Study plan Bachelor Mathematics  
Start of studies as of winter semester 2023/24

Please note: the Bachelor’s program Mathematics at TUM is a program in German. This study plan only provides a brief overview of the program. Legally binding information can be found in the examination regulation.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Modules</th>
<th>Credits</th>
</tr>
</thead>
</table>
| 1.       | Analysis 1  
9 CP  
Linear Algebra 1  
9 CP  
Math. Foundations  
5 CP  
Math. Studying  
6 CP  
Minor Subject  
6 – 9 CP | 30 |
| 2.       | Analysis 2  
9 CP  
Lin. Alg. 2  
6 CP  
Discrete Math.  
4 CP  
Minor Subject  
6 – 9 CP | 30 |
| 3.       | Analysis 3  
9 CP  
Numerics  
9 CP  
Introd. to Prob. and Statistics  
9 CP  
Intro. to Programming  
3 CP | 30 |
| 4.       | Intro. to Optimization  
9 CP  
Algebra  
9 CP  
Geometry  
9 CP  
Professional Internship  
6 CP  
Minor Subject  
6 – 9 CP | 30 |
| 5.       | Math. Specialization  
Seminar  
3 CP | 30 |
| 6.       | Math. Specialization  
Interdisciplinary Courses  
4 CP  
Bachelor’s Thesis  
12 CP | 30 |

Legend:  
Grey: Compulsory modules in the basic area  
Light blue: Elective mathematical modules in the advanced and specialization areas  
Dark blue: Thesis, seminar and professional internship  
Light green: Modules in the minor subject area (elective and/or compulsory)  
Orange: Interdisciplinary courses (elective)

Basic and orientation examination (GOP) and progress check

The GOP gives all students the opportunity to orient themselves on the basis of subject-specific content. By passing the exam, students also demonstrate that they have acquired the essential mathematical foundations that are a prerequisite for continuing their studies and an excellent indicator of academic success. This gives students clarity about the requirements of their degree course during their first year of study. Students who are unsuccessful in the GOP must leave the degree program.

The GOP comprises

- the four foundation modules (written): Analysis 1, Linear Algebra 1, Analysis 2 and Linear Algebra 2 and
- the module Mathematical Foundations (oral).

By the end of the second semester, at least one of the two analysis modules (Analysis 1, Analysis 2), at least one of the two Linear Algebra modules (Linear Algebra 1, Linear Algebra 2) and the oral Mathematical Foundations examination must have been passed. Students have two attempts for
each of these. After this, students have an unlimited number of retakes for a maximum of two of the four written foundation modules.

In addition, the examination modules specified in the FPSO must be completed:
- at least 30 credits by the end of the third semester,
- at least 60 credits by the end of the fourth semester,
- at least 90 credits by the end of the fifth semester,
- at least 120 credits by the end of the sixth semester,
- at least 150 credits by the end of the seventh semester and
- at least 180 credits by the end of the eighth semester.

**Credit requirements in the elective areas**

The elective area is divided into advanced modules (Introduction to Optimization, Algebra, Geometry), specialization modules and modules in minor subjects. The area of minor modules can include both compulsory and elective modules. The following conditions apply:

<table>
<thead>
<tr>
<th>Area</th>
<th>Credit requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced modules</td>
<td>at least 18 CP</td>
</tr>
<tr>
<td>Specialization modules</td>
<td>at least 23 CP</td>
</tr>
<tr>
<td>Minor subject</td>
<td>18 – 27 CP</td>
</tr>
</tbody>
</table>

**Specialization modules and recommendations for elective modules for specializations**

The current elective catalog with all specialization modules can be found in the study tree in TUMonline.

**Minor subject**

The minor subjects Electrical Engineering and Information Technology, Computer Science, Physics and Economics are offered without overlap.

All further information can be found in the FPSO and the study tree in TUMonline.