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/
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>
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 (15 credits) modules.

Sections B and C consist of mandatory modules (42 credits).

Sections D and E consist of elective modules (at least 23 credits): they are the application areas or catalogs.

http://www.cse.tum.de/curriculum
## Sections A, B, C mandatory modules

<table>
<thead>
<tr>
<th>Section</th>
<th>Field</th>
<th>Modules</th>
<th>ECTS</th>
</tr>
</thead>
</table>
| A       | Computer Science     | IN1503 Advanced Programming  
IN2147 Parallel Programming | 10   |
| B       | Applied Mathematics  | MA3305 Numerical Programming I  
MA3306 Numerical Programming II  
IN2012 Parallel Numerics | 21   |
| C       | Scientific Computing | IN2005 Scientific Computing I  
IN2141 Scientific Computing II  
IN2182 Scientific Computing Lab  
IN2183 Seminar Scientific Computing | 21   |

= 52 ECTS

[http://www.cse.tum.de/curriculum/mandatory](http://www.cse.tum.de/curriculum/mandatory)
## Section A elective modules

<table>
<thead>
<tr>
<th>Module</th>
<th>Module number</th>
<th>Required Knowledge</th>
<th>Term</th>
<th>ECTS</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Architecture and Networks</td>
<td>IN2189</td>
<td></td>
<td>winter</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Fundamental Algorithms</td>
<td>IN2157</td>
<td></td>
<td>winter</td>
<td>5</td>
<td>1/2</td>
</tr>
<tr>
<td>Patterns in Software Engineering</td>
<td>IN2081</td>
<td></td>
<td>winter</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Scientific Visualization</td>
<td>IN2026</td>
<td></td>
<td>winter</td>
<td>5</td>
<td>1/2</td>
</tr>
<tr>
<td>Programming of Supercomputers</td>
<td>IN2190</td>
<td>IN2189</td>
<td>winter</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

15 ECTS needed

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

- Sections D & E are subdivided into 12 catalogs (6 each) containing several modules
- You need at least 6 credits in two different catalogs
- … one of which has to be a D-catalog
- The other credits can be distributed across all catalogs (including the two above)
- You should obtain at least 23 credits in total

→ See examples on a later slide

[http://www.cse.tum.de/curriculum/electives](http://www.cse.tum.de/curriculum/electives)
## Sections D & E (elective modules)

<table>
<thead>
<tr>
<th>Section</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>

[http://www.cse.tum.de/curriculum/electives](http://www.cse.tum.de/curriculum/electives)
# Sections D & E (elective modules)

<table>
<thead>
<tr>
<th>Section</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. ( \ldots )</td>
</tr>
<tr>
<td>E2</td>
<td>Finite Elements</td>
<td>MA3303 Numerical Methods for PDEs ( \ldots )</td>
</tr>
<tr>
<td>E3</td>
<td>Parallel and Dist. Computing, HPC</td>
<td>IN2011 Parallel Algorithms ( \ldots )</td>
</tr>
<tr>
<td>E4</td>
<td>Vision and Visualization</td>
<td>IN2139 Information Visualization ( \ldots )</td>
</tr>
<tr>
<td>E5</td>
<td>Probabilistic Methods in Computational Science and Engineering</td>
<td>MA3402 Computational Statistics ( \ldots )</td>
</tr>
<tr>
<td>E6</td>
<td>Data Driven Simulation and Computing</td>
<td>EI7637 Data Analysis for Computer Engineering ( \ldots )</td>
</tr>
</tbody>
</table>
Sections D & E (example)

- Rule 1: At least **23 credits** in total
- **Rule 2:** Two catalogs with at least **6 credits** each
- **Rule 3:** At least one of these catalogs has to be a **D-catalog**
- The other credits can be distributed over all catalogs (including these two)

| D1: Multidisciplinary Design Optimization | 5 ECTS |
| D1: Material Mechanics | 3 ECTS |
| D2: Introduction to Microfluidic Simulations | 3 ECTS |
| E1: Modelling and Simulation | 8 ECTS |
| E5: Algorithms of Uncertainty Quantification | 5 ECTS |

→ fine = 24 ECTS

| D1: Multidisciplinary Design Optimization | 5 ECTS |
| D2: Introduction to Microfluidic Simulations | 3 ECTS |
| D4: Computational Plasma Physics | 5 ECTS |
| E1: Modelling and Simulation | 8 ECTS |
| E5: Machine Learning | 8 ECTS |

→ not fine (Rule 3) = 29 ECTS
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
Seminars

- You must use the (informatics-wide) matching system to get your seminar
- The matching takes place at the end of the previous semester
- Find a seminar 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 can be used
- Only the first seminar is used (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/seminar
Master's Thesis

- Should ideally be written on the 4th semester
- 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