Examination Regulations & Study Plan

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Coordinators and their responsibilities

Daily business
Study advisor
TUMonline
Website

Examination Board
Program structure
Master's theses
Formal issues

BGCE & Management
Application management
Event organization

coordinators@cse.tum.de
Examination regulations

- FPSO: Fachprüfungs- und Studienordnung
- APSO: Allgemeine Prüfungs- und Studienordnung

- The FPSO is CSE specific, while the APSO covers all study programs
  → the FPSO is based on the APSO

http://www.cse.tum.de/regulations
Program duration

- Standard period of study: 4 semesters
- **120 ECTS** credits: 90 ECTS of modules + 30 ECTS Master's thesis

→ approx. **30 ECTS per semester** are expected

- Maximum period of study: 6 semesters
- You can take any courses at any time! But:

<table>
<thead>
<tr>
<th>By the end of the...</th>
<th>...you must have at least...</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd semester</td>
<td>30 credits</td>
</tr>
<tr>
<td>4th semester</td>
<td>60 credits</td>
</tr>
<tr>
<td>5th semester</td>
<td>90 credits</td>
</tr>
<tr>
<td>6th semester</td>
<td>120 credits</td>
</tr>
</tbody>
</table>
Courses, Modules, Sections

- The Master’s program consists of different modules:
  lectures, tutorials, labs, seminars, thesis + their respective examinations

- Course registration is not compulsory, but highly recommended
  (at the beginning of the lecture period)

- Exam registration is compulsory, independently of the type of module!
  (at the middle/end of the lecture period)

https://www.in.tum.de/en/current-students/administrative-matters/exams/
Calendar

- Final exams usually start right after the last week of lectures
- Repetition exams usually take place at the end of the lecture-free periods
- You have an unlimited* number of attempts to pass an exam

* As long as you stay within the credit limits

https://www.in.tum.de/en/current-students/administrative-matters/academic-calendar/
# Grades

Best: 1.0; Worst: 5.0; Min. grade to pass: 4.0

<table>
<thead>
<tr>
<th>Grade</th>
<th>In words (German)</th>
<th>In words (English)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0, 1.3</td>
<td>Sehr gut</td>
<td>Excellent</td>
</tr>
<tr>
<td>1.7, 2.0, 2.3</td>
<td>Gut</td>
<td>Good</td>
</tr>
<tr>
<td>2.7, 3.0, 3.3</td>
<td>Befriedigend</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>3.7, 4.0</td>
<td>Ausreichend</td>
<td>Sufficient</td>
</tr>
<tr>
<td>4.3, 4.7, 5.0</td>
<td>Mangelhaft</td>
<td>Not sufficient</td>
</tr>
</tbody>
</table>
Courses, Modules, Sections

- The CSE curriculum is divided into 5 sections (A to E), each of which contains different modules

**Section A** consists of mandatory (10 credits) and elective (at least 10 credits) modules

**Section C** consists of mandatory modules (31 credits)

**Sections B, D, and E** consist of elective modules (at least 49 credits): they include applied mathematics, application areas, and further electives

http://www.cse.tum.de/curriculum

Examination Regulations | CSE 2021
## Sections A & C: mandatory modules

<table>
<thead>
<tr>
<th>Section</th>
<th>Field</th>
<th>Modules</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Computer Science</td>
<td>IN1503 Advanced Programming, IN2147 Parallel Programming</td>
<td>10</td>
</tr>
</tbody>
</table>

= 41 ECTS

[http://www.cse.tum.de/curriculum/mandatory](http://www.cse.tum.de/curriculum/mandatory)
Sections A & B: elective modules

<table>
<thead>
<tr>
<th>Section</th>
<th>Field</th>
<th>Modules</th>
<th>ECTS</th>
<th>Sem.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Computer Science</td>
<td>IN2189 Computer Architecture and Networks</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IN2157 Fundamental Algorithms</td>
<td>5</td>
<td>1/3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IN2081 Patterns in Software Engineering</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IN2026 Visual Data Analytics</td>
<td>5</td>
<td>1/3</td>
</tr>
<tr>
<td>B</td>
<td>Applied Mathematics</td>
<td>MA3305 Numerical Programming I</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MA3306 Numerical Programming II</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IN2398 Numerical Algorithms for High Performance Computing</td>
<td>8</td>
<td>3</td>
</tr>
</tbody>
</table>

At least 10 ECTS in A and 16 ECTS in B needed

http://www.cse.tum.de/curriculum/electives
Sections D & E: elective modules

- Section D is subdivided into 6 catalogs (6 each) containing several modules
- You need at least 8 credits in a single catalog
- Section E contains further elective courses
- The remaining credits (up to 15) can be distributed across all elective categories (including A and B)

→ See examples on a later slide

http://www.cse.tum.de/curriculum/electives
Section D: elective modules

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Field</th>
<th>Modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>Computational Mechanics</td>
<td>BV010016 Material Mechanics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...</td>
</tr>
<tr>
<td>D2</td>
<td>Computational Fluid Dynamics</td>
<td>BV410013 Fluid Mechanics and Turbulence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...</td>
</tr>
<tr>
<td>D3</td>
<td>Mathematics in Bioscience</td>
<td>MA3601 Advanced Mathematical Biology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...</td>
</tr>
<tr>
<td>D4</td>
<td>Computational Physics</td>
<td>PH2077 Computational Astrophysics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EI7519 Simulation of Quantum Devices</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...</td>
</tr>
<tr>
<td>D5</td>
<td>Computational Electronics</td>
<td>IN2306 Scientific Comp. in Circuit Simulation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EI7519 Simulation of Quantum Devices</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...</td>
</tr>
<tr>
<td>D6</td>
<td>Computational Chemistry</td>
<td>LV2156 Advanced Electronic Structure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...</td>
</tr>
</tbody>
</table>

At least 8 ECTS in a single catalog

http://www.cse.tum.de/curriculum/electives
## Section E: elective modules

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Field</th>
<th>Modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>Algorithms in Scientific Comp.</td>
<td>IN2001 Algorithms of Scientific Comp.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...</td>
</tr>
<tr>
<td>E2</td>
<td>Finite Elements</td>
<td>MA3303 Numerical Methods for PDEs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...</td>
</tr>
<tr>
<td>E3</td>
<td>Parallel and Dist. Computing, HPC</td>
<td>IN2011 Parallel Algorithms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...</td>
</tr>
<tr>
<td>E4</td>
<td>Vision and Visualization</td>
<td>IN2139 Information Visualization</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...</td>
</tr>
<tr>
<td>E5</td>
<td>Probabilistic Methods in Computational Science</td>
<td>MA3402 Computational Statistics</td>
</tr>
<tr>
<td></td>
<td>and Engineering</td>
<td>...</td>
</tr>
<tr>
<td>E6</td>
<td>Data Driven Simulation and Computing</td>
<td>EI7637 Data Analysis for Computer Engineering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...</td>
</tr>
</tbody>
</table>

※ *E Catalog numbers no longer matter*

At most 15 ECTS

http://www.cse.tum.de/curriculum/electives
Elective Module rules

- **Rule 1:** At least **49 credits** in total
- **Rule 2:** At least **10 credits** in section A
- **Rule 3:** At least **16 credits** in section B
- **Rule 4:** one **D catalog** with at least **8 credits**
- The other credits can be distributed over all sections

![Course List](image)

→ fine! (even with no E courses)

= **49 ECTS**
Elective Module rules

- **Rule 1**: At least 49 credits in total
- **Rule 2**: At least 10 credits in section A
- **Rule 3**: At least 16 credits in section B
- **Rule 4**: one D catalog with at least 8 credits

- The other credits can be distributed over all sections

<table>
<thead>
<tr>
<th>Section</th>
<th>Course Title</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Computer Architecture and Networks</td>
<td>5</td>
</tr>
<tr>
<td>A</td>
<td>Fundamental Algorithms</td>
<td>5</td>
</tr>
<tr>
<td>A</td>
<td>Visual Data Analytics</td>
<td>5</td>
</tr>
<tr>
<td>B</td>
<td>Numerical Programming 1</td>
<td>8</td>
</tr>
<tr>
<td>B</td>
<td>Numerical Programming 2</td>
<td>8</td>
</tr>
<tr>
<td>D1</td>
<td>Multidisciplinary Design Optimization</td>
<td>5</td>
</tr>
<tr>
<td>D2</td>
<td>Introduction to Microfluidic Simulations</td>
<td>3</td>
</tr>
<tr>
<td>D4</td>
<td>Computational Plasma Physics</td>
<td>5</td>
</tr>
<tr>
<td>E</td>
<td>Machine Learning</td>
<td>8</td>
</tr>
</tbody>
</table>

→ not fine (Rule 4) = 52 ECTS
FPSO 2017 vs. FPSO 2021:

- **Main change:** One elective from A and the third B course are replaced by a practical course

- Credits: 52 ECTS mandatory $\rightarrow$ 41 ECTS mandatory
- Section A: Prog. of Supercomputers $\rightarrow$ Practical Course
- Section B: Parallel Numerics $\rightarrow$ Numerical Algs for HPC
  - Courses here are now electives
- Sections D/E: Electives are now more flexible
  - Only one D catalog with 8 ECTS required
  - Other electives can come from any catalog or section

[http://www.cse.tum.de/curriculum](http://www.cse.tum.de/curriculum)
FPSO 2017 vs. FPSO 2021:

Rule: At least 23 credits in D/E
- 15 credits in section A
- 21 credits in section B mandatory

Rule: Two catalogs with at least 6 credits
Rule: At least one has to be a D catalog

The other credits can be distributed over all D/E catalogs

Rule: At least 49 credits in A/B/D/E
- At least 10 credits in section A
- At least 16 credits in section B

Rule: one D catalog with at least 8 credits

The other credits can be distributed over all sections

http://www.cse.tum.de/curriculum/electives
Overview

Section A: Computer Science
  Module
  ...
  Module

Section B: Applied Mathematics
  Module
  ...
  Module

Section C: Scientific Computing
  Module
  ...
  Module

Section D: Applications in CSE
  Catalog D1
  Catalog D2
  Catalog D3
  Catalog D4
  Catalog D5
  Catalog D6
  Module
  ...
  Module

Section E: Methods & Techniques in CSE
  Catalog E1
  Catalog E2
  Catalog E3
  Catalog E4
  Catalog E5
  Catalog E6
  Module
  ...
  Module

Thesis

http://www.cse.tum.de/curriculum
Recognitions

- Examination results from foreign institutions will, in general, be recognized if the course content is equivalent (learning outcomes are the same)
- In general, no recognitions are possible for elective courses
- Must be done within the first year
- The decision is made by the corresponding TUM lecturer
- Grades are converted to the German system

http://www.cse.tum.de/recognitions
Seminar & Practical Course (Lab)

- You must use the (informatics-wide) matching system to get your seminar and your practical course
- The matching takes place at the end of the previous semester
- Find a seminar and a practical course you are interested in
- Check the CSE webpage if the seminar is already accepted for CSE
- If not, ask the coordinators (before the matching is done!)
- Only one seminar and one practical course can be used
- Only the first courses passed are valid - no possibility of improving the grade!

http://docmatching.in.tum.de/index.php/manual-students
http://docmatching.in.tum.de/index.php/schedule
http://www.cse.tum.de/curriculum
Master's Thesis

- Should ideally be written on the 4th semester and after (mostly) finishing all coursework
- Duration: **6 months** at most
- Can be done at TUM, another university, at one of the partner institutes, or at an external company
- At least one TUM examiner: a Professor (Prof) or Privatdozent (PD) is needed
- If failed, it can be repeated **once**

[http://www.cse.tum.de/thesis-info](http://www.cse.tum.de/thesis-info)
Thank you for your attention!

 coordinators@cse.tum.de