Technology for the benefit of people and the environment

Tampere University of Technology (TUT) is at the leading edge of technological development and a sought-after collaboration partner among the scientific and business communities. We educate skillful graduates to serve the needs of society. Our University is a fertile breeding ground for innovations and new research- and knowledge-based companies.

We generate new knowledge and expertise for the benefit of society. We foster the well-being of people and the environment through research and education. We develop technologies that reshape the competitive landscape of Finnish industry.
TUT turned 50 and keeps on exploring new avenues and renewing Finland’s competitive edge

For a solid period of 50 years, Tampere University of Technology has furthered education, research and innovation and significantly contributed to the development of the Pirkanmaa region and Finland as a whole. The nature of its work was never innocent, but the benefit to the future never faded.

Today, TUT is a renowned pioneer in technological development and a valued partner in research and business endeavors. We educate sought after experts for the needs of society. In technology, it is so clear that the state made wise decisions on the expansion and further development of the higher education system over half a century ago. These decisions were also decisive in terms of the nation’s prosper decisions on the expansion and further development of society. In hindsight, it is easy to concur that the state made wise decisions on the expansion and further development of society. In hindsight, it is easy to concur that the state made
toward a more competitive education system.

In TUT’s strategy updated in 2016, the University profiles itself as an institution that reflects the welfare of people and the environment, reshapes the competences of Finland and correspondingly explores new avenues for research and education in the fields of engineering. In the Tampere process, Tampere3 is an apt example of a modern learning environment.

In 2012, the Tampere3 process was initiated involving the Tampere3 project team. The project team consists of Tampere University of Technology, the University of Tampere and Tampere University of Applied Sciences. The project is directed at different interest groups throughout the year. The first main festivities took place in September: the University’s centennial was published and the new Kampusareena building was inaugurated.

Kampusareena is a unique pilot project launched by TUT and University Properties of Finland Ltd. The facilities and services available in Kampusareena have been specifically designed to connect startups and post-graduate education between the University and companies. The building brings together companies, researchers, students and academic disciplines in an open working environment. The building is an example of an innovation district to sustain the strengths of R&D projects, innovations, jobs and successful businesses.

Tampere3 is an example of a broad-minded outlook and solid strategy. In honour of the jubilee, the Board of the TTY Foundation decided to support research and educational development efforts by handing out altogether five million euros of return on capital through a fund-raising campaign. To support the efforts, the state has committed itself to providing up to three times the return on capital for investing in selected development targets and new openings. These funds also allow the University to further develop its operations in the long term, as stated in the structure and the strategic plan of TUT.

Correspondingly, the TUT makes a commitment to further develop its operations in the long term, as stated in the structure and the strategic plan of TUT. In 2015, the Board of the TTY Foundation initiated a three-year adjustment programme to balance TUT’s finances. With this decision, TUT continues the good and responsible management of its finances.

The reductions in the traditional funding sources accentuates the benefits of TUT’s foundation. TUT is able to absorb funds from the return on capital for capital for investing in selected development targets and new openings. These funds also allow the University to further develop its operations in the long term, as stated in the structure and the strategic plan of TUT. In 2015, the Board of the TTY Foundation initiated a three-year adjustment programme to balance TUT’s finances. With this decision, TUT continues the good and responsible management of its finances.

The benefits of TUT’s foundation form a distinct research and learning environments.

The study paths offered will better enable the students to meet future labor market needs. The new university programs will become an internationally recognized pioneer in pedagogy and learning environments.

Being able to contribute to the establishment of this new university is a true-in-a-lifetime opportunity. In order to succeed, we will need unwavering cooperation and a strong commitment between the involved parties. What we already have is a distinct ambition and a strong foundation for creating a super-new university.
TUT 50 years

Tampere University of Technology started its operations as a branch of Helsinki University of Technology in 1965. Gradually, a full university campus was established in the suburb of Hervanta, today housing approximately 8,300 BSc/MSc and doctoral students and employing 1,700 experts from various fields. The university has borne crucial significance in the development of the local Pirkanmaa region, Finland and the world of science.

In 2015, Tampere University of Technology celebrated its 50th anniversary. The jubilee was celebrated on several occasions together with the staff, students, cooperation partners and city residents.

The year was set off with the ‘Light into Darkness’ science event in Tampere Hall in January. The main festivities took place in September. The University’s chronicle Hyöty ja tiede was published and the anniversary cantata Alussa oli insinööri premiered in conjunction with the opening ceremonies for the academic year. The newly completed Kampusareena building was also inaugurated.

The year 2015 was also the UN’s International Year of Light.

The theme of the jubilee was light. Light symbolizes life and hope, and it also bridges TUT into the future. Science and technology is crucial for solving social problems and they pave the way for a brighter future. The year 2015 was also the UNESCO International Year of Light.

One of the highlights of the jubilee was the publication of the University’s chronicle. Written by Martti Häikiö, the 516-page Tamperean University’s history 1965–2015 summarizes the key development stages of the disciplines of the University and the numerous new innovations made at TUT, and it also looks back on the University’s long history of close connections with business life. Attention is paid to the most important turning points and the key people involved.

According to Professor Häikiö, the core of the University is composed of ideas, or in other words, people. To Häikiö, some of the most memorable people from the writing process were the founding father of digital signal processing Yrjö Neuvo, Pentti Kettunen from materials science, the developer of biodegradable materials Pertti Törmälä, the optoelectronics guru Markus Pessa, Matti Vilenius from hydraulics as well as Director of Administration Seppo Loimio, whose dynamic attitude guided the University firmly forward.

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In honour of the jubilee, incentive awards were granted during the TUT Week in February from the return on the capital of the TTY Foundation. Awards were granted to Professor Jorma Mäntynen (on the left), Head of Department Heli Harrikari from the Language Centre, University Teacher Essi Isohanni and Academy Research Fellow Alessandro Foi. Professor Mircea Guina was also rewarded.
Technology Days is a free-of-charge technology event for the general public. Its main event took place in October 2015, for the first time outside the metropolitan area. Public lectures were given in the Finlayson area at the heart of Tampere, and the keynote speaker, Emeritus Professor of Space Astronomy Esko Valtaoja, spoke to a full auditorium of people. A part of the programme was directed particularly at children and youth.

The highly popular TUT Forum was arranged as a part of Technology Days. The event focused on the all-encompassing business revolution induced by digitalization and the debate on the role of humans in the Internet of Things. The keynote speaker at the event was the recipient of the 2014 Millennium Technology Prize and big data expert, Professor Stuart Parkin.

The most brilliant jubilee festivity was the staff gala held in November. At the gala, several merited TUT members were awarded. The award of merit in the amount of 20,000 euros granted by the Tuula and Yrjö Neuvo Fund was received by Professor Moncef Gabbouj.

The most brilliant gala dressers was also awarded: the deserving winners were Riina and Matti Virkki (in the photo) who had designed and executed fabulous LED decorations in their garments.

Light Artist Kari Kola’s imposing installation Koski (The Rapids) opened the 50th Tampere Illuminations event on 23 October. Exhibiting strong colours and the juxtaposition of nature and architecture, Koski extended both sides of the Tammerkoski rapids. With the work, Tampere University of Technology participated in the jubilee of the annual Tampere Illuminations event. The awe-inspiring Koski work remained on view for the city residents throughout the weekend.
The year 2015 involved a lot of discussion on the distribution of work, cooperation, and profiles of the universities in Finland. Together with Aalto University and Lappeenranta University of Technology, TUT took a close look at the strengths of each of the three universities, also covering any overlapping fields in research and education. At the end of the year, the Board of the TTY Foundation approved TUT’s updated strategy for 2016–2020. The new strategy included Tampere3 in the University’s vision and highlighted four profile areas for research: digital operating environment, energy- and eco-efficiency, health technology and light-based technologies. The last-mentioned forms a new profile area for TUT and involves research on the properties of light and the development of light-controlled materials and new sources of laser light. The research conducted in optics and photonics at TUT’s White light research group is first-rate, also globally speaking.

Research

Light-based technologies emerged as a new profile area

The Academy of Finland made a new funding form available in 2015, aiming to strengthen the profiling of the Finnish universities. In the first application cycle, TUT received funding for research cooperation in biomedical technology, along with intelligent machines and mathematics. The largest share of funding, 7.9 million euros, was granted to BioMediTech, a joint multidisciplinary institute for bioscience and medical engineering between Tampere University of Technology and the University of Tampere.

The year under review also included enhanced investments in TUT’s scientific standards and internationality. A record number of tenure track professors were appointed in research areas supporting the University’s strategy. For the first time, the Board of the TTY Foundation also allocated funds from the return on capital for hiring postdoctoral researchers. The requirements for the appointed postdoc researchers included high research standards and former international experience.

In a survey conducted by the Open Science and Research Initiative, TUT ranked among the top higher education institutions in terms of maturity of open conduct. The preparations for TUT’s Research Data Policy were also initiated in 2015, creating explicit principles and processes for research data processing.

Open science is an asset

“The more we follow the principle of open science and make our publications and the underlying data and methods openly available, the more citations we will attract and facilitate the verification of research findings,” says TUT’s Library Director Riitta Lähdemäki. Our results show that research materials and methods are, by default, open and available for joint use. Researchers are required to prepare a data management plan. For all doctoral dissertations and scientific articles, a version approved by the publisher must be stored in a parallel archive.

Professor Ulla Ruotsalainen took office as TUT’s Vice President for Research at the beginning of 2015.

TUT’s profile areas

Digital operating environment
Energy- and eco-efficiency
Health technology
Light-based technologies

In future, the sun will be an increasingly important energy source. Professor Mircea Guina’s group develops highly efficient solar cells.
Research

Winds of change in energy policy: increased flexibility needed in electrical energy supply

Finland is pursuing an increasingly resource-efficient and climate-neutral society. The aim is to use natural resources in a sustainable manner and thus counteract the climate changes. In electricity production, renewable resources such as wind power, solar energy and biomass are becoming more common. This shift necessitates enhanced load adjustability in order to manage the power balance of the energy system.

"This development in our electrical energy system poses several technical challenges and also raises questions concerning our energy policy," Professor Pertti Järventausta notes. "Together with the University of Tampere and Tampere University of Applied Sciences, TUT is involved in two consortia that received funding, one focusing on future electric energy systems (EL-TRAN) and the other on robots and well-being services."

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In 2015, substantial investments were made in TUT’s on-campus learning environments. The Board of the TTY Foundation has allocated altogether 3.5 million euros to the development and deployment of new education technology and new teaching methods for 2015–2017. In fact, TUT is well under way in becoming a superior learning environment across Finnish universities.

In September, the new Kampusareena building was taken into use, now offering a modern learning environment with a range of learning facilities and technologies available. Kampusareena welcomed companies at the core of the campus and laid the foundation for encounters between companies and students, along with resulting new discoveries.

The establishment of the new professorship in engineering pedagogy, supported by a 600,000 euro donation from the Technology Industries of Finland Centennial Foundation, was a significant opening in educational development. Dr. Petri Nokelainen was chosen to the position with the goal of studying and developing university-level education in engineering. What poses additional challenges to the task is today’s learning environments, constantly transforming through such evolutions as digitalization.

A significant reform in TUT’s educational management was our transition to a new organizational structure. For the first time, the support services organization for TUT’s education now operates directly under the management of the vice president for education. This has enabled us to develop our operations with increased determination. The departments prepared their first educational strategies, comprising the educational methods to be applied and the teaching profile of the department for the near future.

In addition to operational planning, the educational strategies serve the purpose of strengthening the University’s pedagogical management culture.

The Tampere3 project started to gain visibility across the University’s educational activities. The year 2015 also saw the launching of 14 teaching pilots aimed at joint education and accumulated experiences of cooperation between the three higher education institutions.

TUT aspires to be the most high-quality and international academic learning environment in Finland.
The first professor of engineering pedagogy in Finland

Tampere University of Technology established a new professorship in engineering pedagogy supported by a donation from the Technology Industries of Finland Centennial Foundation. The professorship is the first of its kind in Finland. The position was taken up by Dr. Petri Nokelainen, an educationist, who studies engineering pedagogy in Finland.

Petri Nokelainen notes. “We study the difference between a professional and a world-class expert.”

“In integrated studies, the focus is not on the language as a system, but rather on problem solving using a foreign language. This allows the students to learn field-specific and workplace-oriented language skills in a natural way,” says Nina Niemelä, a coordinator for integrated studies.

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“Mystery shopping – new feedback on education

Feedback on education can be requested from students in a variety of ways. From 2015, TUT has introduced a new method based on mystery shopping for the purpose: mystery shopping. Dozens of students, observing the teaching provided at the university, paid their own learning instead of the course teachers knowing about it. The observations were gathered and used for educational development. A systematic student feedback collection, the Kaku feedback system is used for each course taught at TUT – new feedback on education.

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Language studies integrated into field-specific courses

In today’s international workplace, students are expected to have practical language skills in their own fields of expertise. For example, students studying engineering or science may need linguistic skills in their field of study. Language studies included in their degrees are therefore taken increasingly by engineering students. TUT students have the same alternatives for applying specific pedagogical approaches as available in other institutions, such as increased student involvement, enhanced field-specific competence and improved problem-solving skills and functional multilingualism.

With his team, Nokelainen has outlined a model of how expertise accumulates. “We study the difference between a professional and a world-class expert.”

“The digital revolution and internationalisation are changing the working life, which means that we must rethink the way we teach learning skills. Education in the field of engineering is a good level, but it is important to critically consider the grounds for applying specific pedagogical approaches and also keep in mind that there are alternative implementation models available,” Nokelainen notes.

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Opened in autumn 2015, Kampusareena literally brought companies at the core of the campus. The facilities enable joint efforts and interaction working, creating a co-creation environment with a re-defined partnership and a type of collaboration. At the end of 2015, Kampusareena hosted over 50 companies.

With Kampusareena, business life became even closer to education and students’ everyday lives. To an increasing extent, business representatives also served as visiting lecturers and commission theses, projects and student work. This type of cooperation supports social interaction and the working life relevance of academic degrees. TUT graduates are sought-after employees.

In 2015, TUT paid special attention to SMEs: new products were created for them, existing products were productized further, and target group-oriented communications was intensified. This work was carried out in cooperation with the University of Tampere and Tampere University of Applied Sciences. Among TUT’s new services, Industry Puzzles Friday, in particular, became established and enabled companies to discuss their problems with academic experts. The wide-ranging cooperation between the University and business life has also given rise to several new companies and substantial new business in existing companies. Nearly half of the inventions made at the University were transferred to companies that use them in their own business and patenting. Researchers’ and students’ entrepreneurship was also supported. Other cooperation partners included entrepreneurial and business service providers in the Tampere region, and the activities also reached the utilization of existing services, such as PopUP Activation and Business Clinic.

In the future, Tampere3 will unite and harmonize the practices of the three higher education institutions, develop support mechanisms and facilitate the production of increasingly powerful solutions for the needs of business life.

Collaboration between the University and companies creates new information, expertise and business

Societal impact

Opening of PR and Partnerships

Ann-Mari Järvelin

In 2015

12 companies were spun out of TUT’s research

More than 20 knowledge-based companies were established by students

14 projects were underway to commercialize research results
Kampusareena helps the University and companies cross paths

The new Kampusareena is the heart of the TUT campus and a venue for encounters between companies from a variety of fields and TUT's researchers, students and alumni. The campus community has truly adopted the new building and its meeting rooms, cafés, restaurants, the TUT library and the numerous lounge rooms.

Kampusareena is home to over 50 companies that have close cooperation relations with the University and companies. The collaboration between TUT and business life is further boosted by Kampusklubi, hosted by University Properties of Finland Ltd on the fifth floor of Kampusareena. The Kampusklubi members include R&D-oriented, research-intensive companies from a variety of fields and TUT's researchers, students and alumni. The campus and a venue for encounters between companies arising from scientific research and dealing with technologically challenging areas, such as sensor and detector technologies, high-performance computing and big data applications, cooling technologies, magnetic and power technologies and specialists of CERN.

The Kampusklubi members have close cooperation relations with the University and companies. A lot of interesting new research is currently ongoing, with close connections to the business world.

Making CERN technologies available to start-ups

A new channel for world-class cooperation opened up for Finnish companies in September as a result of a cooperation agreement. The agreement concerns the commercialization of the expertise of CERN and the technologies it develops. The Finnish Business Incubation Center CERN Technologies (FBC) provides companies with a connection to the technical expertise and specialists of CERN.

This new opening will promote the technological and commercial utilization of large-scale scientific projects for the benefit of Finnish industry and commerce,” says Director of Technology Programme at HEL TUT Professor Saku Mäkinen.

"SMACC’s services are highly accessible. Business Development Manager Besso Moneves (VTT) and Professor Kari T. Koskinen (TUT) raised the competence centre opening ceremonies.

In the vanguard of the things

Tampere University of Technology was the first Finnish university to join the international Industrial Internet Consortium (IIC). With the membership, TUT has put itself in a position among the trailblazers of the Industrial Internet of Things (IIoT) both internationally, nationally and as a leading expert in the field in Finland.

SMACC is a joint research alliance between Tampere University of Technology and VTT Technical Research Centre of Finland. It provides quick solutions, diverse top expertise and wide cooperation networks targeted at companies, in particular.

"SMACC strengthens the development in the field and offers a one-stop-shop for the utilization of high-class research expertise and wide cooperation networks targeted at companies, in particular.

"The development of the IIoT and IoT will globally promote economic growth, create new jobs and reshape the technologies and 3D printing.

"For TUT, this membership opens the doors to unprecedented cooperation potential with the other IIC members, including highly-innovated universities in the United States and businesses operating in Silicon Valley,” says Professor Manny Ramirez from the Department of Information Management and Logistics.

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TUT has a long history of systematic HR and operations development. Delightfully, these efforts have borne fruit and also showed in the results of the staff survey carried out in Finnish universities in 2015. Among the universities, TUT’s staff gave the highest scores for an individual employee’s own work contents, competence and working conditions. TUT shared the first position in the assessment of community spirit and came in third in the area of well-being at work. When comparing TUT’s results with the results from the previous corresponding survey, positive development could be observed across all areas.

The excellent results are the outcome of systematic work and the staff’s active participation in development measures. TUT’s investments in the development of supervisory work are also bearing fruit and advancing the University’s goal of becoming the best university employer in Finland.

A functional and competent work community and continuous operational development are also great assets when recruiting new talent. In 2015, TUT made special investments in tenure track recruitment, aiming at professorships. The tenure track is a four-stage career path that enables the employees to strengthen the education and research carried out in TUT’s profile areas.

The beginning of 2015 also saw the introduction of the new support services unit, incorporating a significant share of the support services staff of departments and faculties. During the year the unit developed its services to support the University’s fundamental tasks, research and education, as effectively as possible.

A university is never complete. Amidst all the changes and turns, we are well positioned, however. The strong groundwork carried out with our staff lays a solid foundation for creating a new joint university together with the University of Tampere and Tampere University of Applied Sciences.

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A good lecturer values feedback

"In the swim", 'considerate', 'easily inspired about the topics studied', praise the students. 'Supportive', 'helpful' and 'articulate', say the colleagues. The Student Union of Tampere University of Technology nominated University Teacher Sami Paavilainen from the Department of Physics as the 2015 Lecturer of the Year.

In Sami Paavilainen’s view, a good lecturer is inspiring, 'considerate' and thought-provoking.

“The students do not have to assimilate everything during the lecture. Lectures should also raise questions for later reflection. At the same time, highly admin students who are able to come up with the best questions during the lecture” he notes.

In fact, Paavilainen finds his best motivation in students’ questions or exam answers that show that the students have truly understood the course contents, often even beyond the course requirements. Whether official lecture feedback, insightful exam answers or a good old sigh from the back row.

In the Tampere3 process, Tampere University of Applied Sciences, Tampere University of Technology and the University of Tampere are taking steps to establish an all-new university in Tampere.

In the Tampere3 process, Päivi Myllykangas took office as the manager of the Tampere3 process, and her belief is that a new, internationally attractive university for Tampere is about to see novel, internationally high-level solutions at the interfaces of research, education and administration as the three institutions unite.

“What we need is brave new initiatives and experiments. Tampere3 is a unique process in Finland and it also bears international significance. It allows us to ensure that we will still have a vital community replete with expertise in 2025, “ Myllykangas notes.

Awards and grants at the Staff Gala

At TUT’s 50th anniversary gala in November, the Industrial Research Fund of Tampere University of Technology handed out various rewards and grants to altogether 71 employees and postgraduate students. The recipients work in research, education and support services positions at the University.

The most substantial acknowledgement, an award in the amount of 20,000 euros by the Tuula and Yrjö Neuvo Fund, was received by Professor Moncef Gabbouj. The award was granted in recognition of Professor Gabbouj’s meritorious and productive scientific work.

Professor Moncef Gabbouj was recognized for his meritorious and productive scientific work.

Aiming at a globally attractive university

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In Myllykangas’ opinion, high-level science carries all the more weight in generating new information and challenging customary mindsets in a world that is becoming increasingly diverse.

“We need versatile education and new practices that provide the youth with a strong competence base. It is the proficient workforce and top research that make this region an attractive hub for companies. ”

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2015 was a year of major changes in the finances of Tampere University of Technology. The main funding provider, the Finnish state, reduced its funding for the university sector by lowering direct government subsidies. Furthermore, the project funding provided by Tekes and the Academy of Finland also decreased. The impacts of these cuts reflected both on the University’s business-oriented projects as well as the R&D investments made by companies. To a significant extent, the reduced funding will also impact TUT’s finances in the years to come.

TUT’s balance sheet has remained strong, however, thanks to sensible management of finances. The University’s sound economy will also support our systematic operational development in the long run. TUT’s solvency ratio in 2015 was 94 per cent.

When the times are hard for finances, the foundation form brings welcome benefits. The return on capital of the TTY Foundation can be used for developing our operations. In 2015, returns in the amount of 3 million euros were handed out for the development of educational and research activities.

The retrenchment targeted at higher education by the state ushered the higher education institutions to profile themselves, on one hand, and seek closer cooperation, on the other. The ongoing Tampere3 project will promote the cooperation and structural reform of the higher education institutions in Tampere to a substantial degree. The reforms will cover education, research, support services and administration alike. Tampere3 will give rise to strong expertise that supports the growth and success of Finnish industry and commerce.

A strong balance sheet is a sign of sensible management of finances.
## PROFIT AND LOSS ACCOUNT (EUR 1,000)

### CONTINUING OPERATIONS 2015 2014

<table>
<thead>
<tr>
<th>Income</th>
<th>59,888</th>
<th>60,748</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income from grants</td>
<td>44,209</td>
<td>44,744</td>
</tr>
<tr>
<td>Income from business activities</td>
<td>14,099</td>
<td>15,372</td>
</tr>
<tr>
<td>Other income</td>
<td>126</td>
<td>132</td>
</tr>
<tr>
<td><strong>Expenses</strong></td>
<td>45,601</td>
<td>44,667</td>
</tr>
<tr>
<td>Personnel expenses</td>
<td>92,194</td>
<td>94,899</td>
</tr>
<tr>
<td>Depreciation</td>
<td>6,304</td>
<td>2,835</td>
</tr>
<tr>
<td>Other expenses</td>
<td>4,361</td>
<td>4,667</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>-81,211</td>
<td>-81,652</td>
</tr>
</tbody>
</table>

### FUNDRAISING 2015 2014

<table>
<thead>
<tr>
<th>Income</th>
<th>433</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donations</td>
<td>24</td>
<td>0</td>
</tr>
<tr>
<td>Collection proceeds</td>
<td>410</td>
<td>0</td>
</tr>
<tr>
<td><strong>Expenses</strong></td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### INVESTMENTS AND FINANCING 2015 2014

<table>
<thead>
<tr>
<th>Income</th>
<th>15,721</th>
<th>23,667</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expenses</strong></td>
<td>560</td>
<td>18,529</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>15,161</td>
<td>5,138</td>
</tr>
</tbody>
</table>

### GENERAL STATE FUNDING 2015 2014

<table>
<thead>
<tr>
<th>Income</th>
<th>15,231</th>
<th>23,687</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expenses</strong></td>
<td>685</td>
<td>12,518</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>14,546</td>
<td>11,170</td>
</tr>
</tbody>
</table>

### PROFIT FOR THE FINANCIAL YEAR 2015 2014

<table>
<thead>
<tr>
<th>Income</th>
<th>298,705</th>
<th>292,957</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total assets</strong></td>
<td>291,536</td>
<td>284,431</td>
</tr>
</tbody>
</table>

### LIABILITIES 2015 2014

<table>
<thead>
<tr>
<th>Income</th>
<th>281,536</th>
<th>284,931</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total liabilities</strong></td>
<td>291,536</td>
<td>284,431</td>
</tr>
</tbody>
</table>

### Fixed Assets 2015 2014

<table>
<thead>
<tr>
<th>Asset</th>
<th>1,793</th>
<th>1,888</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intangible assets</strong></td>
<td>1,793</td>
<td>1,888</td>
</tr>
<tr>
<td><strong>Tangible assets</strong></td>
<td>11,322</td>
<td>11,943</td>
</tr>
<tr>
<td><strong>Investments</strong></td>
<td>33,643</td>
<td>33,643</td>
</tr>
<tr>
<td><strong>Depreciation</strong></td>
<td>2,835</td>
<td>2,835</td>
</tr>
</tbody>
</table>

### Current Assets 2015 2014

<table>
<thead>
<tr>
<th>Asset</th>
<th>682</th>
<th>848</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short-term receivables</strong></td>
<td>24,806</td>
<td>25,923</td>
</tr>
<tr>
<td><strong>Investments</strong></td>
<td>191,955</td>
<td>191,955</td>
</tr>
<tr>
<td><strong>Cash at bank and in hand</strong></td>
<td>21,324</td>
<td>21,064</td>
</tr>
</tbody>
</table>

### Current Liabilities 2015 2014

<table>
<thead>
<tr>
<th>Asset</th>
<th>695</th>
<th>848</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short-term liabilities</strong></td>
<td>33,237</td>
<td>33,237</td>
</tr>
<tr>
<td><strong>Total liabilities</strong></td>
<td>291,536</td>
<td>284,431</td>
</tr>
</tbody>
</table>

## BALANCE SHEET (EUR 1,000)

### ASSETS

<table>
<thead>
<tr>
<th>Asset</th>
<th>2015</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fixed Assets</strong></td>
<td>48,708</td>
<td>50,370</td>
</tr>
<tr>
<td><strong>Current Assets</strong></td>
<td>298,705</td>
<td>292,957</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td>347,413</td>
<td>343,327</td>
</tr>
</tbody>
</table>

### LIABILITIES

<table>
<thead>
<tr>
<th>Asset</th>
<th>2015</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fixed Liabilities</strong></td>
<td>170,951</td>
<td>170,951</td>
</tr>
<tr>
<td><strong>Current Liabilities</strong></td>
<td>33,237</td>
<td>33,237</td>
</tr>
<tr>
<td><strong>Total liabilities</strong></td>
<td>204,188</td>
<td>204,188</td>
</tr>
</tbody>
</table>

### GENERAL STATE FUNDING 2015 2014

<table>
<thead>
<tr>
<th>Income</th>
<th>79,642</th>
<th>82,472</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expenses</strong></td>
<td>74,166</td>
<td>66,119</td>
</tr>
<tr>
<td><strong>Surplus (deficit)</strong></td>
<td>5,476</td>
<td>6,353</td>
</tr>
</tbody>
</table>

## BOARD OF THE TTY FOUNDATION 2015

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managing Director</td>
<td>Tom Järvinen</td>
</tr>
<tr>
<td>Chair of the Board of the TTY Foundation</td>
<td>Eero Leppänen</td>
</tr>
<tr>
<td>Professor, Sirpa Jalkanen</td>
<td>Vice Chair</td>
</tr>
<tr>
<td>President, Antti Kaunonen</td>
<td>Director</td>
</tr>
<tr>
<td>Director, Matti Törmä</td>
<td>Professor, Sirpa Jalkanen</td>
</tr>
<tr>
<td>Professor, Jouni Kivistö-Rahnasto</td>
<td>Professor, Antti Valmari</td>
</tr>
<tr>
<td>University Lecturer, Heikki Huttunen</td>
<td>University Lecturer, Heikki Huttunen</td>
</tr>
<tr>
<td>Professor, Marina Rauhonen</td>
<td>Professor, Laura Rautio</td>
</tr>
<tr>
<td>Academic Board</td>
<td>Academic Board</td>
</tr>
<tr>
<td>Managing Director</td>
<td>Chair</td>
</tr>
<tr>
<td>Chair of the Education Council</td>
<td>Professor, Marina Rauhonen</td>
</tr>
<tr>
<td>Professor, Jouni Kivistö-Rahnasto</td>
<td>Professor, Antti Valmari</td>
</tr>
<tr>
<td>Vice President, Design, Anne Stemness</td>
<td>Vice President, Design, Anne Stemness</td>
</tr>
<tr>
<td>Student representative, Tuomas Hirvonen</td>
<td>Student representative, Tuomas Hirvonen</td>
</tr>
<tr>
<td>Student representative, Jussi-Pekka Ten</td>
<td>Student representative, Jussi-Pekka Ten</td>
</tr>
<tr>
<td>Student representative, Joel Tirkkonen</td>
<td>Student representative, Joel Tirkkonen</td>
</tr>
</tbody>
</table>

## TAMPERE UNIVERSITY OF TECHNOLOGY

### Support Services

- Computer Science and Engineering
- Intelligent and Information Systems
- Signal Processing

### Faculty of Business and Economics

- Civil Engineering
- Industrial Management
- Information Management

### Faculty of Computing and Electrical Engineering

- Electrical Engineering
- Electronics and Communications
- Mechanical Engineering

### Faculty of Engineering Sciences

- Automation Science and Engineering
- Intelligent Systems
- Materials Science

### Faculty of Natural Sciences

- Chemistry and Bioengineering
- Mathematics
- Physics

## TAMPERE UNIVERSITY OF TECHNOLOGY

### Academic Board

- President, Markku Kivistö, Chair
- Professor, Marina Rauhonen
- Professor, Jouni Kivistö-Rahnasto
- Professor, Laura Rautio
- Professor, Antti Valmari

### Support Services

- Computer Science and Engineering
- Intelligent and Information Systems
- Signal Processing

### Faculty of Business and Economics

- Civil Engineering
- Industrial Management
- Information Management

### Faculty of Computing and Electrical Engineering

- Electrical Engineering
- Electronics and Communications
- Mechanical Engineering

### Faculty of Engineering Sciences

- Automation Science and Engineering
- Intelligent Systems
- Materials Science

### Faculty of Natural Sciences

- Chemistry and Bioengineering
- Mathematics
- Physics
### Students

#### Total number of students

<table>
<thead>
<tr>
<th>Year</th>
<th>BSc and MSc students</th>
<th>Doctoral students</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>9,904</td>
<td>1,455</td>
</tr>
<tr>
<td>2014</td>
<td>9,163</td>
<td>1,336</td>
</tr>
<tr>
<td>2015</td>
<td>8,295</td>
<td>1,158</td>
</tr>
</tbody>
</table>

Last year, the share of women among TUT's MSc/BSc students was 21% and 27% among the postgraduate students.

#### Applicants and admitted students

<table>
<thead>
<tr>
<th>Year</th>
<th>Applicants (first choice)</th>
<th>Admitted students</th>
<th>Women of admitted students</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>4,468</td>
<td>1,460</td>
<td>25%</td>
</tr>
<tr>
<td>2014</td>
<td>3,924</td>
<td>1,501</td>
<td>25%</td>
</tr>
<tr>
<td>2015</td>
<td>3,529</td>
<td>1,419</td>
<td>23%</td>
</tr>
</tbody>
</table>

#### International students

<table>
<thead>
<tr>
<th>Year</th>
<th>Total number of international students</th>
<th>MSc students</th>
<th>Doctoral students</th>
<th>Other students</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>1,423</td>
<td>801</td>
<td>216</td>
<td>507</td>
</tr>
<tr>
<td>2014</td>
<td>1,342</td>
<td>638</td>
<td>192</td>
<td>512</td>
</tr>
<tr>
<td>2015</td>
<td>1,305</td>
<td>566</td>
<td>205</td>
<td>534</td>
</tr>
</tbody>
</table>

#### Exchanges

<table>
<thead>
<tr>
<th>Year</th>
<th>Outgoing students</th>
<th>Incoming students</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>267</td>
<td>406</td>
</tr>
<tr>
<td>2014</td>
<td>221</td>
<td>407</td>
</tr>
<tr>
<td>2015</td>
<td>169</td>
<td>424</td>
</tr>
</tbody>
</table>

#### Publications and innovations

<table>
<thead>
<tr>
<th>Type</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patents applications</td>
<td>10</td>
<td>15</td>
<td>22</td>
</tr>
<tr>
<td>Received patents</td>
<td>7</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Invention disclosures</td>
<td>82</td>
<td>69</td>
<td>56</td>
</tr>
</tbody>
</table>

* applications in which TUT is the applicant or that are based on research conducted at TUT

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### INNOVATION ACTIVITIES

<table>
<thead>
<tr>
<th>Year</th>
<th>Patents applications</th>
<th>Received patents</th>
<th>Invention disclosures</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>10</td>
<td>7</td>
<td>82</td>
</tr>
<tr>
<td>2014</td>
<td>15</td>
<td>3</td>
<td>69</td>
</tr>
<tr>
<td>2015</td>
<td>22</td>
<td>3</td>
<td>56</td>
</tr>
</tbody>
</table>

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### SCIENTIFIC AND OTHER PUBLICATIONS

<table>
<thead>
<tr>
<th>Year</th>
<th>International publications</th>
<th>Refereed papers</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>1,571</td>
<td>1,436</td>
<td>115</td>
</tr>
<tr>
<td>2014</td>
<td>1,586</td>
<td>1,488</td>
<td>98</td>
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<tr>
<td>2015</td>
<td>1,582</td>
<td>1,443</td>
<td>139</td>
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</tbody>
</table>

### Publications in Jufo-ranked journals

<table>
<thead>
<tr>
<th>Year</th>
<th>Publications in Jufo-ranked journals</th>
<th>Refereed papers</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>1,124</td>
<td>51</td>
<td>276</td>
</tr>
<tr>
<td>2014</td>
<td>1,159</td>
<td>16</td>
<td>178</td>
</tr>
<tr>
<td>2015</td>
<td>1,212</td>
<td>69</td>
<td>216</td>
</tr>
</tbody>
</table>

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### Refereed papers:

- scientific papers that undergo a peer review and appear in scientific journals, compilations or conference proceedings.

### Other:

- non-peer reviewed scientific papers, scientific books, publications aimed at a professional audience or the general public, patents and electronic publications.

### Jufo:

- scientific papers and publications that appear in journals, compilations or conference proceedings that have been ranked based on the Finnish publication ranking system. Jufo 1 = basic level, 2 = leading, 3 = top.

The figures for 2013 and 2014 follow the 2014 ranking criteria.

### STAFF EMPLOYED UPON GRADUATION

<table>
<thead>
<tr>
<th>Year</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>72%</td>
<td>71%</td>
<td>71%</td>
</tr>
<tr>
<td>Women</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
DEGREES CONFERRED

<table>
<thead>
<tr>
<th>Degree Type</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Science (Tech/Arch)</td>
<td>662</td>
<td>687</td>
<td>819</td>
</tr>
<tr>
<td>Master of Science (Tech)</td>
<td>94</td>
<td>91</td>
<td>88</td>
</tr>
<tr>
<td>Licentiate of Science (Tech)</td>
<td>778</td>
<td>812</td>
<td>864</td>
</tr>
<tr>
<td>Doctor of Science (Tech, PhD)</td>
<td>1,550</td>
<td>1,598</td>
<td>1,715</td>
</tr>
<tr>
<td>Bachelor of Science (Tech/Arch)</td>
<td>62</td>
<td>67</td>
<td>81</td>
</tr>
<tr>
<td>Total</td>
<td>778</td>
<td>812</td>
<td>864</td>
</tr>
</tbody>
</table>

Share of women in MSc/BSc graduates: 23% (2013), 24% (2014), 26% (2015)

By region
- Province of Western Finland: 72% (2013), 74% (2014), 72% (2015)

By sector
- Private sector: 71% (2013), 78% (2014), 78% (2015)
- Other public sector: 8% (2013), 6% (2014), 5% (2015)

NATIONALITIES AMONG TUT’S EMPLOYEES

- Russia: 41%
- China: 26%
- Germany: 13%
- Italy: 10%
- Greece: 9%
- Turkey: 8%
- India: 6%
- Pakistan: 5%
- Iran: 4%
- France: 3%
- Iran: 2%

TUT’s staff incorporates 52 nationalities.

DEPARTMENT MOBILITY 2013 2014 2015

Visits lasting longer than 1 month

Visits lasting 1 week to 1 month

PERSON-YEARS 2013 2014 2015


STAFF 2013 2014 2015


The number of hourly paid teachers is not included.

FINLAND 41
RUSSIA 26
CHINA 21
GERMANY 13
ITALY 10
GREECE 9
TURKEY 8
INDIA 5
PAKISTAN 4
IRAN 2
FRANCE 3
OTHER NATIONALITIES 123

TUT’s staff incorporates 52 nationalities.

The number of hourly paid teachers is not included.