copy of your passport (or, for German nationals, your German identification card (*Personalausweis*))

Please note that you may omit (black out) the issuing authority, serial number, and identification number.

Your application: which documents you need to submit during the online application procedure

Preliminary review documentation (so-called *VPD*) from uni-assist

is required for a Master's entrance qualification (e. g. Bachelor's degree) that was not obtained in Germany

Special requirements may apply depending on your educational background

We may require additional documents if you obtained your bachelor‘s degree in certain countries. Please refer to https://www.tum.de/en/studies/application/application-info-portal/special-conditions-for-certain-countries for more details.

How are applicants selected for admission?

The aptitude assessment test: a two-part procedure

Once you have officially submitted your application including all the required documents the department and professors will check whether your application meets the specific requirements to be admitted to the *M. Sc. in Materials Science and Engineering*.

Part one

In the initial stages, your grades and submitted documents will be evaluated according to a certain point system.

Applicants with excellent or good results will be admitted directly.

Applicants with bad results will be rejected at stage one.

Candidates with unclear results will be invited for an interview.

How are applicants selected for admission?

Part two

In part two of the aptitude assessment procedure you will be invited to a 20-minutes admission interview. Whether you will be admitted in the end depends on both your grades from your bachelor‘s degree as well as the outcome of the interview.

When are the interviews held?

The interviews will be held during the summer (July/August). Please note that the master degree program *M. Sc. Materials Science and Engineering* only has an intake for the winter semester.

Regarding your motivation

- You are looking for an interdisciplinary degree program focusing on the natural sciences, in particular maths, physics and chemistry
- You are particulary interested in maths and a lot of theory
- You are looking for a degree program studying in a small and highly international group of students

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©Uli Benz / TU Munich

We will look forward to receiving your application.

Thank you for your attention.

Additional info following the Q&A session

- Regarding the GRE or GATE test, please refer to §36 of the academic and examination regulations:

§ 36
Eligibility Requirements

(1) Eligibility for the Master's Program in Materials Science and Engineering is demonstrated by:

1. a qualified bachelor's degree obtained after a program of at least six semesters from a domestic or foreign institution of higher education, or at least an equivalent degree in engineering, mechanical engineering, electrical engineering, informatics, civil/environmental engineering, chemical engineering or a comparable degree program.

2. proof of expertise in the form of a "Graduate Record Examination (GRE) General Test" or a "Graduate Aptitude Test in Engineering" (GATE) for applicants who have completed a bachelor's degree in the following countries: Bangladesh, China, India, Iran, Pakistan; for other applicants who completed a bachelor's degree in a state that has not signed the Convention on the Recognition of Qualifications concerning Higher Education in the European Region from 11 April 1997 (Lisbon Recognition Convention), we recommend submitting the test as it will be requested later if there are significant differences in terms of the competencies gained in the bachelor's degree in accordance with Section 2; this proof is not necessary for degrees that were completed in signatory states of the Lisbon Recognition

Additional info following the Q&A session

- Regarding the proof of English language proficiency, please refer to https://www.tum.de/en/studies/application/application-info-portal/admission-requirements/language-certificates as well as §36(1) 3. of the academic and examination regulations:

3. adequate knowledge of the English language; students whose language of instruction is not English must demonstrate proficiency through an acknowledged language test such as the Test of English as a Foreign Language (TOEFL) (with a minimum of 88 points), the International English Language Testing System (IELTS) (with a minimum of 6.5 points), or the Cambridge Main Suite of English Examinations; if, in the undergraduate program, at least 8 credits were obtained for examinations administered in English-language examination modules, adequate proficiency in English is also deemed proven, alternatively the proof of a bachelor's thesis written in English or a comparable pass/fail credit requirement amounting to 8 credits can be provided.

Additional info following the Q&A session

- Regarding the points awarded for your grade please refer to appendix 2, 5.1.1b) of the academic and examination regulations:

b) Grade

[1]Three points are awarded for every tenth of a grade higher than 2.5 of the average calculated with examination requirements for the modules that are taken into account for the subject-specific qualification according to 5.1.1 a). [2]The maximum number of points is 45. [3]Negative points will not be awarded. [4]If modules amounting to more than 120 are taken into consideration for the discipline-specific specific skills and qualifications according to 5.1.1 a), only the best modules amounting to 120 credits will be used to calculate the grade; if there were modules amounting to less than 120 credits for the discipline-specific specific skills and qualifications according to 5.1.1 a), the grade will be calculated using the lower credit number. [5]If no modules to be taken into consideration in accordance with 5.1.1 a), no points will be awarded for the grade. [6]Grades of international degrees will be converted by applying the Bavarian formula. [7]The applicant needs to submit a list of the required modules together with the application and confirm its accuracy in writing. [8]The grade weights of the individual modules correspond to the credits assigned to each module. [9]If the candidate submits this list, the average is calculated according sentences 1 to 6. [10]If the candidate has submitted a degree certificate containing more than 120 credits with the application, the assessment will be made on the basis of the best graded modules in the amount of 120 credits that are to be taken into consideration in accordance with 5.1.1 a).