

# WelCOME to come.tum

Master of Science in Computational Mechanics

Munich, 7. October 2024



Who's involved?

# Formative Chairs

## Chair of Structural Mechanics

Prof. Dr.-Ing. Gerhard Müller



## Chair of Computational Modelling and Simulation

Prof. Dr.-Ing. André Borrmann



## Professorship for Computational Solid Mechanics

Prof. Dr.-Ing. habil. Fabian Duddeck



## Chair of Hydromechanics

Prof. Dr.-Ing. habil. Michael Manhart

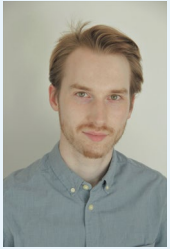


## Chair of Structural Analysis

Prof. Dr.-Ing. Kai-Uwe Bletzinger



# Course Coordinators



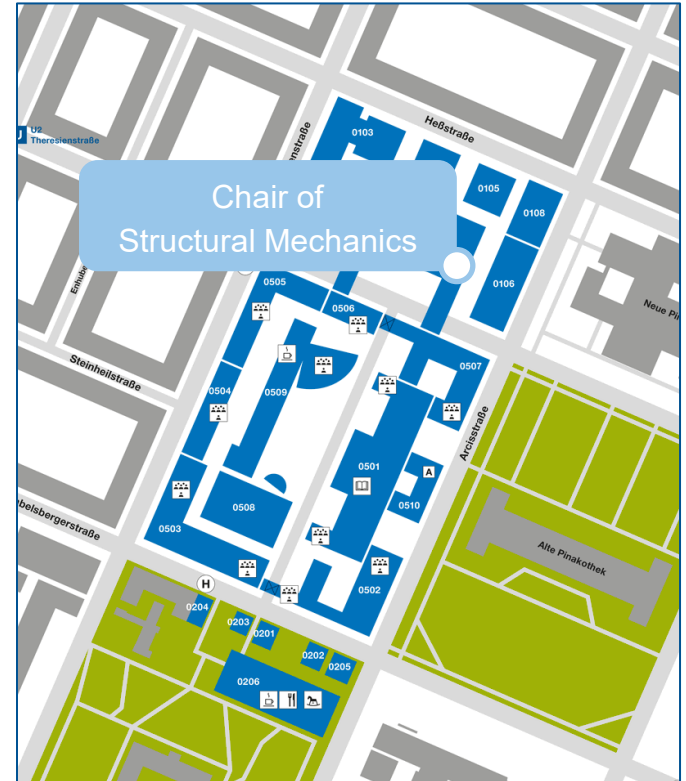
Sebastian Schopper, M.Sc.  
Room N1151

E-Mail: [sebastian.schopper@tum.de](mailto:sebastian.schopper@tum.de)  
Telephone: 089-289-28322



Felix Schneider, M.Sc.  
Room N1149

E-Mail: [felix.w.schneider@tum.de](mailto:felix.w.schneider@tum.de)  
Telephone: 089-289-28393



# Examination Administration

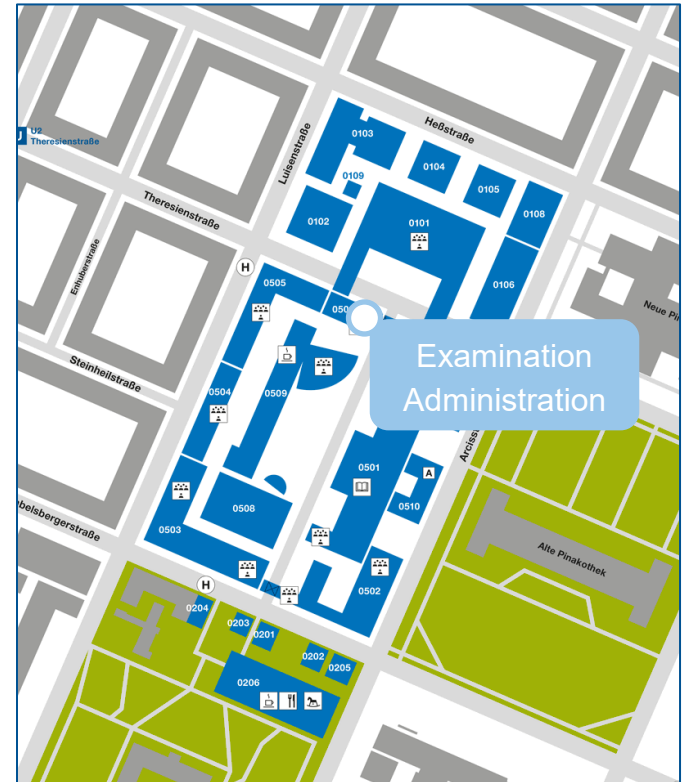
Samanta Castellarin  
Room 1701

E-Mail: [samanta.castellarin@tum.de](mailto:samanta.castellarin@tum.de)  
Telephone: 089-289-28194

## Office Hours:

Make an appointment via phone or e-mail.

Responsible for exam administrations and compliance of study regulations

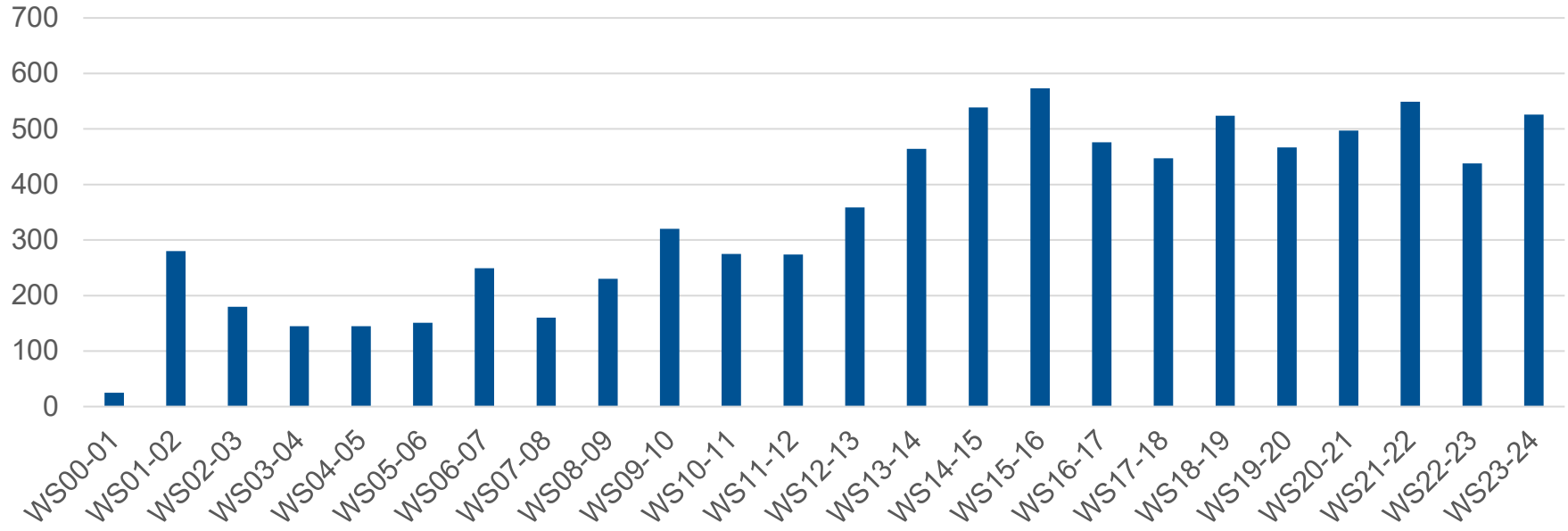


# Overview

- Numbers
- Introduction to the Examination Regulations
- Study Plan/Curriculum
- TUMonline (enrollment, course registration)
- Moodle
- Schedule of courses (1st semester)
- welCoMe week program

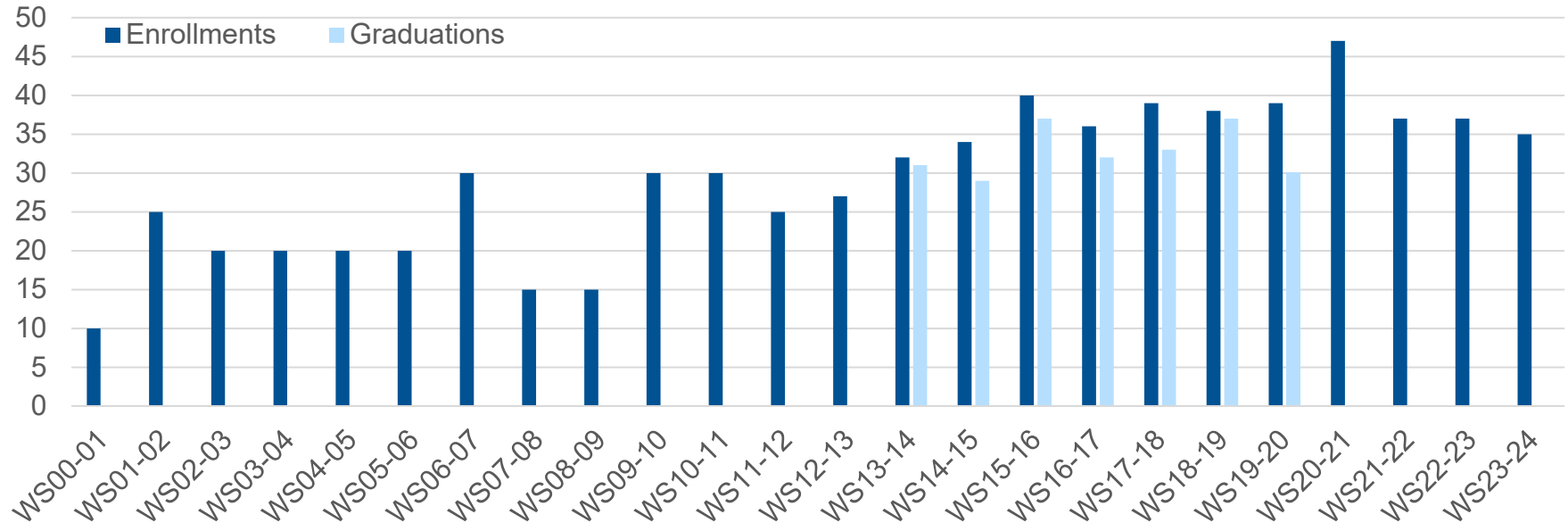
# Numbers

# Applications



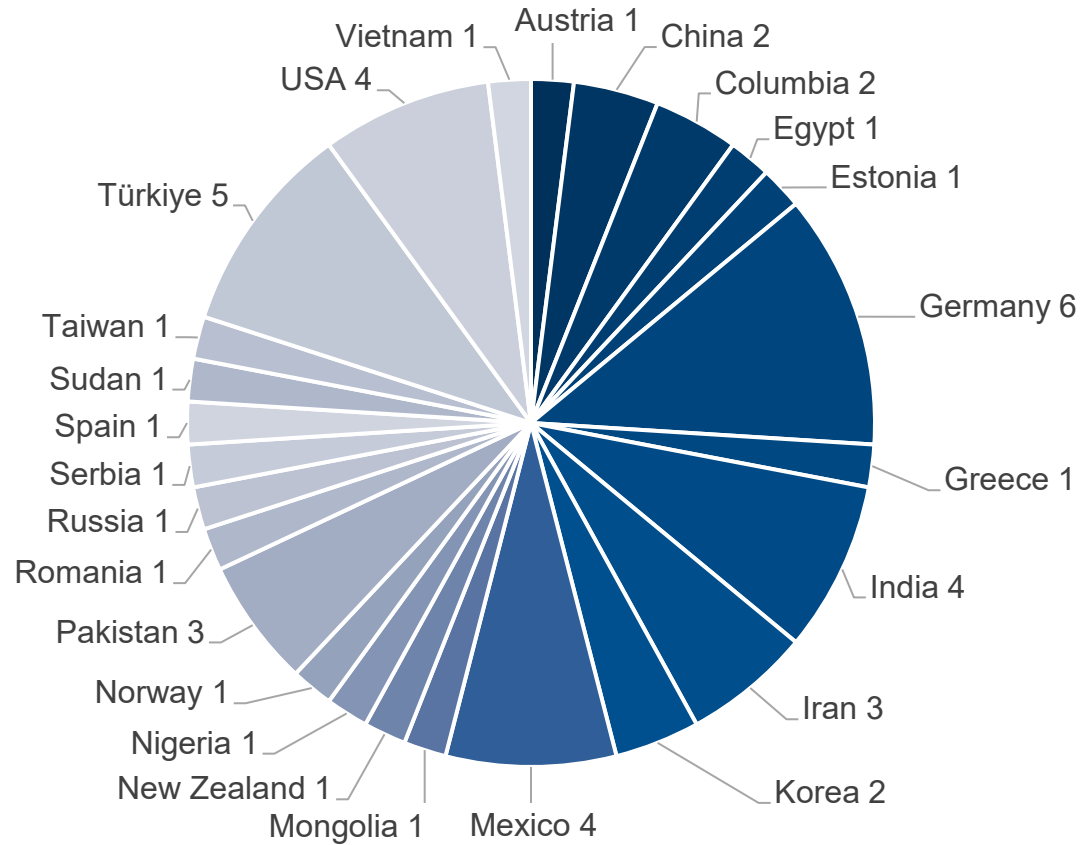


# Enrollments and Graduations



# Nationalities

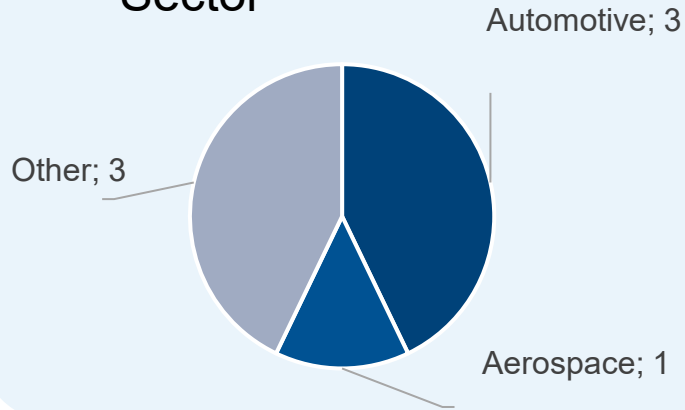
## WS 23/24



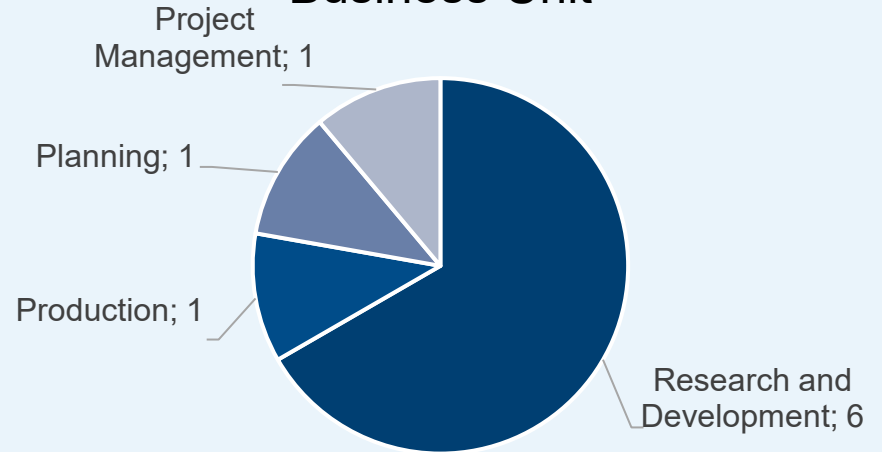
# Career

## Graduate Poll 2020

### Sector



### Business Unit

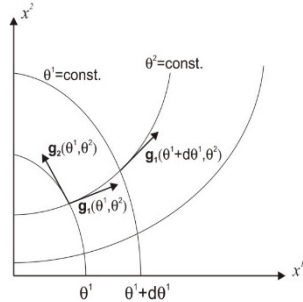


### Further areas of activity:

- Structural Engineering (2)
- Software Development (4)

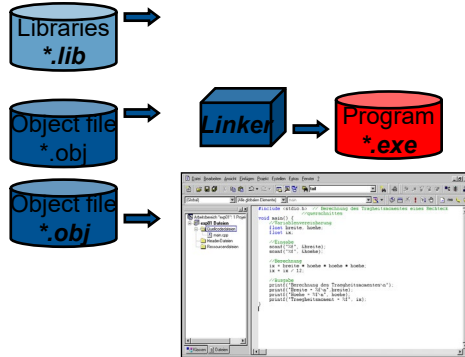
# Study Plan and Examination Regulations

# Study Content



$$\mu u^i|_j + (\lambda + \mu) u^j|_i - \rho \ddot{u}^i = 0$$

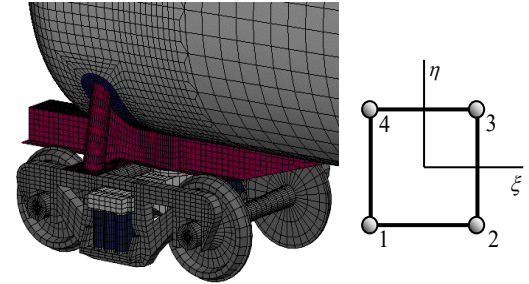
Derivation of differential equations for the description of mechanical systems



Solution of technical problems using numerical methods

Implementation in software

$$\mathbf{K} = \int_{-1}^1 \int_{-1}^1 \mathbf{t} \mathbf{B}^T \cdot \mathbf{C} \cdot \mathbf{B} |J| d\xi d\eta$$



Numerical solution methods

# Examination regulations

Standard study period: 4 Semesters (including Master's Thesis)

Compulsory Courses  
36 Credit Points

Core Elective Courses  
in catalogues  
Mechanics  
&  
Computation  
24 Credit Points

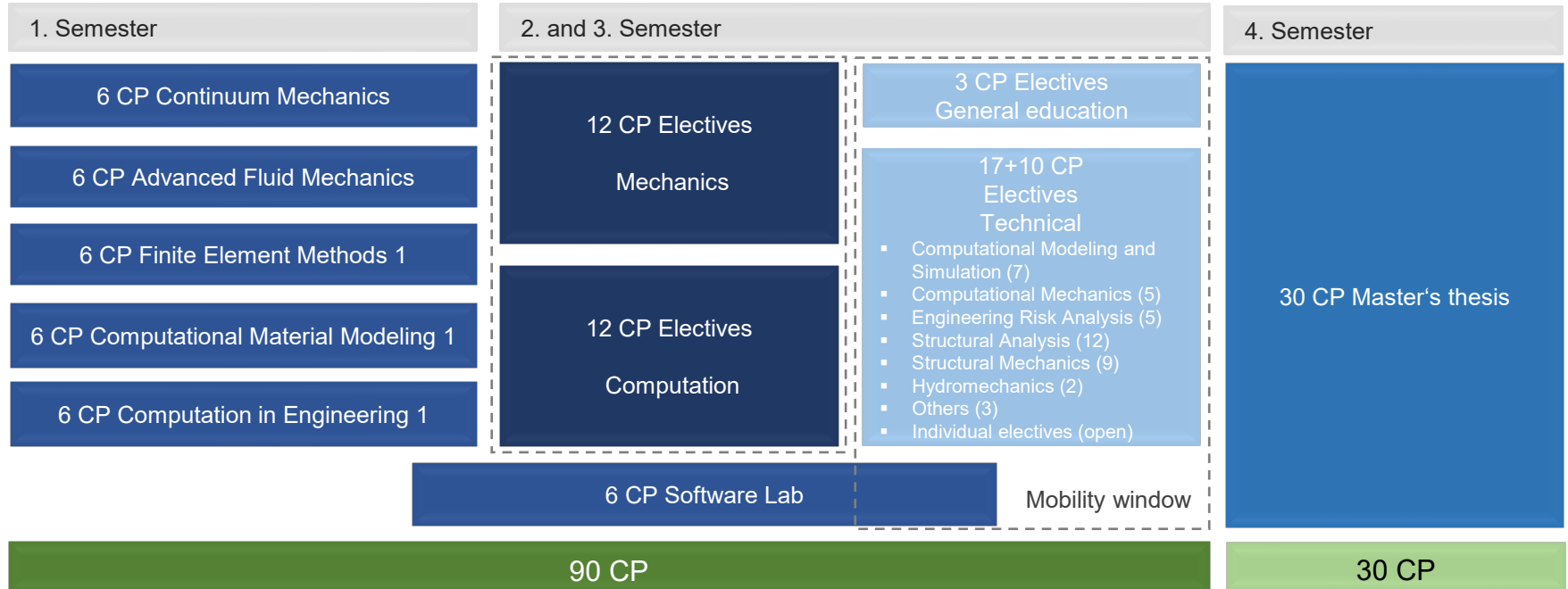
General Education Courses  
3 Credit Points

General Elective Courses  
27 Credit Points  
(Minimum)

Master's thesis  
30 Credit Points

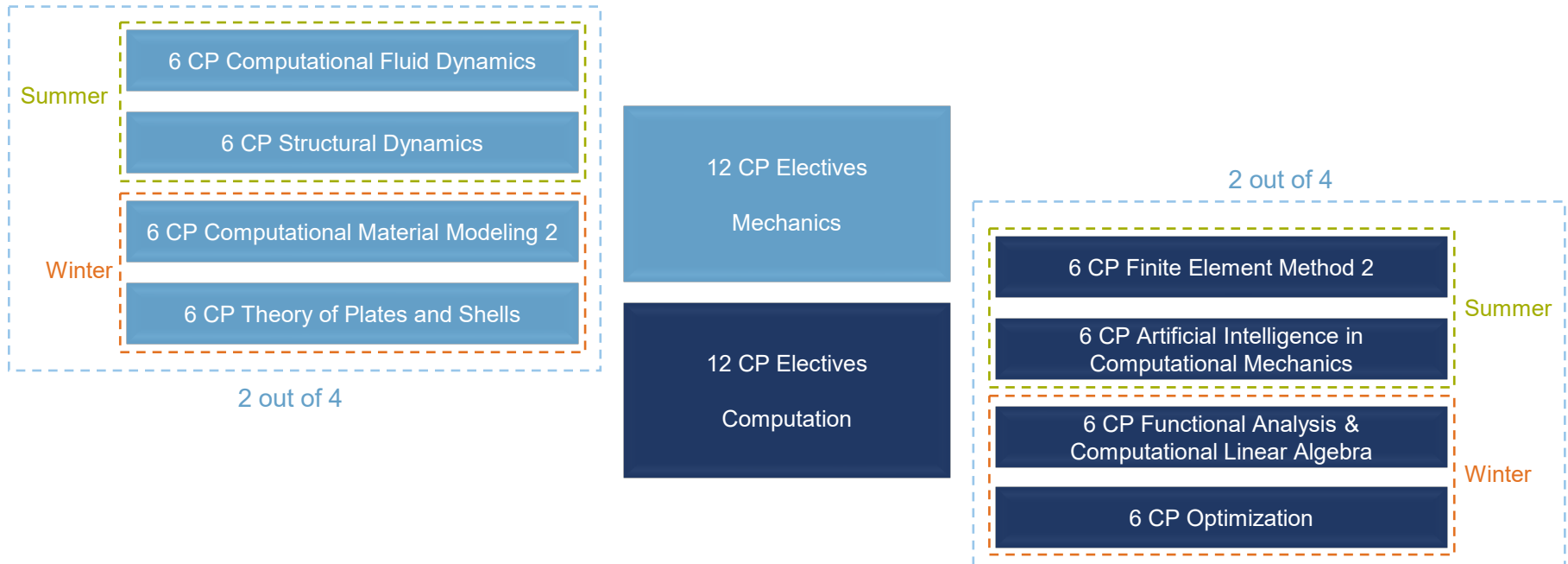
Minimum number of credits: 120 CP

# Study Plan/Curriculum



# Study Plan/Curriculum (Core Electives 2<sup>nd</sup> & 3<sup>rd</sup> semester)

12 CP (2 modules) per electives catalogue





## Study Plan/Curriculum (Electives)

- Technical Elective Courses (27 Credits):
  - available courses published at <https://wiki.tum.de/display/edschooloffice/Curriculum>
  - 17 out of 27 credits have to be from this curriculum
  - 10 out of 27 credits can be accredited as individual elective courses (that means selection from the complete module catalog of TUM is possible)

All individual elective courses have to be approved by the course coordinator.

## Study Plan/Curriculum (General Electives)

- General Elective Courses (3 Credits):
  - available courses published at <https://collab.dvb.bayern/display/TUMedschooloffice/Curriculum>
  - 3 credits have to be taken
  - Language courses, Carl von Linde-Akademie (<https://www.cvl-a.mcts.tum.de>),...
  - Please make suggestions, if you would like to include a specific course

# Study Progress Regulations

One compulsory exam has to be passed after two semesters

Minimum credits:

30 credits after 3 semesters

60 credits after 4 semesters

90 credits after 5 semesters

120 credits after 6 semesters

The study regulations for the master's program Computational Mechanics are published in the CoMe-Wiki, please visit

<https://collab.dvb.bayern/x/Q9dfB>

→ Maximum duration of study: 6 semesters

# Proof of Basic German Language Proficiency

A certificate of basic proficiency in German is required until the end of the second semester (30.09.2025)

Required level: A1.1 or higher

## Possible Courses

- TUM language center:  
<https://www.sprachenzentrum.tum.de/en/sprachenzentrum/languages/german/>
- Any German course offered at an institute (e.g. University Munich, Goethe-Institute, Volkshochschule, ...) or online

Send your proof (certificate or exam result) to Mrs. Castellarin

# Exam Registration

Via TUMonline ([www.tumonline.de](http://www.tumonline.de))

Registration Periods:

winter term: 1st – 31st January

summer term: 1st – 31st July

Cancellation possible until 3 days before the exam

# Exam Review

Right to a post-exam review

Different procedures at the chairs:

- General date announced by the chair
- Registration necessary via e-mail or online
- Individual appointment upon request

→ Check with the course supervisor if you want to review your exam

# Important Webpages and Further Information

## TUMonline – [www.tumonline.de](http://www.tumonline.de)

- TUM-Wiki:

<https://collab.dvb.bayern/display/TUMdocs/Students>

- Course Registration:

<https://www.tum.de/en/studies/during-your-studies/organizing-your-studies/course-offerings>

- YouTube - Tutorials:

- general information: [https://www.youtube.com/watch?v=e-67iU\\_DH34](https://www.youtube.com/watch?v=e-67iU_DH34)

- TUM student info channel:

<https://www.youtube.com/channel/UCx0umWxDASjFmTYlttdkelA>



# TUMonline – Course Registration

We recommend to register for courses via “Study Status / Curriculum”:

All applications ▾

Filter by application title...

**Studies and Courses**

- Study Status / Curriculum**
- Courses
- Module Catalog
- Student Files
- Calendar
- TUM Degree Programs

**Exams**

- Exams
- Recognitions / Achievement Supplements
- My Achievements
- Transcripts

# TUMonline – Course Registration


Select the program “Computational Mechanics”

ID of degree programme	Name of degree programme	Curriculum
1630 06 671	[REDACTED]	<a href="#">20211</a>
1630 17 310	[REDACTED]	<a href="#">20161</a>
1630 16 331	<a href="#">Computational Mechanics</a> 	<a href="#">20161</a>

# TUMonline – Course Registration

Uncollapse the required modules and click on the link for the registration

Node filter-Name

- [-] [20161] Master Computational Mechanics 
- [-] Examination Modules
- [-] Degree Requirements
  - [-] [BGU44013T2] Computation in Engineering I
  - [-] [BGU44013P1] Computation in Engineering I - 1st element of assessment
  - [-] [BGU44013S1] Computation in Engineering I - 1st pass/fail credit requirement
  - [-] ▲ Computation in Engineering I
 

Course(s) in academic year	Part	Lecturer (Assistant)	Place (1st session)	Time (1st session)
0000002243 23W 2SWS VO Computation in Engineering I	③	Kollmannsberger S, Holla V	N 1189, Hans-Piloty-Hörsaal (0101.02.189)	18.10.23 09:45 - 11:15
  - [-] ▲ Exercises to Computation in Engineering I
  - [-] [BGU41021] Advanced Fluid Mechanics
  - [-] [BV320016] Finite Element Method 1
  - [-] [BV330009] Computational Material Modeling 1
  - [-] [BV020001] Continuum Mechanics
  - [-] [BV030004] Software Lab

# TUMonline – Course Registration

Click on “Go to course registration”

**Overview**

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Description

---

Dates and Groups

---

Status within Curriculum

---

Equivalent courses

---

Go to course registration

---

☉ Course open for registration

Overview

<b>Title</b>	Computation in Engineering I ☆
<b>Number</b>	000002243
<b>Persons involved</b>	<b>Lecturer (Assistant)</b>  <a href="#">Kollmannsberger_Stefan</a>  <a href="#">Holla_Vijaya</a>
<b>Type</b>	lecture (VO)
<b>Semester weekly hours</b>	2
<b>ECTS credits</b>	-
<b>Course language/s</b>	English
<b>Offered in</b>	Winter semester 2023/24
<b>Organisation</b>	<a href="#">Chair of Computational Modeling and Simulation (Prof. Bormann)</a>

# TUMonline – Course Registration

Select “Standardgruppe” and place your request

**Computation in Engineering I**  
Course open for registration

<b>Registration period</b> from 13.09.23, 00:00 to 29.10.23, 23:59	<b>Ranking options</b>	1. Studium: Studienplanzuordnung (PF vor WF vor FF)
<b>Deregistration</b> to 29.11.23, 23:59		2. Los ( 4 Stellen )
<b>Date of Allocation</b> -	<b>Participants</b>	For a possible maximum number of participants see course group

Please select at least 1 groups of 1 different courses.

Collapse all ^

---

0000002243 **Computation in Engineering I - VO** Free registration ▾

**Standardgruppe** (Participants: 141 / max. unlimited) ☆

Lecturer  
Holla\_Vijaya Kollmannsberger\_Stefan

Next Date  
WED, 18.10.2023, 09:45 - 11:15  
N.1189\_Hans-Piloty-Hörsaal (0101.02.189)

...show all

---

0000002312 **Exercises to Computation in Engineering I - UE** Free registration ▾

**Standardgruppe** (Participants: 126 / max. unlimited) ☆

Lecturer  
Holla\_Vijaya Kollmannsberger\_Stefan

Next Date  
WED, 18.10.2023, 11:30 - 13:00  
N.1189\_Hans-Piloty-Hörsaal (0101.02.189)

...show all

Back
Enter place request

# Moodle – www.moodle.tum.de

## Moodle = e-learning platform of TUM

- Lectures provide there their supporting material (lecture notes, task sheets, ...)
- Login also with @tum address and TUMonline password
- Registration for courses is transferred automatically from TUMonline

### TUM-Moodle

#### Willkommen!

#### Online-Lernen einfach, schnell & überall

Moodle ist die zentrale Lernplattform der TU München. Moodle bietet Online-Lernräume, in denen Dozierende Materialien und viele unterschiedliche Aktivitäten für Kommunikation, Zusammenarbeit und Selbstlernen bereitstellen. Studierende können die Moodle-Kurse unabhängig von Ort und Zeit und nach eigenen Lernbedürfnissen nutzen.

**Web Login Service**  
Anmeldung mit Ihrem TUM Account an  
[www.moodle.tum.de](http://www.moodle.tum.de)

**Benutzername**  
z.B. gn42tum / muster@tum.de

**Passwort**

angemeldet bleiben (1)

zu übertragende Daten anzeigen (2)

**LOGIN** Passwort vergessen?

#### Moodle Login

[Mit TUM-Kennung](#)

[Mit LMU-Kennung](#)

[Als Gast \(ohne Kennung\)](#)

#### Kontakt

**ProLehre | Medien und Didaktik**

Technische Universität München  
Barer Str. 21  
80333 München

[lms-support@tum.de](mailto:lms-support@tum.de)

## Website – [www.come.tum.de](http://www.come.tum.de)

- Web presence at [www.come.tum.de](http://www.come.tum.de), directing to

<https://www.ed.tum.de/en/ed/studies/degree-program/computational-mechanics-m-sc/>

- Most of the detailed information can now be found on our Wiki page

<https://wiki.tum.de/display/edschooloffice/M.Sc.+Computational+Mechanics>

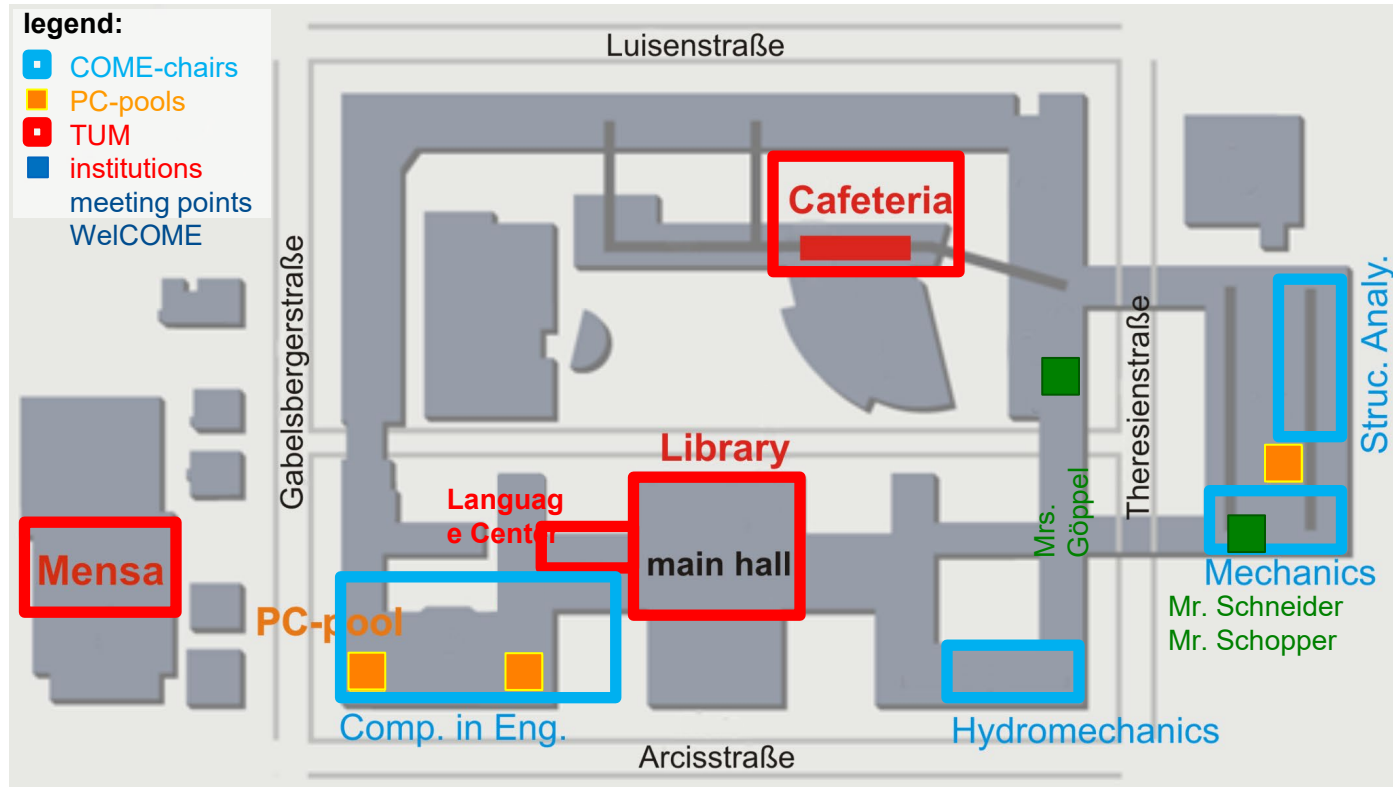
# Schedule of courses (1st semester)



# Timetable 1st Semester (on Wiki)

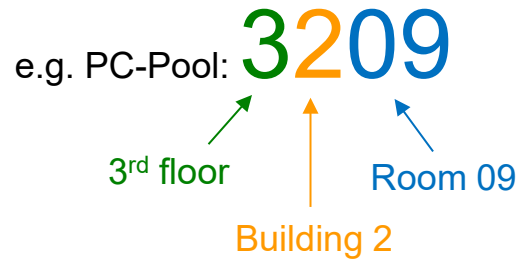
	Monday	Tuesday	Wednesday	Thursday	Friday
8.00	Advanced Fluid Mechanics (comp.) (Manhart) 2760	Advanced Fluid Mechanics (comp.) (Manhart) 0220	Intro. to Finite Element Methods (comp.) (Wüchner) N1070		Continuum Mechanics (comp.) (Müller) N 1090
8.30					
9.00			"belongs to the Module 'Finite Element Methods 1'"		
9.30					
10.00			Computation in Engineering 1 (comp.) (Nousias) N1189	Computational Material Modeling 1 (comp.) (Duddeck) 2100	Continuum Mechanics (comp.) (Müller) N 1090
10.30					
11.00					
11.30	Seminar Fluid Mechanics (comp.) (Manhart) 0670		Exercises to Computation in Engineering 1 (comp.) (Nousias) N1189	Computational Material Modeling 1 (comp.) (Duddeck) 2100	
12.00					
12.30	You have to visit only one of these tutorials per week				
13.00					
13.30		Theory of Plates* (comp. el.) (Wüchner) N1090	Intro. to Finite Element Methods (comp.) (Wüchner) 0602	Seminar Fluid Mechanics (comp.) (Manhart) N1039	FE-Modelling, Simulation & Validation (comp.) (Duddeck) cip pool 3238
14.00					
14.30	Additional Elective Courses	"belongs to the Module 'Theory of Plates and Shells'"	"belongs to the Module 'Finite Element Methods 1'"	You have to visit only one of these tutorials per week	"belongs to the Module 'Finite Element Methods 1'"
15.00	"ATHENS program": lectures en bloc from November 16 -23.2024 and in March 2025 <a href="https://register.athensnetwork.eu">https://register.athensnetwork.eu</a>	Seminar Continuum Mechanics (comp.) (Müller) N1070	Seminar Fluid Mechanics (comp.) (Manhart) 2770	Seminar Computational Material Modeling (comp.) (Duddeck) 2100	
15.30					
16.00		not every week. *lect. will be announced in lecture	You have to visit only one of these tutorials per week		
16.30		Tutorial Theory of Plates* (comp. el.) (Wüchner) N1179/3238			
17.00		"belongs to the Module 'Theory of Plates and Shells'"			
17.30					
18.00					
18.30					
	Structural Analysis (Wüchner) comp. = compulsory	Structural Mechanics (Müller) el. = elective	Comp. Modeling and Simulation (Bormann)	Hydromechanics (Manhart)	Computational Mechanics (Duddeck)

# Locations on Main Campus



# Room Numbering at TUM

- Room Numbers at TUM Main Campus (Arcisstr.):



TUM-RoomFinder: <https://portal.mytum.de/campus/roomfinder>

# University Sports Center

- Classes in sports, climbing, fitness and health, and much more...

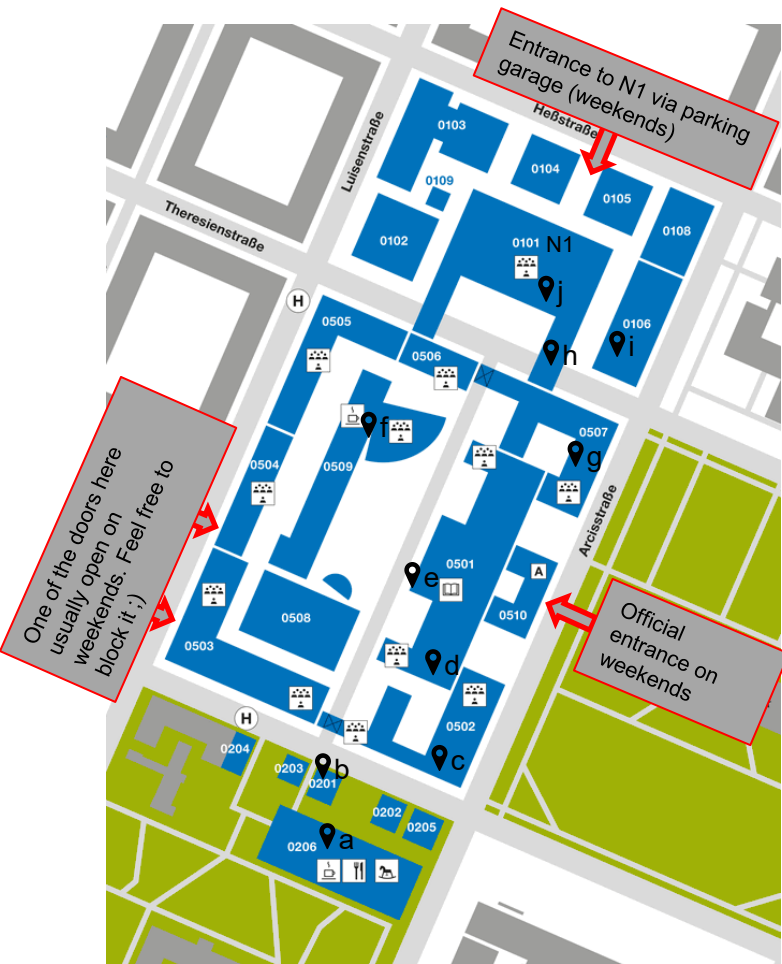


<https://www.zhs-muenchen.de>

WelCoMe week

# Schedule of the welCOME week

	Monday	Tuesday	Wednesday	Thursday	Friday
Morning	<p><u>08:30 - 10:00</u></p> <p><b>Welcome Address</b></p> <p><a href="#">Room 2770</a></p>	<p><u>09:00 - 10:30</u></p> <p><b>Introduction to Programming in C++</b></p> <p><a href="#">online/room 3238</a></p>	<p><u>09:00 - 12:00</u></p> <p><b>Introduction to Programming in C++</b></p> <p><a href="#">online/room 3238</a></p>	<p><u>09:00 - 12:00</u></p> <p><b>Introduction to Programming in C++</b></p> <p><a href="#">online/room 3238</a></p>	<p><u>09:00 - 12:00</u></p> <p><b>Introduction to Programming in C++</b></p> <p><a href="#">online/room 3238</a></p>
	<p><u>10:00 - 11:00</u></p> <p><b>Campus Tour</b></p> <p>starting after the welcome address</p>				
	<b>Lunch Break</b>				
Afternoon	<p><u>13:15 - 16:45</u></p> <p><b>Introduction to Programming in C++</b></p> <p><a href="#">Room 1100</a></p>	<p><u>13:15 - 16:45</u></p> <p><b>Introduction to Programming in C++</b></p> <p><a href="#">online/room 3238</a></p>	<p><u>13:15 - 16:45</u></p> <p><b>Introduction to Programming in C++</b></p> <p><a href="#">online/room 3238</a></p>	<p><u>13:15 - 16:45</u></p> <p><b>Introduction to Programming in C++</b></p> <p><a href="#">online/room 3238</a></p>	<p><u>13:15 - 16:45</u></p> <p><b>Introduction to Programming in C++</b></p> <p><a href="#">online/room 3238</a></p>
	<p><u>17:00 - 18:00</u></p> <p><b>Office Hour Prof. Duddeck</b></p> <p><a href="#">Amalie Bauer Saal</a> (main entrance, to the right on the ground floor)</p>		<p><u>17:00 - 19:00</u></p> <p><b>Guided City Tour</b></p> <p>Meeting point: in front of <a href="#">Mensa Arcisstraße</a></p>		
	<p>18:00</p> <p><b>Potluck Dinner</b></p> <p><a href="#">Amalie Bauer Saal</a> (main entrance, to the right on the ground floor)</p>				



📍a	Mensa	🍴
📍b	StudiTUM (for all TUM students)	✍️
📍c	3238: CIP-Pool → C++ exercises take place here 3209: CIP-Pool (on opposite side of building)	👤
📍d	3rd floor: Chair of Computational Modeling and Simulation – Prof. Borrmann	🪑
📍e	5th floor: Vorhoelzer – Potluck Dinner	🕒
	Ground floor: Studenten Service Zentrum Validation machines for student card	✍️
📍f	First floor: Library	🍴
📍g	Stu-Café	🪑
	Chair of Hydromechanics – Prof. Manhart	✍️
📍h	First/second floor: 2710 & 3701: Study rooms (for BGU students)	✍️
📍i	N1160: Study room (for BGU students)	🪑
📍j	Chair of Computational Mechanics – Prof. Duddeck	🪑
	Chair for Structural Mechanics – Prof. Müller & Chair of Structural Analysis – Prof. Bletzinger Ground floor: CIP-Pool N0199a	👤

Scan this to download map





# Potluck Dinner

Bring your own food

A regular portion is enough

No heating or cooling available

Bring something that you like yourself or that is traditional in your home country

All food is shared

We provide drinks



# City Tour



City tour from 5 to 7 pm

2 hour walk to the city centre

Check weather forecast and bring rain-proof clothes if necessary

We will finish the tour in Munich downtown



# Thank you for your attention!

Have a great start at TUM and enjoy your  
Master's in

## Computational Mechanics

