

Annual report 2022



UNIVERSITY
OF OULU



Notable events during the financial period

The notable events during the financial period are presented at the end of the sections on education, research and innovation activities.



Annual Report of the University Board for 2022

Education

In 2021, a programme package for education that will continue until 2024 was launched in accordance with the new strategy period. In order to achieve the objectives, the university has an action plan for developing education in the period 2021–2024. The programme is funded through strategic education funding and supplementary 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). The preparation of a strategic programme for education (Noste) was launched in 2022 with the aim of defining guidelines for developing education at the University of Oulu and increasing the competitiveness of education during the new agreement period.

For the strategic objectives set for 2022, the following results can be reported:

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

During 2022, a set of indicators was used to monitor attraction, completion rates and quality in each degree programme. This process also involved analysing the degree programme's portfolio, and the resulting information will be utilised in monitoring and reforming the portfolio structure.

In 2022, the Degree Programme in Industrial Engineering and Management at the University of Oulu was awarded ASIIN and EUR-ACE accreditations and quality labels demonstrating the quality of education. They apply to both the Bachelor's degree education and the Master's degree education in Finnish and in English in Industrial Engineering and Management. Industrial Engineering and Management is the first degree programme at the University of Oulu to receive these accreditations. EUR-ACE accreditation for the Degree Programme in Electronics & Wireless Communications Technology was postponed until spring 2023. EUR-ACE accreditation of the international master's degree programme in Electronics & Communication Engineering is also in progress. In 2022, Oulu Business School prepared EQUIS accreditation so that the application can be submitted by the end of 2023.

During 2022, the sustainable development theme was highlighted in the courses and programmes offered to our students and outside the university. The sustainable development personnel training (1 cr) will be provided by TOPIK Extension School, and is expected to be available from autumn 2023 onwards. The minor subject package for sustainable development has been updated for the academic year 2023–24. Preparations to join the Network of sustainability studies (<https://www.kestavvysopinnot.fi>) were completed in 2022, and this will be implemented in spring 2023. The aim of the network is to increase digital teaching cooperation and cross-institutional study agreements with other Finnish universities.

An application for educational responsibility in medical technology was submitted to the Ministry of Education and Culture in September 2022, and the programme will be implemented as cooperation between the Faculty of Medicine and the Faculty of Information Technology and Electrical Engineering.

The Faculty of Education and Psychology launched a degree programme in learning sciences in 2022.

The Faculty of Humanities received significant funding to expand education in the Sámi language and open up education in the Sámi language for non-Sámi speakers.

In 2022, preparations for a new product development degree programme were made with the Industrial Engineering and Management unit of the Faculty of Technology. To support this, a Professor of Practice position was established with a donation from the Technology Industries of Finland Centennial Foundation. The challenges presented by the Japanese construction company Shimizu were linked to the first course pilots as the foundation for exercises. Shimizu is funding the programme.

With regard to continuous learning, the University of Oulu has reorganised its services. All non-degree education offered by the university (open university, separate modules, continuing education and tailored training) and competence development services for both private and corporate customers have been compiled on the JOY digital service platform.

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 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.

The Languages and Communication Unit has developed workplace-oriented basic, further and sector-specific language studies in Finnish. Strategic funding has been used to launch studies in Finnish as a second language and they have been offered extensively to different target groups. 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 student experience and working life cooperation

Student well-being, study skills and challenges related to studying was provided support in cooperation with the University of Oulu Student Union via a well-being project implemented with separate funding from the Ministry of Education and Culture (HYVIS project). The project has supported the students' sense of community and attachment to the study community and strengthened their initiative and study skills through various workshops, Moodle courses and self-study materials. Study psychologist services were also increased via the project. Another goal of the HYVIS project is to strengthen the competence of guidance staff. Faculty visits carried out in 2022 involved discussing guidance-related challenges and training needs, to which the university will respond.

The Professor Pentti Kaitera Fund has provided incentive funding for student guilds and interest societies to organise new events or activities that support students' sense of community and well-being. Communication in the early stage of studies, peer guidance and tutor guidance skills to support study ability have been developed. Cooperation with different stakeholders has been increased in order to improve the student experience.

The number of individual guidance counselling sessions (career and study counselling and study psychologist counselling) and individual study arrangements has increased significantly. Guidance needs focus on the early stages of studies. During the autumn, the DigiLukiseula (digital tool for assessing reading and writing skills) was introduced for the first time at the University of Oulu.

In accordance with the university's core value of "Creating new", the University of Oulu has established Finland's first Career Centre to support student employment and cooperation between students and companies. Located at the heart of the Linnanmaa campus, the Career Centre is designed to meet the needs of the entire university community and stakeholders. It acts as an intermediary between staff and students in the university's units and companies, enabling discussion on employability and employment. The Career Centre offers versatile service ranging from individual guidance to organising large-scale recruitment events.

Internationalisation of education

The UNIC European University, which started its operations in autumn 2020, strengthened its cooperation with partners. In 2022, UNIC made an expansion decision and invited two new universities – the Malmö University from Sweden and the University of Lodz from Poland – to the alliance. The closer cooperation was reflected in stronger research and urban collaboration as the UNIC4ER project aimed at developing research structures was launched in 2022. This linked the UNIC objectives of systemic perspective, education and research cooperation, and societal impact into a more integrated whole and laid the foundation for the further funding application launched in the autumn.

Educational cooperation continued with studies offered via the joint virtual course selection, which included 30 courses from the University of Oulu in 2022. A total of 58 students participated in the courses offered by Oulu, with some completing several courses. The virtual course selection provided an opportunity to try international educational cooperation, also



in faculties and degree programmes that do not have established international cooperation. At the beginning of 2022, an application for UNIC start-up funding was opened to accelerate the internationalisation and digitalisation of education. Development funding was distributed to 20 study modules from different faculties and units. In addition to individual courses and smaller modules, work continued on the joint degree programmes shared by all eight original partners: Redesigning the Post-Industrial City (RePIC) and Superdiversity in Educational, Organizational and Societal Contexts (SEOS). In terms of dual-degree programmes, cooperation discussions were held in areas such as economics, biochemistry and theoretical mathematics.

In June 2022, Oulu organised the international UNIC Conference and CityLabs Festival, which attracted more than 200 visitors from the nine partner universities and cities. In addition to the festival, several UNIC CityLab events were organised, and an idea competition related to integrating international students inspired nine student groups to compete for prizes. The prize for the best idea went to Media Arts Lab.

In autumn 2022, preparation of UNIC's further funding application began at a seminar held in Rotterdam. The application was submitted in January 2023.

One example of international educational cooperation is the first Erasmus Mundus master's programme coordinated by the University of Oulu, which started in autumn 2022. This is the Erasmus Mundus Joint Master in Sustainable Mineral and Metal Processing Engineering (PROMISE) programme coordinated by Oulu Mining School and implemented in cooperation with 3 other universities and 39 partners representing international mining companies, technology suppliers and research centres.

Supplementary funding for education increased to more than EUR 10 million in 2022.

In 2022, the University of Oulu had 612 starting places available in its two-year international master's degree programmes, with 82 of these allocated to dual-degree programmes. The total number of applicants for the programmes was 4,281, but the number of eligible applicants was clearly lower. Further decreases occurred with regard to accepting the place and arriving to start the actual semester. The majority of applicants and students who eventually arrived are from countries outside the EU or EEA, which means that the share of students paying tuition fees is significant, even after taking grant programmes into consideration.

In order to achieve the international degree objectives, further development work is needed at different stages of the student selection process. As part of the Talent Boost action plan, development work on a cross-cutting university service path for international students was launched in spring 2022. When examined from a student-oriented perspective, development needs were identified especially in terms of identifying talented students who were most likely to accept a place at the university. Attention was also focused on the student distribution between EU/EEA countries and countries outside those areas. Challenges in the application process have been identified and further measures agreed upon. At the end of 2022, for example, the Offer Holder Hub virtual platform was introduced as a planning measure to encourage commitment from international students who were offered a starting place in the 2023 application process. In addition, a pilot project on targeted international student marketing and recruitment started with the Faculty of Information and Electrical Engineering. This included new cooperation with agents. Discussions were also initiated with other faculties, aiming at common targets and filling the maximum number of starting places.

Digitalisation and digital pedagogical development

The most significant development for the future of education is participation in the Digivisio 2030 project and subsequently using digitalisation in different ways in learning and teaching work. A Digivisio 2030 change coordinator began their work in October 2022 and, according to the project guidelines, prepared a Digivisio 2030 change programme plan for the University of Oulu. The change coordinator works closely with the national Digivisio 2030 change coordinator network. The change programme will be updated every six months in the future.

In 2022, the university's digital pedagogy services were combined under a single address (ICT services, digital pedagogy and video services). Studio Lipasto opened for live broadcasts, and Studio Klippi continued to meet the needs of teaching video production. There was plenty of diverse digital pedagogy training available in 2022, and 400 teachers were trained in classroom technology in cooperation with the IT company Atea.

A second survey of digital pedagogical competence was carried out for teaching staff as part of the development discussions in 2022, and the results were analysed and shared with faculties. The feedback on digital pedagogy activities collected in the course feedback system was also used for digital pedagogy support, service and development. The balancing of remote, hybrid and contact teaching was piloted in health science and Finnish language programmes. The guidelines produced as a result of the piloting will be published.

Moodle has become a shared learning environment for both universities in Oulu. The Summer University of Northern Ostrobothnia also uses the system. Integrations from Moodle to the Peppi and Turnitin systems were introduced in 2022. Two MOOC pilots were built in 2022 and they provided a lot of good experience. The "1.5% climate target" course was selected as a scalable course.

The well-known MEDigi and FiTech national digital teaching networks continued strong operations in their respective fields of medicine and technology. In FiTech, piloting in which the University of Oulu participated was prepared in the Digivisio 2030 programme, as well as a Service Centre for Continuous Learning and Employment project related to the hydrogen theme.

Enhancing doctoral education

University of Oulu Graduate School (UniOGS) activities were reorganised in 2022. D.Sc. Annu Perttunen took over as director of the graduate school and the university regulations were changed. The Vice Rector of Education became chair of the UniOGS management group.

The organisational reform led to the introduction of operational changes that aimed at accelerating degree completion, for example, by (1) streamlining approval as a doctoral researcher at UniOGS and improving guidance, (2) clarifying the processes and criteria for dissertation and degree approval, (3) improving advisers' access to information and situational awareness, and (4) improving supervision of researcher positions subject to employment contracts.

With regard to doctoral education, we successfully applied for funding from the EU-funded I4World programme. The programme makes it possible to recruit 25 doctoral researchers.

The 11th Doctoral Conferment Ceremony of the University of Oulu took place May 27–29 2022. A total of 228 doctors attended the Doctoral Conferment Ceremony. At the same time, a total of 21 Honorary Doctors elected by the faculties were conferred.

Notable events in 2022:

- Increase in the level of supplementary funding for education to more than EUR 10 million
- Product development programme ramp-up and PoP, Opening contract with Shimizu
- Launch of the learning sciences programme
- Increased demand for distance learning
- Preparation of the Noste education project

Table 1. Key Figures of Education 2018–2022

Key Figures of Education	2018	2019	2020	2021	2022
Bachelor's degrees	1,181	1,153	1,173	1,049	1,205*
Master's degrees	1,315	1,502	1,509	1,446	1,407
Doctoral degrees	199	158	143	161	170
Bachelor's and Master's degrees completed within the target time	986	1,179	1,429	1,244	1,304
Degrees completed by international degree students (bachelor's + master's)	154	266	179	139	215
Employment% (minimum target)	79.4 %	81.2 %	83.4 %	84.6 %	82.0 %

*) The bachelor's degrees in 2022 include 84 degrees completed in commissioned education.

**) The most recent available figure from two years ago was used in the employment indicator. For example, the information reported for 2022 applies to the situation for 2019 graduates in 2020. The logic is equivalent in each preceding year.

Research

Research focus areas

The University of Oulu's strength is its wide-ranging field of science, which is unique among Finnish universities and supports multidisciplinary research very well. A multidisciplinary approach and top-level research are required to address the global issues selected in the strategy. As one of the development targets in its agreement with the Ministry of Education and Culture, the university is simultaneously strengthening its international research cooperation with universities best suited to developing its focus areas.

Using the research focus areas defined in the university's strategy (presented at <https://www.oulu.fi/en/research>) and their themes and spearhead profiles, the University of Oulu focuses its expertise on solving globally significant challenges. The focus areas form thematic multidisciplinary entities that provide the foundation for topics representing top-level research and renewal. The Arctic Strategy completed in 2022 as part of the university strategy brings together cross-disciplinary Arctic thematic areas in education and research, which are included in all the focus areas described below.

Top international research in profile fields

National profiling

The University of Oulu is strengthening its research profile with Academy of Finland competitive funding allocated for university profiling. The purpose of this funding is to support and speed up the strategic profiling of Finnish universities to improve the quality of research. The nine profiling research themes launched in 2016–2021 consist of sub-projects under different profiling application rounds and the flagship programme as outlined in the table.

The application for the seventh profiling round was completed in spring 2022, and the themes will begin in early 2023. The theme of emission-free and energy-neutral production methods related to the hydrogen transition, use of hydrogen in the metal industry, and the hydrogen embrittlement resistance of high-strength steels responds to the global energy crisis and climate change (H2FUTURE). The objective of the Frontiers of Arctic and Global Resilience (FRONT) theme is to create a research hub based on top research, that examines the resilience of institutions, communities, individuals and the environment in a multidisciplinary manner and at different regional levels. The Hybrid Intelligence theme aims to create a research hub that promotes cooperation between artificial intelligence and humans in a way that strengthens both in an ethical, responsible and productive manner, taking into account the opportunities of physical and mixed reality.

Table 2. Projects funded by the University of Oulu with the Academy of Finland's competitive funding to strengthen university research profiles (= profi) in different application rounds and in the flagship programme. The GeneCellNano flagship programme is coordinated by the University of Eastern Finland.

Abbreviation	Name	PROFI 2	PROFI 3	PROFI 4	PROFI 5	PROFI 6	PROFI 7	FLAGSHIP	DURATION
SPACE	Near-earth space environment	x							2016–2020
UWISS	Ubiquitous wireless sensor systems	x							
Genome of Steel	Physics for strong, tough, and sustainable steel		x						2017–2021
Fibrosis diseasome	Fibrosis as a shared risk factor in the etiology of complex chronic diseases and unhealthy ageing		x						
ArcI	Arctic Interactions and Global Change			x					2018–2022
GenZ	Strengthening Human Capabilities in the New Digital Era			x					
DigiHealth	Digitalized Solutions for Future Health Care				x				2019–2023
HiDyn	Dynamic Data Modelling				x				
InStreams	Inorganic circular economy research community				x				
Anthropocenes	Biodiverse Anthropocenes					x			2021–2026
Fibrobesity	Preventing Fibrosis Related to Obesity					x			
6GESS	6G-Enabled Sustainable Society					x			
H2FUTURE	Hydrogen Future as a Climate Change Solution						x		2023–2028
HYBRID INTELLIGENCE	Human-AI Co-evolution and Learning in Multi-realities						x		
FRONT	Frontiers of Arctic and Global Resilience						x		
6G	6G-Enabled Wireless Smart Society & Ecosystem							x	2018–2026
GeneCellNano	Gene, Cell and Nano Therapy Competence Cluster for the Treatment of Chronic Diseases							x	2020–2024



Top research and spearhead projects

The research units of our eight faculties and regional units are responsible for research. The focus institutes Biocenter Oulu, Eudaimonia Institute, Infotech Oulu and Kvantum Institute promote research cooperation, doctoral education and networking across faculty boundaries in our multidisciplinary focus areas. The Thule Institute coordinates Arctic activities and cooperation networks, 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 university supports the scientific competence and career progress of selected young post-doctoral researchers through Emerging projects related to the spearhead projects of the focus institutes.

The aim is to increase the number of projects funded by the European Research Council (ERC) and academy professors. The ERC's support measures have been developed extensively, and ERC applicants were provided with targeted support and coaching measures during 2022. The University of Oulu also wants to improve the success rate for Horizon Europe (HE) funding applications submitted from the university and increase the number of applications being coordinated. In order to support this goal, we provide enhanced support measures for young and inexperienced coordinators. Based on an open call for applications, four coordinators were selected for applications ending in spring 2023, and the support process began in 2022.

Researcher recruitment and doctoral training

We support our talented researchers to emerge at the top of their field. We support independence in the research careers and develop the academic leadership and multidisciplinary approach of young researchers.

We enhance the profiling of research activities by means of recruitment and tenure packages. These are aimed at recruiting exceptionally promising young researchers and leading researchers in their field by means of internationally contested application processes. We implemented tenure track recruitments within the national university profiling programme in 2022, and the faculties have also begun filling some of their vacancies through the tenure track career path.

The ratio of post-doctoral researchers to doctoral candidates will be increased in the personnel planning of faculties and other units. A so-called post-doctoral programme is used to allocate funding to successful research groups for the recruitment of a post-doctoral researcher.

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. During 2022–2023, international development work carried out using the Benchlearning 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 research focus areas. Some of the strategically funded doctoral degree vacancies are directed to spearhead projects in the focus institutions and Emerging projects, and some of the vacancies are directed based on decisions made by four Doctoral Training Committees. An Introduction to Interdisciplinarity course aimed at all doctoral researchers was launched in 2022 to support multidisciplinary and interdisciplinary research.

The University of Oulu's Arctic Strategy was completed in 2022, and the measures required by it will be planned and launched in 2023. The focus areas of the Arctic Strategy are human resilience and response ability, the environment and One Health, as well as natural resources and business activities.

We strengthen research and multidisciplinary in emerging fields

Competitive research environments

During the 2018–2022 period, the University of Oulu allocated a four-year doctoral education position to provide academic support for new emerging research themes and projects run by young researchers. The projects are linked to strategic spearhead projects and the multidisciplinary activities of focus institutes. The programme promotes the wider dissemination of top research expertise at our university. New projects for the 2023–2026 period were selected in 2022.

The goal of the Rapid Research Radicals (R3) programme is to raise the level of multi- and interdisciplinary 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 multidisciplinary seminars and various scientific competence measures. Both scientific capital and competence are increased at the annual UniOulu Science Day, which was launched in 2022 and will be organised annually in the future. Its workshops bring a wide range of researchers together across discipline boundaries. The R3 programme is implemented as part of the activities of the focus institutes and within and between focus areas.

At the end of 2021, foresight work with the aim of identifying future interdisciplinary and multidisciplinary research topics was launched as a pilot coordinated by the Kvantum Institute. Kvantum coordinates two research focus areas: Sustainable materials and systems and Changing climate and northern environment. Several topics for development were identified during 2022. These included quantum computing, green energy research and biodiversity, in which new multidisciplinary projects and supplementary funding projects were built. In the future, foresight work will expand to cover all focus areas.

We systematically monitor and develop the quality of research

The most recent Research Assessment Exercise (RAE2020) covering the entire university was performed in 2020–2021. The results of the evaluation will be examined systematically and utilised during 2022–2023 to develop functions and objectives at the university, faculty, focus area and research unit levels.

We develop high-quality research infrastructures

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. University-level infrastructures include the Biocenter Oulu Infrastructure Centre BCO-CORE, the Biodiversity Unit, the Laboratory Animal Centre, the LeaF Infrastructure, the Centre for Material Analysis and the Oulanka Research Station. The visibility of infrastructures has been promoted by entering information about these into the national Research.fi portal, marketing videos and an updated open infrastructure policy, as well as the units' own data policies.

Twenty-two applications from the University of Oulu were submitted to the Academy of Finland's FIRI 2022: local research infrastructures application round, and 4 of these received a positive funding decision in early 2023.

Table 3. The University of Oulu's participation in research infrastructures of the Academy of Finland's national roadmap and in certain international infrastructure networks. ESFRI = European Strategic Forum on Research Infrastructures. P = project, L = landmark.

Abbreviation	Name	Field	Funding scheme	ESFRI	Responsible organization
BF	Biocenter Finland	Life and health sciences	National roadmap 2021–2024		HY
EuBI-Fi	European Research Infrastructure for Imaging Technologies in Biological and Biomedical Sciences Euro-BioImaging Finland	Life and health sciences	National roadmap 2021–2024		ÅA
BBMRI.fi	Biobanking and Biomolecular Resources Research Infrastructure of Finland BBMRI.fi	Life and health sciences	National roadmap 2021–2024		*
FinStruct	Integrated Structural Biology Infrastructure Instruct-ERIC Centre Finland	Life and health sciences	National roadmap 2021–2024		HY
INFRAFRONTIER	Infrafrontier – European mouse mutant archive	Life and health sciences		L	OY
ISIDORe	Integrated Services for Infectious Disease Outbreak Researchs	Life and health sciences	EU Horizon		
FUWIRI	Research Infrastructure for Future Wireless Communication Networks	Data and computing sciences	National roadmap 2021–2024		OY
FCCI	Finnish Computing Competence Infrastructure	Data and computing sciences	National roadmap 2021–2024		HY
CONVERGE	Telecommunications and Computer Vision Convergence Tools for Research Infrastructures	Data and computing sciences	EU Horizon		
SLICES	Scientific Large-scale Infrastructure for Computing/Communication Experimental Studies - Preparatory Phase	Data and computing sciences	EU Horizon	P	
PII	Printed Intelligence Infrastructure	Physical sciences and technology	National roadmap 2021–2024		OY
MAX IV	Synchrotron Radiation Facility	Physical sciences and technology			OY
FIN-CLARIAH	Common Language Resources and Technology Infrastructure	Social sciences	National roadmap 2021–2024		HY
FIRI-PBS	Finnish Research Infrastructure on Population Based Surveys	Social sciences	National roadmap 2021–2024		THL
E2S	Earth-space research ecosystem	Environmental sciences	National roadmap 2021–2024		OY
FinBIF	Finnish Biodiversity Information Facility	Environmental sciences	National roadmap 2021–2024	P	HY, Luomus
FIN-EPOS	European Plate Observing System FIN-EPOS	Environmental sciences	National roadmap 2021–2024	L	HY
INAR RI	Integrated Atmospheric and Earth System Research Infrastructure	Environmental sciences	National roadmap 2021–2024		HY
AnaEE	Analysis and Experimentation on Ecosystems	Environmental sciences	National roadmap 2021–2024	L	LUKE
eLTER RI	Integrated European Long-Term Ecosystem, critical zone and socioecological system RI	Environmental sciences	National roadmap 2021–2024	P	HY
EISCAT-3D	European Incoherent Scatter Association	Environmental sciences		L	OY

*Finnish Biobank Cooperative FINBB

We promote responsible research and open use of information

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.

In 2022, the University of Oulu launched a responsible science steering group, the aim of which is to steer and promote the implementation of open and responsible science policies, training, practices and support services. It is based on the university's responsible research programme adopted in 2018. The principles and policies related to managing open research infrastructures, the openness of publications and research data were further updated in 2022 to comply with new EU and national requirements.

A group of data experts with a researcher background has continued to support the management of research data at the University of Oulu and the data protection of research. In spring 2022, co-creation of data support services began with three German universities. A Data Champions network for researchers interested in responsible data management was also established in 2022, with the goal of more extensively sharing research data-related competence and good practices with the research community. The aim of these wide-ranging support services is to, for example, respond to the demand for the FAIR compatibility (findable, accessible, interoperable and reusable) of research data by the EU and major financiers. Specific targets in 2022 involved opening the descriptive data for research data and developing data training.

The University of Oulu achieved the highest level in the national monitoring of open science in 2022, and was one of two universities assessed at the highest level in all four areas: operating culture, publishing, research data and education.

The University of Oulu has been actively involved in developing researcher and research evaluation in both national and international cooperation. The Rector signed the international Declaration on Research Assessment (DORA) in 2020 and the Reforming research agreement in November 2022, the aim of which is to implement changes in assessment practices via co-creation. At the same time, the university joined the CoARA coalition to promote the reform process. As a result, the university increases its commitment to developing responsible evaluation of researchers and the use of responsible publishing metrics. During 2022, we piloted new criteria and tools for recruitment and rewards, and we are publishing guidelines for responsible evaluation of research and researchers.

Notable events in 2022:

- The seventh round of profiling
- Completion of the Arctic Strategy
- FIRI local research infrastructure application
- Promotion of EU applications
- Open science actions and national evaluation
- Emerging project selections
- Piloting foresight work on new openings and future research topics

Table 4. Key Figures of Research 2018–2022

Key Figures of Research	2018	2019	2020	2021	2022
Research funding from the Academy of Finland, EUR 1,000	23,943	26,826	25,484	29,169	29,523
Business Finland funding, EUR 1,000	11,277	9,204	7,607	7,249	10,073
International competitive research funding, EUR 1,000	8,661	9,793	10,103	11,728	14,492
Share of supplementary funding of total funding	37.30 %	39.50 %	39.80 %	39.50 %	41.60 %
Jufo-1 publications, pcs	1,649	1,745	1,717	1,896	1,777
Jufo-2 publications, pcs	618	707	732	781	715
Jufo-3 publications, pcs	250	298	260	318	397
Scientific publications, pcs	2,647	2,861	2,827	3,110	3,006



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's 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's innovation centre has 10 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 2022, 52 invention notices and 4 copyright notices were filed by the university. During the year, the rights for

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14 inventions were transferred to a research project's business partner. An invention notice is an important indicator of the success of research cooperation.

Based on the inventions, nine new patent applications were submitted in the name of the University of Oulu. At the end of 2022, the university was the holder of a patent family based on 52 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, use agreements were signed for three patent families, three layout designs and one software.

In 2022, the university granted a total of EUR 242,000 of Proof-of-Concept (PoC) funding for 13 researcher projects, with EUR 121,000 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 2022, the University of Oulu submitted four 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 four ongoing R2B projects.

Two new research-based companies were established during the year, and the university currently has a small ownership stake in six spin-out companies. In the 2000s, 76 research-based companies have taken shape at the University of Oulu.

Each year, the University of Oulu engages in cooperation with hundreds of companies and stakeholder organisations. Some of this cooperation takes place in co-financed projects, but the majority involves projects commissioned by clients to meet a specific need. In 2022, the total financing received from companies totalled EUR 6.3 million from 426 companies, with EUR 1.8 million coming from foreign companies (30 companies). A total of 22 collaboration projects funded by Business Finland were granted. The university concluded a partnership or framework agreement with four companies or stakeholder organisations.

Last year, a total of 34 training or information events related to innovation activities, business development and business cooperation were organised or run by the Innovation Centre, and 10 presentations of research commercialisation projects were organised for investors.

Table 5. Key Figures of Innovation activities 2018–2022

Key Figures of Innovation activities	2018	2019	2020	2021	2022
Invention disclosures	35	61	36	46	56
Priority patent applications	6	6	10	10	9
Patent portfolio of the university (number of patent families)	35	37	39	45	52
Technology transfer agreements (assignment documents or licence agreements for company-commissioned research)	13	17	24	13	21
New research-based companies	3	2	2	3	2
Proof of Concept (PoC) projects	9	11	15	17	13
Business Finland TUTLI funding (new projects)	5	0	7*	2	2

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

Notable events in 2022:

- Researchers' innovation activities are dynamic
- Utilisation focuses on licensing
- Corporate financing is increasing

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 2022, a total of EUR 4,010,236 was donated. Of this, a total of EUR 836,453 was donated directly to research projects and endowed professorships. Donations targeting different fields of education or the university in general totalled EUR 3,173,783.

The University of Oulu's 2020–2022 funding campaign that ended on 30 June 2022 produced a total of EUR 5.2 million in donations. The EUR 4.99 million in match funding paid by the Government increases the total campaign result to EUR 10.2 million for research and education. The donations directly support research in the focus areas of research. Matched funding increases the university's investment capital, the return on which is used to strengthen the university's scientific profile over the long term. The donation negotiations and related strategic discussions have contributed to strengthening the foundation and business partnerships of the University of Oulu.

During 2022, the university allocated more than EUR 4 million in donations to different fields of science. For example, key recruitments have played an important role. Donations have made it possible to establish new professorships in fields like business ethics and economics. In addition to research, donation funds have been allocated to educational development and student well-being through the recruitment of a new study psychologist. The professorship in digitalisation of water technology established with donated funding was filled in 2022.

The University of Oulu received a significant donation from the Technology Industries of Finland Centennial Foundation to establish a Professor of Practice position in industrial engineering and management. Partner funding for professorships in SoC (System on Chip) technology and micro-entrepreneurship was also ensured during the year.



Table 6. Fundraising at the University of Oulu. Donations 2008–2022

Donor	2008–2014	2015–2019	2020	2021	2022
Public organisations	1,529,343	105,212	0	20,300	15,350
Foundations, associations	3,106,786	5,773,777	130,000	1,606,700	2,334,645
Companies	5,614,819	2,320,456	264,967	721,300	927,000
Financial and insurance institute	568,587	1,096,285	0	0	290,000
Private individuals	1,273,985	1,354,774	59,279	247,299	443,241
Business	28,582	1,255	0	0	0
Total	12,122,102	10,651,760	454,246	2,595,599	4,010,236
Ministry of Education and Culture match funding	23,097,552	11,236,561	0	0	4,990,000

At the end of 2022, the market value of fund-raising investments totalled EUR 76.2 million (including matched funding), which represents a significant share of the University of Oulu's investment assets.

Facilities

At the end of 2022, the University of Oulu had 155,303 m² of leased premises.

In 2022, the University of Oulu terminated its lease agreements with Nivalan Teollisuuskylä Oy and Pyhäsalmen Kvanttikiinteistöt Oy for space used by the Kerttu Saalasti Institute. In total, the terminated lease agreements covered an area of around 402 m². The lease obligations for the Linnanmaa sports hall ended in June 2022 because renovations began in the hall.

Studying and working methods changed enormously due to the coronavirus pandemic, and this is reflected in changes in the use of facilities and a reduced carbon footprint. In line with the Sustainable Development Goals, the university continued ongoing projects and launched new ones to promote a low-carbon, green campus. Implementation and monitoring of the Sustainable and Responsible Campus Life 2025 action plan continued. The action plan was updated and a monitoring report prepared at the end of 2022. Monitoring of the carbon footprint continued in 2022. The university also continued its efforts to increase the efficiency of facility use.

In 2022, a Hybrid Collaboration Cube project was carried out with University Properties of Finland Ltd. This involved building a total of five multi-purpose cubes on the Linnanmaa and Kontinkangas campuses. The cubes are intended for research and development related to hybrid teaching in education and nursing science. Architecture students will study space use and positioning inside the cubes. In addition to the Hybrid Collaboration Cube project, smaller user-oriented changes were implemented in the properties.

At its meeting on 24 February 2022, the Board of Directors of the University of Oulu decided to launch a long-term vision work on the campus entity. A campus vision working group was set up to prepare the work. The working group came up with three different scenarios in the vision work of possible integrated campus solutions for the University of Oulu over the next 25 years.

Financial position in 2022

The University of Oulu's turnover in 2022 was EUR 266.3 million (EUR 263.7 million in 2021) and the loss for the financial year was EUR 37.8 million (EUR 32.2 million profit in 2021).

The total loss on investment and financial activities was EUR 26.8 million (change in fair value EUR -28.6 million).

The equity ratio of the University of Oulu was 86.5% (89.9% in 2021), 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 2022 was EUR 155.6 million (EUR 159.6 million in 2021).

Income from supplementary funding was EUR 110.7 million (EUR 104.1 million), equal to 41.6% (39.5%) of total income.

During the financial year, operating expenses amounted to EUR 279.5 million (EUR 259.1 million in 2021), of which personnel expenses accounted for EUR 190.6 million, equal to 68.2% of total operating expenses (EUR 179.3 million and 69.2% in 2021). Facility rental expenses totalled EUR 27.7 million in 2022 (EUR 27.2 million), equal to 9.9% (10.5%) of operating expenses.

The amount of supplementary research funding reported to the Ministry of Education and Culture was EUR 77.2 million (EUR 70.5 million), which corresponds to 27.6% (27.2%) 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 14.5 million (EUR 11.7 million).

The balance sheet total on 31 December 2022 was EUR 332.6 million (EUR 346.3 million in the previous year). The fixed assets on the balance sheet totalled EUR 265.6 million (EUR 311.0 million), while current assets totalled EUR 67.0 million (EUR 35.3 million).

Table 7. Financial indicators of the University of Oulu

Financial indicators	2019	2020	2021	2022
Change in net sales %	2.01	7.31	5.45	1.01
Operating profit %	-3.08	0.04	1.74	-4.93
Change in equity % (development of the university's own funds)	7.24	5.77	13.35	-10.88
Return on investments at fair value	16.4 %	3.8 %	11.6 %	-11.9 %
Quick ratio	1.96	2.39	1.21	1.71
Adequacy of cash, days	37	55	8	40
Solvency, %	89.1 %	88.7 %	89.9 %	86.5 %
Net gearing	-10.85	-15.61	-2.14	-12.40

* Key figures calculated in accordance with the Code of Financial Administration in Universities, OKM/2/500/2018 (11 November 2022).

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 256.6 million (EUR 288.5 million), of which the value of University Properties of Finland Ltd shares was EUR 54.2 million, or 21.1% 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 74.4 million (EUR 54.2 million) and compulsory reserves totalled EUR 0.2 million (EUR 0.3 million).

Total investments in the financial statements amounted to EUR 7.8 million (EUR 7.2 million). Investment grants received totalled EUR 1.4 million (EUR 2.2 million). Of the total investments, investments in intangible and tangible assets totalled EUR 7.8 million (EUR 7.2 million), and other investments amounted to EUR 0.0 million (EUR 0 million in 2021). The University of Oulu holds 10.41% of the share capital of University Properties of Finland Ltd and 19.44% of the share capital of Certia Oy.



Investment activities in 2022

The challenging investment year 2022 ended in an expectant atmosphere. Both the ECB and Fed raised their key interest rates by 50 basis points in December, and the ECB noted at its meeting that high inflation will require continued tight monetary policy in 2023. The ECB also announced a reduction in its asset purchase programme starting next March. As a whole, 2022 was an eventful year in the market, and strong upward and downward months were witnessed in terms of both interest rates and shares. At the beginning of the year, the start of the war in Ukraine caused market turbulence and a strong decline was also seen in August and September. The market began to rebound again in October and November, and this led to positive returns. Key economic drivers – meaning central bank operations, inflation figures and the war between Ukraine and Russia – were closely monitored throughout the year. Tight monetary policy was the main theme of the central banks during the year, and both Fed and the ECB increased interest rates on several occasions. The arrival of autumn and winter increased concern about energy adequacy, and the leaks reported in the Nord Stream gas pipelines from Russia to Germany also caused temporary disturbances.

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.

Table 8. Summary of the University of Oulu's investment activities in 2022

Summary by portfolio	Weight of stock	Market value (€)	%	Return from the beginning of the year (€)	Return from the beginning of the year (%)	Profit from the beginning of the portfolio (%)
Scholarship Fund of the University of Oulu	44.8 %	4,052,898	1.9 %	-741,036	-15.1 %	4.6 %
Professor Pentti Kaitera Fund	46.2 %	1,370,897	0.6 %	-263,077	-15.7 %	5.7 %
Council Reserve Fund	53.6 %	6,553,464	3.1 %	-1,069,637	-14.0 %	5.4 %
Fundraising	45.9 %	63,520,516	29.8 %	-10,744,556	-14.5 %	4.9 %
State-capitalised assets	53.1 %	57,248,933	26.9 %	-8,409,998	-12.8 %	4.6 %
Cash portfolio	34.5 %	26,481,493	12.4 %	-5,744,336	-11.4 %	3.0 %
Match funding	44.8 %	12,742,611	6.0 %	-2,269,987	-15.1 %	2.5 %
Alternative investments	100.0 %	15,274,391	7.2 %	483,022	5.3 %	14.9 %
Cash assets	0.0 %	25,717,391	12.1 %	0	0.0 %	0.0 %
Evli Euro Liquidity	0.0 %	3	0.0 %	-17	-0.3 %	0.1 %
Total		212,962,597	100.0 %	-28,759,623		

Comments on the portfolio's responsibility:

- The ESG rating of the University of Oulu's investment portfolio is at the AA leader level.
- The proportion of investments taken into account in the calculation is 64.7%.
- The lowest ESG rating is received by many portfolio funds investing in emerging markets, which is characteristic of these markets.

Investment overview for 2023

On 31 December 2022, the market value of the University of Oulu's total investment assets was EUR 212,962,597 and the return on investment activities in 2022 was EUR -28,759,623.

The past year 2022 an eventful one in the investment market and very strong movement has occasionally been seen in liquid assets. Early in the year, the market was shaken by the war in Ukraine, which caused wide-ranging impacts – especially in the euro area.

The year 2023 began optimistically as stock and interest indexes increased in January. The development of inflation and central bank actions are likely to continue as key economic themes in 2023. Positive news on inflation development in Europe was received in January, when preliminary figures indicated a lower than expected consumer price index (CPI) increase in January. Unfortunately, the desired decrease was not reflected in baseline inflation, which does not include the impact of highly variable energy and food products. The ECB is expected to implement an increase of 50 basis points, which would bring the key interest rate to 3.0%. Many of the world's central banks have slowed down in terms of interest rate increases, and the markets are eagerly awaiting messages from the Fed and the ECB concerning future decisions. The euro also continued to strengthen against the dollar in January. In late summer 2022, the euro was below parity, but it developed strongly during the last four months of the year. The euro is still in a weaker position in comparison to 2021, but its upward trend is expected to continue in 2023.

Despite these threat scenarios, many asset managers are primarily optimistic concerning investment market development in 2023.

In 2022, 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). Ira van Gilse van der Pals left the Investment Committee at the end of 2022, and at the same time Aki Kangasharju (ETLA) started as a member of the Investment Committee. The Investment Committee began its work in autumn 2013.

Personnel

Number of personnel and structure

In 2022, the average number of people working at the University of Oulu was 3,715 and the number of person-years in 2022 was 3,217 (2021: 3,134 person-years, increase of 2.65%). The average number of employees has increased by 205 people.

One of the principles of the personnel strategy is that core tasks are handled by permanent employees and the share of permanent staff is increased. The higher than average number of fixed-term employment relationships at universities is due to the special nature of research, teaching and further education tasks. Among university personnel, the percentage of fixed-term employees has decreased slightly compared to the previous year, standing at 58.9% of all personnel (2021: 59.3%). The proportion of permanent roles has thus increased. In the doctoral and post doc stage, research staff are primarily hired on fixed-term contracts. Of employees subject to the total working time system, 73.6% (2021: 72.7%) were fixed-term employees on 31 December 2022.

The units' personnel plans aim at developing the researcher career structure (tenure track, personal career path), balancing the number of tasks in different career stages, and internationalising the research staff. The number of person-years in stage III of the researcher career structure has increased.

A total of 52.4% of university staff were women (2021: 51.4%). The average age of university staff remained steady at 42 years (2021: 42). In total, 59.6% of the personnel are aged 44 or less (2021: 58.3%). The largest age group is those aged 30–34, accounting for 16.2% of the personnel (2021: 15.1%). A total of 367 people, or 9.7%, are aged 60 or over (2021: 347 people, or 9.4%). The representation of women in academic management at the University of Oulu is as follows. Women account for 25% of the rectors and vice rectors, 38% of the deans and vice deans, and 13% of the other managers, excluding administration.



Internationalisation and personnel

At the turn of the year, the total number of international personnel was 810, equal to 22.5 per cent of all personnel (situation on 31 December 2022). The number and relative share of international personnel has continued to increase (31 December 2021: 753 persons, 20.4% of all personnel). The share of international personnel in teaching and research staff was 33.1%.

Personnel structure development and recruiting

Recruitment activity and the number of applicants in 2022 were similar to the previous year. Activities continued to focus on developing the image of the University of Oulu as an employer and improving job applicant experiences. A project to implement a new recruiting system began in 2022 and also involved work to streamline the recruitment process. The new Varbi recruitment system was introduced on 1 January 2023.

A total of 333 external job advertisements were posted by the university via the Saima recruitment system (377 in 2021 and 265 in 2020). As some of the advertisements included several roles, there were a total of 393 vacancies (410 in 2021). 15 of the advertisements concerned professors (incl. Full Professor and tenure track positions) and 7 concerned tenure track positions (17 in 2021 and 9 in 2020). In addition to appearing in the relevant academic journals, the job advertisements were posted elsewhere, including the Academic Positions, Euraxess and LinkedIn portals.

A total of 18 persons were appointed as professors in 2022.

Most of the applications (71%) were related to teaching and research staff positions. The number of applications received was 8022 (2021: 8109, 2020: 8690).

In 2022, 934 new employees were hired to the university (2021: 953, 2020: 860). This includes basic degree students and trainees who typically complete their thesis at the university in a short-term employment relationship.

A total of 18 persons were appointed as professors (incl. Full Professor and tenure track positions) in 2022 (2021: 27, 2020: 16).

Pay

Total pay expenditure per person-year increased in 2022, and the average pay expenditure per person-year was EUR 58,118 (2021: EUR 56,818). In accordance with the general collective agreement of universities (8 April 2022 to 31 March 2024), salaries were increased in 2022 with a general increase of 1.45% on 1 June and a 0.45% local instalment on 1 December 2022.

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 2022 was calculated from the salary sum for September 2022. The calculation was made separately for the salaries of teaching and research staff, other staff and the teacher training school.

The employer discussed the criteria for the use and distribution of local instalments with the head personnel representatives and asked supervisors for proposals based on the allocation criteria. Euro-based salaries also included general increases equal to the cost effect of the local instalment.

In accordance with the collective agreement, personal performance was assessed during the evaluation period between 1 September and 1 November 2022. Any pay increases took effect after the spring appraisal, starting at the beginning of December. At the end of 2022, 0.11% of the personnel were subject to guarantee salary (2021: 0.14 %).

Well-being at work

The development of well-being at work at the university level and in the different units continued in 2022 on the basis of action plans that are updated each year and a joint well-being survey for universities performed in autumn 2021. A work community development plan was also prepared in 2022. The processing of the results of the well-being survey carried out in autumn 2021 began in late 2021 for the results of the university as a whole, and processing of the survey and response measures continued in spring 2022. Coaching related to processing the results of the well-being survey and preparing development plans was offered in early 2022.

The annual performance appraisals were carried out in the units between 1 February and 3 May. At the university level, 76% of the appraisals were completed (2021: 79%).

The total number of sick leave days increased slightly. Mental health disorders continued to be the most significant cause of sick leave. However, sick leaves due to mental health disorders decreased slightly in comparison to the previous year. The next largest cause of absence were other unclassified diseases and symptoms, such as coronavirus absences without official testing, and musculoskeletal disorders.

The highest number of sick leave days accumulated from medium-length absences of more than 4 and less than 60 days. There was a significant decrease in long absences of more than 30 days, which indicates the utilisation and success of measures aimed at supporting work capacity and managing long absences, such as occupational health negotiations and partial sick leave practices. A total of 49 people took partial sick leave during the year. As absences due to mental health disorders also decreased, measures targeting mental health support, such as short-term psychotherapy services purchased as additional services, can be considered effective.

Short absences of less than 10 days increased somewhat, which is explained by sickness caused by respiratory infections, coronavirus and influenza. The increase in the number of short absences compared to the previous year caused the increase in the total number of sick leave periods. The fact that short sick leaves reported by employees more than doubled can be considered positive, and a sign that awareness of the importance of reporting short absences has also increased.

In 2022, a total of 69 accidents involving personnel were reported, 41 of which occurred at the workplace and 28 on work trips. Insurance covered 21 of the work trip accidents and 25 of the workplace accidents, which means compensation was paid for a total of 46 accidents involving personnel. The increase in work trip accidents over the previous year is explained by termination of the remote work recommendation at the end of February and the subsequent increase in commuting and working at the workplace.

The most typical occupational accidents were slipping, falling, falling down, and sudden physical or psychological stress (including noise and radiation). The accident frequency in 2022 was 10 (2021: 9). Accident frequency means the ratio between accidents and hours worked (with consideration to sick leave absences). The ratio is calculated per million hours worked.

Competence development

The number of training days qualifying for the three-day training allowance increased in comparison to the previous year, and there was an increase in the number of educational, conference and seminar trips outside the university after the termination of pandemic restrictions.

The University of Oulu's programmes, services and forums to support management and supervisory work continued as planned in 2022. The one-year Science Leadership programme aimed at supporting the career development of advanced post-doc researchers was implemented for the fourth time.

Personnel information is presented in more detail in the separate Personnel Data 2022 document.

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. In order to develop risk management, the university-level risk register and risk management process were updated, and the identification of control measures and development of harmonised documentation for the seven most significant risks initiated during 2022. The most significant risks identified are associated with the level of different funding sources and to personal risks.

Board of Directors and auditors

During the year under review, the Board of Directors of the University of Oulu was chaired by Juhani Damski, and the board members were Anna Rotkirch (Vice-Chair), Liisa Jaakonsaari, Kalervo Väänänen, Mikko Ayub, Tiina Kinnunen, Johanna Uusimaa, Riku Hietaniemi, Kimmo Kontio, Teemu Virtanen and Miriam Putula.

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

Assessment of future developments

Sustainable development, including the prevention of the climate crisis and biodiversity loss, continue as emerging trends in the activities of the international scientific community. We have undertaken to promote the UN's Sustainable Development Goals through our research and education and we are also committed to promoting sustainability and responsibility practices in our daily activities – we strengthen our carbon handprint and reduce our carbon footprint.

The University of Oulu must continue to actively seek membership in international pioneer networks.

Major budget cuts are unlikely after the upcoming parliamentary elections and the formation of the Government. However, the level of state debt will be a challenge for the public sector economy, meaning that large budget increases may not necessarily be possible in the next few years. The education provided by universities is valued and science has the support of citizens.

The RDI Act has broad parliamentary approval and we expect it to provide universities with new economic opportunities. The act is expected to increase the number of personnel engaged in RDI work, which will place more pressure on education and recruitment.

As a whole, we expect the university's operations and results to continue developing in a manner similar to recent years. The University of Oulu is likely to be successful in the resource competition over the next few years. Productivity development has been particularly favourable in terms of funding procurement and scientific publications. The area of doctoral education requires particular attention in order to meet the personnel needs resulting from increased funding under the RDI Act.

In the strategic funding section of the funding model, we succeeded well in the negotiations for the 2021–2024 agreement period, and a proposal to support implementation of a strategy for unallocated strategic funding was submitted to the Ministry of Education and Culture in 2022. The university's internationalisation programme was carried out strongly in 2022 but, for example, the implementation of additional study places is a challenge for the university and its staff.

An interim audit performed with the Ministry of Education and Culture in autumn 2022 reviewed implementation of the Sustainable Growth Programme that is the focus of the

agreement period. 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.

During the aftermath of the pandemic, 2022 involved adapting to the new normal, the digital leap and new working methods. 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 future facility solutions.

The Noste education programme planned during 2022 defines the guidelines for developing education at the University of Oulu and increases the competitiveness of education. This development programme is our response to challenges identified in the university community, such as a decrease in the size of age groups in our region, difficulty in integrating international students to Oulu, changes in learning and teaching methods caused brought digitalisation, and the pace of degree completion.

The university will continue to develop its operations in specific strategic intersectoral development programmes. 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 contents and objectives of the programmes in the post-pandemic period will be critically examined and updated if necessary.

Board proposal on the processing of financial year results

The Board proposes that the result for the financial year (EUR - 37,842,024.71) be entered in the balance sheet profit/loss 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. No donations were transferred to the unrestricted fund in 2022. Use of the unrestricted fund from previous years takes the form of an intra-balance sheet transfers after the approval of the financial statements. The amount transferred to the restricted fund in 2022 was EUR 3,189,689.02

Income Statement

Consolidated Income Statement	Group 1.1.-31.12.2022	Group 1.1.-31.12.2021	University 1.1.-31.12.2022	University 1.1.-31.12.2021
Revenue	316,932,680.41	314,174,994.97	266,323,039.93	263,652,128.39
Government funding	204,568,000.00	208,147,724.35	155,607,000.00	159,581,424.35
Income from grants	94,916,396.88	89,325,527.26	86,958,844.21	81,306,773.04
Income from business	10,453,761.65	10,227,657.61	11,269,455.10	10,953,027.07
Other income	6,994,521.88	6,474,085.75	12,487,740.62	11,810,903.93
Expenses	-328,640,847.57	-307,105,660.02	-279,450,231.85	-259,056,131.26
Personnel expenses	-223,727,146.05	-212,135,261.33	-190,635,522.00	-179,269,545.99
Depreciation	-7,618,498.24	-7,651,717.48	-6,528,464.02	-6,372,245.76
Other expenses	-97,295,203.28	-87,318,681.21	-82,286,245.83	-73,414,339.51
Operating profit (loss)	-11,708,167.16	7,069,334.95	-13,127,191.92	4,595,997.13
Fundraising				
Income from fundraising and donations	3,281,766.37	2,306,131.71	3,203,266.20	2,182,598.89
Other fundraising expenses	-20,050.95	-11,879.35	-13,547.18	-6,194.18
Surplus / deficit	3,261,715.42	2,294,252.36	3,189,719.02	2,176,404.71
Investment and Financial Activities				
Dividend income	1,920,801.16	2,091,360.61	1,920,801.16	2,091,360.61
Interest income	20,564.66	-17,518.33	20,533.93	-17,537.39
Rental income	194,111.86	204,382.16	0.00	0.00
Profit on sales of investments	12,965,492.53	15,008,486.39	12,629,012.22	13,529,058.37
Other income	727,401.64	856,453.13	657,600.30	810,292.09
Financial charges	-74,368.56	-75,774.60	0.00	0.00
Loss on sales of investments	-13,778,373.76	-468,124.44	-13,311,518.09	-436,291.73
Other investment expenses	-202,529.24	-209,564.03	-169,213.19	-180,865.77
Change in fair value	-31,085,008.12	11,725,887.47	-28,581,384.57	11,231,526.10
Surplus / deficit	-29,311,907.83	29,115,588.36	-26,834,168.24	27,027,542.28
Profit (loss) before appropriations and taxes	-37,758,359.57	38,479,175.67	-36,771,641.14	33,799,944.12
Appropriations				
Change tied-up funds	-2,437,333.44	-957,714.11	-2,282,363.32	-1,091,577.11
Change equity funds	2,758,163.50	-1,741,945.06	1,212,011.10	-549,352.82
Income taxes	-39,362.87	-45,619.30	-31.35	-24.07
Minority holdings	-180,982.47	-1,784,702.69		
NET PROFIT (LOSS)	-37,657,874.85	33,949,194.51	-37,842,024.71	32,158,990.12

Balance Sheet

Assets	Group 31/12/2022	Group 31/12/2021	University 31/12/2022	University 31/12/2021
FIXED ASSETS				
Intangible assets				
Intellectual property rights	941,457.67	563,220.94	941,457.67	563,220.94
Other intangible assets	3,297,363.04	3,689,803.53	3,181,225.12	3,494,643.51
Advance payments	1,177,815.40	1,154,248.68	1,177,815.40	1,154,248.68
Total	5,416,636.11	5,407,273.15	5,300,498.19	5,212,113.13
Tangible assets				
Land and water areas	300,000.00	300,000.00	0.00	0.00
Buildings and structures	104,441.39	36,552.05	104,441.39	36,552.05
Machinery and equipment	13,964,982.03	14,044,420.43	11,007,892.55	11,003,542.58
Other tangible assets	254,586.05	255,688.25	28,864.54	29,966.74
Advance payments and purchases in progress	1,222,822.05	1,956,238.50	1,139,259.40	1,425,359.13
Total	15,846,831.52	16,592,899.23	12,280,457.88	12,495,420.50
Investments				
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	56,567,247.82	56,509,247.82	55,074,560.19	55,074,560.19
Other long-term investments	194,173,404.74	236,643,115.53	182,075,985.85	226,222,247.12
Total	250,740,652.56	293,152,363.35	242,470,356.04	286,616,617.31
Funds in non-autonomous reserves	14,627,300.52	17,145,422.89	5,563,289.16	6,632,547.38
Total fixed assets	286,631,420.71	332,297,958.62	265,614,601.27	310,956,698.32
CURRENT ASSETS				
Receivables				
Long-term receivables				
Other receivables	1,248,855.71	0.00	1,223,149.49	0.00
Accrued income	5,142.14	2,436.34	0.00	0.00
Total	1,253,997.85	2,436.34	1,223,149.49	0.00
Short-term receivables				
Trade receivables	16,994,478.72	15,415,657.19	17,109,893.37	15,539,633.68
Other receivables	157,868.88	362,275.44	155,162.93	90,294.82
Accrued income	22,017,167.60	18,808,869.41	17,401,478.09	13,678,069.56
Total	39,169,515.20	34,586,802.04	34,666,534.39	29,307,998.06
Shares and holdings	2,000,000.00	0.00	0.00	0.00
Cash and bank receivables	40,411,883.47	18,634,080.08	31,138,836.92	6,033,859.27
Total current assets	82,835,396.52	53,223,318.46	67,028,520.80	35,341,857.33
TOTAL ASSETS	369,466,817.23	385,521,277.08	332,643,122.07	346,298,555.65

Equity and Liabilities	Group 31/12/2022	Group 31/12/2021	University 31/12/2022	University 31/12/2021
EQUITY				
Basic capital	112,358,990.83	107,368,990.83	112,358,990.83	107,368,990.83
Basic capital of Scholarship Foundation	269.10	269.10		
Non-autonomous reserves	5,539,803.34	6,749,289.25	5,416,776.31	6,628,787.41
Other equity of Scholarship Foundation	10,490,974.34	12,039,651.93		
Other statutory reserves	12,867,238.67	10,429,905.23	12,367,581.13	10,085,217.81
Paid-up unrestricted equity reserve	642,953.56	642,953.56		
Unrestricted reserves	2,169,821.36	2,223,561.04	2,169,821.36	2,223,561.04
Other equity				
Operating capital	35,268,582.32	35,268,582.32	35,268,582.32	35,268,582.32
Translation difference	18,882.93	3,639.83	0.00	0.00
Retained earnings (loss)	128,389,209.06	94,475,695.05	126,861,724.52	94,732,297.72
Profit (loss) for the financial period	-37,657,874.85	33,949,194.51	-37,842,024.71	32,158,990.12
TOTAL EQUITY	270,088,850.66	303,151,732.65	256,601,451.76	288,466,427.25
MINORITY HOLDINGS	10,605,234.01	10,424,251.54		
STATUTORY PROVISIONS				
Pension provisions	31,722.57	31,722.57	0.00	0.00
Other statutory provisions	231,251.50	316,851.50	156,851.50	316,851.50
Total	262,974.07	348,574.07	156,851.50	316,851.50
GROUP RESERVE	3,524,275.20	3,524,275.20		
LIABILITIES				
Debts in non-autonomous reserves	5,120.14	5,000.00	5,120.14	5,000.00
Long-term				
Advances received	2,193,000.00	3,583,441.00	1,458,000.00	2,713,441.00
Other creditors	0.00	967,425.12	0.00	608,675.02
Total	2,193,000.00	4,550,866.12	1,458,000.00	3,322,116.02
Short-term				
Advances received	39,536,645.87	28,465,295.81	36,009,052.07	25,018,625.00
Trade payables	5,482,772.77	6,152,097.33	4,996,713.26	4,408,430.24
Other creditors	15,196,264.01	7,880,640.53	13,336,646.66	6,350,374.99
Accruals	22,571,680.50	21,018,543.83	20,079,286.68	18,410,730.65
Total	82,787,363.15	63,516,577.50	74,421,698.67	54,188,160.88
TOTAL LIABILITIES	84,985,483.29	68,072,443.62	75,884,818.81	57,515,276.90
TOTAL EQUITY AND LIABILITIES	369,466,817.23	385,521,277.08	332,643,122.07	346,298,555.65

Cash Flow Statement

Cash flow from operating activities	1.1.-31.12.2022	1.1.-31.12.2021
Profit (loss) before appropriations and taxes	-36,771,641	33,799,944
Depreciation and impairment	6,528,464	6,372,246
Other non-payment income and expenses	498,930	-918,634
Change in fair value	28,581,385	-11,231,526
Financial income and expenses	-1,747,216	-15,796,016
Income and expenses in non-autonomous reserves	1,070,352	1,640,930
Change in working capital		
Change in short-term non-interest-bearing receivables	-6,581,686	-879,336
Change in short-term non-interest-bearing liabilities	16,562,442	-2,945,436
Paid direct taxes	-31	-24
Cash flow from operating activities (A)	8,140,998	10,042,147

Cash flow from investment activities		
Investments in tangible and intangible assets (-)	-7,799,768	-7,221,470
Received investment grants	1,397,881	2,169,478
Investments / divestment income from investments (net)	15,707,734	-54,024,623
Other net income from investments		
Dividend income from investments	1,920,801	2,091,361
Net income from investments	-194,119	13,722,193
Cash flow from investment activities (B)	11,032,529	-43,263,061

Cash flow from financing activities		
Increase in equity	4,990,000	0
Interest and financial income received	20,534	-17,537
Cash flow from financing for non-autonomous reserves	926,401	427,730
Cash flow from financing activities (C)	5,936,935	410,193

Increase (+) / decrease (-) in cash and cash equivalents (A+B+C)	25,110,463	-32,810,721
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Cash and cash equivalents at the beginning of the financial period	6,033,859	38,818,758
Cash and cash equivalents at the end of the financial period	31,138,837	6,033,859
Change in cash and cash equivalents	25,104,978	-32,784,898

Cash and cash equivalents in non-autonomous reserves at the beginning of the financial period	964	26,786
Cash and cash equivalents in non-autonomous reserves at the end of the financial period	6,449	964
Change in cash and cash equivalents of non-autonomous reserves	5,485	-25,822

Total change in cash and cash equivalents	25,110,463	-32,810,721
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Consolidated Cash Flow Statement

Cash flow from operating activities	1.1.-31.12.2022	1.1.-31.12.2021
Profit (loss) before appropriations and taxes	-37,758,360	38,479,176
Depreciation and impairment	7,618,498	7,651,717
Other non-payment income and expenses	537,300	-930,316
Change in fair value	31,085,008	-11,725,887
Financial income and expenses	-1,773,100	-17,389,701
Income and expenses in non-autonomous reserves	1,070,352	1,640,930
Change in working capital		
Change in short-term non-interest-bearing receivables	-6,612,410	-1,618,876
Change in short-term non-interest-bearing liabilities	16,073,349	-3,453,962
Interest and other financial expenses paid	-13,199	-10,542
Interest and other financial income received	1,046	1,063
Paid direct taxes	-39,363	-18,719
Cash flow from operating activities (A)	10,189,122	12,624,882
Cash flow from investment activities		
Investments in tangible and intangible assets (-)	-9,765,047	-9,330,835
Revenue from the sale of intangible and tangible assets	37,348	48,956
Received investment grants	2,704,312	4,038,932
Investments / divestment income from investments (net)	12,920,949	-65,063,033
Other net income from investments		
Dividend income from investments	1,920,801	2,091,361
Net income from investments	-156,113	15,325,338
Cash flow from investment activities (B)	7,662,251	-52,889,282
Cash flow from financing activities		
Increase in equity	4,990,000	0
Interest and financial income received	20,565	-17,518
Cash flow from financing for non-autonomous reserves	923,876	414,747
Cash flow from financing activities (C)	5,934,441	397,229
Increase (+) / decrease (-) in cash and cash equivalents (A+B+C)	23,785,814	-39,867,171
Cash and cash equivalents at the beginning of the financial period	18,634,080	58,488,412
Cash and cash equivalents at the end of the financial period	42,411,883	18,634,080
Change in cash and cash equivalents	23,777,803	-39,854,332
Cash and cash equivalents in non-autonomous reserves at the beginning of the financial period	90,103	102,943
Cash and cash equivalents in non-autonomous reserves at the end of the financial period	98,114	90,103
Change in cash and cash equivalents of non-autonomous reserves	8,010	-12,839
Total change in cash and cash equivalents	23,785,814	-39,867,171

Realisation of quantitative targets 2019–2022

Degrees	Average 2019–2022	2022	Target 2021–2024
Doctoral degrees	158	170	182
Master's degrees	1,466	1,407	1,757
Bachelor's degrees	1,145	1,205	1,600

Supplementary research funding (expenditure based), EUR million

Research funding	2019	2020	2021	2022
Total supplementary research funding	67.8	67.2	70.5	77.2
% of total funding	28.2	26.9	27.2	27.6

National competitive research funding, EUR million

National competitive research funding	2019	2020	2021	2022
Academy of Finland	26.8	25.5	29.2	29.5
Business Finland	9.2	7.6	7.2	10.1

International competitive research funding, EUR million

International competitive research funding	2019	2020	2021	2022
EU Framework Programme funding and other qualitative competitive EU funding	7.2	8.2	9.5	11.7
Other foreign funding	2.6	1.9	2.3	2.8

Breakdown of total costs, EUR million

Breakdown of total costs	2019	2020	2021	2022
Personnel expenses	157.3	171.2	179.3	190.6
Depreciation	5.4	5.7	6.4	6.5
Materials, supplies, goods	9.8	9.7	10.3	12.8
Purchases of services	16.7	15.8	16.2	17.0
Rents for premises and other rents	28.2	29.1	29.4	30.3
Travel expenses	7.3	1.9	1.3	5.4
Other expenses	15.5	16.5	16.2	16.9
TOTAL	240.2	249.9	259.1	279.5

Breakdown of income, EUR million

Breakdown of income	2019	2020	2021	2022
Basic funding	140.9	150.4	159.6	155.6
Compensation for teacher training schools	6.6	6.8	7.0	7.2
Supplementary funding	85.5	92.8	97.1	103.5
TOTAL	233.0	250.0	263.7	266.3



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