

## End-of-year wishes, review of 2024 and outlook for 2025

Dear employees and students of the Department of Mathematics,

another year is (almost) behind us: once again, the year turned out very differently than we had imagined at the start of the year.

In 2024, we also learned and tested many new things and had to adapt to new framework conditions time and again. We managed to do this with the combined efforts of all groups in the Department.

### **The dean's office would like to thank everyone involved!**

We have "managed" studies, teaching and examinations, research, administration, committee work and also the integration of new students and new employees together.

We saw each other on campus, but we were also able to continue taking advantage of digital meetings. We are already looking forward to our next meetings in the New Year!

The teaching staff - from the professors to the student assistants - used old and new techniques and tools (blackboard and chalk, videos, quizzes, ...) and offered very good teaching with great commitment - we expected nothing less ;-)

Before and after the winter break, the current evaluation of the courses is underway. We will continue to evaluate in digital form, as the feedback is easier and quicker to obtain.

Surely we all need a breather now. Let's use the "company vacations" to relax and switch off!

Before that, we would like to take a brief look back at the year 2024 at the Department of Mathematics and give a preview at one point or another.

### **Continuity in the Dean's Office**

Committee elections were held again in the summer semester of 2024 and the team of deans was also re-elected in July 2024. The previous dean's team stood for election once again and was re-elected. In the new term of office (2024-2028), a generational change is to be prepared and will also take place in parts. The current dean's team - Stefan Turek, Lorenz Schwachhöfer, Christoph Selter - would like to take this opportunity to thank you for the trust you have placed in us and the good cooperation with all groups in the department!

<https://www.mathematik.tu-dortmund.de/fakultaet/fakultaet/ansprechpartner#dekanat>

### **Double start in 2024**

After welcoming the first students of the new English-language degree program "Industrial Mathematics" in the fall of 2023 and the second cohort in the fall of 2024, there are also innovations in the Bachelor's degree program. For the first time (or for the first time in more than 50 years), it was also possible to start the mathematics courses in the summer semester: In April 2024, there was a short orientation phase for new students in Mathematics, Technomathematics and Mathematics and Economics. In the summer semester, the program is organized slightly differently than in the winter semester; only Linear Algebra I/II is "doubled", and the module Discrete Mathematics is also offered as an elective at the beginning of the program. Based on the experience of the first year, planning is already underway for the next summer start in April 2025.

<https://www.mathematik.tu-dortmund.de/fakultaet/studium-lehre/start-sommersemester>

Pre-courses in mathematics were held again in September. Many new students were already there and got to know each other, the work at the university and their new life as students. For the first time, we offered a preliminary course for the mathematics teaching training (GS, HR, SP), which was very well received, so much so that the lecture hall (E29) was almost too small ...

This coming September, we will again be preparing new students for their studies in four different preliminary courses. In addition to two preliminary courses for natural sciences and engineering, the MATH preliminary course will prepare new students of mathematics, technomathematics, mathematics and economics and statistics as well as those studying to become teachers of mathematics at grammar schools and vocational colleges, and the LEHRAMT preliminary course will prepare new students studying to become teachers at elementary schools, secondary schools as well as those studying to become teachers of special needs education for the respective basic lectures in Linear Algebra, Analysis and Arithmetic and its Didactics. As the pre-course groups will then be somewhat smaller, the lectures will no longer take place in the Audimax, but can be moved to medium-sized lecture halls - and to "friendlier" times between 10 a.m. and 2 p.m. for everyone.

**Preview:** The preliminary courses will take place **from September 01 to 19, 2025**. There will also be a preliminary course (in hybrid form or similar) for new students in the summer semester.

<https://www.mathematik.tu-dortmund.de/fakultaet/lehre/services-themenseiten/vorkurs-mathematik>

Incidentally, the 2024 preliminary course began with a very special experience: at midday on the first day - and therefore at the end of the very first lecture for one group (MATH) and on the way to the very first lecture for the other group (LEHRAMT) - there was a **fire alarm** in the math building, so the building had to be evacuated and everyone was allowed outside in the sun until the fire brigade and the Corporate Center Construction and Facility Management and the Office of Occupational Safety, Environmental and Health Protection were able to clear the building again. Fortunately, it was only a false alarm that was triggered during the current construction work (\*). An examination that had just started also had to be interrupted and continued later ...

We know that our student councils have once again done a good job (and this time twice as good) of supporting and guiding new students through their first steps at university with the **orientation phases** and "all around". We hope that everyone has settled in well by now.

Now we have all - and especially the "first semester students" - earned a semester break. The courses will start again on January 06, 2025.

**Preview:** Halftime - In the second half of the first semester, there will be an information event on **January 8, 2025** for the "first semester students" in mathematics, technomathematics, mathematics and economics to explain the examination regulations etc.; the lecture is also part of the series "100 Days TU Dortmund". From **January 17 to 19, 2025**, the learning journey for joint preparation for the first university exams (Analysis I, Linear Algebra I, Arithmetic and its Didactics I) will take place.

<https://www.mathematik.tu-dortmund.de/fakultaet/fakultaet/aktuelles/meldungen/detail/primary=Halbzeit-2024-12-09>

<https://fsmath.de/index.php?hn=3&bn=9&bsn=9>

### **Never-ending stories: Construction work (\*)**

Fire safety modernization has been taking place on all floors of the mathematics building since November 2023. In particular, the passages between stairwells and corridors as well as the ceilings within the corridors have been renovated in stages. This construction work is (hopefully) slowly coming to an end. Almost all of the new doors (two per passage on the north and south side of each floor) have now been installed; the doors will be fine-tuned at the beginning of 2025 to make them "smooth-running", especially as they are not equipped with electric door openers - as is the case on the third floor. As part of the construction work, the toilet facilities on the floors have also been and will be "spruced up" (new paint, new ceilings, ...).

## Annual celebration / graduation ceremony on April 26, 2024

Our annual celebration took place again in April. Many graduates from recent years were celebrated in the Audimax - after much applause in the Audimax, there was a small champagne reception in the foyer afterwards!



Bachelor's and Master's degrees for teachers in Mathematics / Mathematical Basic Education

Bachelor's and Master's degrees in Mathematics, Techno-mathematics and Mathematics & Economics



Doctorates in Mathematics (Dr. rer. nat.) and Didactics of Mathematics (Dr. paed.)

Teaching Award of the Department 2023: Dr. Nadine Wilhelm



Photos: Katharina Suttmeier

<https://www.mathematik.tu-dortmund.de/fakultaet/fakultaet/aktuelles/veranstaltungen/jahresfeier>

**Preview:** We are planning the next annual celebration and graduation ceremony on **April 11, 2025** (Friday).

As always, the Department of Mathematics' **teaching award**, this time for the academic year 2022/2023, was also presented at the annual celebration. The announcement took place in December 2023; the celebration was held in April. Dr. Nadine Wilhelm received the Teaching Award 2023 for her lectures and seminars for teacher training!

<https://www.mathematik.tu-dortmund.de/fakultaet/studium-lehre/services-themenseiten/lehrpreis-der-fakultaet-fuer-mathematik#lehrpreis-2023>

### **15th stair run at the 38th campus run on May 15, 2024**

The Math tower run also took place again as part of the campus run: 220 steps in the north staircase were once again conquered in record time - and various top places were once again taken by the Department of Mathematics. Many members of the department were also involved in the organization.

<https://hsp.tu-dortmund.de/wettkampf-events/campuslauf/ergebnisse/>

**Preview:** The next campus run and thus also the stair run are planned for **June 04, 2025**.

### **Internships for school students**

From **January 22 to February 2, 2024** and from **July 1 to 4, 2024**, two internships were offered for around 20 pupils each to give future students an insight into the various facets of mathematics at the university. The winter internship is attended by pupils in the 10th grade; in the summer short internship we invite pupils in the 11th/12th grade. Once again, we would like to thank all those involved from the department.

<https://www.mathematik.tu-dortmund.de/fakultaet/lehre/services-themenseiten/schulpraktikum>

**Preview:** The next internship will take place from **February 3 to 14, 2025**.

### **Summer parties**

There was another summer party at TU Dortmund University (**June 27, 2024**). The department's summer party took place on July 14, 2024; after the European Football Championships in Dortmund, soccer was once again played in the department at the "table football" tournament (with real players) as part of the summer party.

<https://www.tu-dortmund.de/landingpages/sommerfest/>

**Preview:** The TU Summer party 2025 is planned for **July 10, 2025**. The date of the department's summer party will be set later.

### **Alumni and Friends Association: New old board**

On **November 20, 2024**, the Association of Friends of the Department of Mathematics at TU Dortmund University - our alumni and friends association - met for its annual general meeting. During the regular board elections, the current board members were re-elected for the next term of office: Heribert Blum continues to be chairman of the association.

<https://www.freunde.mathematik.tu-dortmund.de/de/aktuelles.html>

The association welcomes new members. The amount of the annual membership fee is freely selectable. The association supports many activities in and around the department (annual celebration, summer party, workshops and colloquia, math weekend for students, ...).

The lecture series "Math! And then?" is a joint project of the association and the department.



## Math! And then?

The Friends of the Department and the Dean's Office have launched a new series of lectures to present mathematics careers and employers from the region (and beyond) with concrete examples.

The title "**Math! And then?**" is a continuation of the lecture series "*Abi! And then?*" (A-levels! And then?) for prospective students; this series addresses the next stage:

- What comes after graduation?
- What do mathematicians, technomathematicians, graduates of mathematics and economics, ... later in their careers?
- Where do they work?
- Which companies need and are looking for mathematicians?
- Which companies in the region have exciting tasks and fields of activity for mathematicians, technomathematicians and graduates of mathematics and economics?

In the meantime, mathematical fields of work have already been presented at Signal Iduna Versicherung, ISD Software und Systeme GmbH, Deloitte, d-fine, the Federal Office for Information Security (Bundesamt für Sicherheit in der Informationstechnik, BSI) and Continentale Krankenversicherung a.G.

**Preview:** The next presentation will take place on **January 13, 2025** (Monday) with a report from KPMG AG Wirtschaftsprüfungsgesellschaft (Accounting company).

<https://www.mathematik.tu-dortmund.de/fakultaet/studium-lehre/nach-dem-studium>

## Mathematical colloquium: Insights into the wonders and beauty of mathematics

The Mathematical Colloquium is being relaunched and will now take place on Wednesdays. Approximately three lectures per semester are planned. The first lecture was given by Angkana Rüland (Rheinische Friedrich-Wilhelms-Universität Bonn): "*Scaling Laws for Shape-Memory Alloys: Between Rigidity and Flexibility*"; the lecture hall E19 was almost too small - almost all the seats were taken.

**Preview:** The next lecture will take place on **January 15, 2025** (Wednesday). László Erdős (Institute of Science and Technology Austria (ISTA)) will give a talk on "*Universality phenomenon for random matrices*".

<https://www.mathematik.tu-dortmund.de/fakultaet/fakultaet/aktuelles/veranstaltungen/mathematisches-kolloquium>

## 30 years of Scientific Computing in Dortmund

There were also milestone birthdays and other anniversaries in 2024. In May 2024, there was a small conference on "*Modern Aspects in Scientific Computing*". The advent of scientific computing in Dortmund officially began in 1994, when Heribert Blum was appointed to lead the newly established Chair of Scientific Computing at the University of Dortmund. The appointment of Stefan Turek to the Chair in Applied and Numerical Mathematics in 1999 launched numerous research activities in the fields of finite element techniques, fast solvers and high performance computing with application in computational solid and fluid dynamics. The development of property-preserving discretization techniques for hyperbolic and convection-dominated transport problems was actively pursued by the team of Dmitri Kuzmin, who became a junior professor and in 2014 a tenured professor in Numerical Continuum Mechanics. 2024 marked the anniversary of these activities and was simultaneously supplemented by "milestone birthdays".

<https://www.mathematik.tu-dortmund.de/wr30/>

In addition to the events that can be "tied" to dates, there were many other events and successes last year: exams passed and degrees completed, publications, prizes, newly acquired and extended third-party funded projects, new colleagues ...

You can also find some of it on our homepage.

## Major didactics projects with Dortmund participation

The Institute for Development and Research in Mathematics Education (IEEM) has been involved in many major studies and projects for years. The latest results of the **TIMS study** (*Trends in International Mathematics and Science Study*) were recently presented. A total of 58 countries took part in the current TIMSS 2023 survey. Around 360,000 fourth-grade students took part worldwide. In Germany, 4,442 fourth-graders at 230 schools took part. The institute is also involved in **QuaMath**, the ten-year program of the Standing Conference of the Ministers of Education and Cultural Affairs, which aims to reach 10,000 schools, as well as in the **Startchancen**-Kompetenzzentrum Mathematik (Starting opportunities - Competence Center Mathematics), with which the federal and state governments want to support up to 4,000 schools in challenging situations.

<https://www.tu-dortmund.de/detail/grundschuelerinnen-sind-in-mathematik- genauso-gut-wie-vor-corona-48113/>

<https://www.tu-dortmund.de/universitaet/aktuelles/detail/startchancen-kompetenzzentrum-mathematik-eroeffnet-mit-starker-tu-beteiligung-45796/>

## Updating the degree programs

The department's degree programs and study structures are regularly reviewed and revised. Following the **accreditation** of the teacher training degree programs, the next accreditation round (2026) for the mathematics degree programs is already "just around the corner". The innovations already presented, such as the English-language "Industrial Mathematics" course in the Master's degree program in Techomathematics and the start of studies in the summer semester for the Bachelor's degree programs in Mathematics, Technomathematics, Mathematics and Economics, were also made in order to gain experience and thus be able to make informed decisions about continuations, adjustments and extensions.

At the same time, we are preparing for the **"missing" Abitur cohort in fall 2026**: With the switch back from G8 to G9 at grammar schools in NRW, there will be far fewer school leavers in summer 2026 and therefore fewer first-year students. Courses that are currently split or offered in parallel can then be combined again - such as linear algebra in the mathematics degree course and in the teacher training degree course (GY/BK).

The Department of Mathematics is one of four STEM faculties involved in the beVinuS project; corresponding courses will be available for new students in the summer semester of 2025. **beVinuS** is the virtual zero semester that accompanies the course and allows students to repeat, refresh or revise subject-specific skills, especially in mathematics, so that they can keep up with their studies in the best possible way - flexibly in terms of location and time thanks to digital offerings. These are supplemented by (optional) face-to-face modules at TU Dortmund University. In the medium term, it is planned that students with certified participation in the accompanying virtual zero semester will receive an individually increased standard period of study (+ 1 semester).

<https://www.tu-dortmund.de/studierende/start-ins-studium/bevinus/>

All groups in the department are invited to participate in the discussions and revisions.

## New websites, new information channels (Instagram etc.)

We are (still) working on new websites for the department.

The "Who is who" of the department can be found in the list of people:

<https://www.mathematik.tu-dortmund.de/fakultaet/fakultaet/personen/az-gruppiert>

The **calendar for 2025** also already has some entries:

[https://www.mathematik.tu-dortmund.de/fakultaet/fakultaet/aktuelles/veranstaltungen/list/class=\\*,year=2025](https://www.mathematik.tu-dortmund.de/fakultaet/fakultaet/aktuelles/veranstaltungen/list/class=*,year=2025)

You can also find the student bodies and the alumni club online:

<https://fsmath.de>

<https://fs-wima.tu-dortmund.de>

<https://www.freunde.mathematik.tu-dortmund.de>

The department has its own **Instagram channel** since summer 2022, which we use to draw the attention of prospective students to our degree programs, among other things.

<https://www.instagram.com/mathematik.tudortmund/>

Just have a look ...

### **Final nibbles: demolition of the University Library (UB) as the latest distraction outside the window**

The University Library moved out in summer 2023; the building has now been gutted to such an extent that demolition has begun. This has made the east side of the mathematics building a little noisier, but also much more exciting.

With the webcam in the UB construction blog, everyone else can also take a look at the construction site from time to time.

<https://baublog.ub.tu-dortmund.de/index.php/webcam-baustelle-bibliothek/>



The library (UB) is being nibbled away ...

Vogelpothsweg therefore was closed in December 2024

tu technische universität  
dortmund



... and the math building is available to nibble on

as a new motif in the TU Dortmund University  
Christmas card collection

So much for a brief look back at 2024 and a big thank you for being there!

First of all, we wish you and all of us a peaceful winter break.

We look forward to working with you next year.

Stay healthy!

Best regards from the entire dean's office

Magdalena Thöne, assistant

Stefan Turek, dean

*... and thanks to DeepL for the help with the translation (MT)*