

# Annual Report 2021



UNIVERSITY  
OF OULU



## Notable Events During the Financial Period

According to its strategy, the University of Oulu is an international research and innovation university that contributes to the resolution of global challenges in its areas of strength. Within these areas of strength, the University's research is internationally cutting-edge, and its research is of international standard in many other fields as well. The university offers research-based higher education and trains young people to serve society and humanity. The university's work produces new research-based knowledge, competence and the experts of the future, as well as opportunities for innovations.

The University of Oulu's strategy is based on five thematic research focus areas of international significance. Within these areas, the university participates in solving global challenges and produces new knowledge in order to build a healthier, smarter, more sustainable and more humane world. These focus areas are:

- **Sustainable materials and systems**
- **Lifelong health**
- **Digitalisation and smart society**
- **Changing climate and northern environment**
- **Understanding humans in change**

In 2019, the University of Oulu adopted an updated strategy for the 2020s. This strategy includes the shared thinking on operating methods which was approved in 2018 and which is summarised in three values that guide our activities: Creating new, taking responsibility and succeeding together. Strategy development programmes are regularly evaluated and updated as part of the annual calendar of the Board of Directors of the University of Oulu, and the strategy is mainly implemented on the basis of the programmes of measures for research and education based on the strategy.

Now that the University of Oulu has acquired 50.5% of the shares of Oulu University of Applied Sciences Ltd, the University of Oulu and Oulu University of Applied Sciences Ltd (Oamk) form a single enterprise group. Despite this ownership arrangement, the University of Applied Sciences remains an independent legal entity and the institutions' funding systems remain separate. The basic tasks of the two higher education institutions remain in accordance with the Universities Act and the Polytechnics Act, and they have their own tasks and profiles that complement each other. The University of Oulu has implemented higher education services for both institutions since February 2020.

The University of Oulu's position improved in all key university rankings in 2021. The University of Oulu's position in the Times Higher Education rankings (251–300) went up from last year (301–350). For Finnish universities, the University of Oulu ranked 3rd–5th. The evaluation scores of the University of Oulu increased in research, citations and internationality, and remained virtually unchanged in education and funding from companies. The Times Higher Education Impact Ranking has been structured in line with the UN's sustainable development goals (SDG). The University of Oulu participated in this evaluation for the second time, and we were ranked within the 301–400 segment (3rd–6th for Finland). Of the 12 SDGs considered, we ranked Finland's best for SDG3 (Good Health and Well-being), SDG4 (Quality Education) and SDG8 (Decent Work and Economic Growth), on shared first and second place for SDG5 (Gender Equality), on shared 1st to 4th place for SDG11 (Sustainable Cities and Communities), on shared 1st to 5th place for SDG9 (Industry, Innovation and Infrastructure) and on second place for SDG15 (Life on Land).

In the latest QS University Rankings, the University of Oulu rose from 408th to 377th place in 2021, while remaining in fifth place among Finnish universities. In its 2021 rankings, QS evaluated over 5,500 universities from around the world, of which 1,000 were included in a more detailed evaluation.

The University of Leiden's CWTS ranking, which is based solely on publications, placed the University of Oulu in 526th place overall and fifth-best among Finnish universities. This ranking involved more than 900 universities. As its default indicator, the CWTS ranking weights the total number of publications such that publications shared between several universities receive less weight than publications whose authors are only from one university.



# Annual Report of the University Board for 2021



In field-specific evaluations, the University of Oulu ranked between 3rd and 7th among the universities of Finland, as measured by the share of publications that were among the top 10% most cited in their field.

In the University of Shanghai's rankings, the University of Oulu's position among the world's top universities climbed from the 501–600 segment to the 401–500 segment, while its position among Finnish universities changed from 4th–6th to 4th. The University of Shanghai's rankings put significant weight on highly cited researchers, and one of the University of Oulu's researchers made it to the list after a one-year break.

An agreement between the Ministry of Education and Culture and the University of Oulu for 2021–2024 began to provide a structure to the University of Oulu's activities. The agreement includes a shared target state for the university as well as the university's strategic choices, profile and areas of strength, degree objectives, funding, and monitoring principles. The objectives set out in the agreement are derived from the Government Programme, the Government Action Plan, the vision for higher education and research in 2030 and the university's strategy.

Based on its strategy and taking into account the shared target state, the university has identified four key development areas, all of which have been recorded in the agreement together with their descriptions and monitoring indicators:

- **sustainable growth and adaptation to its requirements**
- **cooperation between sectors and actors as a driving force for expertise impact**
- **learner-centred education for diverse life situations**
- **digitalisation as a resource for societal change**

The agreement's target state is also reflected in the weightings of the reformed funding allocation model, which were used for the first time in 2021. For example, continuous learning in diverse life situations has become increasingly important, as has the acquisition of research funding from international sources. The university's internal application of the revised funding allocation model was approved in 2020 and introduced in 2021.

The strategy-based funding for the new agreement period 2021–2024, which supports the Government's higher education and science policy objectives, includes the programme for increasing the level of education and competence, meaning additional starting places, and the internationalisation programme for higher education institutions (total programme funding EUR 40 million). The internationalisation programme continues to be divided into two sections: TalentBoost, which mainly focuses on internal activities within universities, and pilot programmes implemented by university networks in target countries (global pilots). The university's share of funding for the internationalisation programme totalled 10.6%, with the shares for the different programmes being 17% for additional starting places, 6.2% for TalentBoost and 8.7% for the global pilots. 57% of the additional starting places were successfully filled. The first students started in the degree programme in psychology, for which the university had obtained new educational responsibility. Measures to swiftly launch the internationalisation programme were taken in 2021.

The implementation of the Research Evaluation Exercise (RAE2020) launched in 2019 was completed and published in November 2021. In 2022, the results of the evaluation will be examined systematically and utilised to develop functions and objectives at the university, faculty, focus area and research unit levels. The knowledge produced by RAE will also be used in assessing the impact of multidisciplinary research in sustainable development.

The focus areas for the strategic steering of research in 2021 have been to continue to define the profile of the University of Oulu within the sixth round of the Academy of Finland's university profiling programme, to launch the seventh profiling programme, and to implement the 6Genesis programme for wireless network technologies, which was included in the new national flagship programme and received a funding decision in 2018 and whose programme period was extended in 2021. From 2016 to 2020, nine profile themes were launched, and all these themes continued to run through 2021. In the sixth profiling application process, which ended in 2020, the University of Oulu's proposal was ranked second and received significant funding for three of its themes: The new research area connected with the 'Arctic Interactions' theme focuses on the promotion of Arctic biodiversity and the interaction between humans and the environment (Anthropocene), the 'Fibrosis Chronic Diseases and Cancer' theme



focuses on the obesity and hypoxia caused by fibrosis (Fibrobesity), and the new research area that expands the 6G flagship programme focuses on wireless applications with an emphasis on health and energy systems (6G-FSS). The work of the new research areas was launched in 2021.

The university systematically promotes the prerequisites for high-quality research in strategic focus areas and the formation of a top-level portfolio by selecting fixed-term research projects based on open applications and international peer evaluation, the resourcing of which is strengthened through multidisciplinary focus institutes. The focus institutes Biocenter Oulu, Eudaimonia Institute, Infotech Oulu and Kvantum Institute coordinate multidisciplinary thematic entities. In 2021, support was provided to a total of 52 strategic key projects and 19 emerging projects of junior researchers within the focus areas of research. These projects can be found in all faculties and across a wide range of research units. At the Eudaimonia Institute and Infotech Oulu, the selection of new projects for the period 2022–2025 was completed in 2021. 2021 saw the continued implementation of the tenure track programme and support for top-level and key research projects continued.



In order to promote multidisciplinary and new openings, a programme is underway that involves 19 four-year doctoral education vacancies that are aimed at launching new research openings and disseminating top research expertise more extensively at our university. The Rapid Research Radicals (3R) programme, launched in 2018, has in cooperation with the focus institutes effectively promoted the identification and formation of new ideas and the use of multidisciplinary in research development.

In the Ministry of Education and Culture's 2019 transparency maturity level report, the University of Oulu reached level five, the highest possible. The University of Oulu has purposefully continued to develop a responsible and open scientific community and to broadly strengthen the operating culture required for openness by combining the principles of openness and ethical practice in a new and constructive way within the overall concept of responsibility. In spring 2021, the University of Oulu's declaration of responsible science was published, through which the university promotes open and responsible science, good scientific practices, sustainable development, equality and non-discrimination in research, and responsible research evaluation.

The university's research performance developed favourably in 2021. Funding from the Academy of Finland increased by 15% compared to the previous year and by 10% compared to the previous peak year 2019. This partly reflects the implementation of new researcher recruitment delayed by the coronavirus pandemic, for example in profiling projects. International competitive research funding increased by 11% (a total increase of 99% since 2015). The number of scientific publications increased by 10% from the previous year and for the first time exceeded the level of 3,000 publications. The number of publications increased on all Jufo levels: Jufo-1 10 %, Jufo-2 7 %, Jufo-3 22 %. Since 2016, the total number of Jufo-2 and Jufo-3 publications has increased by 40%. It should be noted, however, that the publication data for 2021 will be finalised in June 2022, meaning that the final figures will shift in a positive direction. After dropping during the previous four-year period, Business Finland funding has remained almost unchanged (down by 5%). This decrease reflects the decrease in the funding provider's appropriations and its change in spending policy. Income from supplementary funding increased by 4.5% from the previous year, accounting for 39.5% of the total funding.

The most significant development activities in education were related to developing the degree programme as a whole and increasing the level of continuous learning, developing high-quality learning, increasing the number of international students and the level of mobility, utilising flexible digital learning and applying digital pedagogy, and enhancing and speeding up doctoral education.

The year 2021 was still marked by the epidemic situation. In the area of digitalisation, the digital leap accomplished in 2020 was continued and the number of online courses independent of place and time has become many times higher. The teaching has taken major steps to promote the use of tools suitable for hybrid teaching, which has been used to reduce burden and increase flexibility in teaching arrangements. Some students have found distance learning to make their studies more flexible, while others have found it emotionally straining and stressful. In 2021, it has been necessary to enhance student guidance and increase study psychologist resources, for instance. The internationalisation of education has been strongly promoted during 2021, particularly through consortium cooperation launched within the framework of the European University Network, the launching of internationalisation pilots funded by the Ministry of Education and Culture, and by expanding the dual degree programme currently underway in China with the Nanjing Institute of Technology (NJIT).

In 2021, the number of completed bachelor's degrees was 1,049, while the target for the period 2021–2024 was 1,600. A total of 1,446 master's degrees were completed with the goal of 1,757. The impact of the pandemic is particularly visible in the number of bachelor's degrees. The main factors affecting these figures are ensuring a sufficient number of starting places and taking care that students make it through the programme. The number of starting places for Finnish-language Bachelor's and Master's programmes has been gradually rising each year since 2016 (2016: 1,858, 2017: 2,131, 2018: 2,140, 2019: 2,201), but the number of new students and completion rate have not secured sufficient degree completion in line with the objectives of the Ministry of Education and Culture, particularly at the bachelor's level. The offering and results for the Master's degree level are improved by the degree results for foreign

language programmes. The strategy-based funding supporting the Government's higher education and science policy objectives for the new agreement period 2021–2024 includes the programme for raising the level of educational competence, which involves significant educational expansion. As part of this program, 350 additional starting places have been agreed upon for 2021 and 361 for 2022, mostly in the fields of technology, data processing and information technology. As a new programme with 40 starting places, the university received the right to offer a degree in psychology. The new programme started in autumn 2021.

During the new agreement period 2021–2024, the most important indicator for measuring the smooth progress of studies is the number and share of bachelor's or master's degrees completed during the target period. The combined number of bachelor's and master's degrees completed within the target period developed well until 2020, but somewhat decreased in 2021, reflecting the general decrease in the number of degrees during the first year of the pandemic.

The number of doctoral degrees was, after the record year 2018 (199) and the succeeding two years with a more regular number of degrees, slightly higher at 161 degrees. Consequently, the university fell behind the Ministry of Education and Culture's target of 182 by 11.5%.

The aim of the university's central campus project is to create campus environments that support the attractiveness of the university and the City of Oulu as a university city, since competition for students and staff is tightening as the size of these age groups decreases. Just like other comparable cities, the University of Oulu is aiming for a central campus that would be easily accessible by public transport, by bicycle and on foot as well as being well connected to the city's services. For the central campus project, the University of Oulu, Arina Co-operative Society and Kesko applied for and received in autumn 2020 a planning reservation for a plot in the Raksila neighbourhood. The university's project planning was launched in 2021, it was completed in December 2021 and the University of Oulu's Board of Directors approved the project plan at the meeting on 16 December 2021. The project plan provides the University of Oulu with sufficient information for the investment decision and initiation of the planning process. In line with the Sustainable Development Goals, the university continued ongoing projects and launched new ones to promote a low-carbon, green campus and to encourage cycling and walking instead of driving.

The coronavirus pandemic continued to affect international researcher visits by the University of Oulu's researchers in early 2021, which mainly began between September and December 2021. Starting in August 2021, a multi-location working model was introduced. The aim of the model is to increase the efficiency and flexibility of work and to facilitate the reconciliation of work and private life. Multi-location work enables working in different locations based on the requirements of the work, and the employee and supervisor agree on how much work is done in the actual workplace and how much is done elsewhere.

The coronavirus pandemic continued to affect the number and type of various training events organised in 2021. There continued to be little travel to external training, conferences and seminars due to the prevailing travel restrictions. Although the prevailing situation caused uncertainty about whether face-to-face training sessions and events could be organised, a considerably higher number of them could take place compared to the previous year. On the other hand, the previous year had taught us that many training sessions and events could also be successfully organised online or using remote connections. As a result, these methods of implementation were also much more popular than before the pandemic. Despite the COVID-19 situation, cooperation with EU stakeholders has continued to strengthen. The university has organised remote meetings with the European Commission and the European Parliament, as well as with other influential stakeholders in Brussels.

In 2021, the main topic of discussion related to the economy continued to be coronavirus as well as inflation. In the first half of the year, vaccine coverage improved at a fast pace and restrictions were waived after the summer in Europe and North America. While the message was that inflation was only temporary, the final part of the year was overshadowed by a new, highly contagious omicron variant and the central banks admitted that the inflation might persist for longer. In the stock market, the year was excellent, and almost all of the most common equity indices yielded double-digit returns, with the university's return on investments (excluding cash assets) amounting to 14.2%.



## Education

In 2021, a programme package for education was launched in accordance with the new strategy period that will continue until 2024. Its strategic, common objectives are:

1. **Developing a more competitive and high-quality set of degree programmes and raising the level of continuous learning.**
2. **Developing more communal, accessible, flexible and high-quality learning linked to working life.**
3. **Increasing the number of international students and the level of mobility.**
4. **Making full use of flexible digital learning and applying digital pedagogy.**
5. **Improving the efficiency and rate of doctoral education.**

Indicators and target values have been defined for each objective. A university-level summary of these is presented in the table “Key figures of education 2017–2021”. Performance is also monitored by faculty.

To support the achievement of the objectives, the university has an action plan for developing education in the period 2021–2024. The use and traceability of the funding for the action plan with the university’s operations management tools (particularly LATO) have been enhanced at the beginning of the strategy period. The programme is funded through strategic funding for education and it is divided into ten key areas:

1. **Action plan for student guidance,**
2. **Action plan for developing the quality of education, with a special focus on the reform of degree programmes,**
3. **Development programme for the Open University and creating new course content provided under the programme,**
4. **Development programme for science education,**
5. **Development programme for digital learning environments,**
6. **Development of the TOPIK Extension School,**
7. **Development programme for student experiences,**
8. **Programme for the internationalisation of education,**
9. **Programme for education marketing,**
10. **Maintenance and development of the activities of the University of Oulu Graduate School (UniOGS).**

In addition, the measures have been funded with complementary funding (e.g. structural funds, EU Erasmus+ programmes, projects funded by the Ministry of Education and Culture and the Finnish National Agency for Education, and funding by foundations for the development of education).

2021 was still overshadowed by the efforts to adapt to the COVID-19 pandemic. The impact of the pandemic is difficult to assess in terms of the most important performance targets (number of degrees, degrees completed in time). Various surveys and reports conducted during the year reveal polarisation: some students have found that distance learning makes their studies more flexible, while others have found it emotionally straining and stressful. In 2021, it has been necessary to enhance student guidance and increase study psychologist resources, for instance. The teaching has taken major steps to promote the use of tools suitable for hybrid teaching, which has been used to reduce burden and increase flexibility in teaching arrangements.

For the strategic objectives set for 2021, the following results can be reported:

### **Developing a more competitive and high-quality set of degree programmes and raising the level of continuous learning**

In 2021, the focus in degree programmes was on clarifying the monitoring and measurement of their objectives. For each degree programme, a set of indicators was created for monitoring attraction, completion rates and quality. This process also involved analysing the degree programme’s portfolio, and the resulting information will be utilised in monitoring and





reforming the portfolio structure starting at the beginning of 2022. The number of starting places applied and received was 107 in autumn 2021. The additions will be reflected in the joint application process for 2022.

The following degree programmes have applied for accreditation: Degree programme in Electronics & Wireless Communication Engineering, including the international master's degree programmes in Electronics & Wireless Communication Engineering (EUR-ACE accreditation) and Industrial Engineering and Management (EUR-ASIIN/ACE accreditation).

The psychology programme launched in 2021 was the most attractive programme at the university.

With regard to continuous learning, the University of Oulu has reorganised its university services. All non-degree education offered by the university (open university, separate modules, continuing education and tailored education) and competence development services for both private and corporate customers have been compiled on the JOY digital service platform. More than 1,000 courses were offered on JOY, which means that the number of courses increased by 185%. There was also an increase in continuing education, in which the number of participants increased by 68% compared to 2020.

The new Education from Finland website does a better job at compiling the education and training offered in English together with international degree programmes. The English non-degree programmes have also been compiled on the JOY in English website and customer-oriented education sales processes have also been developed for foreign customers. Offers for training and consultation services have been prepared for international clients in countries such as Kuwait, Bahrain and Nigeria. In addition, cooperation between those involved in the university's education export activities has been systematised together with experts from the Team Finland Knowledge network. Regional cooperation in the education export efforts has been goal-oriented despite the challenges caused by the coronavirus pandemic.

The Languages and Communication Unit has developed workplace-oriented basic, further and sector-specific language studies in Finnish. The strategic funding has been particularly allocated to the development of studies in Finnish as a second language for exchange students, international students and international staff. The development target has been the provision of further and advanced Finnish language courses to ensure more students and faculty members will have the skills required for working life in Finnish. In addition, Finnish language courses implemented remotely and online have been developed to make Finnish language studies flexibly accessible to students. In practice, the Languages and Communication Unit has created an online version of the Beginners' Finnish 1 course, developed the contents of the Intermediate Finnish 1 and 2 courses, and implemented, for example, a Finnish language course for advanced students. In the academic year 2021–2022, an estimated 800 students have participated in the S2-level courses offered by the Languages and Communication Unit.

In 2021, a new steering group and coordinator who started in the position at the beginning of August were appointed to the science education activities. The field of science education includes LUMA cooperation with the City of Oulu, production of a nature exhibition with Tietomaa as a continuation of the animal museum, development of a science garden, production of various new events and brand work related to science education.

### **Improving the learning experience, working life cooperation**

Students' learning during the pandemic has been supported with separate funding from the Ministry of Education and Culture and various measures activating the students' own initiative in studies, studying together with others (using the Yhdessä etänä and Study Together concepts), and their study skills have been promoted through various workshops, Moodle courses and self-study materials. Different guidance and operating models have been offered to instructors and teaching staff to support communality and attachment to studies. Communication aimed at new students has been developed to support integration into education and studies. Students were provided with remote information sessions before starting their studies, which gave them an opportunity to ask for more information about starting their studies. Educational counselling psychologist resources were increased by one person-year.

The University of Oulu has first opened Career Centre in Finland to support the employment of students and cooperation between students and companies. Companies have

been interested in its activities and have been active in organising recruitment events at the University of Oulu.

### **Internationalisation of education**

In 2021, key internationalisation efforts included the University for Post-Industrial Cities consortium cooperation launched within the framework of the European University Network, internationalisation pilots funded by the Ministry of Education and Culture, and the expansion of the ongoing dual-degree programme with the Nanjing Institute of Technology (NJIT) in China from one to four degree programmes.

The UNIC European University, which started its operations in autumn 2020, began piloting its educational cooperation at a spring school organised already in spring 2021. The spring school focusing on entrepreneurship and change included a total of 7 study units, of which 2 were offered by the University of Oulu. A total of over 160 students from all partner universities participated in the spring school. In addition, a virtual Creathon idea competition was organised for students in the spring, enabling student teams to contribute to the development of UNIC operations.

UNIC's joint virtual course selection was compiled for autumn 2021 and included a total of 152 courses, of which 16 were from the University of Oulu. During the year, two students from UNIC partner universities studied physically in Oulu. 14 currently valid Erasmus agreements have been signed. A total of 48 students attended the virtual courses organised in Oulu. In 2021, 2 students and 3 staff members left for a physical Erasmus+ exchange from Oulu.

The cooperation was accelerated by means such as collecting information on the English-language studies offered by all partners and by starting the so-called Faculty Round concept, in which teaching and research staff can familiarise themselves with each other. In addition, mobility has been promoted by writing and publishing a handbook on physical and virtual mobility, and internal start-up funding has been prepared to support cooperation in education.

In addition to mobility, CityLabs activities and general education cooperation, two joint degree programmes between all eight partners were launched: Redesigning the Post-Industrial City (RePIC) and Superdiversity in Intercultural, Teaching and Learning Settings. EMDM funding (Erasmus Mundus Design Measure) was applied for and received for the coordination and accreditation of the RePIC programme. Joint degree programmes will be approved as part of the degree programme portfolio, and the first students in the programmes will start in 2023.

The extension prepared with NJIT progressed in 2021 to the point where the application for the Oulu - NJIT School which will serve as a platform for the programmes was submitted to the Ministry of Education of the People's Republic of China. If implemented, this commissioned education and the contract concerning it will be a ten-year project, amounting to approximately EUR 30 million as the University of Oulu's invoicing. Within the framework of the ongoing cooperation, all courses (starting in 2018) are full and the first students will graduate this spring. Of them, 24 have applied for master's degree studies in Oulu. Five of them have applied through the open university path.

In 2021, efforts were made to improve the efficiency of application processes supplementing education, especially the EU's Erasmus application process. High-quality applications and their progress were recorded per programme as follows:

- Erasmus Mundus Joint Masters: 2 applications / 1 accepted, 1 rejected
- Erasmus Cooperation Partnerships: 4 applications / 4 accepted
- Erasmus Alliances for Innovation: 1 application, pending decision
- Erasmus Teacher Academies: 1 application, pending decision
- Team Finland Knowledge (TFK): 7 applications / 2 accepted

The measures of the pilots under the Ministry of Education and Culture's global programme, the Global Innovation Network for Teaching and Learning and EDUCase Platform, have been designed in cooperation with the Faculty of Education, the University of Oulu Extension School, the Strategy and Science unit and the Rector of Education. The pilot projects also activate and expand the existing networks of the University of Oulu. The partners selected



for the pilots include the University of Namibia (UNAM, Namibia), Cape Peninsula University of Technology (CPUT, South Africa), Savitribai Phule Pune University (SPPU, India) and Hangzhou Normal University (HZNU, China).

### Digitalisation and digital pedagogical development

The year was still marked by the epidemic situation. In the area of digitalisation, the digital leap accomplished in 2020 was continued and the number of online courses independent of place and time has become many times higher.

In 2021, the hybrid capabilities of classroom technology were widely improved. The new systems procured in 2021 include Yuja (media management system, managing and accessing educational video material), Presemo (a tool for participation and activation that can be used to conduct queries, polls, digital walls, etc. for various events, teaching and conferences in remote, near and hybrid situations) and Howspace (a facilitation platform for shorter activities on which many kinds of materials can be displayed and that enable various kinds of participation and include AI features for tasks such as creating summaries).

A decision was made to continue the use of the DigiCampus service as a platform for courses jointly organised with other higher education institutions. Education in digital pedagogy has been active. It has included training in different systems (Moodle, Yuja, Zoom, etc.) and from more pedagogical starting points in the Inspiraatiota opetukseen ("Inspiration for teaching") event series and training in pedagogical video production. The development of joint production methods for Massive Open Online Course content progressed to the piloting phase.

Participation in the Digivisio 2030 project represents the most significant development for the future of education. The work was organised, activated and intensified in cooperation with the Oulu University of Applied Sciences (OAMK). We were actively represented in the project's work packages by our contact persons. We were involved in resource work through our participation in the planning team of a continuous learning project and in an identity management survey.

### Effective doctoral education

An internal audit of UniOGS was performed in 2021. Based on the recommendations received from the audit, UniOGS started an overhaul of its operations. The aim of these efforts has been to specify the responsibilities so that the faculties play a clearer role in taking the main responsibility for the content and performance of individual fields of science. UniOGS supports these activities through joint training that is generally considered a part of the profession of a researcher and by coordinating operating methods that speed up studies. The arrangement improves the collaboration with the focus institutes to promote the interdisciplinary nature of doctoral studies and the utilisation of funding opportunities for doctoral dissertation projects.

Tapio Koivu served as the Rector of Education in 2021. Vesa-Matti Sarenius served as Koivu's replacement during his sick leave in October.

### Key Figures of Education 2017–2021

Year	2017	2018	2019	2020	2021
Bachelor's degrees	1,255	1,181	1,153	1,173	1,049
Master's degrees	1,332	1,315	1,502	1,509	1,446
Doctoral degrees	151	199	158	143	161
Bachelor's and Master's degrees completed within the target time	905	986	1,179	1,429	1,244
Outgoing exchange students	415	381	352	132	165
Incoming exchange students	675	835	799	401	455
Pressure of applications	2.68	3.03	2.82	2.59	2.41
Employment% (minimum target)	76.40 %	79.40 %	81.20 %	83.40 %	84.60 %





## Research

Work on defining the research profile of the University of Oulu continued in 2021 with the launching of the sixth round of the Academy of Finland's University profiling programme. The flagship programmes support new creative research and lay the foundations for business opportunities and the development of cooperation with other actors in society through a long-term four- or eight-year action plan. The year 2021 was the fourth year of operation of the 6G flagship project of the University of Oulu, and at the beginning of 2022, the project was selected for the extension period 2022–2026. As a result of the new programme application process, a new national flagship programme, GeneCellNano, was launched to speed up the introduction of new biological medicines for the treatment of severe chronic diseases. This new flagship programme is led by the University of Eastern Finland, with the University of Oulu taking the assistant leader role as one of three partnering organisations. Other key actions taken for strengthening research were supporting top-level research and key research projects, implementing a national health strategy, recruiting high-quality international researchers through the tenure track process, supporting doctoral education, carrying out infrastructure-related measures, and implementing responsible research policies in research units. The focus area and research unit structure support the strategic steering of research and the monitoring of performance as well as the allocation of resources to high-quality research groups. In the context of the Kvantum Institute, foresight work was launched in 2021 with the aim of identifying future interdisciplinary and multidisciplinary research topics. Cooperation with research institutes has been strengthened through the use of joint professorships. All development measures aim toward the promotion of quality, internationalisation and impact.

The purpose of the competitive funding provided by the Academy of Finland for the profiling of universities is to support and accelerate profiling in line with university strategies in order to develop the prerequisites for improving the quality of research. In 2016, two profiling themes were launched at the University of Oulu: Earth and near-space system and environmental change and anywhere wireless sensor systems. The funding period for these themes ended in 2021. 2017 saw the launch of the project for integrating physics and steel research in a multidisciplinary centre for world-class steel research and for combining medical, biomedical and human sciences research to study the important fibrosis process as a risk factor for diverse chronic diseases and premature ageing. In 2018, two more themes were launched: 'Arctic interactions: understanding the responses of nature and humans as part of curbing global change' and 'Generation Z and beyond: strengthening human capabilities in a digitalising world'. In 2019, the University of Oulu's profiling proposal was ranked third among all universities for the second time running. Within this fifth round, three more themes were launched: digital health (DigiHealth), non-organic circular economy side streams (InStreams), and strengthening of mathematics and AI competence (HiDyn), the last of which is aimed at strengthening all of the themes already established. Three themes were prepared for the sixth profiling round: Research on biodiversity and the coexistence of species in the Arctic region (Anthropocene), research on obesity-related fibrosis (Fibrobesity) and research on digital health services and sustainable energy systems enabled by 6G (6G-FSS). These three themes do not form new areas of profiling but rather support the existing ones. The University of Oulu's profiling proposal was assessed as the second-best among all universities, and the themes were launched in 2021.

In 2021, the activities of the 6G flagship programme have remained strong and its role as the world's leading 6G research hub and opinion-former has further strengthened. In 2021, more than 400 experts worked within this flagship programme at the University of Oulu. A total of 17% of the research staff (career grades I–IV) were women and 60% were international recruitments. In 2021, 467 peer-reviewed articles were published. Between 2018 and 2020, the publications of the 6G flagship project received twice as many citations as the world average in the field of science (FWCI). In addition, about 24% of the publications in 2018–2021 were in the 10% most cited publication series (Scopus analysis). Peer-reviewed publications in 2021 also saw an enhanced emphasis on cooperation, with 65% of them being international joint publications and 14% being joint publications with companies. In 2020, the flagship published 12 new 6G white papers which involved contributions from over 250 experts from more than 100 organisations and more than 30 countries. These 6G White Papers, which deal with

future 6G systems from the perspective of sustainable development, new business and new technologies, increased their cumulative loading numbers to nearly one million in 2021. The 6G Flagship Summit event series was selected as the EU's annual science forum in which the results of Horizon Europe SNS will be presented. The international visibility of the flagship has been significant and has increased further in 2021, especially as regards international events and media visibility. For example, nearly 6,500 experts participated in the 6G flagship virtual events in 2021. For the GeneCellNano flagship, 2021 was the first full year of operation, and several research groups at the University of Oulu participate in the activities.

The research on the University of Oulu's five focus areas is carried out in faculties. The focus institutes Biocenter Oulu, Eudaimonia Institute, Infotech Oulu and Kvantum Institute coordinate multidisciplinary thematic entities. These institutes support networking between disciplines, cross-disciplinary projects and doctoral education that cross faculty boundaries, and are also responsible together with communications and research services for open websites that cover the activities of the focus areas. The Thule Institute is the coordinator of Arctic activities, including cooperation with the Arctic University Network.

The university systematically promotes the prerequisites for high-quality research in strategic focus areas and the formation of a top-level portfolio by selecting fixed-term research projects based on open applications and international panel evaluation, the resourcing of which is strengthened through multidisciplinary focus institutes. The current strategic key project periods are Biocenter Oulu 2020–2023, Eudaimonia Institute and Infotech Oulu 2018–2021 and Kvantum Institute 2021–2024. The selection of the key projects of Eudaimonia and Infotech for the period 2022–2025 was carried out in 2021. Support was provided to a total of 52 strategic key projects and 19 emerging projects of junior researchers within the focus areas of research in 2021. These projects can be found in all faculties and across a wide range of research units. The university supports the scientific competence and career progress of selected young postdoctoral researchers through the 19 Emerging projects related to the key projects. The four-year funding period for the ongoing Emerging projects runs from 2018 to 2022.

The Research Assessment Exercise (RAE2020), a comprehensive evaluation of international research that is conducted every six to seven years, was completed at the University of Oulu in 2021. The assessment results provide an important contribution to the university's

### **The Research Assessment Exercise (RAE2020), a comprehensive evaluation of international research, was completed.**

strategy process. The targets of the assessment included 54 research units across the different faculties of the University of Oulu as well as the Sodankylä Geophysics Observatory, Kajaani University Centre and Kerttu Saalasti Institute. The objective of the RAE2020 evaluation is to identify at both the university and research-unit level research quality, strengths, areas for development and formation of critical mass as well as internal, national and international linkages, scientific and societal research impact and new openings. In addition, the unit activities are assessed in terms of the updated strategy of the faculties and university.

The Rapid Research Radicals (R3) programme supports a multidisciplinary approach and new initiatives. The programme activities aim to increase the level of multidisciplinary competence. The activities contribute to increasing scientific capital by encouraging researchers to get to know research and other researchers in different fields, for example through the multidisciplinary Brown Bag lunch seminars. At the same time, the R3 activities aim to increase the scientific competence of the university community, which refers to the development of operating methods and approaches for interdisciplinary activities. This is supported by facilitating new ideas and projects in their early stages and by supporting the utilisation of a multidisciplinary approach in the development of research. The R3 programme is implemented as part of the activities of the focus institutes and within and between focus areas. Activities in focus institutes include regular breakfast events open to all and Meet the Top Scientists events, which highlight researchers who have reaped success in their careers. Due to the coronavirus pandemic, interactive events and workshops have been conceptualised into web-based versions, and certain operating concepts will be continued more extensively in 2022 if the situation permits. Twitter conferences that started even before the pandemic are held two or three times per year and each new conference has attracted a bigger audience than the last one.

The Academy of Finland's Centre of Excellence Programme included one unit from Oulu during the period 2012–2017 and two units during 2014–2019 (in the fields of medicine,



geography and physics). In addition, researchers at the University of Oulu are participating in three other Centres of Excellence that are coordinated by other bodies (two in the fields of mathematics and one in the field of electronics). During the new period 2018–2025, researchers from the University of Oulu will participate in one unit coordinated by another body (in the field of mathematics). The University of Oulu supports these centres in accordance with the agreements made with the Academy of Finland.

In 2021, the University of Oulu had six research groups funded by the European Research Council (ERC; in the fields of medicine, natural sciences, information technology and human sciences) and one Academy Professor group (in the field information technology). The aim is to increase the number of ERC funded projects and academy professors. The ERC's support measures have been developed extensively. ERC applicants have been provided with targeted support and coaching measures. A coaching group consisting of researchers and support persons has been put together for the applicants to support the preparation of applications that are as competitive as possible. The researchers invited to the ERC interviews have been provided with internal training panels, training on public speaking and graphic designer services. Those researchers who have been selected for ERC interviews but do not receive a positive ERC funding decision have been provided with support for preparing a new application. In addition, the university supports the recipients with a strategic support package negotiated on a case-by-case basis. The support measures will continue in 2022.

Work on the formation of competitive research environments also includes several collaborative projects and programmes. Funding from the Academy of Finland's Strategic Research Council is used to support knowledge-based management, solutions for the renewal of Finnish society and ideas relating to the future of business and working life. The University of Oulu manages one of the projects of the first programming period launched in 2021. The University of Oulu is also a partner in one joint project launched in 2021.

The University of Oulu and the Hospital District of Northern Ostrobothnia have formed the Medical Research Center, a research cooperation organisation that provides a multidisciplinary research environment for clinical, translational and nursing science research for researchers from the University of Oulu, and the Oulu University Hospital and its area of responsibility. Among other tasks, the Center provides resources for postdoctoral researcher vacancies. Together with the North Ostrobothnia Hospital District, the University of Oulu is an active player in the implementation of the National Strategy for Research and Innovation in the Health Sector in Biobank, Genome, Cancer and Neuroscience Research and the national Drug Development Centre. We have proposed to the Ministry of Social Affairs and Health the establishment of Finland's Digital Health Centre of Excellence and the granting of the role of a national coordinator to the University of Oulu. Activities in accordance with the proposal will be strongly continued in 2022.

The University of Oulu engages in extensive cooperation with state research institutes, many of which have connections with the university's campuses. New joint professorships and other vacancies are currently ongoing and in planning, and the joint use of research infrastructures will be made more efficient. The Sodankylä Space Center activities have been launched in collaboration with the Finnish Meteorological Institute. In 2021, planning began to intensify cooperation related to physical measurements with the universities of Helsinki, Turku and Lapland.

The University of Oulu is strengthening its Arctic research through both the Arctic profiling measures described above and the Thule Institute's activities. The universities of Oulu and Lapland have strengthened their cooperation, especially in Arctic research, by applying for joint research themes in annual workshops led by a joint advisory board; however, this was not done in the period 2020–2021 due to the coronavirus pandemic. The University of Oulu's Thule Institute is responsible for coordinating the thematic networks and research activities of the University of the Arctic. The activities carried out within the framework of the University of the Arctic will be strengthened, and the University of Oulu has recruited an American researcher as the first "research chair" for the University of the Arctic for the period 2017–2022. We will continue the measures that have been used to strengthen communication on the activities of the University of the Arctic and increase the participation of researchers from the University of Oulu in thematic networks since 2018. The University of Oulu has a strong representation in many Arctic working groups and other bodies. This includes the university's chairmanship in the

European Polar Board in the period 2017–2021, which has contributed to supporting Finland's Presidency in the Arctic Council in 2017–2019 and, above all, strengthens the university's role as a significant Arctic research university. The Arctic 5 cooperation between the universities of Oulu, Lapland, Luleå, Umeå and Tromsø, which was created in 2017, strengthens the interaction between these universities in Arctic research and education. From 2019 to 2021, the visibility of Arctic research, international networking and planning of multidisciplinary projects at the University of Oulu were strengthened by establishing a network of Arctic researchers in connection with Thule. The network currently has over 160 members.

The University of Oulu's new strategic cooperation network, the European University of Post-Industrial Cities UNIC, launched its operations in autumn 2020. UNIC is one of the European Universities Networks (EUN) supporting the development of the European Higher Education Area (EHEA). The EUNs are a flagship of the European Commission with the aim of strengthening the international competitiveness of European higher education. Universities in Europe are building a common long-term strategy for the development of education, research and innovation activities.

The UNIC network has very ambitious objectives, such as the creation of a joint virtual campus, the promotion of mobility and the provision of joint education. The network is working on two master's level joint degree programmes between all eight partner universities and 10 other degree programmes offered by at least two partners. The aim is that half of the students and a quarter of the staff will gain international experiences through the UNIC network. In practice, the aim of the activities is that students can seamlessly include studies from other higher education institutions in their degree, with virtual and physical mobility being an integral part of students' studies. The societal impact of universities will be strengthened by supporting the multidisciplinary work of European knowledge-producing teams to solve societal challenges.

Central to the UNIC network is a strong link between universities and cities in the post-industrial UNIC cities, which are all facing structural change. Through the network's activities, we get to deepen our exploration of post-industrial phenomena and the building of the future through collaboration with the university, the city, urban residents, companies and other stakeholders. One key phenomenon that UNIC focuses on is 'superdiversity', which is the development of diversity and inclusion skills and practices.

**We support our talented researchers to emerge at the top of their field.**

A key tool for enabling dialogue and co-creation is UNIC CityLabs, and the University of Oulu is playing a key role in developing this organisation. A Post-Industrial Transitions Academy (PITA) that fosters the implementation of the Engaged Research approach, will be established alongside the CityLabs activities in the period 2021–2024. The Horizon-funded UNIC4ER (UNIC for Engaged Research) project, which develops research and innovation cooperation structures, was

launched in September 2021. The project is strongly connected with an Erasmus-funded project that supports the development of education cooperation, which began already in autumn 2020.

In accordance with our strategy, our competitive research group structure includes researchers at different stages of their careers, from students to postdoctoral researchers and senior researchers. We support our talented researchers to emerge at the top of their field. We also use the tenure track model in recruiting new top researchers to strengthen our strategic research programmes. Demanding selection criteria strengthen the academic capabilities of our community, which in turn promotes the commitment of talented researchers to our university. We support independence in the research careers and develop the academic leadership and multidisciplinary approach of young researchers. The programme is based on internationally contested application processes, which aim at the recruitment of exceptionally promising junior researchers and leading researchers in their field. We implement tenure track recruitments also within the national university profiling programme, and as of 2017, faculties have also begun filling some of their vacancies through the tenure track career path. Over 30 recruitments were approved in 2020 and 16 in 2021. The University of Oulu also allocates strategic funding to new, top-level ad hoc recruitments that support its leading profile. The units also develop the preconditions for research and key persons' commitment using a four-tiered tenure track system based on accepted criteria for making progress.

The ratio of post-doctoral researchers to doctoral candidates will be increased in the personnel planning of faculties and other units. At the start of 2016, a new so-called post-doctoral





programme was launched to allocate funding to successful research groups for the recruitment of a post-doctoral researcher. The programme is primarily implemented as part of the fixed-term research projects of focus institutes and a national profiling programme, including nearly 100 vacancies in total.

The University of Oulu Graduate School (UniOGS), which covers all doctoral studies, operates based on selected, uniform policies in a manner that enables harmonising the matters related to student admission, shared degree components, student guidance and legal protection. Efforts are made to promote study completion, graduation within the four-year target period, and relevance to working life. The aim is to reduce the average age of doctoral degree completion, which will also promote the career development of young researchers. International mobility is also promoted. The quality of doctoral education and the level of doctoral dissertations are of a high international standard, and a sufficient number of doctoral degrees is safeguarded. In the first half of 2022, international development work carried out using the Benchmarking method, which is part of FINEEC's audit process, will be implemented for doctoral education.

UniOGS doctoral education has been organised into four programmes that cover the university's focus areas. These four broad and multidisciplinary programmes are positioned within the fields of humanities, health and life sciences, technology and natural sciences, and information and electrical engineering. All the programmes have a coordinator responsible for organising academic training, and UniOGS also has coordinators who take care of general studies and degree processes. Some of the strategically funded doctoral degree vacancies are directed to spearhead projects in the focus institutes, and some of the vacancies are directed based on decisions made by four Doctoral Training Committees.

The efficiency of national and international recruitment in the University of Oulu Graduate School will be improved, and cooperation with other actors will be intensified. A joint doctoral programme in life sciences is underway with Ulm University, and similar programmes are also planned with universities deemed best for developing other focus areas. In addition, an international and multidisciplinary I4Future programme under the EU-funded Marie Skłodowska-Curie Cofund programme is carried out in the period 2016–2021 and involves training 20 people in the field of imaging in cooperation with several companies.

High-quality infrastructures are one of the basic prerequisites for high-quality research activities. The University of Oulu's infrastructure unit has been operating since 2016, and includes extensive internal infrastructures that transcend the university's international, national and faculty boundaries. The unit is funded and managed centrally within the remit of the Rector of Research. These university-level infrastructures include the Biocenter Oulu Infrastructure Centre, the Biodiversity Unit, the Laboratory Animal Centre, the Leaf Infrastructure, the Centre for Material Analysis and the Oulanka Research Station. A new resource management software has been introduced in 2021. The visibility of infrastructures has also been promoted by entering information about these into the national tiedejatutkimus.fi portal, marketing videos and an updated open infrastructure policy, as well as the units' own data policies.

The faculties have high-quality infrastructures, such as the Northern Finland Birth Cohorts 1966 and 1986 and the Infrastructure for Population Studies at the Faculty of Medicine, the physics infrastructure MAX IV, which operates in Lund, Sweden, and whose coordination in Finland takes place at the University of Oulu, and the mini-pilot laboratory for the mining sector. The Faculty of Information Technology and Electrical Engineering has an Open UBI Oulu real-world laboratory, a 5G test network and, in cooperation with the Faculty of Technology, a FabLab education and research environment. The University of Oulu is a participant in the Borealis Biobank of Northern Finland, whose other shareholders are the hospital districts of Northern Finland and Nordlab Laboratory.

The University of Oulu is involved in 11 research infrastructure networks approved for the Academy of Finland's roadmap for national infrastructures in Finland 2021–2024. Five of these networks have been approved on the international ESFRI roadmap (European Strategy Forum on Research Infrastructures), and the national coordination of three of them occurs at the University of Oulu. The University of Oulu coordinates the following infrastructure networks:

- in information and electrical engineering: The Printed Intelligence Infrastructure (PII) provides access to a modern research and pilot-manufacturing infrastructure covering the entire research and development path from materials through components and devices to circuits and systems.



- in information and electrical engineering: The Research Infrastructure for Future Wireless Communication Networks (FUWIRI) promotes the deployment of 5G technology and enables testing 6G technologies.
- in environmental sciences: The Earth-Space Research Ecosystem (E2S) consists of observations from Tähtelä and Metsähovi megasites.

The University of Oulu is involved in eight other roadmap infrastructures:

- in life and medical sciences: Biocenter Finland (a network of Finnish university Biocentres), BBMRI.fi (Biobank infrastructure), Integrated Structural Biology Infrastructure (FinStruct & Instruct-ERIC Centre FI), EuBI-Fi (infrastructure for imaging technologies) and FIRI-PBS (research infrastructure for population research data).
- in environmental sciences: FINN-EPOS (European seismic plate observation station network) and FinBIF (Finnish Biodiversity Information Facility)
- e-infrastructures: FCCI (Finnish Computing Competence Infrastructure)

The University of Oulu is also involved in the Finnish Biobanks cooperative and the Finnish Long-Term Socio-Ecological Research (FinLTSER) network coordinated by the University of Helsinki. The role of the Oulanka Research Station in this network has gained more emphasis.

To maintain and develop the infrastructures, the faculties and other actors will be instructed on making plans for the long-term. The university will continue the strategic resourcing of infrastructures to develop the services of the University of Oulu Infrastructure Unit and to meet faculties' own infrastructure needs. As a rule, very large equipment or entities formed by equipment with a purchase price of millions of euros require a special connection to the national and/or international level (Roadmap for Finnish research infrastructures, ESFRI).

### Declaration of Responsible Science was published at the end of 2020.

The Academy of Finland also opened an additional funding call for FIRI research infrastructures as collaborative platforms in 2020. Unlike the usual FIRI funding calls, the Academy will use this round to support the development of research infrastructures that are carried out in cooperation with the business community and whose aim is to create a platform in which research, education and innovation can intermingle and develop side-by-side. A total of 10 applications were submitted from the University of Oulu, of which 3 were granted funding. The operating period of the projects is from 1 July 2020 to 30 November 2021. Two of the projects are coordinated by the University of Oulu:

- The E2S Industry project for the development of an Earth Space ecosystem in cooperation with industry
- The FUWIRI-6G project for the development of 6G wireless networks.

The University of Oulu is also a partner in the Integrated Atmospheric and Earth System Research Infrastructure INAR RI co-locations project.

In 2020, the University of Oulu received funding for two infrastructure projects in the European Union's Horizon 2020 programme for research and innovation in the Integrating and opening research infrastructures of European interest call. Both projects were launched in spring 2021. The aim of the call is to make major national and regional research infrastructures available to all European researchers and to promote the optimal use and joint development of these infrastructures. The objective of the PITHIA Network of Research Facilities (PITHIA-NRF) project is to build a European network that combines observation equipment, datasets, data processing tools and foresight models focused on research in the ionosphere, thermosphere and plasma. Meanwhile, the Slices Research Infrastructure project focuses on providing testing platforms and services for future and emerging technologies in Internet-based digital disciplines (e.g. 5G/6G, NFV, IoT, Cloud Computing).

The university adheres to national and international requirements for open and responsible science and research, while taking into account the requirements of innovation activities and privacy protection. The University of Oulu has principles and an action plan that integrates open and responsible research and their support into a natural part of the university's activities. This is based on the University's Responsible Research Programme adopted in

2018, which describes the principles and policies related to providing open access to research activities in relation to publishing, data, infrastructures, source code and open learning. The University of Oulu's Declaration of Responsible Science was published at the end of 2020. In this context, the policies guiding open research infrastructures, the openness of publications and the management of research data were revised to comply with the new requirements at the EU and national levels. The policies were further updated in 2021.

The reuse of research data is becoming increasingly important in the EU. A group of seven data experts with a researcher background has continued to support the responsible management of research data at the University of Oulu and the opening of the data and related metadata. The aim is to respond to the demand for the FAIR compatibility (findable, accessible, interoperable and reusable) of research data by the EU and major financiers. In 2021, making national FAIR data services and European EOSC services part of the day-to-day work of researchers also played an important role.

In the co-authoring of publications, the University of Oulu is continuing its very successful work.

On 1 January 2020, the Rector signed the international Declaration on Research Assessment (DORA), under which the university is committed to developing a responsible assessment of researchers and the responsible use of publication metrics. In this context, a working group was set up to produce university-level policies and instructions for responsible assessment used in recruitment, for instance, during the period 2021–2022. In March 2020, the Rector signed the national Declaration on Open Science and Research 2020–2025, under which the university undertakes to promote openness as a fundamental value of science, strengthen the societal knowledge base and innovation, and improve the quality of scientific research outputs, the educational resources based on them, and the impact of research outputs.

**Presentation of research and popularisation of science:** In order to strengthen science communication within the different faculties, designated communications experts assist researchers in obtaining visibility for their research in conventional media and social media at the national and international level, making use also of various types of events. One of the goals is also to increase the societal impact of research.

The University of Oulu Science Garden, which was created in the ERDF-funded ESI project in 2017–2020, has continued its operations as part of the University of Oulu's Tellus platforms. The Science Garden operates in the Botanical Gardens of the University of Oulu, serving as a meeting point for companies, the scientific community and the general public. This space presents the expertise of science and environmental companies, offers creative facilities and a natural environment, and hosts activities and events for different target groups. The virtual showroom developed within the project presents business and research expertise from the cleantech, bioeconomy and circular economy sector. In the future, the Science Garden exhibition will be developed further from the perspective of science education.

The university's active role in EU matters has been further strengthened in 2021. The university has prepared statements on the EU's Horizon Europe 2021–2027 framework programme and other key programmes and strategies such as the EU's Research Fund for Coal and Steel, and it has actively engaged in consultations organised by the Commission on, for example, the European Research and Training Area. In addition, we have responded to a survey by the Ministry of Education and Culture on the priorities of EU cooperation in higher education and research, and participated in the preparation of an EU cooperation model for the Finnish universities in UNIFI.

Despite the COVID-19 situation, cooperation with EU stakeholders has continued to strengthen. The university has organised remote meetings with the European Commission and the European Parliament, as well as with other influential stakeholders in Brussels. For example, the university management met with members of the European Parliament's Committee on Industry, Research and Energy in a virtual online meeting organised in cooperation with the universities of Eastern Finland and Lapland. The University of Oulu also organised in November a training and advocacy trip to Brussels with the Class 21' (future research leaders) group. Persons who have influence in the EU have also approached the University of Oulu by invitations to meetings and events and requests for an expert opinion.

The university has organised online events in cooperation with people who have influence in Brussels and has invited speakers from the EU, including members of the



European Commission and European Parliament, to its own events. A virtual partnership event, the Conference on the Future of Europe, was organised at the university's premises in May. In 2021, the university participated in various remote events concerning Horizon Europe and the Research and Innovation Days organised online by the Commission.

In addition to the university's rectors, a number of other university employees have become active in advocacy work, including the faculty deans, the directors of the focus institutes and other university management personnel. An event on the Horizon Europe framework programme was organised for the faculty deans and the directors of the focus institutes in February. In addition, an event on impacts and networking at the EU level was organised for researchers and management in August. Researchers have been activated by receiving information on topics such as applying for memberships in EU expert groups, key events, Commission initiatives and consultations, and other possibilities for networking and influence.

In 2021, a multiannual support process for participation in European partnerships was developed and launched. Two memberships in partnerships (AI, Data and Robotics and Made in Europe) were selected to be adopted at the university level. The coordinators of EU research networks in other universities have also been contacted, and an assessment of the utilisation of the networks and the need for support has been completed.

## Key Figures of Research 2017–2021

Key Figures of Research	2017	2018	2019	2020	2021
Research funding from the Academy of Finland, EUR 1,000	21,722	23,943	26,826	25,484	29,406
Business Finland funding*, EUR 1,000	12,831	11,277	9,204	7,607	7,250
International competitive research funding, EUR 1,000	7,421	8,661	9,793	10,103	11,728
Share of supplementary funding of total funding	35.90 %	37.30 %	39.50 %	39.80 %	39.50 %
Jufo-1 publications, pcs	1,563	1,649	1,745	1,717	1,896
Jufo-2 publications, pcs	575	618	707	732	781
Jufo-3 publications, pcs	216	250	298	260	318
Scientific publications, pcs	2,526	2,647	2,861	2,827	3,110

## Innovation

The goal of the University of Oulu is to commercially utilise research results so that they produce economic benefits for the researcher, the university and the surrounding society. The university considers it an important quality for its staff members that they engage in impactful activities aimed at the utilisation of research results and expertise.

The task of the University Innovation Centre is to manage internal services related to intellectual property rights (IPR), to coordinate business cooperation in cooperation with the faculties and to assist research teams in developing research-oriented business. The University Innovation Centre has eight employees.

The research carried out produces a variety of outputs: inventions, computer programs and materials which may serve as the seed for new business activities. In 2021, 41 invention notices and five copyright notices were filed by the university. During the year, the rights for nine inventions were transferred to a research project's business partner. An invention notice is an important indicator of the success of research cooperation.

### Ten new patent applications were submitted.

Based on the inventions, ten new patent applications were submitted in the name of the University of Oulu. At the end of 2021, the university was the holder of a patent family based on 45 priority patents or applications. Some of these have been licensed, some are being developed further, such as in R2B (Research to Business) projects funded by Business Finland, while for others a route to commercialisation is still being sought. Last year, a licence agreement was signed on four patent families.

Over the years, the University of Oulu has patented a total of 120 inventions. A large proportion of the inventions patented by the university have been transferred to companies that have taken on the task of protecting the patent.

In 2021, the university granted a total of EUR 270,000 of Proof-of-Concept (PoC) funding for 17 researcher projects, with EUR 120,000 of this coming from the City of Oulu Development Fund. The purpose of PoC funding is to support the first technical implementation of a research-based idea to demonstrate its feasibility. The funding aims to promote opportunities for complementary research funding that supports utilisation of the idea. PoC funding has made it possible to apply for various Business Finland projects and get the patenting process started.

Commercial utilisation of the research results supports research at the university as additional competitive funding for research. In 2021, the University of Oulu submitted six new R2B project applications, two of which received funding. R2B funding is granted for the development of new research-based business. In addition, the Riitta and Jorma J. Takanen Foundation donated a total of EUR 100,000 as additional funding to five ongoing R2B projects.

Three new research-based companies were established during the year, and the university currently has a small ownership stake in seven spin-out companies. In the 2000s, 74 research-based companies have taken shape at the University of Oulu.

Each year, the University of Oulu engages in commercial cooperation with more than 300 companies and stakeholder organisations. Some of this cooperation leads to co-financed projects and some is a matter of research commissioned by clients to correspond to a specific need. In 2021, the value of company-commissioned research amounted to EUR 4.1 million. The university made the coordination and goal-oriented nature of its cooperation with companies and stakeholders more efficient by expanding its customer management activities to all faculties. As one of the results of these activities, the university concluded a partnership or framework agreement with eight companies or stakeholder organisations.

Last year, a total of 49 training or information events related to innovation activities, business development, business cooperation were organised or run by the Innovation Centre, and six presentations of research commercialisation projects were organised for investors.



## Key Figures of Innovation activities 2017–2021

Year	2017	2018	2019	2020	2021
Invention disclosures	47	35	61	33	46
Priority patent applications	9	6	6	10	10
Patent portfolio of the university (number of patent families)	30	35	37	39	45
Technology transfer agreements (assignment documents or licence agreements for company-commissioned research)	18	13	17	24	13
New research-based companies	3	3	3	2	3
Proof of Concept (PoC) projects	12	9	11	15	17
Business Finland TUTLI funding (new projects)	5	5	0	7*	2

\*One of the projects that received a decision in 2020 was part of the autumn 2019 application round (decision received 3 January 2020).

## Fund-Raising

The University of Oulu carries out active fund-raising and maintains good donor relations. Donations are used to support the university's operations, in line with its strategy, in ways that increase the impact of the university and the vitality and competitiveness of both the region and the whole country.

In 2021, a total of EUR 2,595,598.89 was donated. Of this, direct allocations to different projects totalled EUR 433,000.

The matched funding paid by Sitra for private donations provides a significant opportunity to strengthen the University of Oulu's research ecosystem. The donations directly support research in the focus areas of research. The growth in capital achieved through the matched funding enables long-term support for the university's core fields of research. The University of Oulu has systematically promoted its fund-raising campaign that aims to maximise the fund-raising total and thus the matched funding. The campaign will be carried out until 30 June 2022. The donation negotiations held during the year and related strategic discussions have contributed to strengthening the foundation and business partnerships of the University of Oulu.

Brain research related to memory disorders, which drew public attention, resulted in an interest in supporting this research area with donations, especially among the general public. Support for Research to Business projects with a donation from a foundation continued in 2021 similarly to the previous year.

At the end of 2021, the market value of fund-raising investments totalled EUR 89.3 million, which represents a significant share of the University of Oulu's investment assets.

### Fundraising at the University of Oulu Donations 2008–2021

Donor	2008–2014	2015–2017	2018	2019	2020	2021
Public organisations	1,529,343.00	101,752.19	2,000.00	1,460.00	0.00	20,300.00
Foundations, associations	3,106,786.05	5,705,917.75	67,759.67	100.00	130,000.00	1,606,700.00
Companies	5,614,818.58	1,810,396.00	262,950.00	247,110.00	264,967.29	721,300.00
Financial and insurance institute	568,587.00	995,835.00	300.00	100,150.00	0.00	0.00
Private individuals	1,273,985.06	1,105,182.08	77,895.00	171,696.50	59,279.00	247,298.89
Business	28,582.08	1,254.87	0.00	0.00	0.00	0.00
<b>Total</b>	<b>12,122,101.77</b>	<b>9,720,337.89</b>	<b>410,904.67</b>	<b>520,516.50</b>	<b>454,246.29</b>	<b>2,595,598.89</b>
<b>Ministry of Education and Culture match funding</b>	<b>23,097,551.55</b>	<b>11,236,561.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>





## Facilities

At the end of 2021, the University of Oulu had 158,254 m<sup>2</sup> of leased premises.

In 2021, the University of Oulu terminated rest of its lease agreements of facilities in the Kastelli Research Centre and its second storage facility in Rusko. In total, the terminated lease agreements covered an area of around 1,270 m<sup>2</sup>.

During 2021, some small-scale user-driven alterations were made in the properties. To promote sustainable development, a working group was established in 2021 to calculate the carbon footprint of the university's operations. The task of the working group was to examine the most appropriate way for the university organisation to assess its carbon footprint, the current carbon footprint of the university's operations and properties, ways to reduce the carbon footprint of offices and properties, and how to implement any needed emissions compensation. The working group calculated the carbon footprint for 2018, 2019 and 2020. The working group's operating period was extended to 2022.

In 2021, an action plan, Sustainable and Responsible Campus Life, was drawn up in cooperation with the Oulu University of Applied Sciences. The action plan focuses on areas significant to the carbon footprint, and the objective of the action plan is to reduce the carbon footprint by 50% of the 2019 reference level by 2025.

In 2021, the possibilities and alternatives for cost-effective anti-theft bicycle storage were also examined in cooperation with the University Properties of Finland Ltd.

At its meeting on 28 April 2020, the Board of Directors of the University of Oulu decided to authorise President Jouko Niinimäki to launch the preparation of a project plan for the central campus of the University of Oulu, which will cover an area of around 30,000 floor area m<sup>2</sup>. As a basis for the project planning, the University of Oulu prepared a building strategy in 2019–2020 which examined the most optimal long-term property strategy for the University of Oulu, including the options of maintaining and renovating the existing building stock, partially demolishing the existing building stock and carrying out new construction in university campuses, and new construction in the immediate vicinity of the centre of the City of Oulu.

For the central campus project, the University of Oulu, Arina Co-operative Society and Kesko applied for and received in autumn 2020 a planning reservation for a plot in the Raksila neighbourhood. The planning reservation period ran until 31 December 2021. The planning reservation report will provide the City of Oulu with sufficient information for making decisions on matters such as launching the necessary planning process.

The university's project planning was launched in 2021 and completed in December 2021. The University of Oulu Board approved the project plan at its meeting on 16 December 2021. The project plan provides the University of Oulu with sufficient information for the investment decision and initiation of the planning process. The total area of the project has been estimated at 45,000 GSM.

In line with the Sustainable Development Goals, the university continued ongoing projects and launched new ones to promote a low-carbon, green campus and to encourage cycling and walking instead of driving. The university continued its efforts to increase the efficiency of facility use. A project to improve the efficiency of facility use began with the Faculty of Medicine. The project involves piloting an operating model in which workstations can be booked and not everyone has their own personal workstation. In 2022, the Academic Affairs and Financial Services will join the project.

## Financial Position in 2021

The University of Oulu's turnover in 2021 was EUR 263.7 million (EUR 250.0 million in 2020) and the profit for the financial year was EUR 32.2 million (EUR 11.4 million in 2020).

The total return on investment and financial activities was EUR 27.0 million (change in fair value EUR 11.2 million – in accordance with the IFRS 9 standard, which entered into force on 1 January 2018, changes in the fair value of financial instruments have been recorded in profit and loss statements).

The equity ratio of the University of Oulu was 89.9% (88.7% in 2020), meaning that the solvency of the university has remained at an excellent level. The liquidity of the university also remained at a good level.

In accordance with the agreement between the Ministry of Education and Culture and the University of Oulu, the basic funding contained in the income statement for 2021 was EUR 159.6 million (EUR 150.4 million in 2020).

Income from supplementary funding was EUR 104.1 million (EUR 99.6 million), equal to 39.5% (39.8%) of total income.

During the financial year, operating expenses amounted to EUR 259.1 million (EUR 249.9 million), of which personnel expenses accounted for EUR 179.3 million, equal to 69.2% of total operating expenses (EUR 171.2 million and 68.5% in 2020). Facility rental expenses totalled EUR 27.2 million in 2021 (EUR 26.9 million), equal to 10.5% (10.8%) of operating expenses.

The amount of supplementary research funding reported to the Ministry of Education and Culture was EUR 71.0 million (EUR 67.2 million), which corresponds to 27.4% (26.9%) of the university's total expenditure. The figure is calculated using the formula specified by the ministry, and it differs slightly from the figure for grant income given in the income statement. Supplementary funding consists mainly of project funding from the Academy of Finland, Business Finland and the European Union. Research expenditure on international competitive research funding totalled EUR 11.7 million (EUR 10.1 million).

The balance sheet total on 31 December 2021 was EUR 346.3 million (EUR 314.7 million in the previous year). The fixed assets on the balance sheet totalled EUR 311.0 million (EUR 247.5 million), while current assets totalled EUR 35.3 million (EUR 67.2 million).

### Financial indicators of the University of Oulu

Financial indicators	2018	2019	2020	2021
Change in net sales %	3.45	2.01	7.31	5.45
Operating profit %	1.04	-3.08	0.04	1.74
Change in equity % (development of the university's own funds)	0.97	7.24	5.77	13.35
Return on investments at fair value	-5.1 %	16.4 %	3.8 %	11.6 %
Quick ratio	2.29	1.96	2.39	1.21
Adequacy of cash, days	58	37	55	8
Solvency, %	88.4 %	89.1 %	88.7 %	89.9 %
Net gearing	-17.28	-10.85	-15.61	-2.14

\* Key figures calculated in accordance with the Code of Financial Administration in Universities, OKM/2/500/2018 (30 November 2020).



In 2016, the investment assets allocated to the university's asset management portfolios were reclassified under fixed assets as 'other long-term investments'. Investment assets are traded only for the purpose of implementing allocation changes and to free up liquidity for use in the university's operations. A significant portion of the university's basic capital is composed of the shares of University Properties of Finland Ltd and funds collected through fund-raising, including matched funding from the state. Total equity at the end of the year amounted to EUR 288.5 million (EUR 254.7 million), of which the value of University Properties of Finland Ltd shares was EUR 54.2 million, or 18.8% of the total. The Group's shares and holdings (acquisition of Oulu University of Applied Sciences in 2019 with 50.5% of the share capital) totalled EUR 5.3 million. Current liabilities amounted to EUR 54.2 million (EUR 55.3 million) and statutory provisions totalled EUR 0.3 million (EUR 0.5 million).

Total investments in the financial statements amounted to EUR 7.2 million (EUR 8.7 million). Investment grants received totalled EUR 2.2 million (EUR 3.8 million). Of the total investments, investments in intangible and tangible assets totalled EUR 7.2 million (EUR 8.7 million), and other investments amounted to EUR 0.0 million (EUR 0 million in 2020). The University of Oulu holds 10.41% of the share capital of University Properties of Finland Ltd and 19.49% of the share capital of Certia Ltd.



## Investment Activities in 2021

The long-term objective of the University of Oulu's investment activities is to ensure the purposeful, productive and secure investment of assets while taking into account yield targets, acceptable risk levels, ethical responsibility and liquidity requirements. The University of Oulu is a responsible investor, and it requires its asset management partners to sign the UN Principles for Responsible Investment. The UN Principles for Responsible Investment concern the consideration of environmental, social and corporate governance factors in investment activities. The management of the University of Oulu's investment assets was tendered out in spring 2017 and is currently outsourced to three fully authorised asset managers.

According to the investment policy approved by the University Board, the university's investment assets are to be invested over a period of several decades, but at least part of the annual return must be quickly available when the Board decides annually on its allocation. The return from investment activities is mainly allocated to finance strategic recruitments and separate projects approved by the Board of Directors and to increase equity, thus securing the financing of more and/or larger projects in the future.

The university's Investment Committee began its investment strategy work at the beginning of 2019 with the aim of better understanding the history of building the university's portfolios based on how the current structure has been arrived at. One outcome of the strategy work was that the investment committee decided to recommend to the University Board an alternative investment in the investment portfolio.

Investment distribution	Market value, €	Market value change YTD, €	Actual allocation, %	Target, %	Allocation limits, %
<b>ALL INVESTMENTS</b>	<b>236,679,078</b>	<b>29,909,693</b>	<b>100.0</b>	<b>100.0</b>	-
<b>Equity</b>	<b>119,045,114</b>	<b>28,547,340</b>	<b>50.3</b>	<b>55.0</b>	-
<b>Listed equity</b>	<b>108,520,033</b>	<b>23,154,652</b>	<b>45.9</b>	<b>45.0</b>	<b>30.0% - 60.0%</b>
- Equity, Finland	3,441,689	1,376,261	1.5	-	-
- Equity, Europe	30,488,741	10,396,539	12.9	12.9	0.0% - 55.0%
- Equity, North America	50,635,419	11,870,558	21.4	20.3	0.0% - 55.0%
- Equity, Japan	3,980,033	2,871,054	1.7	1.9	0.0% - 55.0%
- Equity, Global	0	0	-	-	-
- Equity, Emerging Markets	19,974,151	-3,359,761	8.4	10.0	0.0% - 20.0%
<b>Unlisted equity (Private Equity)</b>	<b>10,525,080</b>	<b>5,392,688</b>	<b>4.4</b>	<b>10.0</b>	<b>0.0% - 15.0%</b>
<b>Fixed income</b>	<b>117,633,964</b>	<b>2,104,635</b>	<b>49.7</b>	<b>45.0</b>	-
<b>High risk fixed income</b>	<b>38,055,709</b>	<b>5,310,920</b>	<b>16.1</b>	<b>10.0</b>	<b>0.0% - 30.0%</b>
- HY	26,832,085	7,138,385	11.3	5.5	0.0% - 20.0%
- EMD	11,223,624	-1,827,464	4.7	4.5	0.0% - 10.0%
<b>Lower risk fixed income</b>	<b>79,578,255</b>	<b>-3,206,285</b>	<b>33.6</b>	<b>35.0</b>	<b>2.0% - 100.0%</b>
- Government loans	18,707,913	3,672,252	7.9	17.9	0.0% - 30.0%
- IG	38,712,882	16,029,913	16.4	12.6	0.0% - 35.0%
- Money market	22,157,460	-22,908,450	9.4	4.5	2.0% - 35.0%
<b>Alternative investments</b>	<b>0</b>	<b>-742,283</b>	<b>-</b>	<b>0.0</b>	<b>0.0% - 5.0%</b>
- Combination	0	-742,283	-	-	-



The Investment Committee examined the products of four well-known asset managers, eQ, Mandatum, Nordea and SEB. Based on these proposals, Nordea's PE product was selected as the first proposed PE-labelled product and was approved by the University Board as the university's first PE product at its meeting on 20 November 2019.

The Nordea PE subscription amount was EUR 5 million which was paid out of the University of Oulu's cash reserves. The fund subscription took place in January 2020. The market value of the Nordea NSIF-Global Private Equity BI investment in 2021 was EUR 7.5 million. Overall, the targeted size of the PE portfolio is approximately 10–15% of the university's investment portfolio, which will mean additional investments of approximately EUR 10 million in the future. These additional investments are intended to be financed by the risk-bearing fixed-income investments in the current portfolios.

Additional investment decisions for the PE portfolio will be made separately, including decisions on the asset managers for the portfolio, and this work was initiated by the university's Investment Committee in Q1\_2020. The accounting surplus of investment and financial activities in 2021 was EUR 27.0 million (2020 EUR 10.6 million).

In 2020, the Investment Committee continued its strategy work on alternative investments, as a result of which the Investment Committee recommended a new alternative investment target to the University Board. eQ PE XII North is a Finnish specialised investment fund that began its investment activities in January 2020. It is what is known as an FOF (fund of funds), and its target size is EUR 200 million.

The Fund invests its assets in buyout funds investing in small and medium-sized enterprises in Northern Europe (Nordic countries, UK, Ireland, and Benelux and DACH countries). The Fund is managed by eQ Fund Management Company Ltd, which is a 100% subsidiary of eQ Asset Management Ltd. Both companies are part of eQ Plc, which is Finland's leading independent asset management and corporate finance company.

The University Board was presented with a university portfolio investment commitment of EUR 8 million for the eQ Private Equity XII North Buyout Fund FOF / Europe. The investment commitment will be gradually 'put to work' over a 5–7-year period, and the eQ investment is funded either from cash assets or from reallocated investment assets. The Board approved this proposal.

In 2021, the University of Oulu's Board of Directors approved two new alternative eQ investments based on a proposal by the Investment Committee. The first was the eQ PE XIII US fund of funds with an investment commitment amounting to USD 9.75 million (approximately EUR 8 million) and the second was the eQ PE XIV North special mutual fund. The Fund invests its assets in buyout funds investing in small and medium-sized enterprises in Northern Europe (Nordic countries, UK, Ireland, and Benelux and DACH countries). The investment commitment was EUR 8 million.

At the end of 2021, the value of the University of Oulu's alternative investments was EUR 10.5 million.

In 2021, many discussions revolved around coronavirus and inflation. In the first half of the year, vaccine coverage improved at a fast pace and restrictions were waived after the summer in Europe and North America. The message was that the inflation is only temporary. However, the final part of the year was overshadowed by a new, highly contagious omicron variant and the central banks admitted that the inflation might persist for longer. In the stock market, 2021 was an excellent year with nearly all the most common equity indices yielding double-digit returns. The global equity index MSCI World generated +32.0%. As a result of inflation and the consequent rise in interest rates, the situation of investors in the interest market was challenging throughout the year, and overall income remained very low. Government loans yielded negative returns both in Western countries and in emerging markets. Taking a risk on the interest market was worthwhile, as only high yield corporate debt indices with a lower credit rating were generally positive from the beginning of the year.

The coronavirus pandemic continued to make headlines in 2021. Nevertheless, the stock markets reacted positively to the increase in vaccination coverage, and the stock exchange prices in developed economies were largely climbing until the autumn, when the omicron variant and concerns related to inflation began unsettling the market. In 2021, however, the stock market yield was excellent, while the interest rate market revenue remained generally low as a result of inflation and rising interest rates.

In 2021, the annual returns of the University of Oulu's investment portfolios varied between 7.7% and 43.6%, and the return on all investment assets was 11.6%. The highest return on the university's investment portfolios resulted from Private Equity investments with a profit of 43.6%. Equity funds investing in the Finnish and European markets also generated over 20%, and those investing in the North American market as much as over 30%. The total return on equity investments reached 25.6%. Meanwhile, interest rate investments yielded 0.6%, with the return on more risky interest rate categories and short-term interest rate investments being positive and other low-risk interest rate investments being negative.

### **The total market value of the investment portfolios increased by EUR 29.9 million in 2021.**

The total market value of the investment portfolios increased by EUR 29.9 million in 2021, and the discretionary asset managers managed over EUR 220 million in investment assets at the end of the year. In 2021, the fund-raising portfolio yielded almost EUR 8.6 million, or 13.1%, measured based on a change in market value, and the state-capitalised assets portfolio yielded EUR 7.6 million, or 13.0%. The university's investment activities were successful in the period 2012–2017 and again in 2019–2021. The investment revenues for 2011 and 2018 were negative.

At the end of 2021, the market value of the University of Oulu's portfolio was EUR 169.2 million (EUR 162.1 million in 2020) (excluding cash reserves EUR 3.8 million, liquid investments EUR 53.2 million and alternative investments EUR 10.5 million).

In early 2022, the markets have tried to adapt to the new situation, as inflation and economic growth are higher than average and central banks are tightening up their monetary policy for the first time in many years. The Russian invasion of Ukraine has also led to more instability.

In 2021, the University of Oulu's Investment Committee comprised Maaria Eriksson (KEVA), Ira van Gilse van der Pals (Central Administration of the Finnish Lutheran Church), Pirjo Kytösalmi (Kaleva) and Pekka Riuttanen (University of Oulu). The Investment Committee began its work in autumn 2013.



## Personnel

In 2021, the average number of people working at the University of Oulu was 3,510 (2020: 3,303). The total number of university personnel at the end of 2021 was 3,684 (2020: 3,386). The total number of person-years for 2021 was 3,134 (2020: 2,977 person-years, increase of 5.27%). In 2021, the average number of personnel increased by 207 people, by the last day of the year the number had increased by 298 people, and the total person-years increased by 157. Teaching given as hourly teaching (41.15 person-years) and work performed by hour-based employees (20.39 person-years) is also included in the total person-years (2020: hourly teaching 46.24 person-years and hour-based employees 11.47 person-years).

**Table 1. Number of employees in persons and person-years 2017–2021**

Employees	2017	2018	2019	2020	2021
<b>Number of employees (average)</b>	<b>2,844</b>	<b>2,937</b>	<b>3,080</b>	<b>3,303</b>	<b>3,510</b>
<b>Number of employees on 31 December</b>	<b>2,854</b>	<b>3,019</b>	<b>3,135</b>	<b>3,386</b>	<b>3,684</b>
<b>Number of employees (person-years)</b>	<b>2,545</b>	<b>2,610</b>	<b>2,744</b>	<b>2,977</b>	<b>3,134</b>
- teaching and research staff (person-years)	1,591	1,621	1,688	1,785	1,884
- other staff (person-years)	844	879	941	1,066	1,117
- teacher training schools (person-years)	109	111	115	126	133
<b>Person-years excluding part-time hourly instruction</b>	<b>2,492</b>	<b>2,565</b>	<b>2,708</b>	<b>2,931</b>	<b>3,092</b>

From 2017, the basis for the calculation is the number of part-time teaching hours given divided by 455.

As of 1 August 2021, part-time teachers working on an hourly basis have become hour-based employees at the University of Oulu.

On 1 February 2020, the transfer of business from the OAMK increased the number of personnel by 137 people.

(Source: from 2017, SAP for average number and 31 December total, Personec F and Mepco for person-years 2017, Mepco for average and number from 2020)

While employees' employment relationships have been made permanent in all faculties, especially among teaching and research staff, the share of employees with a fixed-term employment contract among the staff has not decreased during 2021 due to an increase in the number of staff and the person-years.

**Table 2. Share of fixed-term employees, % by staff group 2018–2021**

Staff group	2018 F-T total	2018 Grand total	2018 F-T share%	2019 F-T total	2019 Grand total	2019 F-T share%	2020 F-T total	2020 Grand total	2020 F-T share%	2021 F-T total	2021 Grand total	2021 F-T share%
<b>Not within YPJ</b>	<b>69</b>	<b>75</b>	<b>92 %</b>	<b>65</b>	<b>71</b>	<b>92 %</b>	<b>66</b>	<b>73</b>	<b>90 %</b>	<b>52</b>	<b>59</b>	<b>88 %</b>
- men	39	-	-	40	-	-	35	-	-	28	-	-
- women	30	-	-	25	-	-	31	-	-	24	-	-
<b>Teaching staff at training school</b>	<b>16</b>	<b>104</b>	<b>15 %</b>	<b>19</b>	<b>107</b>	<b>18 %</b>	<b>19</b>	<b>108</b>	<b>18 %</b>	<b>21</b>	<b>110</b>	<b>19 %</b>
- men	5	-	-	7	-	-	5	-	-	6	-	-
- women	11	-	-	12	-	-	14	-	-	15	-	-
<b>Other staff</b>	<b>239</b>	<b>902</b>	<b>26 %</b>	<b>300</b>	<b>971</b>	<b>31 %</b>	<b>312</b>	<b>1,125</b>	<b>28 %</b>	<b>330</b>	<b>1,175</b>	<b>28 %</b>
- men	109	-	-	122	-	-	122	-	-	133	-	-
- women	130	-	-	178	-	-	190	-	-	197	-	-
<b>Teaching and research</b>	<b>1,386</b>	<b>1,847</b>	<b>75 %</b>	<b>1,412</b>	<b>1,889</b>	<b>75 %</b>	<b>1,471</b>	<b>1,975</b>	<b>74 %</b>	<b>1,593</b>	<b>2,147</b>	<b>74 %</b>
- men	819	-	-	835	-	-	847	-	-	899	-	-
- women	567	-	-	577	-	-	624	-	-	694	-	-
<b>Hour-based pay</b>	<b>88</b>	<b>88</b>	<b>100 %</b>	<b>94</b>	<b>94</b>	<b>100 %</b>	<b>102</b>	<b>102</b>	<b>100 %</b>	<b>189</b>	<b>190</b>	<b>99 %</b>
- men	40	-	-	37	-	-	38	-	-	82	-	-
- women	48	-	-	57	-	-	64	-	-	107	-	-
<b>Employer tasks</b>		<b>3</b>	<b>0 %</b>		<b>3</b>	<b>0 %</b>		<b>3</b>	<b>0 %</b>		<b>3</b>	<b>0 %</b>
<b>Grand total</b>	<b>1,798</b>	<b>3,019</b>	<b>60 %</b>	<b>1,890</b>	<b>3,135</b>	<b>60 %</b>	<b>1,970</b>	<b>3,386</b>	<b>58 %</b>	<b>2,185</b>	<b>3,684</b>	<b>59 %</b>
- men	1,012	-	-	1,041	-	-	1,047	-	-	1,148	-	-
- women	786	-	-	849	-	-	923	-	-	1,037	-	-

(Source: 2018–2019 SAP HR, 2020–2021 Mepco)

75% of the university staff (2020: 68%) work in the faculties. Teaching and research staff accounted for 58.03% of all personnel (2020: 58.32%). The aim has been to invest in increasing the vacancies for teaching and research staff and, in particular, the post-doc stage of researchers' careers.

The units' personnel planning has aimed at a balanced personnel structure by balancing the number of tasks in different career stages, and internationalising the research staff. Efforts have been made to increase career development and related alternatives through the use of tenure track tasks aiming at eventually appointing employees to the position of a permanent professor. The development of the personnel structure and alternative career development paths have been made possible through the allocation of strategic research funding.

Recruitment activity increased significantly in 2021 in relation to open applications, even though the challenging situation in the recruitment market slightly decreased the number of applicants from the previous year. Indeed, activities were aimed at working on the image of the University of Oulu as an employer and improving job applicant experiences. HR support for preparatory groups was also further increased.

A total of 377 external job advertisements were posted by the university via the Saima recruitment system (265 in 2020 and 268 in 2019). As some of the advertisements included several roles, there were in total around 410 vacancies (300 in 2020). 19 of the advertisements concerned professors (incl. Full Professor and tenure track positions) and 17 concerned tenure track positions (9 in 2020 and 34 in 2019). In addition to appearing in the relevant academic journals, the job advertisements have also been posted elsewhere, including the Academic Positions, Euraxess and LinkedIn portals. Most of the applications (56%) were related to teaching and research staff positions. The number of applications received was 8,109 (2020: 8,690, 2019: 7,840).



**Table 3. Number of employees by faculty, and change compared to the previous year 2020–2021**

Employees by faculty	31.12.2020 Total	31.12.2021 Men	31.12.2021 Women	Change in number 20-21	Change % 20-21	Share% 31.12.2021
Faculty of Humanities	176	72	126	22	13 %	5 %
Faculty of Education	303	92	243	32	11 %	9 %
Faculty of Science	242	180	114	52	21 %	8 %
Faculty of Medicine	571	205	363	-3	-1 %	15 %
Faculty of Biochemistry and Molecular Medicine	129	59	82	12	9 %	4 %
Oulu Business School	107	59	58	10	9 %	3 %
Faculty of Technology	444	354	181	91	20 %	15 %
Faculty of Information Technology and Electrical Engineering	561	438	136	13	2 %	16 %
<b>Faculties in total</b>	<b>2,533</b>	<b>1,459</b>	<b>1,303</b>	<b>229</b>	<b>9 %</b>	<b>75 %</b>
BCO infra	29	11	17	-1	-3 %	1 %
Biodiversity Unit	12	8	5	1	8 %	0 %
Laboratory Animal Centre	15	5	10	0	0 %	0 %
Centre for Material Analysis	17	13	4	0	0 %	0 %
Oulanka Research Station	7	4	3	0	0 %	0 %
BCO Multidisciplinary Research Centre	2	0	2	0	0 %	0 %
Eudaimonia	1	1	0	0	0 %	0 %
Infotech	1	0	1	0	0 %	0 %
Kvantum institute	3	3	2	2	67 %	0 %
Thule institute	4	0	4	0	0 %	0 %
Kajaani University Consortium	39	18	22	1	3 %	1 %
Kerttu Saalasti Institute	42	24	19	1	2 %	1 %
Sodankylä Geophysical Observatory	36	33	11	8	22 %	1 %
UniOGS	1	0	0	-1	-100 %	0 %
University Innovation Centre	8	5	4	1	13 %	0 %
<b>Infrastructure, Multidisciplinary Research Centres and Separate Departments in Total</b>	<b>217</b>	<b>125</b>	<b>104</b>	<b>12</b>	<b>6 %</b>	<b>6 %</b>
<b>Rector's Office</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0 %</b>	<b>0 %</b>
Human Resources Services	35	3	36	4	11 %	1 %
Academic Affairs	199	16	198	15	8 %	6 %
Law and Contract Services, Facilities & Safety	38	28	13	3	8 %	1 %
Oulu University Library	71	13	58	0	0 %	2 %
Common Services	1		1	0	0 %	0 %
Strategy and Science (incl. Tellus)	25	7	18	0	0 %	1 %
Financial Services	68	16	60	8	12 %	2 %
ICT-services	96	78	18	0	0 %	3 %
Research and Project Services	14		12	-2	-14 %	0 %
Extension School	48	15	63	30	63 %	2 %
Communication, Marketing and Societal Relationships	38	12	25	-1	-3 %	1 %
<b>Services in Total</b>	<b>633</b>	<b>188</b>	<b>502</b>	<b>57</b>	<b>9 %</b>	<b>19 %</b>
<b>TOTAL</b>	<b>3,386</b>	<b>1,774</b>	<b>1,910</b>	<b>298</b>	<b>9 %</b>	<b>100 %</b>

(duplicated figures removed, 2020 data excludes hour-based teachers, includes hour-based employees; hour-based teachers were transferred under an hour-based employee agreement as of 1 August 2021, source: start of 2020 Mepco (structure of non-faculty components changed on 1 June 2020))

Most of the university's staff work full-time. In 2021, there were 716 people in part-time employment (2020: 529), equal to 19% of all personnel (2020: 16%). When broken down by personnel group, most of these worked as auxiliary teaching and research staff (211), doctoral candidates (85), university lecturers (81) and administration/office staff (62).

**Table 4. Number of full-time and part-time employees in 2018–2021**

Workingtime	2018			2019			2020			2021		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Full-time	1,331	1,295	2,626	1,369	1,361	2,730	1,396	1,461	2,857	1,426	1,542	2,968
Part-time	229	164	393	223	182	405	249	280	529	348	368	716
<b>Total</b>	<b>1,560</b>	<b>1,459</b>	<b>3,019</b>	<b>1,592</b>	<b>1,543</b>	<b>3,135</b>	<b>1,645</b>	<b>1,741</b>	<b>3,386</b>	<b>1,774</b>	<b>1,910</b>	<b>3,684</b>

(Source: 2018–2019 SAP HR, 2020 Mepco)

At the turn of the year, the total number of international personnel was 753, equal to 20.4 per cent of all personnel (situation on 31 December 2021). The number and relative share of international personnel has continued to increase, as at the end of 2020 the number of international personnel was 658, equal to 19.4% of all personnel. The share of international personnel in teaching and research staff has also continued to increase, reaching 34.2%.

**Table 5. Number of international personnel by personnel group 2018–2021**

Year	Teaching Staff	Other Staff	Total number of international employees
2021	696	57	<b>753</b>
2020	615	43	<b>658</b>
2019	568	48	<b>616</b>
2018	561	28	<b>589</b>

By country, the largest number of international employees were from Iran (86 persons), India (76 persons), China (65 persons), Russia (38 persons) and Pakistan (36 persons). In total, 79 nationalities are represented in the staff of the University of Oulu.

The coronavirus pandemic continued to affect international researcher visits made by researchers at the University of Oulu, especially in early 2021. In 2021, researchers at the University of Oulu made a total of 41 official trips that lasted more than one month (27 in 2020), and most of these started between September and December 2021. The most popular countries for official trips were the United Kingdom, Switzerland and Denmark.

A total of 51.8% of university staff were women (2020: 51.4%). The average age of university staff decreased slightly to 42 years (2020: 42.5).



**Table 6. Average age of personnel**

Personnel group	2018 M	2018 F	2018 Total	2019 M	2019 F	2019 Total	2020 M	2020 F	2020 Total	2021 M	2021 F	2021 Total
Not within YPJ	37.5	35.3	<b>36.5</b>	38.4	38.0	<b>38.2</b>	40.3	36.7	<b>38.6</b>	38.5	36.0	<b>37.4</b>
Trainingschools	49.9	47.7	<b>48.5</b>	48.9	47.1	<b>47.7</b>	50.6	48.4	<b>49.1</b>	48.2	46.5	<b>47.0</b>
Other staff	48.4	48.1	<b>48.2</b>	47.6	46.9	<b>47.1</b>	47.4	47.0	<b>47.1</b>	47.1	46.4	<b>46.6</b>
Teaching and research	40.1	40.0	<b>40.1</b>	40.1	40.6	<b>40.3</b>	40.0	40.3	<b>40.1</b>	39.9	40.0	<b>40.0</b>
Hour-based pay	31.6	34.1	<b>33.0</b>	30.8	32.0	<b>31.5</b>	30.4	31.7	<b>31.2</b>	34.9	34.7	<b>34.8</b>
Employer tasks	51.5	53.0	<b>52.0</b>	52.5	54.0	<b>53.0</b>	53.5	55.0	<b>54.0</b>	54.5	56.0	<b>55.0</b>
<b>Grand total</b>	<b>42.0</b>	<b>43.1</b>	<b>42.5</b>	<b>41.8</b>	<b>43.0</b>	<b>42.4</b>	<b>41.9</b>	<b>43.0</b>	<b>42.5</b>	<b>41.5</b>	<b>42.5</b>	<b>42.0</b>

(Source: 2018–2019 SAP HR, from 2020 Mepco)

**Table 7. Personnel age structure and age group percentages**

Age group	2018 M	2018 F	2018 Total	2018 % share	2019 M	2019 F	2019 Total	2019 % share	2020 M	2020 F	2020 Total	2020 % share	2021 M	2021 F	2021 Total	2021 % share
19-24	59	48	107	4%	65	49	114	3.6%	51	48	99	2.9%	71	58	129	3.5%
25-29	236	149	385	13%	254	176	430	13.7%	257	213	470	13.9%	268	252	520	14.1%
30-34	247	194	441	15%	246	195	441	14.1%	271	205	476	14.1%	300	256	556	15.1%
35-39	209	209	418	14%	211	214	425	13.6%	217	243	460	13.6%	245	247	492	13.4%
40-44	177	231	408	14%	163	251	414	13.2%	187	282	469	13.9%	200	293	493	13.4%
45-49	139	158	297	10%	149	178	327	10.4%	163	208	371	11.0%	173	241	414	11.2%
50-54	188	160	348	12%	195	156	351	11.2%	183	171	354	10.5%	167	187	354	9.6%
55-59	132	186	318	11%	136	182	318	10.1%	152	207	359	10.6%	181	198	379	10.3%
60-64	144	109	253	8%	146	131	277	8.8%	132	148	280	8.3%	128	159	287	7.8%
65-	29	15	44	1%	27	11	38	1.2%	32	16	48	1.4%	41	19	60	1.6%
<b>Total</b>	<b>1,560</b>	<b>1,459</b>	<b>3,019</b>	<b>100%</b>	<b>1,592</b>	<b>1,543</b>	<b>3,135</b>	<b>100%</b>	<b>1,645</b>	<b>1,741</b>	<b>3,386</b>	<b>100%</b>	<b>1,774</b>	<b>1,910</b>	<b>3,684</b>	<b>100%</b>

(Source: 2018–2019 SAP HR, from 2020 Mepco)

In accordance with the general collective agreement of universities (1 April 2020 to 31 March 2022), salaries were increased by 1.1% in 2021 with a general increase on 1 June and by 0.5% with a local instalment on 1 December 2021. In accordance with the collective agreement, the local instalments were used as determined by the employer for a job-specific pay component, a complexity bonus valid until further notice or a personal wage component. The size of the local instalment on 1 December 2021 was calculated from the salary sum for September 2021. The calculation was made separately for the salaries of teaching and research staff, other staff and the teaching training school. Euro-based salaries also included general increases equal to the cost effect of the local instalment.

For the teaching and research staff, EUR 12,901 was spent on the job-specific pay component, with the recipients including 11 persons at OV02 difficulty level, six persons at OV03, one person at OV04, two persons at OV05, three persons at OV06, 11 persons at OV08 and two persons at OV09 difficulty level. A total of EUR 3,878 was used for the complexity bonus, and the recipients were two persons at the OV05, four persons at the OV06, one person at the OV07, one person at the OV08 and two persons at the OV09 difficulty level. A total of EUR 18,517 was spent on the personal wage component, with the recipients including eight people

at the OV01, 14 people at the OV02, nine persons at the OV03, four persons at the OV04, 29 persons at the OV05, 34 persons at the OV06, 16 persons at the OV07, six persons at the OV08, 13 persons at the OV09 and two persons at the OV10 difficulty level.

For the other staff, EUR 2,264 was spent on the job-specific salary component, with the recipients including one person at the MV03, two persons at the MV06, two persons at the MV07, three persons at the MV08, one person at the MV09 and one person at the MV12 difficulty level. A total of EUR 919 was spent on the complexity bonus, with the recipients including one person at the MV05, MV06, MV07, MV08 and MV09 difficulty levels. EUR 15,485 was spent on the personal wage component, with the recipients including one person at the MV03, four persons at the MV04, 27 persons at the MV05, 15 persons at the MV06, seven persons at the MV07, 11 persons at the MV08, 33 persons at the MV09, 19 persons at the MV10, 19 persons at the MV11, four persons at the MV12 and one person at the MV13 difficulty level.

A total of 0.25% of local instalments were used at the teacher training school to implement the changes achieved by a working group on the changes required by the Act on General Upper Secondary Education and the curriculum reform on 1 August 2021. 0.25% of the local instalment was used as determined by the employer for the job-specific salary component, including a complexity bonus valid until further notice or a personal wage component on 1 December 2021.

A total of EUR 1,740 was spent on the personal wage component at the teacher training school, and the number of recipients was 21, of whom six were at CO05, 11 at CO06 and two at CO07 difficulty level. Due to data protection, the difficulty level of two employees cannot be reported.

The most significant change in the instructions on salaries published in August was the abandonment of hour-based teachers' employment contracts and the change to use the employment contract for hour-based employees for these teachers.

The performance appraisals of spring 2021 were carried out successfully, also remotely, and at the university level, 79% of the appraisals were completed.

The Board of Directors approved the performance bonus programme at the end of 2018. The programme was introduced on 1 January 2019. The new performance bonus programme includes the rector and vice rectors, the deans and the deans of education, heads of research units and separate units, as well as heads of service activities. The performance bonus programme complements the existing pay system. The performance bonus programme is primarily a tool of the University of Oulu Board used for outlining the activities of the university and faculty management. The purpose of the performance bonus programme is to help strengthen the commitment of persons in key roles to the university, achieve the university's strategic objectives and reward good performance in this regard.

In 2021, bonuses awarded for the achievement of goals set for 2020 under the performance bonus programme were paid to a total of 83 persons. The total sum of the performance bonuses paid was EUR 145,117.28 excluding additional salary-related costs.

The representation of women in academic management at the University of Oulu is at a reasonable level. Women account for 25% of the rectors and vice rectors, 56% of the deans and vice deans, and 11% of the other managers, excluding administration.

**Table 8. Academic management at the University of Oulu by gender for 2018–2021**

Manager	2018 F	2018 M	2018 Total	2018 F%	2019 F	2019 M	2019 Total	2019 F%	2020 F	2020 M	2020 Total	2020 F%	2021 F	2021 M	2021 Total	2021 F%
Rector + vice rectors	2	2	4	50%	2	2	4	50%	2	2	4	50%	1	3	4	25%
Deans + vice deans	8	8	16	50%	8	8	16	50%	9	7	16	56%	9	7	16	56%
Managers + assistant managers, excluding administration	1	8	9	11%	0	9	9	0%	1	8	9	11%	1	8	9	11%

The development of well-being at work at the university level and in the different units has continued in 2021 on the basis of a work ability management action plan that is updated each year. During autumn 2021, an updated well-being survey was carried out among the entire staff, and a joint model for processing the survey results was planned. Efforts to determine which development actions are required based on the results were started in the autumn.

Starting in August 2021, a multi-location working model was introduced. The aim of the model is to increase the efficiency and flexibility of work and to facilitate the reconciliation of work and private life. Multi-location work enables working in different locations based on the requirements of the work, and the employee and supervisor agree on how much work is done in the actual workplace and how much is done elsewhere.

**Table 9. Average results for the subsections of the well-being survey for the reference years 2013, 2015, 2017 and 2019**

Well-being survey	2013	2015	2017	2019
Social interaction in our unit	3.32	3.56	3.75	3.85
Content of own work and competence	3.66	3.76	3.84	3.97
Working conditions	3.34	3.43	3.57	3.68
Working with immediate supervisors	3.65	3.83	3.98	4.09
Strategic leadership, university	2.60	2.76	-	3.09
Strategic leadership, faculty	3.33	3.51	-	-
<b>MEAN:</b>	<b>3.32</b>	<b>3.48</b>	<b>3.79</b>	<b>3.74</b>

**Table 10. Well-being at work survey: Indexes 2021**

Index	Well-being at work survey 2021	University norm
*Job resources index	4.35	4.31
*Competence, learning and development index	4.17	4.13
**Direct supervisor satisfaction index	4.10	4.01
**Job satisfaction index	4.00	3.90
**Workplace culture index	3.91	3.82
**Work ability index	3.88	3.78
**Job demands index	3.62	3.55
**Overall index	3.89	3.81

\*=Statistically significant difference (95 %)

\*\*=Highly significant difference (99 %)

Scale 1–5, 5=best

**Table 11. Summary of the results of the Well-being at work survey: average rates for each section**

Survey	Well-being at work survey 2021	University norm
**Task resources	4.16	4.10
**Interpersonal resources: line manager	4.10	4.01
**Interpersonal resources: unit	3.95	3.85
**Work ability indicators	3.87	3.76
**Job demands	3.57	3.49
Organizational resources	3.49	3.47

\*=Statistically significant difference (95 %)

\*\*=Highly significant difference (99 %)

Scale 1–5, 5=best

To support the coping of employees, the Academy of Brain FORWARD online training package was made available to all personnel in the Moodle learning environment. The online training package provides support for mental coping and success in remote work. The BREAK PRO break exercise application was also introduced in 2021. The application reminds employees to take breaks and guides them in getting enough movement during the working day. Employees' coping, recovery and well-being were also supported in the form of physical activity, culture and well-being benefit introduced on 1 September 2021. The benefit is available to all employees six months after the start of the employment relationship.

Work ability management training was organised in cooperation with Varma, the earnings-related pension company, for supervisors at the Academic Affairs. This training package is a pilot used to find out whether similar training should also be offered to other units more extensively. The training also involved introducing and piloting a work ability tool developed by Varma, which can be introduced more extensively in the organisation. The pilot will end in early 2022.

In the final part of the year, the Novemberfest recreational event was organised for the staff together with the Oulu University of Applied Sciences. The event promoted a sense of community between and within organisations and there are plans to organise it again the next year.

The aim of cooperation with occupational health care was to increase the early identification of work ability risks and active cooperation with occupational health care, supervisors and earnings-related pension companies. Mehiläinen Ltd continued as the university's partner in the provision of occupational health care and Terveystalo Ltd continued as a provider of occupational health care services at the Sodankylä Geophysical Observatory. In 2021, special emphasis was placed on preventive occupational health care, including the Mielen sparrit mental health service provided by Mehiläinen and the utilisation of brief therapies as part of occupational health care services. The services were first piloted during a one-month trial period, which received positive feedback. Preventive activities have also been promoted by lowering the threshold for participating in digital training provided by occupational health care. In addition, the service agreement was extended to include all part-time employees with a monthly salary in occupational health care services as of summer 2021. Flu and COVID-19 vaccines were offered as an additional service to the personnel. Coronavirus tests required by work tasks could also be obtained from occupational health care. In autumn 2021, Kela rehabilitation aimed at university teachers and supervisors was also implemented in cooperation with the occupational health care provider.

As part of the objectives of occupational health cooperation, the University of Oulu continued the TYKYTUO project carried out in occupational health care in 2021. The project involves broad development and increased efficiency of cooperation between primary health care, special health care and occupational health care and also between the workplace and



occupational health care. The University of Oulu's part in this was focused on the sub-project of the Finnish Institute of Occupational Health, which seeks to develop cooperation between the workplace and occupational health care. The development task selected for the project was a psychosocial workload management model in which a special focus is on the risk assessment process and the related development of workplace surveys. The development project will run until 31 August 2022.

The priorities for occupational safety operations in 2021 were 1) implementation of the chemical system and development of general laboratory safety, 2) management of occupational accidents and near-miss incidents, and 3) increasing awareness of occupational safety. The most important occupational safety measure in 2021 was the implementation of the Ecobio Manager chemical and risk assessment system as part of workplace surveys. In 2021, a total of 50 accidents involving personnel took place, which is 19 more than in the previous year.

**Table 12. University of Oulu well-being indicators for 2018–2021**

Indicator	2018	2019	2020	2021
<b>Sick leave days (calendar days), of which</b>	<b>13,203 calendar days</b>	<b>15,497 calendar days</b>	<b>17,732 calendar days</b>	<b>19,044 calendar days</b>
- Self-announcements	-	-	991 (from June 1)	1,767
- Accidents at work	329	360	370	252
Sick leave days (calendar days / person (average))	4.5	5.0	5.4	5.4
<b>Sick leave (%)</b>	<b>1.5%</b>	<b>1.7%</b>	<b>1.7%</b>	<b>1.6%</b>
Sick leave costs (days of absence in working days * EK €350)	3.8 million	4.0 million	4.6 million	4.9 million
Health (%)	68%	66%	60%	73.6%
Accident frequency	9.3	7.3	3.1	9.0
Accidents at the workplace	39	36	14	40
Accidents on work trips	41	30	17	10
<b>Accidents total</b>	<b>80</b>	<b>66</b>	<b>31</b>	<b>50</b>
Pension contribution category	Varma 4	Varma 7	Varma 7	Varma 1
Occupational health care costs € (preliminary, not including EA supplies and training)	1,286,040 €	1,099,146 €	716,989 €	982,557 €
<b>All applied compensations per compensation category</b>	<b>1,294,250 €</b>	<b>1,111,376 €</b>	<b>721,763 €</b>	<b>982,557 €+EA</b>
Category 1	38.6%	48.2%	66.2%	68.7%
Category 2	61.4%	51.8%	33.8%	31.3%
All applied compensations € / person-year	496 €/p-y	405 €/p-y	242 €/p-y	314 €/p-y
Work ability negotiations	58	54	71	101

(Source: SAP HR for 2018–2019, Mepco for 2020–2021: sick leave days, sick leave % and health %, OP reports: number of accidents, Varma: pension payment category, Kela application: occupational health care costs, cost ratio and costs €/person-year, YritysMehiläinen and TerveystaloExtranet: work ability negotiations)

**Table 13. Various pensions started at the University of Oulu, 2017–2021**

YEAR	2017	2017	2018	2018	2019	2019	2020	2020	2021	2021
Type of pension	Nr.	Avg. age	Nr.	Avg. age	Nr.	Avg. age	Nr.	Avg. age	Nr.	Avg. age
Old-age pension	56	65	49	64	52	65	31	65.3	48	65.3
Part-time pension	10						-	-	-	-
Other pension									1	61.8
Partial early old-age pension							4	61.9	6	62.5
Disability pension	4		1		2		5	58.6	-	-
Partial disability pension	1		3		7		9	58.9	3	60
Rehabilitation subsidy							7	54.2	8	50.8
Partial rehabilitation subsidy							8	53	4	58.6

(Source: SAP HR 2017–2019, Mepco HRM 2020 from)

2021 marked the final year of the Equality and Non-Discrimination Committee's term, which started its operations on 1 January 2019. Equality and non-discrimination work continued as the implementation of the measures of the equality and non-discrimination plan adopted on 20 November 2019 and introduction of the measures at the units.

In addition to the preparation of a new equality and non-discrimination plan for the period 2022–2024, the committee's meetings were concerned with issues such as projects promoting the language policy, equality and non-discrimination, such as RESET (Redesigning Equality and Scientific Excellence Together) and the EUni4All accessibility project. Due to the coronavirus pandemic, the Equality Day was celebrated remotely in March and the 'Bring your Child to Work' event did not take place.

The pay survey required under the Act on Equality between Women and Men was carried out in the same manner as in previous years. The survey also included producing a breakdown of the placement of women and men in different tasks and a report on the job classification, salaries and the gender wage gap. According to the survey, the differences in pay between men and women are minor and mainly based on differences in the level of difficulty and performance of tasks.

The committee awarded the 2021 Equality and Non-Discrimination Prize to the marketing team for prospective applicants at the Communication, Marketing and Societal Relationships Unit which has made long-term efforts to promote tolerance and equality in developing university-level marketing targeted to international and Finnish applicants in all fields of study.

### Competence Development

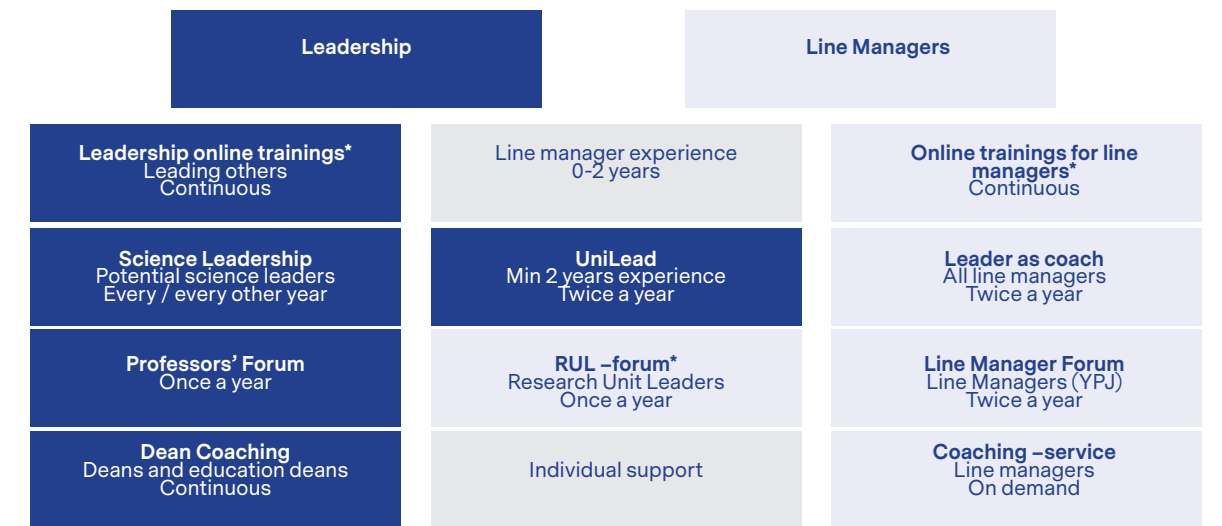
The coronavirus pandemic continued to affect the number and type of various training events organised in 2021. There continued to be little travel to external training, conferences and seminars due to the prevailing travel restrictions. Although the prevailing situation caused uncertainty about whether face-to-face training sessions and events could be organised, a considerably higher number of them could take place compared to the previous year. On the other hand, the previous year had taught us that many training sessions and events could also be successfully organised online or using remote connections. As a result, these methods of implementation were also much more popular than before the pandemic. The number of training days qualifying employees to a three-day training allowance remained similar as in the previous year. The impact of the pandemic was particularly apparent in the low number of educational, conference and seminar trips outside the university. Centrally offered personnel training and other training events qualifying for the three-day training allowance (e.g. personnel's further studies, TESO days at the normal school, conference and seminar trips) amounted to 3,340 training days, 217 days more than in 2020. A total of 974 people had received training for at least three days during the year (in 2020, the total was 896). A total of 101

people had received two days of training (107 in 2020) and 216 had received one day (221 in 2020). During the year, approximately 136,000 hours (91% of all reported hours) of personnel training hours were allocated to teaching and research personnel and around 11,400 hours (8% of all reported hours) to other personnel.

A description of the overall support for management and supervisory work at the University of Oulu was prepared in 2020 (Figure 1). A goal for 2021 was to continue establishing the different parts of this support in the day-to-day work of supervisors. The UniLead programme was implemented for the fifth time in 2021, and 17 supervisors participated in the programme. All in all, 93 supervisors from the University of Oulu have participated in the programme since its launch in 2018. The Coaching Supervisor training was carried out once in spring 2021 with a group in Finnish and in English with 19 participants in total. The UniLead and Coaching Supervisor training will continue in 2022. The Science Leadership programme aimed at supporting the career development of advanced post-doc researchers was implemented for the third time in 2021. The group (Class of '21) had 20 participants. The programme will be carried out again in spring 2022. In addition to the programmes, managers and supervisors continued to have access to an individual coaching process in 2021 through dean coaching and supervisor coaching service. Forums for supervisors focusing on current topics and themes related to supervisory work were organised at each faculty during the year. Due to the restrictions caused by the pandemic, the professors' forum could not be held in 2021.

Over the year, the share of online training and coaching increased among all training available to personnel. All personnel have had access to Wistec Online, which includes various independent ICT training programmes and the entire training range of the Academy of Brain, which includes training related to facilitation, interpersonal communications, recovery and management. A new personnel training system "Osku" was introduced for all personnel at the beginning of 2021. All activities related to personnel training (including entering training in the training calendar, registration for training and reporting the training hours) were transferred to the Osku system at this point. The use of interfaces also enabled including online training and coaching available in Moodle as well as remote Wistec training in the Osku training calendar. This has made the available training better visible to the personnel. Other staff training was also offered as continuously available online training. The themes of the internal personnel training offered centrally in 2021 strongly revolved around teaching and the organisation of teaching as well as tools, such as Moodle, Peppi and Yuja, as well as accessibility and content production. Regarding the university pedagogy studies (YPE), 11 people completed 25 credits worth of studies in 2021 and 2 completed 35 credits worth. The personnel were also offered a wide range of training programmes that aimed to support the work and the management of the related processes, such as training on performance appraisals, financial instruments, projects and language training (Finnish and English).

Figure 1. Support for UniOulu leaders and line managers



\* To be defined



## Risk Management

Risk management is part of the University of Oulu's management system and supports the achievement of the university's strategic and operational objectives. In its activities, the university takes into account and prepares for key risks threatening the continuity of operations, resourcing, knowledge capital, property and infrastructure as well as the personnel and their safety through appropriate control measures. To develop the activities, a development project aimed at harmonising the risk management practices and strengthening the role of comprehensive risk management at the university was launched in autumn 2021 with an external partner.

The university's strategic risks relate to the university not being successful in the competition between universities and globally with the strategic choices made. Risks also relate to strategic objectives, the operating environment, and legislation. The reputation of the University of Oulu, the profile selected in the strategy and the operating culture work together to determine the attractiveness of the university.

The university's key operational risks concern the results measured by the Ministry of Education and Culture's funding model, such as success in accessing competitive research funding and in publication points. Success in the implementation of national objectives concerning profiling and structural development is also an additional prerequisite for the favourable development of central government basic funding within the reformed funding model. The uncertainty brought by the long-term effects of the coronavirus pandemic increases uncertainty in the economic operating environment related to both basic funding and competitive research funding.

Financial risks apply to fund-raising, investment activities, investments, processing of revenue and expenditure, financial transactions, as well as material and immaterial property. Financial risks can manifest as liquidity risks, interest risks, credit risks or currency risks.

Investment risks and financial risks relate to the management of the university's investment assets and the related counterparty risks. The University Board has approved the university's investment policy, and financial management agreements made oblige the selected asset managers to comply with this policy. Counterparty risk is reduced by selecting three different asset managers to manage the investments.

A strongly digitalised operating environment increases the significance of data risk; if realised, the data risks may cause damage to the university's operations at different levels.

In relation to human risks, the prolonged pandemic poses a challenge to the coping and well-being of staff and students.

## Board of Directors and Auditors

During the year under review, the Board of Directors of the University of Oulu was chaired by Sakari Kallo, and the board members were Liisa Jaakonsaari (Vice-Chairman), Juhani Damski, Anni Huhtala, Anna Rotkirch, Kalervo Väänänen, Marko Huttula, Petri Lehenkari, Kimmo Kontio, Jukka Hiltunen, Joni Ollikainen and Timo Veijola.

The auditors were the Authorised Public Accountants BDO Audiator Oy, with Tiina Lind KHT, JHT and Ulla-Maija Tuomela KHT acting as principal auditors.

## Assessment of Future Developments

The basic funding available through the new funding model that entered into force in 2021 and promotes the reformed higher education policy objectives of the Ministry of Education and Culture will remain broadly unchanged in relation to previous years. In the strategic funding section of the funding model, we succeeded well in the negotiations for the 2021–2024 agreement period, but the implementation of areas such as the provision of additional study places is a challenge for the university and its staff. The university's internationalisation programme has been launched swiftly.

During the new agreement period, the Ministry of Education and Culture's steering practices emphasise the implementation of the Sustainable Growth Programme for Finland and the RDI roadmap. In order to promote the growth and well-being of wider society, for instance, the adequacy of skilled labour should be ensured through measures such as attracting foreign students and helping them to integrate permanently into the Finnish labour market.

Information on the efficacy of COVID-19 vaccines and the development of morbidity rates suggests that in 2022, a transition from pandemic period to the new normal period can be carried out making use of the capabilities obtained through the digital leap that has been accomplished and the new working methods that have been developed. The digitalisation and multi-localisation of education and the increasing importance of continuous learning are changing the field of university education. Digitalisation and increased remote work appear to be bringing permanent changes to space requirements, and these will be taken into account in the planning of the city centre campus.

The EUR 9.6 million balance sheet use budgeted by the University of Oulu for 2022 enables the immediate strengthening of the university's operations. New recruitments will focus on researchers at advanced stages of their careers who are positioned in the strategically important areas selected by the faculties. Through such recruitments, we will attain the highest level nationally in more and more research areas, while also achieving an international high level of quality. New recruitments also increase education resources and promote education quality. Strong resolve, high scientific quality and international activity promote our recognition as a university of science.

The university will continue to develop its operations in specific, strategic, inter-sectoral development programmes coordinated by the Strategy and Science Policy Unit. Special attention will be paid to internal communications for strategic programmes, and staff will be involved in the programmes so that the top expertise of the entire organisation can be put to use. The programmes will be discussed regularly at board meetings, and target levels and indicators have been determined for the programmes in 2021. The strategic programmes are (1) high-level, impactful research; (2) high-quality education for various life situations; (3) an entrepreneurial source of research-based innovations; (4) a skilled, renewing, diverse and international community; (5) high-quality online education and user-driven digital services; and (6) an inspiring working and learning environment on resource-efficient, green campuses. The updating of the contents and objectives of the strategic programmes (4)–(6) in the post-pandemic period will be critically examined and updated if necessary.

## Proposal of the University Board Concerning the Result of the Financial Period

The Board proposes that the profit for the financial year (EUR 32,158,990.12) be transferred to the balance sheet profit account.

At its meeting on 12 February 2013, the Board of Directors decided to set up an unrestricted fund to which the proceeds of unallocated donations will be transferred after the final accounts for each year have been confirmed. For 2021, there were no such unallocated donations to be transferred. The transfer of funds to the unrestricted fund takes the form of an intra-balance sheet transfer after the approval of the financial statements. The amount transferred to the restricted fund in 2021 was EUR 2,176,404.71.

## INCOME STATEMENT

Consolidated Income Statement	Group 1/1-31/12 2021	Group 1/1-31/12 2020	University 1/1-31/12 2021	University 1/1-31/12 2020
<b>Revenue</b>	<b>314,174,994.97</b>	<b>298,848,707.92</b>	<b>263,652,128.39</b>	<b>250,036,944.88</b>
Government funding	208,147,724.35	196,773,000.00	159,581,424.35	150,425,000.00
Income from grants	89,325,527.26	78,906,839.69	81,306,773.04	78,676,404.77
Income from business	10,227,657.61	9,345,844.45	10,953,027.07	8,392,995.79
Other income	6,474,085.75	13,823,023.78	11,810,903.93	12,542,544.32
<b>Expenses</b>	<b>-307,105,660.02</b>	<b>-299,223,114.56</b>	<b>-259,056,131.26</b>	<b>-249,927,227.19</b>
Personnel expenses	-212,135,261.33	-203,497,311.19	-179,269,545.99	-171,212,026.31
Depreciation	-7,651,717.48	-6,829,303.39	-6,372,245.76	-5,725,853.47
Group reserve entry	0.00	17,874.29		
Other expenses	-87,318,681.21	-88,914,374.27	-73,414,339.51	-72,989,347.41
<b>Operating profit (loss)</b>	<b>7,069,334.95</b>	<b>-374,406.64</b>	<b>4,595,997.13</b>	<b>109,717.69</b>
<b>Fundraising</b>				
Income from fundraising and donations	2,306,131.71	329,769.50	2,182,598.89	209,279.00
Other fundraising expenses	-11,879.35	-17,340.49	-6,194.18	-10,893.68
<b>Surplus / deficit</b>	<b>2,294,252.36</b>	<b>312,429.01</b>	<b>2,176,404.71</b>	<b>198,385.32</b>
<b>Investment and Financial Activities</b>				
Dividend income	2,091,360.61	1,968,022.50	2,091,360.61	1,968,022.50
Interest income	-17,518.33	-33,696.78	-17,537.39	-33,315.52
Rental income	204,382.16	200,005.01	0.00	0.00
Profit on sales of investments	15,008,486.39	6,462,662.70	13,529,058.37	6,200,271.76
Other income	856,453.13	507,752.88	810,292.09	462,760.48
Maintenance charges	0.00	-50,094.11	0.00	0.00
Financial charges	-75,774.60	-81,583.37	0.00	0.00
Loss on sales of investments	-468,124.44	-1,425,773.51	-436,291.73	-1,413,357.10
Other investment expenses	-209,564.03	-223,646.39	-180,865.77	-162,166.52
Change in fair value	11,725,887.47	3,798,079.84	11,231,526.10	3,619,860.14
<b>Surplus / deficit</b>	<b>29,115,588.36</b>	<b>11,121,728.77</b>	<b>27,027,542.28</b>	<b>10,642,075.74</b>
<b>Profit (loss) before appropriations and taxes</b>	<b>38,479,175.67</b>	<b>11,059,751.14</b>	<b>33,799,944.12</b>	<b>10,950,178.75</b>
<b>Appropriations</b>				
Change tied-up funds	-957,714.11	780,281.68	-1,091,577.11	683,423.15
Change equity funds	-1,741,945.06	-521,319.09	-549,352.82	-265,434.94
<b>Income taxes</b>	<b>-45,619.30</b>	<b>-11,921.54</b>	<b>-24.07</b>	<b>0.00</b>
<b>Minority holdings</b>	<b>-1,784,702.69</b>	<b>17,520.35</b>		
<b>NET PROFIT (LOSS)</b>	<b>33,949,194.51</b>	<b>11,324,312.54</b>	<b>32,158,990.12</b>	<b>11,368,166.96</b>



## BALANCE SHEET

Assets	Group 31/12/2021	Group 31/12/2020	University 31/12/2021	University 31/12/2020
<b>FIXED ASSETS</b>				
<b>Intangible assets</b>				
Intellectual property rights	563,220.94	494,825.73	563,220.94	469,572.79
Other intangible assets	3,689,803.53	3,384,633.10	3,494,643.51	3,058,788.58
Advance payments	1,154,248.68	952,810.05	1,154,248.68	952,810.05
<b>Total</b>	<b>5,407,273.15</b>	<b>4,832,268.88</b>	<b>5,212,113.13</b>	<b>4,481,171.42</b>
<b>Tangible assets</b>				
Land and water areas	300,000.00	300,000.00	0.00	0.00
Buildings and structures	36,552.05	45,004.68	36,552.05	45,004.68
Machinery and equipment	14,044,420.43	14,744,702.85	11,003,542.58	12,414,141.07
Other tangible assets	255,688.25	256,790.45	29,966.74	31,068.94
Advance payments and purchases in progress	1,956,238.50	4,028,724.12	1,425,359.13	2,056,401.27
<b>Total</b>	<b>16,592,899.23</b>	<b>19,375,222.10</b>	<b>12,495,420.50</b>	<b>14,546,615.96</b>
<b>Investments</b>				
Holdings in group companies	0.00	0.00	5,289,810.00	5,289,810.00
Receivables from group companies	0.00	0.00	30,000.00	30,000.00
Other shares and holdings	56,509,247.82	56,509,247.82	55,074,560.19	55,074,560.19
Other long-term investments	236,643,115.53	161,965,163.11	226,222,247.12	161,965,163.11
<b>Total</b>	<b>293,152,363.35</b>	<b>218,474,410.93</b>	<b>286,616,617.31</b>	<b>222,359,533.30</b>
<b>Funds in non-autonomous reserves</b>	<b>17,145,422.89</b>	<b>15,466,730.49</b>	<b>6,632,547.38</b>	<b>6,078,741.58</b>
<b>Total fixed assets</b>	<b>332,297,958.62</b>	<b>258,148,632.40</b>	<b>310,956,698.32</b>	<b>247,466,062.26</b>
<b>CURRENT ASSETS</b>				
<b>Receivables</b>				
<b>Long-term receivables</b>				
Other receivables	0.00	271,021.16	0.00	0.00
Accrued income	2,436.34	1,932.96	0.00	0.00
<b>Total</b>	<b>2,436.34</b>	<b>272,954.12</b>	<b>0.00</b>	<b>0.00</b>
<b>Short-term receivables</b>				
Trade receivables	15,415,657.19	11,658,042.32	15,539,633.68	11,636,834.18
Other receivables	362,275.44	924,713.28	90,294.82	91,741.094
Accrued income	18,808,869.41	20,615,696.12	13,678,069.56	15,874,417.36
<b>Total</b>	<b>34,586,802.04</b>	<b>33,198,451.72</b>	<b>29,307,998.06</b>	<b>28,428,662.48</b>
<b>Cash and bank receivables</b>	<b>18,634,080.08</b>	<b>58,488,411.87</b>	<b>6,033,859.27</b>	<b>38,818,757.65</b>
<b>Total current assets</b>	<b>53,223,318.46</b>	<b>91,959,817.71</b>	<b>35,341,857.33</b>	<b>67,247,420.13</b>
<b>TOTAL ASSETS</b>	<b>385,521,277.08</b>	<b>350,108,450.11</b>	<b>346,298,555.65</b>	<b>314,713,482.39</b>

Equity and Liabilities	Group 31/12/2021	Group 31/12/2020	University 31/12/2021	University 31/12/2020
<b>EQUITY</b>				
Basic capital	107,368,990.83	107,368,990.83	107,368,990.83	107,368,990.83
Basic capital of Scholarship Foundation	269.10	269.10		
Non-autonomous reserves	6,628,787.41	6,079,434.59	6,628,787.41	6,079,434.59
Other equity of Scholarship Foundation	12,039,651.93	10,860,042.85		
Other statutory reserves	10,085,217.81	8,993,640.70	10,085,217.81	8,993,640.70
Unrestricted reserves	3,331,703.86	3,712,339.76	2,223,561.04	2,240,329.34
Other equity				
Operating capital	35,268,582.32	35,268,582.32	35,268,582.32	35,268,582.32
Translation difference	3,639.83	804.07	0.00	0.00
Retained earnings (loss)	94,475,695.05	83,214,810.33	94,732,297.72	83,398,362.46
Profit (loss) for the financial period	33,949,194.51	11,324,312.54	32,158,990.12	11,368,166.96
<b>TOTAL EQUITY</b>	<b>303,151,732.65</b>	<b>266,823,227.09</b>	<b>288,466,427.25</b>	<b>254,717,507.20</b>
<b>MINORITY HOLDINGS</b>	<b>10,424,251.54</b>	<b>8,639,548.85</b>		
<b>STATUTORY PROVISIONS</b>				
Pension provisions	31,722.57	66,447.75	0.00	0.00
Other statutory provisions	316,851.50	468,552.67	316,851.50	452,323.30
<b>Total</b>	<b>348,574.07</b>	<b>535,000.42</b>	<b>316,851.50</b>	<b>452,323.30</b>
<b>GROUP RESERVE</b>	<b>3,524,275.20</b>	<b>3,524,275.20</b>		
<b>LIABILITIES</b>				
<b>Debts in non-autonomous reserves</b>	<b>5,000.00</b>	<b>0.00</b>	<b>5,000.00</b>	<b>0.00</b>
<b>Long-term</b>				
Advances received	3,583,441.00	5,332,339.00	2,713,441.00	3,772,339.00
Other creditors	967,425.12	462,774.56	608,675.02	462,774.56
<b>Total</b>	<b>4,550,866.12</b>	<b>5,795,113.56</b>	<b>3,322,116.02</b>	<b>4,235,113.56</b>
<b>Short-term</b>				
Advances received	28,465,295.81	31,962,529.38	25,018,625.00	27,130,746.26
Trade payables	6,152,097.33	5,064,841.22	4,408,430.24	3,945,985.52
Other creditors	7,880,640.53	8,612,909.44	6,350,374.99	7,471,106.23
Accruals	21,018,543.83	19,151,004.95	18,410,730.65	16,760,700.32
<b>Total</b>	<b>63,516,577.50</b>	<b>64,791,284.99</b>	<b>54,188,160.88</b>	<b>55,308,538.33</b>
<b>TOTAL LIABILITIES</b>	<b>68,072,443.62</b>	<b>70,586,398.55</b>	<b>57,515,276.90</b>	<b>59,543,651.89</b>
<b>TOTAL EQUITY AND LIABILITIES</b>	<b>385,521,277.08</b>	<b>350,108,450.11</b>	<b>346,298,555.65</b>	<b>314,713,482.39</b>

## CASH FLOW STATEMENT

Cash flow from operating activities	1.1.-31.12.2021	1.1.-31.12.2020
Profit (loss) before appropriations and taxes	33,799,944	10,950,179
Depreciation and impairment	6,372,246	5,677,533
Other non-payment income and expenses	-918,634	2,767,329
Change in fair value	-11,231,526	-3,619,860
Financial income and expenses	-15,796,016	-7,022,216
Income and expenses in non-autonomous reserves	1,640,930	-417,988
Change in working capital		
- Change in short-term non-interest-bearing receivables	-879,336	3,797,855
- Change in short-term non-interest-bearing liabilities	-2,945,436	5,940,506
Paid direct taxes	-24	0
<b>Cash flow from operating activities (A)</b>	<b>10,042,147</b>	<b>18,073,337</b>

Cash flow from investment activities		
Investments in tangible and intangible assets (-)	-7,221,470	-8,637,740
Received investment grants	2,169,478	3,848,737
Investments	-54,024,623	-10,556,814
Other net income from investments		
- Dividend income from investments	2,091,361	1,968,023
- Net income from investments	13,722,193	5,087,509
Loans granted (-)	0	-30,000
<b>Cash flow from investment activities (B)</b>	<b>-43,263,061</b>	<b>-8,320,286</b>

Cash flow from financing activities		
Increase in equity	0	2,913,000
Interest and financial income received	-17,537	-33,316
Cash flow from financing for non-autonomous reserves	427,730	533,640
<b>Cash flow from financing activities (C)</b>	<b>410,193</b>	<b>3,413,324</b>

Increase (+) / decrease (-) in cash and cash equivalents (A+B+C)	-32,810,721	13,166,376
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Cash and cash equivalents at the beginning of the financial period	38,818,758	25,505,868
Cash and cash equivalents at the end of the financial period	6,033,859	38,818,758
<b>Change in cash and cash equivalents</b>	<b>-32,784,898</b>	<b>13,312,890</b>

Cash and cash equivalents in non-autonomous reserves at beginning of period	26,786	173,301
Cash and cash equivalents in non-autonomous reserves at end of period	964	26,786
<b>Change in cash and cash equivalents of non-autonomous reserves</b>	<b>-25,822</b>	<b>-146,515</b>

<b>Total change in cash and cash equivalents</b>	<b>-32,810,721</b>	<b>13,166,375</b>
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## CONSOLIDATED CASH FLOW STATEMENT

Cash flow from operating activities	1.1.-31.12.2021	1.1.-31.12.2020
Profit (loss) before appropriations and taxes	38,479,176	11,059,751
Depreciation and impairment	7,651,717	6,829,303
Adjustment: Group reserve entry	0	-17,874
Other non-payment income and expenses	-943,299	2,769,882
Change in fair value	-11,725,887	-3,798,080
Financial income and expenses	-17,389,701	-7,323,649
Income and expenses in non-autonomous reserves	1,640,930	-417,988
Change in working capital		
- Change in short-term non-interest-bearing receivables	-1,618,876	3,838,633
- Change in short-term non-interest-bearing liabilities	-3,453,962	8,601,142
Interest and other financial expenses paid	-10,542	-48,874
Interest and other financial income received	1,063	1,959
Paid direct taxes	-18,719	-11,922
<b>Cash flow from operating activities (A)</b>	<b>12,611,899</b>	<b>21,482,283</b>

Cash flow from investment activities		
Investments in tangible and intangible assets (-)	-9,330,835	-13,441,704
Revenue from the sale of intangible and tangible assets	48,956	133,308
Received investment grants	4,038,932	4,134,975
Investments	-65,063,033	-10,637,276
Other net income from investments		
- Dividend income from investments	2,091,361	1,968,023
- Net income from investments	15,325,338	5,418,628
<b>Cash flow from investment activities (B)</b>	<b>-52,889,282</b>	<b>-12,424,047</b>

Cash flow from financing activities		
Increase in equity	0	2,915,950
Interest and financial income received	-17,518	-33,697
Interest and fees paid on financial expenses	0	0
Cash flow from financing for non-autonomous reserves	414,747	538,786
<b>Cash flow from financing activities (C)</b>	<b>397,229</b>	<b>3,421,039</b>

Increase (+) / decrease (-) in cash and cash equivalents (A+B+C)	-39,880,154	12,479,275
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Cash and cash equivalents at the beginning of the financial period	58,488,412	45,862,622
Cash and cash equivalents at the end of the financial period	18,634,080	58,488,412
<b>Change in cash and cash equivalents</b>	<b>-39,854,332</b>	<b>12,625,790</b>

Cash and cash equivalents in non-autonomous reserves at beginning of period	26,786	173,301
Cash and cash equivalents in non-autonomous reserves at end of period	964	26,786
<b>Change in cash and cash equivalents of non-autonomous reserves</b>	<b>-25,822</b>	<b>-146,515</b>

<b>Total change in cash and cash equivalents</b>	<b>-39,880,154</b>	<b>12,479,275</b>
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## Realisation of quantitative targets 2018–2021

Degrees	Avarage 2018-2021	2021	Target 2021-2024
Doctoral degrees	165	161	182
Master's degrees	1,443	1,446	1,757
Bachelor's degrees	1,139	1,049	1,600

## Supplementary research funding (expenditure based), EUR million

Research funding	2018	2019	2020	2021
Total supplementary research funding	64.3	67.8	67.2	71.0
% of total funding	28.7	28.2	26.9	27.4

## National competitive research funding, EUR million

National competitive research funding	2018	2019	2020	2021
Academy of Finland	23.9	26.8	25.5	29.4
Business Finland	11.3	9.2	7.6	7.3

## International competitive research funding, EUR million

International competitive research funding	2018	2019	2020	2021
EU Framework Programme funding and other qualitative competitive EU funding	6.3	7.2	8.2	9.5
Other foreign funding	2.3	2.6	1.9	2.3

## Breakdown of total costs, EUR million

Breakdown of total costs	2018	2019	2020	2021
Personnel expenses	148.2	157.3	171.2	179.3
Depreciation	4.9	5.4	5.7	6.4
Materials, supplies, goods	9.8	9.8	9.7	10.3
Purchases of services	15.8	16.7	15.8	16.2
Rents for premises and other rents	27.7	28.2	29.1	29.4
Travel expenses	6.8	7.3	1.9	1.3
Other expenses	12.9	15.5	16.5	16.2
<b>TOTAL</b>	<b>226.1</b>	<b>240.2</b>	<b>249.9</b>	<b>259.1</b>

## Breakdown of income, EUR million

Breakdown of income	2018	2019	2020	2021
Basic funding	143.3	140.9	150.4	159.6
Compensation for teacher training schools	6.4	6.6	6.8	7.0
Supplementary funding	76.9	85.5	92.8	97.1
<b>TOTAL</b>	<b>226.6</b>	<b>233.0</b>	<b>250.0</b>	<b>263.7</b>



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