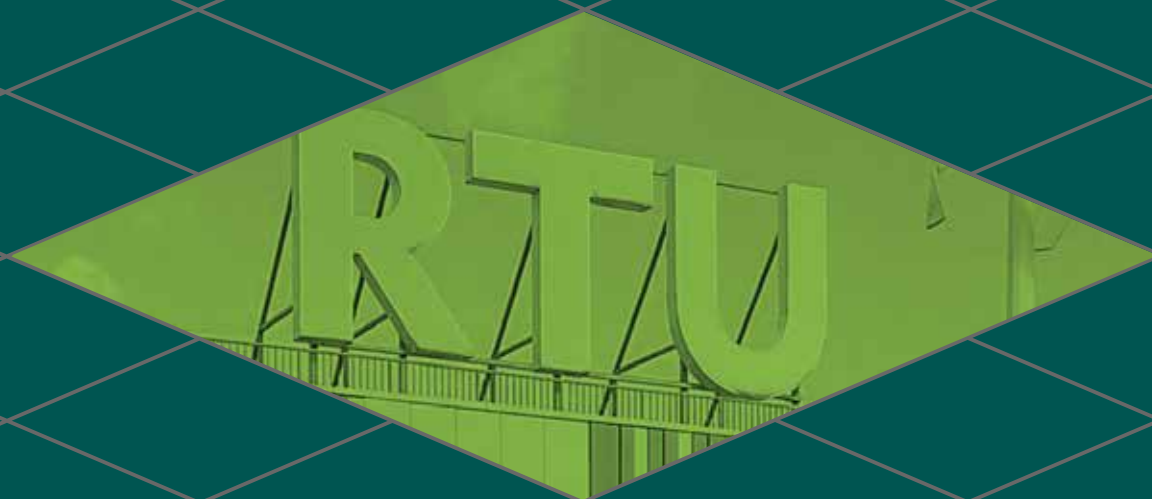




RIGA TECHNICAL  
UNIVERSITY

YEARBOOK  
2020





RIGA TECHNICAL  
UNIVERSITY

# YEARBOOK 2020



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RTU Rector, Academician  
**LEONĪDS RIBICKIS**

This year was challenging for all of us – we were taken aback by COVID-19 pandemic, and definite limitations and emergency situation it caused forced us all to change our daily lives, our habits and to move from the real world to the virtual environment. Online interaction became part of our daily lives – lectures, meetings, communication – all these activities mainly occurred in the digital environment. But we managed to adapt to these changes. Members of academic personnel of RTU very quickly restructured their work and started to deliver lectures online. Our students also adapted to new conditions and started to study online. Visits to the library were restricted. Visits to the laboratories were restricted. Nevertheless, against all odds, we proved we were able to transform our lives, our academic activity, our scientific activity, and also in this turbulent and emotionally devastating year we were able to reach outstanding results in both education and research.

Riga Technical University (RTU) has traditionally summarized its accomplishments in the Yearbook, which provides a comprehensive overview of our achievements in 2020.

Our researchers and their cooperation partners from other universities developed prototypes of technologies that will help protect human health and lives at healthcare facilities and other places with high COVID-19 infection risk within the state research program «Mitigation of the Consequences of COVID-19 Pandemic». Our researchers who work at CERN in cooperation with their colleagues on the international team took part in the development of the lung ventilator; in turn, within the global activity Folding@Home, RTU High Performance Computing Center and its partners offered their supercomputers to the scientists in Latvia and all over the world so that they could use this computation capacity in their research of COVID-19 and search for the cure to limit and eliminate the virus.

We have withstood. Our students and academic staff lived through an academic year prolonged until 14 August, and despite the pandemic, we even managed to sustain a wonderful tradition to celebrate RTU Grand Graduation. At the end of a difficult academic year, we organized a common celebration in the safe environment – we held a graduation ceremony at Spilve Airfield. We managed to stay focused, overcome the challenges brought about by the pandemic and withstand. All together.

That is why I would like to express my sincere gratitude to the entire RTU family – students, academic staff, researchers, and employees – for staying together, supporting each other and performing own duties in new unexpected conditions. We have proved that our power is unity. We were powerful even when we had to work remotely on a daily basis, even when we could not physically stand shoulder to shoulder. But we tested an old saying the hard way – all difficulties make us even stronger. Let us stay strong! All together.

01

# About RTU



RTU is a modern, internationally recognized and prestigious multi-discipline technical university. RTU is purposefully evolving to become the fourth-generation university that offers not only high-quality education, but also provides for excellent research and sustainable valorization, as well as smart digitalization.

At the nine faculties of RTU, it is possible to obtain comprehensive education in the cutting-edge technologies and engineering, as well as social sciences and humanities. The study programs implemented at RTU have passed international expert examination and are officially accredited, thus attesting high quality of education provided by RTU. This has also been acknowledged by the Latvian employers, who recommend RTU to the prospective students as a priority higher education institution in Latvia.

RTU is purposefully improving its infrastructure building the first student campus in Latvia at Ķīpsala. Upon completion, it will become the most modern engineering study center in the Baltic States, locating engineering RTU faculties, modern laboratory building, Scientific Library and administrative buildings.



# 02

# Strategy

The main target of the RTU Strategy is to ensure implementation of the leitmotiv referred to in the National Development Plan for 2014–2020 – to achieve the «economic breakthrough» in Latvia.

RTU positions itself as a cornerstone of the development of Latvia, which provides education and training to the specialists necessary for the Latvian national economy and development of new products and services, serving as a basis for sustainable growth of Latvia.



## Mission ▼

To ensure internationally competitive high-quality scientific research, tertiary education, technology transfer and innovation for the Latvian national economy and society.

## Values ▼

RTU values are quality, academic freedom, sustainable development, integrity, cooperation and stability.

## Vision ▼

RTU – an internationally recognized, modern and prestigious higher education establishment, the leading university of science and innovation in the Baltic States – a cornerstone of the development of Latvia.

## Strategy

RTU Strategy lays out the core targets of RTU development until 2020 and defines the activities and distribution of responsibilities for the implementation of the tasks.

In 2020, a new RTU Strategy 2021–2025 was developed, which is a logical continuation of the existing Strategy.

The leitmotif of the new strategy is high quality and efficiency, as well as proactive link between activities of RTU and the needs of the national economy of Latvia. RTU has set four main aims for the next planning period, three of them – excellent research, high-quality education and sustainable valorization – are related to implementation of the core functions of the University, at the same time, the fourth aim – institutional excellence – is concerned with the support function of the University and improvement of the internal governance system. Six sub-aims have been formulated within the latter aim – institutional excellence: digitalization,

sustainable development, efficient financial and administrative performance, internationalization, communication and cooperation, and human resource development.

Definite tasks to be completed and performance indicators to be achieved have been formulated for all strategic aims, which will allow monitoring the execution of the Strategy and until 2025 implementing RTU Vision – internationally competitive, dynamic and modern university of science and technology.



# Horizontal Priorities

Horizontal priorities set the following seven tasks included in the core activities of RTU (studies, research, innovation and digitalization) to be introduced and implemented across all university activities.



## Tasks of Horizontal Priorities:

### Internationalization

Internationally competitive University performance in science, innovation and studies

### Smart digitalization

Application of modern technologies in order to increase University efficiency

### Interdisciplinarity

Cooperation among different sectors and fields of specialization as the basis for development of new innovative products and modern curriculum

### Organizational efficiency

Efficient high-quality management of the University to promote development

and ensure advanced implementation of modern education and research processes

### Financial efficiency

Secured financial independence of the University and a motivating internal financial system that promotes University development

### Infrastructure efficiency

Up-to-date study, research and innovation environment with modern buildings and technical equipment in compliance with the University needs

### Smart change management

Significant reforms in University development in order to increase competitiveness and improve performance efficiency of the University.

## Sustainability

Sustainable development is the main precondition for RTU activities. Being aware of its role at the national scale, RTU assumes responsibility for its impact on the society, environment and the national economy. In order to be able to assess this impact, it is necessary to take into account the key factors that enable RTU to provide for long-term planning, sustainability and efficient development.

## Green Ķīpsala

In an attempt to reduce human impacts on the environment and climate change, RTU has undertaken to introduce the Green Ķīpsala concept at the RTU Campus by 2023. It is intended to be implemented through sustainable resource management, raising awareness of RTU employees and students about environmental issues and facilitating the creation and usage of environmentally friendly technologies.

RTU has identified three main platforms – consumption of energy resources, waste management and transport, where improvements can be introduced in order to obtain the most efficient results by reducing the ecological footprint of RTU. It can be achieved by improving the infrastructure, changing the habits of students and employees and using innovative green products and technologies created by RTU researchers using the infrastructure of Ķīpsala Campus.

Innovations created by RTU researchers play an important role in the development of the Green Ķīpsala concept. Innovations will be tested in Ķīpsala, promoting sustainable management of the campus.

## RTU Contribution to the National Economy – 844 million euro

In 2020, RTU calculated the contribution it made to the national economy in 2019, which amounted to 844 miln. EUR. It implies that considering the issue in state policy perspective, it is worth investing in high-quality tertiary education and research, it is also worth improving and supporting this sphere, since in future it will

help provide for even larger contribution of the universities to the economy of Latvia.

Estimates were performed by the researchers of RTU Center for Knowledge Management, who analyze world, Latvia's and RTU data and tendencies in order to gain information based on the calculations and forecasts to be further used in decision making.

In order to estimate the economic impact of RTU on the national economy, RTU adopted the methodology developed by the Canadian researcher Walter Sudmant, which has been used for the assessment of economic impact of numerous leading universities, for example, the University of Calgary and the University of British Columbia.

W. Sudmant's methodology is based on five dimensions, whose impact is calculated in order to determine how university added value is created:

- Direct spending of the institution;
- Student spending;
- Visitor spending;
- Graduate premiums;
- Economic impact of research.

Direct spending of the institution is the first item in the calculations, it is actualized when the university pays for goods and services using own financial resources, thus contributing to money circulation in Latvia. In the case of RTU, in 2019 the overall impact of University spending on the Latvian economy was 94.2 m euro.

The second item – student daily spending – is estimated disregarding student tuition fees.

The overall impact of student spending on the Latvian economy was 107.2 m euro.

The third item – visitor spending – amounted to 7.6 m euro.

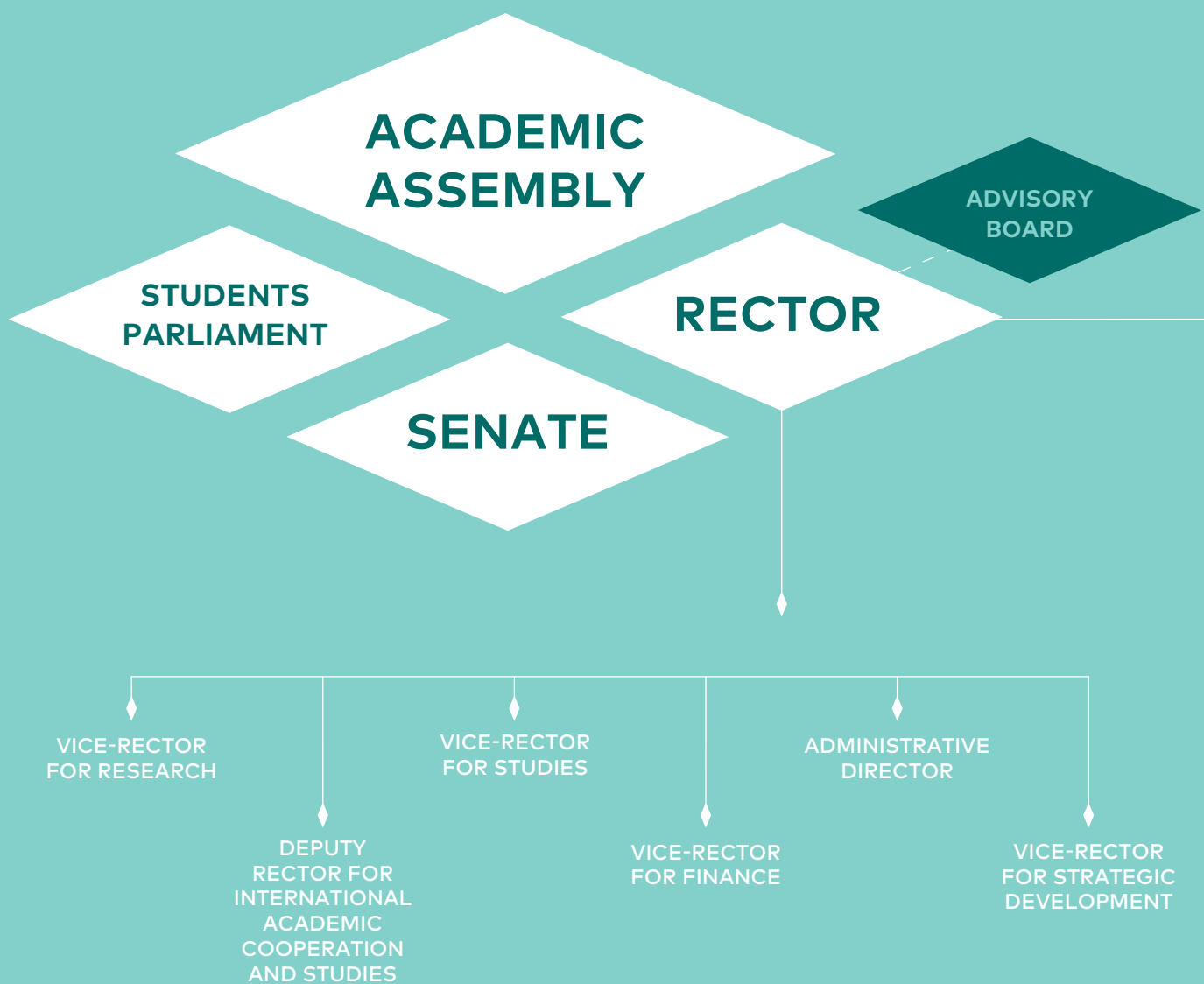
Graduate premiums are the fourth criterion. It is used to denote the increase in remuneration received by the employees with higher level of education as compared to the employees with lower level of education. The overall impact of RTU alumni on the economy of Latvia in 2019 was 478.2 m euro.

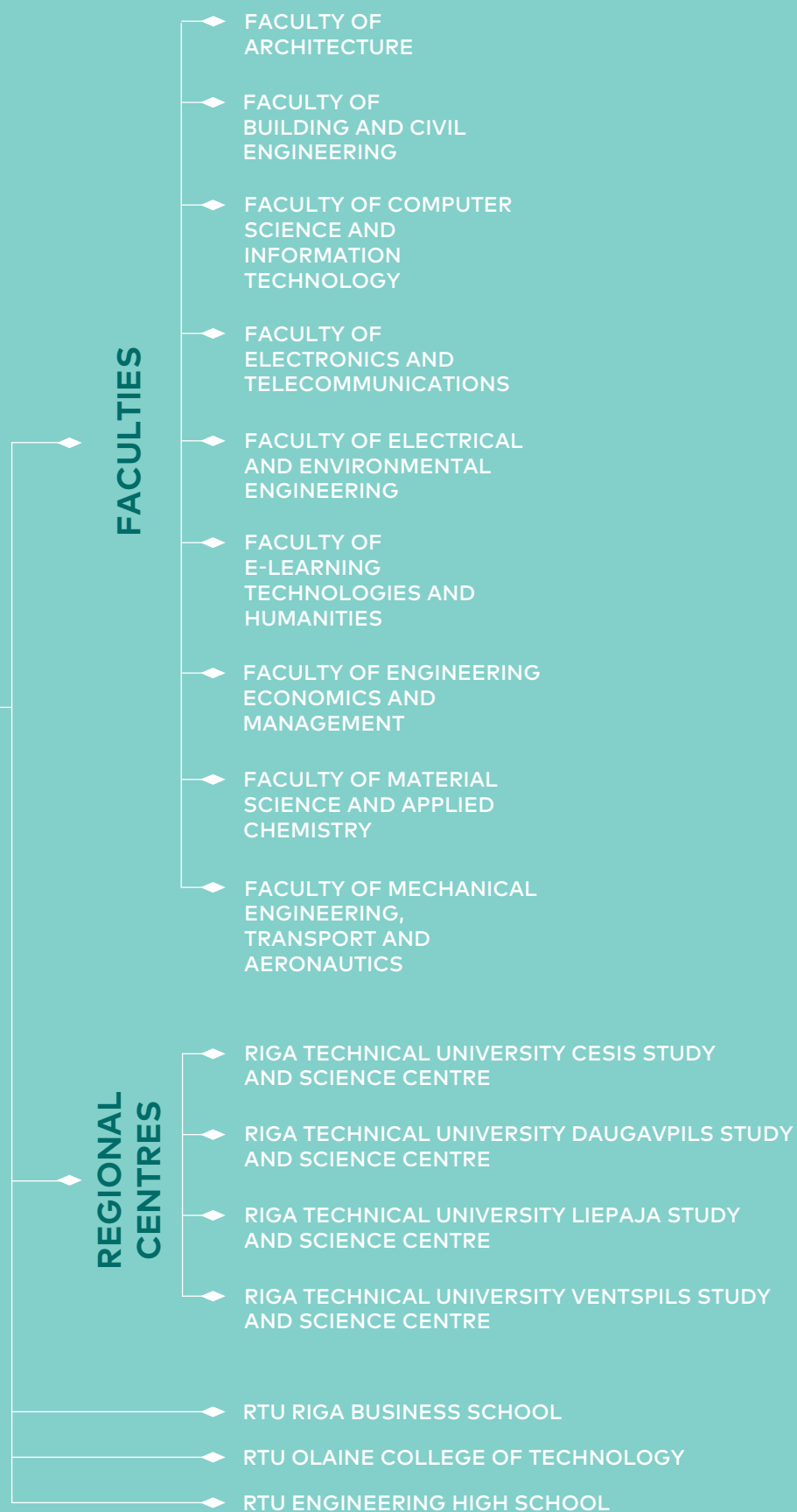
Dynamic impact of research is the fifth criterion, in the case of RTU it reached 156.9 m euro.

Summing up the numbers presented above, the resulting figure 844 m euro is obtained, which attests that higher education and research generate great value for the country and that it is important to find the ways to increase this value in Latvia under conditions of resource scarcity.

# 03

# Structure





04

# Decision-Making Bodies



## a. Constitutional Assembly

Constitutional Assembly is an authorized highest collegiate representative and administrative decision-making body of RTU.



THE CHAIRMAN  
OF THE CONSTITUTIONAL  
ASSEMBLY

Professor  
**Bruno Grasmanis**

On 23 October 2014, the Parliament of Latvia (Saeima) approved the law «On the Constitution of Riga Technical University», which took effect on 5 November 2014. On 8 December 2014, RTU Academic Assembly approved the Regulation on RTU Constitutional Assembly. On 11 May 2015, RTU Academic Assembly was renamed as the Constitutional Assembly.

200 members of the Constitutional Assembly are elected by an open ballot by the

students, academic and general personnel for the term of three years. The Constitutional Assembly comprises all members of RTU Senate, the remaining members of the Assembly are elected by the University administration, faculties, legally autonomous organizational units and student self-government to ensure their proportional representation. Representation wise, the proportion of the academic personnel is minimum 60% and the proportion of students is 20%.

## b. Senate



THE CHAIR  
OF THE SENATE

Professor  
**Elīna Gaile-Sarkane**

The Senate of RTU is a statutory collegial administrative and decision-making body that approves the internal code of conduct and regulations governing all spheres of RTU activity. Since December 2014, RTU Senate consists of 50 members.

Meetings of the Senate are organized in such a way that any

RTU Senator could be involved in discussions to actively represent the opinion delegated by their organizational units. Beyond the Senate meetings, the Senators actively participate in the work of Senate commissions. Senate commissions are established in the areas that are significant for the University operation and are intended for considering and providing statements on proposals submitted for consideration at the Senate meetings and conformity of the documents to be approved to the RTU strategic goals. Since 2016, the Senate meetings are held in the new building of RTU Scientific Library or Student House. Its modern meeting hall ensures excellent working conditions, it is equipped with multimedia equipment that facilitates the work of the Senators.

In total, during ten regular (planned) working meetings

of the Senate a year, on average from 160 to 200 draft projects are considered. A competition is announced annually for minimum 30 positions of professors and associate professors, the titles of RTU Honorary Employees are granted, 30–40 regulations of different kind are approved, 25–30 amendments to different regulations are introduced and a lot of significant decisions are drawn up.

In order to ensure successful information exchange and raise awareness of all RTU employees about the current events at the University, valid regulatory enactments are available to any RTU employee and student in the RTU Documents section of the intranet platform Ortus. At the same time, the decisions made by RTU Senate are published in the weekly RTU brief «Jaunais Inženieris».

05

# Administration



## a. Rector



RECTOR  
RTU RECTOR,  
ACADEMICIAN

**Leonīds Ribickis**

Rector is the highest official of RTU who implements general administrative management and represents RTU without special authorization.

At the end of 2015, Leonīds Ribickis was re-elected as RTU Rector. His candidacy was supported by the vast majority, namely, 159 members of the Constitutional Assembly.

L. Ribickis noted, «Our strategic goals, such as high-quality higher education, excellence in research, valorization and digitalization, can be achieved not by the Rector alone, but by all of us together. We have a lot of talented youth, and it is worth working for their sake.»

According to the Regulations for the Election of RTU Rector, a person holding the position of RTU professor for not less than five years may be elected Rector. Rector is elected by the Constitutional Assembly of RTU for the term of five years, but not more than for two consecutive terms. Rector is elected if at least two-thirds of RTU Constitutional Assembly members participate in the voting and the candidate wins more than a half of the casted Constitutional Assembly member votes.



## b. Vice-Rectors



VICE-RECTOR  
FOR RESEARCH,  
ACADEMICIAN

**Tālis Juhna**

The Office of RTU Vice-Rector for Research administers, promotes and supervises research activity at RTU, as well as manages procedures for obtaining scientific PhD degrees by RTU researchers at the accredited study programs approved by RTU Senate.



VICE-RECTOR FOR  
ACADEMIC AFFAIRS,  
PROFESSOR

**Uldis Sukovskis**

The Office of RTU Vice-Rector for Academic Affairs coordinates implementation of the study programs and supervises the study process.



VICE-RECTOR  
FOR FINANCE,  
PROFESSOR

**Ingars Eriņš**

The aim of the Office of Vice-Rector for Finance is to administer financial management processes and to perform accounting, allocation and planning of resources and funds at RTU to ensure implementation of the University activities and implementation of its development strategy.



VICE-RECTOR  
FOR STRATEGIC  
DEVELOPMENT

**Artūrs Zeps**

The aim of the Office of Vice-Rector for Strategic Development is to draw up RTU development strategy and to ensure its successful implementation, monitoring significant development projects of RTU, as well as representing RTU interests cooperating with public authorities, partners and the public.

## c. Administrative Director



### Juris Iljins

Administrative Department ensures implementation of the administrative processes and procedures that correspond to RTU strategic goals, develops and implements personnel management, administrative work, quality management, information and communication technology system security policies; supervises development and implementation of strategies in the areas of information technology, document management, library, sports and cultural activities; controls implementation of decisions of RTU Senate, Deans' Council and the Rector's Council, as well as the orders of RTU Rector.

## d. Deans of RTU Faculties

DEAN OF THE FACULTY OF ARCHITECTURE

**Professor Uģis Bratuškis**

DEAN OF THE FACULTY OF CIVIL ENGINEERING

**Professor Juris Smirnovs**

DEAN OF THE FACULTY OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

**Professor Agris Nikitenko**

DEAN OF THE FACULTY OF ELECTRICAL AND ENVIRONMENTAL ENGINEERING

**Associate Professor Oskars Krievs**

DEAN OF THE FACULTY OF ELECTRONICS AND TELECOMMUNICATIONS

**Professor Jurgis Poriņš**

DEAN OF THE FACULTY OF E-LEARNING TECHNOLOGIES AND HUMANITIES

**Professor Marina Platonova**

DEAN OF THE FACULTY OF ENGINEERING ECONOMICS AND MANAGEMENT

**Professor Elīna Gaile-Sarkane**

DEAN OF THE FACULTY OF MECHANICAL ENGINEERING, TRANSPORT AND AERONAUTICS

**Professor Ēriks Geriņš**

DEAN OF THE FACULTY OF MATERIALS SCIENCE AND APPLIED CHEMISTRY

**Professor Māris Turks**

06

# Advisors



## a. RTU Advisory Board



CHAIRMAN OF THE  
ADVISORY BOARD

**Āris Žīgurs**

Chairman of the Board,  
JSC Latvenergo



DEPUTY CHAIR  
OF THE ADVISORY  
BOARD

**Juris Gulbis**

Chairman of the Board,  
Ltd Tet

The main aim of RTU Advisory Board is to promote RTU growth, determining the course of its strategic development in accordance with the needs of the national economy of Latvia.

The Advisory Board consults the Senate and Rector on the issues concerning RTU Development Strategy and supports the formation of material and financial resources of the University.

The Advisory Board evaluates RTU performance four times a year and provides recommendations and proposals on University development in general.

## Members of the Advisory Board

<b>Normunds Bergs</b>	Chairman of the Board of Latvian Electrical Engineering and Electronics Industry Association; Chairman of the Board of JSC SAF Tehnika
<b>Juris Binde</b>	President of Ltd Latvijas Mobilais Telefons
<b>Ivars Puksts</b>	
<b>Maksims Jegorovs</b>	Head of Latvian Branch of «Accenture»
<b>Andris Vanags</b>	Chairman of the Council of Ltd Sakret
<b>Raina Dūrēja-Dombrovskā</b>	Executive Director of Association of the Latvian Chemical and Pharmaceutical Industry
<b>Leonīds Jākobsons</b>	Executive Director of the Association of Manufacturers of Building Materials
<b>Māris Gorodcovs</b>	Director of SA Civilā Aviācijas Aģentūra
<b>Juris Savickis</b>	CEO of Ltd ITERA Latvija
<b>Vitālijs Gavrilovs</b>	Head of the Employers' Confederation of Latvia
<b>Vilnis Rantiņš</b>	Chairman of the Board of Association of Mechanical Engineering and Metalworking Industries of Latvia
<b>Ieva Jaunzeme</b>	Director General of the State Revenue Service
<b>Aigars Zariņš</b>	Chairman of the Board of Ltd Balsts
<b>Andris Laučiņš</b>	Partner, audit and professional services company EY (Ernst & Young Baltic)
<b>Visvaldis Sarma</b>	CEO of Ltd Sarma & Norde
<b>Mārtiņš Straume</b>	Chairman of the Board of the Latvian Association of Construction Engineers
<b>Normunds Talcis</b>	Chairman of the Board of JSC Rīgas Siltums
<b>Viktors Puriņš</b>	Ex-president of the Latvian Builders Association
<b>Aigars Kalvītis</b>	Chairman of the Board of JSC Latvijas Gāze
<b>Andris Lubiņš</b>	CEO of Ltd Grandeg
<b>Atis Sausnītis</b>	Chairman of the Board of Ltd Baltijas Lāse
<b>Ivars Alksnis</b>	Technical Director of Ltd Kārlis
<b>Andrejs Vasiļjevs</b>	Chairman of the Board of Ltd TILDE
<b>Andris Bērziņš</b>	Leading Partner of Ltd Change Venture
<b>Andrejs Aleksejevs</b>	
<b>Juris Gulbis</b>	Chairman of the Board, Ltd Tet
<b>Normunds Grinbergs</b>	President of the Latvian Builders Association

## b. Faculty Advisory Boards

Faculty Advisory Boards have been established to consult faculty administration, provide advice to the faculty councils and deans on the faculty development strategy issues, support the formation of material and financial resources of the faculties, as well as evaluate operation of the faculties and make proposals on the development

of the faculties and RTU, study process improvements, planned financial investments, changes to the management model and other significant issues concerning faculty activities.

Currently, Advisory Boards have been established and function at several faculties of RTU.

### Advisory Board of the Faculty of Engineering Economics and Management

<b>Viktors Tihomirovs</b>	Director General of Vollers Rīga
<b>Raimonds Zukuls</b>	Deputy Director General of the State Revenue Service in Customs
<b>Aleksandrs Grigorjevs</b>	Chairman of the Board of Ltd Grif
<b>Mārtiņš Baltmanis</b>	Head of VUGD Board of Civil Protection
<b>Linda Mežs-Talapina</b>	Member of the Board of Ltd LATSIGN
<b>Kaspars Zakulis</b>	Director of Latvijas Zaļais Punkts
<b>Dzintars Putnis</b>	Chairman of the Board of Ltd Leilands un Putnis
<b>Uldis Vītoliņš</b>	Executive Director of the Association of Regional Development Centres (Reģionālo attīstības centru apvienība)
<b>Dace Gaile</b>	Head of the Procurement Monitoring Bureau
<b>Helēna Endriksone-Severnaja</b>	Deputy Chair of the Board of Latvian Association of Construction Engineers; Chair of the Board of Ltd LBS-Konsultants

## Advisory Board of the Faculty of Electronics and Telecommunications

<b>Valdis Vancovičs</b>	Chairman of the Board of Ltd Tele 2
<b>Didzis Liepkalns</b>	Technical Director of JSC SAF Tehnika
<b>Jānis Bokta</b>	Chairman of the Board of the Latvian State Radio and Television Centre
<b>Alfrēds Asars</b>	Strategic Development Director for IT and Telecommunications of JSC Latvenergo
<b>Vija Gēme</b>	Member of the Board of SJSC Elektroniskie Sakari
<b>Ilmārs Osmanis</b>	Chairman of the Board of JSC HansaMatrix
<b>Modris Greitāns</b>	Scientific Director of the Institute of Electronics and Computer Science
<b>Normunds Lapoško</b>	Head of the Wholesale Roaming Services Department of Ltd Latvijas Mobilais Telefons

## Advisory Board of the Faculty of Mechanical Engineering, Transport and Aeronautics

<b>Vilnis Rantiņš</b>	Chairman of the Council of the Association of Mechanical Engineering and Metalworking Industries of Latvia
<b>Ēriks Geriņš</b>	Dean of the Faculty of Mechanical Engineering, Transport and Aeronautics
<b>Aivars Amoliņš</b>	Member of the Board of Ltd Auteko@TUV Latvija
<b>Jānis Druska</b>	Head of Department of LR CAA
<b>Dzintars Naglis</b>	Director of Ltd Naglis&Err
<b>Lolita Smiltiece</b>	HR Director of SJSC Latvijas Dzelzceļš
<b>Normunds Talcis</b>	Chairman of the Board of JSC Rīgas Siltums
<b>Gundars Ziemāns</b>	Head of the Department of Laboratory Diagnostics of «Siemens Healthcare Diagnostics»
<b>Ruta Bogdane</b>	Compliance Monitoring Director of SmartLynx Airlines Ltd
<b>Arnīs Petrānis</b>	Member of the Board of Ltd Peruza
<b>Arnīs Muižnieks</b>	Director of the Department of Aviation of the Ministry of Transport

## Advisory Board of the Faculty of Materials Science and Applied Chemistry

<b>Andris Vanags</b>	Director of Ltd Sakret
<b>Bruno Andersons</b>	Head of the Laboratory of Wood Biodegradation and Protection the Latvian State Institute of Wood Chemistry
<b>Raina Dūrēja-Dombrovskā</b>	Executive Director of the Association of the Latvian Chemical and Pharmaceutical Industry
<b>Ilga Gavare</b>	Quality System Director of Ltd Tenachem
<b>Andris Jegorovs</b>	Director of Production of Active Pharmaceuticals of JSC Grindeks
<b>Juris Gulbis</b>	Head of Division of Production of Active Pharmaceuticals of JSC Grindeks
<b>Raitis Kalniņš</b>	Independent Expert in Environmental Issues
<b>Ivars Kalviņš</b>	Head of Laboratory of Carbofunctional Compounds of the Latvian Institute of Organic Synthesis
<b>Indra Kramzaka</b>	Deputy Director of the Environment State Bureau
<b>Marians Ļahovskis</b>	Director General of Ltd Tenachem
<b>Vilnis Liepiņš</b>	Representative of Ltd BAPEKS
<b>Jānis Mārciņš</b>	Advisor to the Latvian Association of Wood Processing Entrepreneurs and Exporters
<b>Laila Pētersone</b>	Head of the Production Development Department of JSC Valmieras Stikla Šķiedra
<b>Vitālijs Skrīvelis</b>	Chairman of the Board of the Association of the Latvian Chemical and Pharmaceutical Industry
<b>Raimonds Terentjevs</b>	Member of the Board of JSC Olainfarm, Director of the Quality Management Department
<b>Normunds Zelčāns</b>	Representative of JSC Olainfarm



07

# Personnel

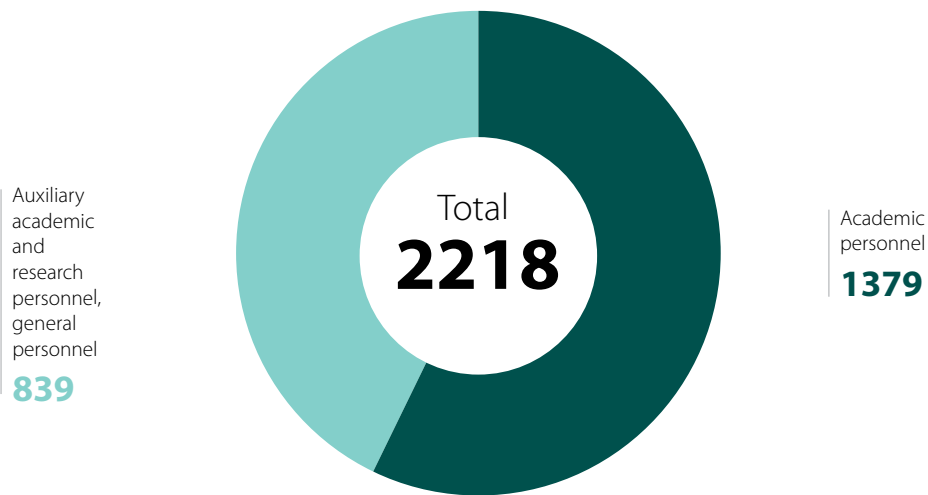


Being aware that human resources are the main asset of RTU, the University creates an inspiring environment for both its employees and students. Flexible working

practices and growth opportunities are provided to all stakeholders. The excellence system based on the EFQM model is incorporated within the RTU management model.

## a. Total number of employees

As of 01 March, 2021



## b. Number of academic personnel

As of 01 March, 2021



08

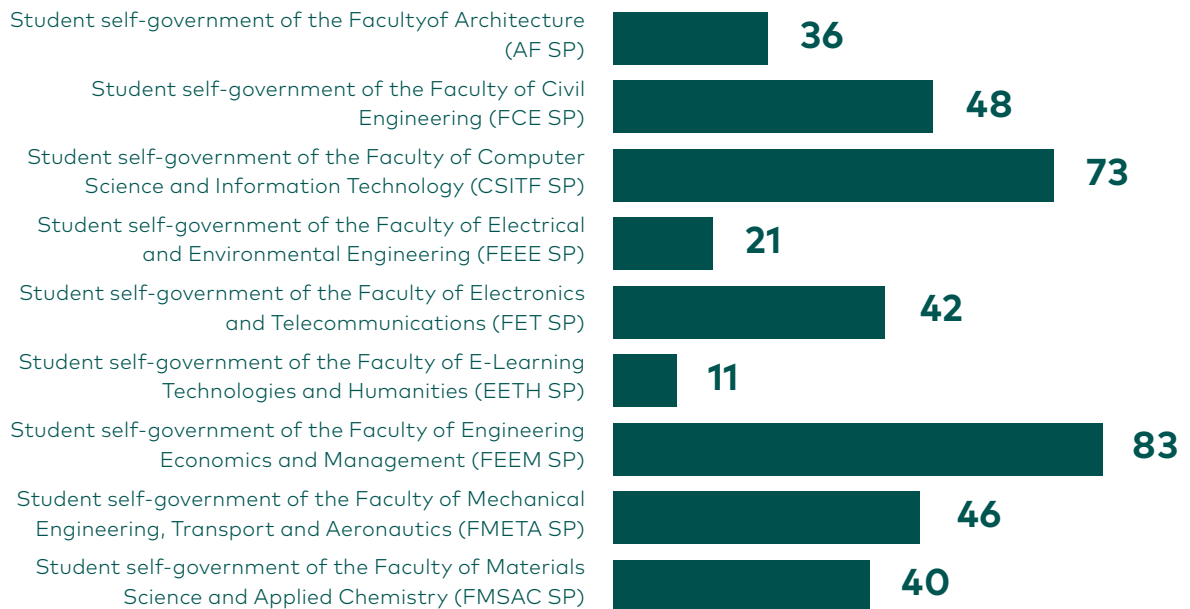
# Student Self-Governments and Parliament



RTU Student Parliament (RTU SP) is a student organization with rich traditions. In 2020, it celebrated its 28th anniversary. The core of RTU SP is formed by RTU students who are interested in making their studies and extra-curricular life more qualitative and diverse, not only for themselves, but for all students of RTU.

RTU SP President in 2020 – a students of the Faculty of Computer Science and Information Technology Lāsma Līga Reisa.

## a. Members of RTU Student Parliament



## b. RTU SP Activities in 2020

- In 2020, RTU SP united the largest number of members as compared to the previous years – 400 students;
- In cooperation with RTU Design Factory and representatives of the program «RTU Innovation Grants for Students», the first 24-hour long hackathon was organized by the SP. The winning team received a prize of 1000 EUR for further development of their innovative idea;
- RTU SP Mentor Program was organized for the first time. Within the program, senior students helped 450 first-year students integrate in the RTU learning environment;
- Promoting cooperation between business and RTU, many guest lectures, discussions, paper presentations and tutorials were organized to make every RTU student even more competitive;
- A seminar on Digital Marketing was held. A large number of participants joined the online seminar and later left a very positive feedback;
- The International Student Council evolved from a department of the Student Parliament into a full-fledged self-government;
- A new user-friendly home page of RTU SP was launched on rtu.lv platform, an English version of the home page was created in 2020;
- At Christmas, RTU SP in cooperation with the student parliaments of Riga Stradins University, Turība University, University of Latvia, and Rezekne Academy of Technologies organized a joint charity event «Heart Abask», donating more than 400 presents to the inhabitants of the social care center «Rauda».

### Events organized by student self-governments

- A paper bridge building contest «Paper Bridges» organized by FCE SP;
- A gingerbread house building contest organized by AF SP;
- A competition «Mechs' Corner» organized by FMETA SP;
- An event «Speedcrack: Escape the web» organized by CSITF SP, where participants tested their IT competences;
- Electronics Olympiad» organized by FET SP.

## 3D Printing Contest

A 3D prize model representing luge sport and Sigulda bobsleigh and luge track was recognized as the best object in the annual 3D printing contest organized by RTU Student Parliament and RTU Design Factory in cooperation with the coach of the Latvian national luge team Mārtiņš Rubenis. The winners – the students of RTU Faculty of Mechanical Engineering, Transport and Aeronautics Harijs Pēteris Broks and Mārtiņš Kuža – received a 3D printer as a prize. The prize model developed by the students may be further improved and in future it can be used as a prize awarded to the winners of luge competitions. The aim of the 3D printing contest is to develop student knowledge about the opportunities and applications of 3D printing.



## Students build a paper bridge holding the load of 280 kg

A new record was reached in the construction contest «Paper Bridges» – the first prize was awarded to the paper bridge that withstood the load of 280 kg. The bridge was built by the team of FCE students «Šneks» – Mārtiņš Arājs, Ivo Liepa and Linards Hremenkins. The team also won the 2019 contest «Paper Bridges», where their bridge was able to hold the load of 139.9 kg.

The annual contest «Paper Bridges» is organized by the student self-government of the FCE. In 2020, for the first time in history the contest was organized in the remote format due to COVID-19 pandemic. In the period of one week, teams of students and schoolchildren had to build a bridge, using only 50 A4 format paper sheets and glue.



09

# High-Quality Education



RTU offers a wide range of study programs at the college, Bachelor, Master and Doctoral level, providing the largest number of study positions funded from the state budget in Latvia.

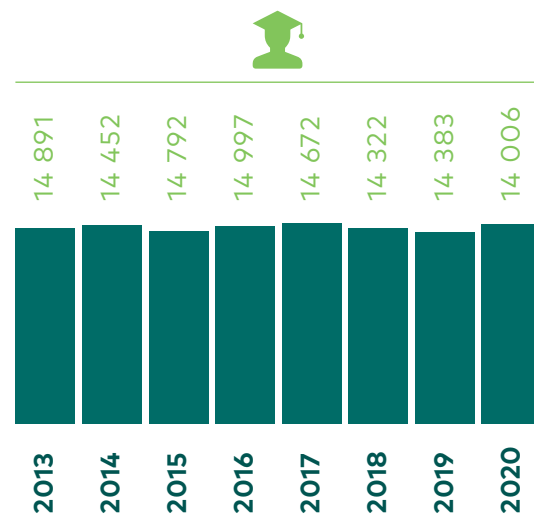
Many programs are also available on part-time or extramural basis, providing opportunity to study in the evenings during the week or on Saturdays. Studies at RTU are implemented by nine faculties in Riga, as well as at the regional Studies and Science Centers in Cēsis, Daugavpils, Liepāja and Ventspils, as well as Riga Business School.

In academic year of 2020/2021, 14,006 students studied at RTU.

## a. Study Fields

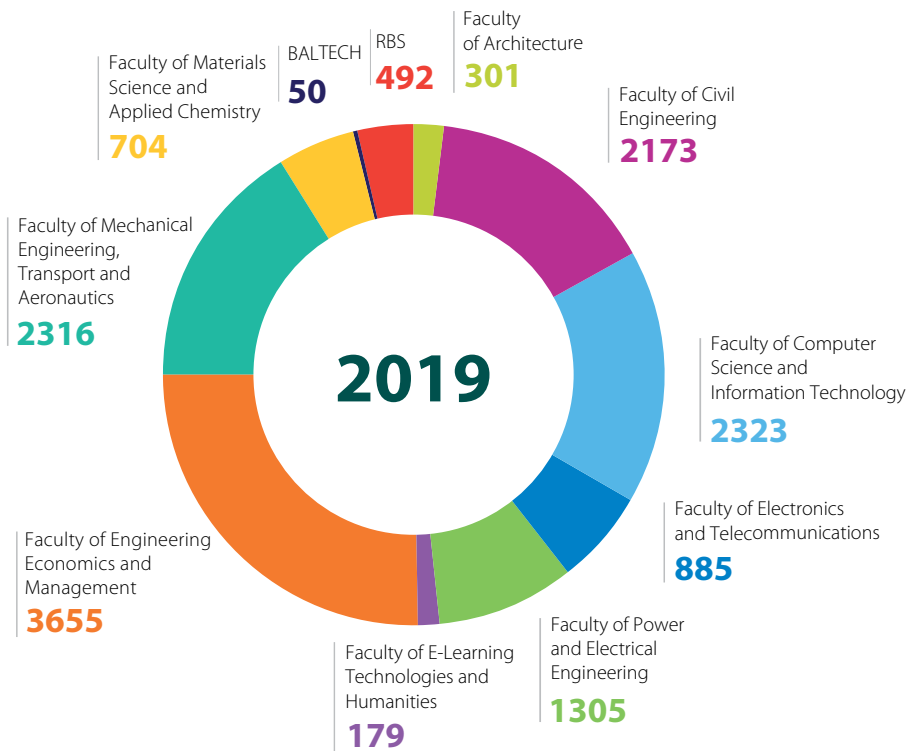
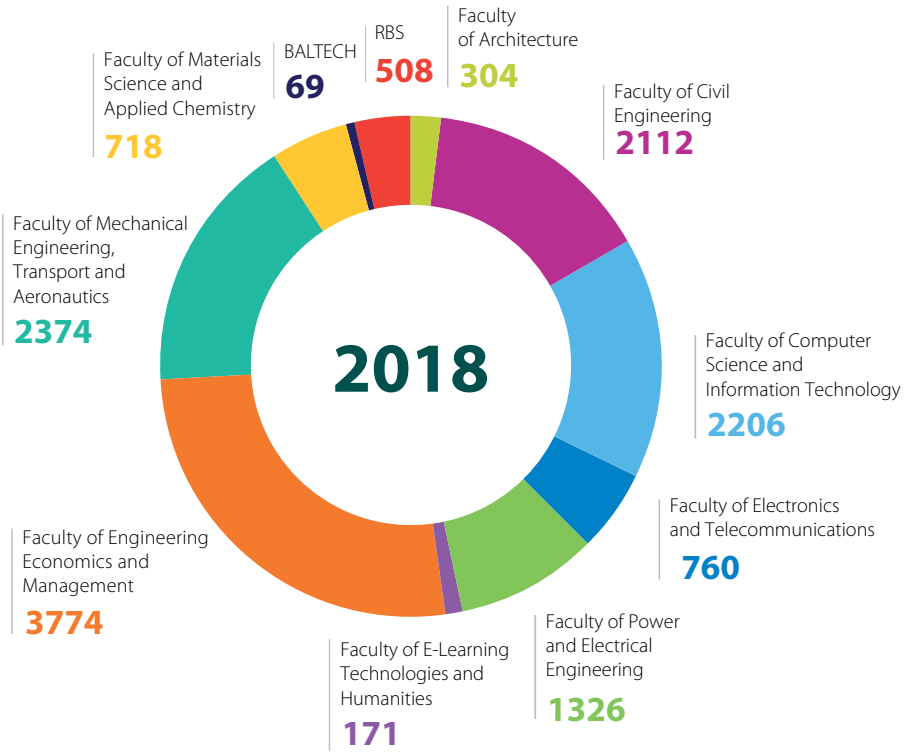
- Architecture and construction
- Economics
- Energy, electrical engineering and electrical technologies
- Physics, materials science, mathematics and statistics
- Internal security and civil defense
- Information technology, computer engineering, electronics, telecommunications, computer control and computer science
- Chemistry, chemical technologies and biotechnology
- Mechanics and metalworking, thermal energy, thermal engineering and mechanical engineering
- Production and processing
- Translation
- Management, administration and real estate management
- Environment protection

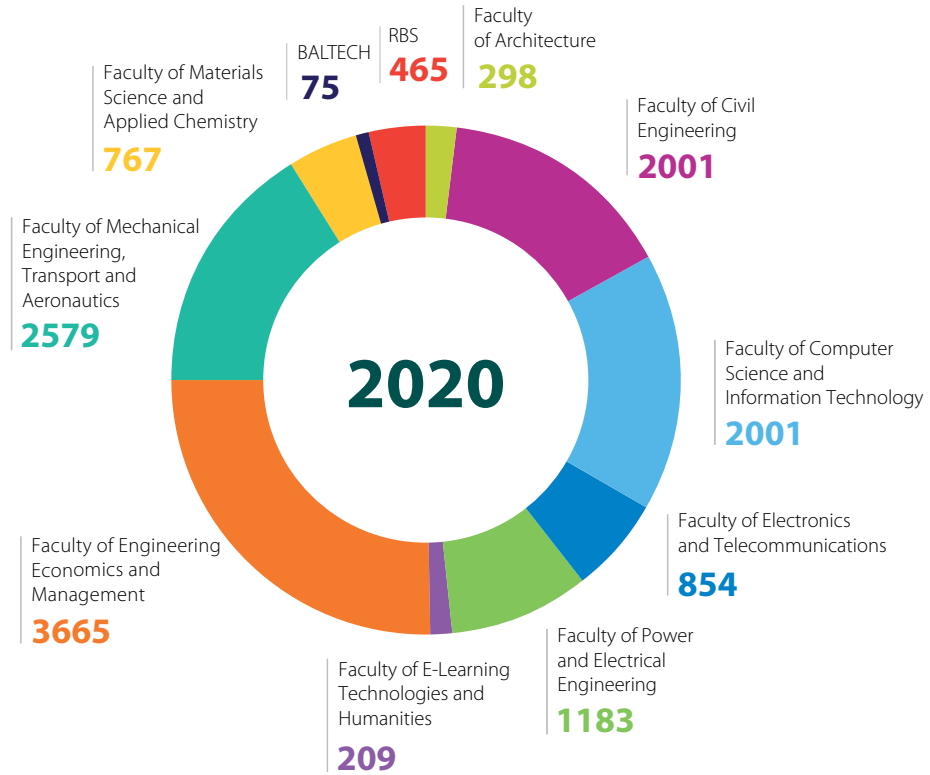
## b. Total Number of Students





## c. Number of Students by Faculty





2020	1 <sup>st</sup> level programs	Bachelor programs	Master programs	Doctoral programs
Number of study programs	6	54	63	21
Enrolled	166	3644	1363	117
Graduated	90	1172	792	30

## d. New Study Programs

### «Environmental Engineering»

The Institute of Energy Systems and Environment (IESE) of RTU Faculty of Electrical and Environmental Engineering (FEEE) started implementing new study programs «Environmental Engineering» at the Bachelor, Master and PhD level in academic year 2020/2021.

The new study programs have been developed to offer students research-focused education. In the study process, students develop various skills, for example, student cooperation and team work, creativity, ability to solve different environment and energy-related problems, as well as develop their own individuality already during the first study years – integration of knowledge in solution of the industry-related challenges. Yet the most important competence that academic personnel promote in students is the ability to innovate.

### «Biotechnology and Bioengineering»

A joint academic Bachelor study program «Biotechnology and Bioengineering» was developed in cooperation between RTU and the University of Latvia. The study program educates and trains highly qualified specialists and researchers capable of competing in both local and international science labor market in various fields of biotechnology and bioengineering. The graduates of the study program will be able to work at the research laboratories of universities and institutes, companies in food processing, agriculture, medicine, waste recycling and other areas or to establish their own enterprises.

### «Design Engineering»

A cross-disciplinary professional Master study program «Design Engineering» provides for the opportunity to specialize in two areas – design and textile and clothing technologies. Students specializing in design will be able to develop new products, manage and supervise design projects, and forecast new trends in industry development, as well as to integrate the knowledge, technologies and methods pertaining to different

areas of human knowledge in the development of design solutions. In turn, graduates specializing in textile and clothing technologies will be able to plan, organize and manage manufacturing processes, accounting and logistics, to introduce new technological processes in the textile and clothing industry.

### In academic year 2020/2021, the talented youth study according to the individual study plan within the Talent Program

RTU started a unique project for Latvia – the Talent Program – in order to engage young talents from all regional schools of Latvia in the engineering studies. The first 22 graduates from ten Latvian schools and RTU Engineering High School enrolled in RTU study programs, using the opportunities offered by the new Talent Program. RTU allows young students to study according to the individual study plan, as they possess wider and more specific knowledge of exact disciplines than some of their peers. In addition, they can develop personally and gain new skills at the lectures and seminars, as well as work with the personal mentors. RTU supports young talents, so that after graduation they could either become scientists and researchers or excellent specialists in engineering, innovators, and company managers.

### RTU Faculty of Engineering Economics and Management – most innovative faculty in the Baltic Region

The Baltic Management Development Association awarded a prize for innovation to RTU Faculty of Engineering Economics and Management (FEEM), appreciating its cross-disciplinary approach to business education. The FEEM ensures tertiary education in various fields of economics and entrepreneurship, educating and training internationally recognized specialists and entrepreneurs. The award was granted for new cross-disciplinary approach to business education.

## RTU researcher automates the study process, creating digital lab stands

Students of RTU Faculty of Electrical and Environmental Engineering (FEEE) develop practical skills and complete lab tasks in the digital format using specially equipped stands created by Professor Pēteris Apse-Apsītis. The opportunity to gain practical experience remotely is topical during the COVID-19 pandemic, when onsite contacts have been significantly restricted for the reasons of epidemiological safety. The stands can be also used by RTU employees to advance their career at the companies and to promote interest in engineering among the schoolchildren.

## New equipment supplements the range of RTU «Mitutoyo» Metrology Laboratory equipment

«Mitutoyo» Metrology Laboratory of RTU Faculty of Mechanical Engineering, Transport and Aeronautics (FMETA) received a valuable gift from the company «Mitutoyo Polska» – a manual coordinate measuring machine «Crysta-Plus M 574», which supplemented the range of cutting-edge metrology laboratory equipment in the Baltics. Similar to other laboratory equipment, it will be available to both RTU students and researchers. The Metrology Laboratory also received software and learning aids in the Latvian, English and Russian languages.

## RTU students develop a system for forecasting the time of bus arrival

In order to increase convenience for the public transport passengers, the students of RTU Faculty of Computer Science and Information Technology (FCSIT) developed a prototype of the system that forecasts the time of arrival of city busses to the bus stops taking into consideration the real time bus movement data. The solution was developed in cooperation with JSC «CATA». Now the development of a mobile app is being considered, the app will operate on all routes serviced by the company.

## «Lego® Serious Play®» method integrated in the business education process

«Lego® Serious Play®» Laboratory was established at RTU Faculty of Engineering Economics and Management. It allows students and academic staff to find efficient solutions to various challenges in a creative way. The internationally acclaimed methodology is also used to diversity the study process at the FEEM Institute of Business Engineering and Management.

## Fashion collections designed by RTU students demonstrated in the first digital fashion show The first digital student fashion show

«Interaction 2020» (Mijiedarbība 2020) was held on 28 July 2020. It showcased fashion collections designed by the students of the Institute of Technology and Design (ITD) of RTU Faculty of Materials Science and Applied Chemistry. «Interaction 2020» is a spin-off of a more prominent tradition to organize RTU student fashion show «Ķīpsala Spring», which was interrupted during the COVID-19 crisis. The fashion show showcased fashion collections designed by 18 third- and fourth-year students of the professional Bachelor study program «Materials Technology and Design» specializing in design. The fashion show could be followed on the ITD Facebook page.

## RTU student turns coffee grounds into a new material

A Master student of RTU Institute of Technology and Design Vineta Haritonova created a new material made from coffee grounds and natural binding agents, which in future may be also used for manufacturing of decorative wall panels. She created an environmentally friendly biodegradable material that may potentially have a wide range of applications. The material has already been used to create cup coasters; it is planned to create flower pots, reusable take-away coffee cups, various accessories, dinnerware, décor, even decorative wall panels.

## MBA student designs clothing that helps hearing-impaired persons feel the music

A student of the MBA study program «Innovation and Entrepreneurship» of RTU Faculty of Engineering Economics and Management Agne Ellere is developing a business idea of creating special clothes – a tactile audio shirt that would allow people with hearing impairments to enjoy music with the help of vibrations. With the help of the integrated actuator and special software, the shirt creates vibration choreography around the whole body, allowing people to feel the music. Tests confirm that the shirt allows creating impression about the musical rhythm for the people with hearing loss.

## RTU students win numerous prizes in the contest «Design Arena 2020»

The works of the students of the Institute of Design Technologies of RTU Faculty of Materials Science and Applied Chemistry were highly evaluated at the competition among schools and universities «Design Arena 2020».

The honorary title of the Best Design Student of the Year was won by Marta Cimdiņa for her work «Introvert extraversion». Svens Martulevs with his work «MODELO – Multifunctional Wall Shelf for Storing Sports Gear» earned the second place in the same category. Annija Elīza Lodziņa won the third prize for her work «Reusable Delivery Package» in this category.

In the category «Environmental Design», the first prize was won by Renāte Santa Gruzniņa with her work «Garden furniture collection «Saga»». Elīna Leiba-Lipsne with the work «Application of Interactive Design Tools at Jaunauce Estate» was ranked third.

Within the contest of Bachelor Papers, in the category «Research in Design», a student Ilmārs Bērziņš won the third prize for his work «Automated Equipment for Profiling of the Bassoon Reed».

## Grand RTU Auto Graduation Ceremony

A traditional RTU Grand Graduation Ceremony was held in Spilve Airfield on 24 July 2020, uniting the alumni of academic year 2019/2020, who obtained Bachelor, Master and PhD degree. Observing the effective COVID-19 social distancing norms, the Grand Graduation Ceremony was organized in a new format – drive-in format, when alumni came in the cars, received their diplomas and enjoyed the show dedicated to them from their cars.

RTU adopted drive-in format to provide its alumni, who spent many months in the virtual environment, an opportunity to enjoy the sense of community, even being inside one's own car. Alumni were congratulated by both RTU Rector Leonīds Ribickis and high state officials – President of Latvia Egils Levits and the Minister of Education and Science Ilga Šuplinska.

## The first graduates of the joint study program «Creative Industries» implemented by RTU and the Latvian Academy of Culture

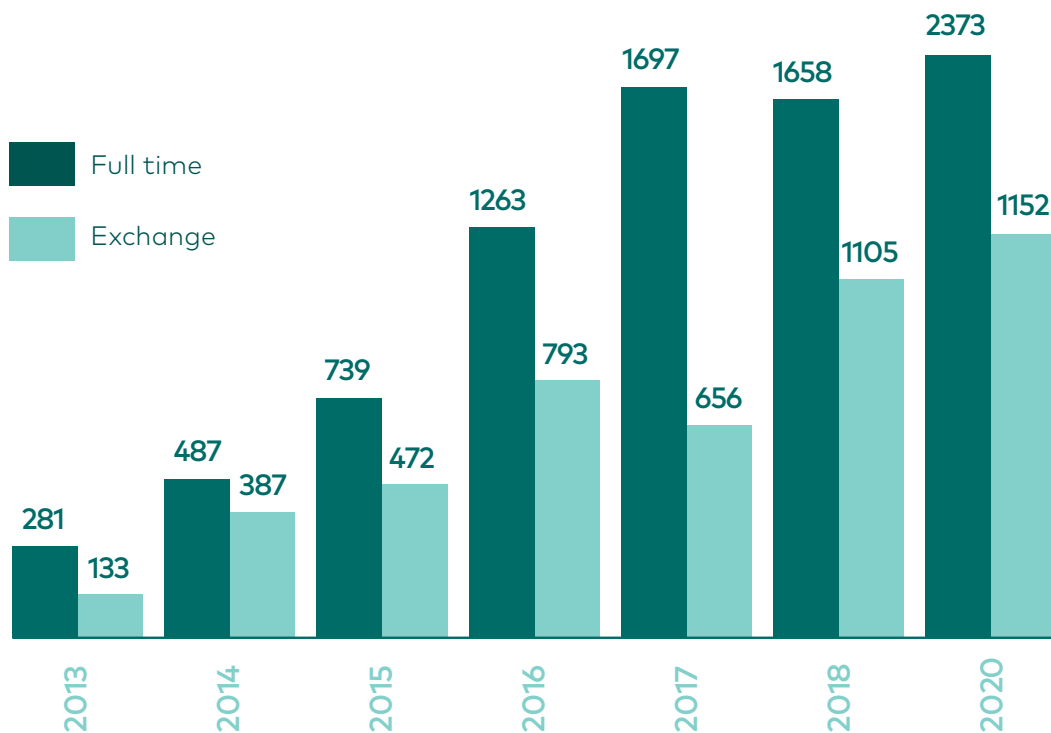
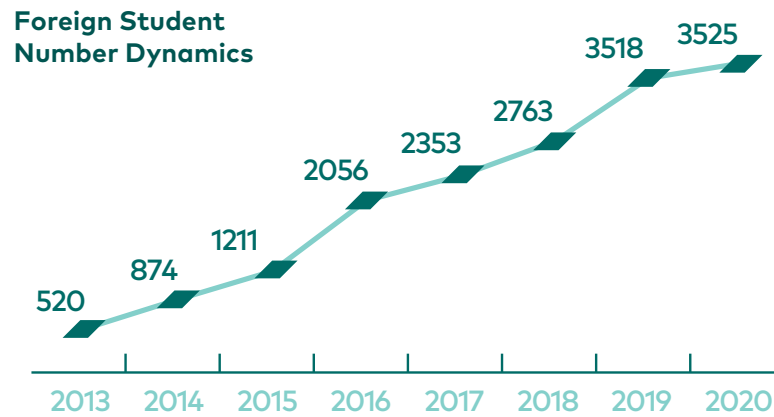
In June, the first 28 graduates of the Bachelor study program «Creative Industries» implemented jointly by RTU and the Latvian Academy of Culture (LAC) received their diplomas.

Upon completion of the Bachelor study program, graduates receive a double – LAC and RTU – diploma. They are trained entrepreneurs in creative industries, who have accumulated comprehensive knowledge in culture and arts, which has been provided by the LAC; they also understand business processes and regularities, know how to conduct business and use modern technologies, which they have learned at RTU. Cooperation between RTU and the LAC continues, since in 2020 the first students were enrolled in the joint Master study program «Creative Industries and Growth Management». This program is intended for the heads of creative industry organizations, who already have relevant work experience and who are willing to improve their knowledge. The study program curriculum is organized in three levels – personal, company and global, and each student may adapt the curriculum to their own individual needs.

## e. Number of Foreign Students

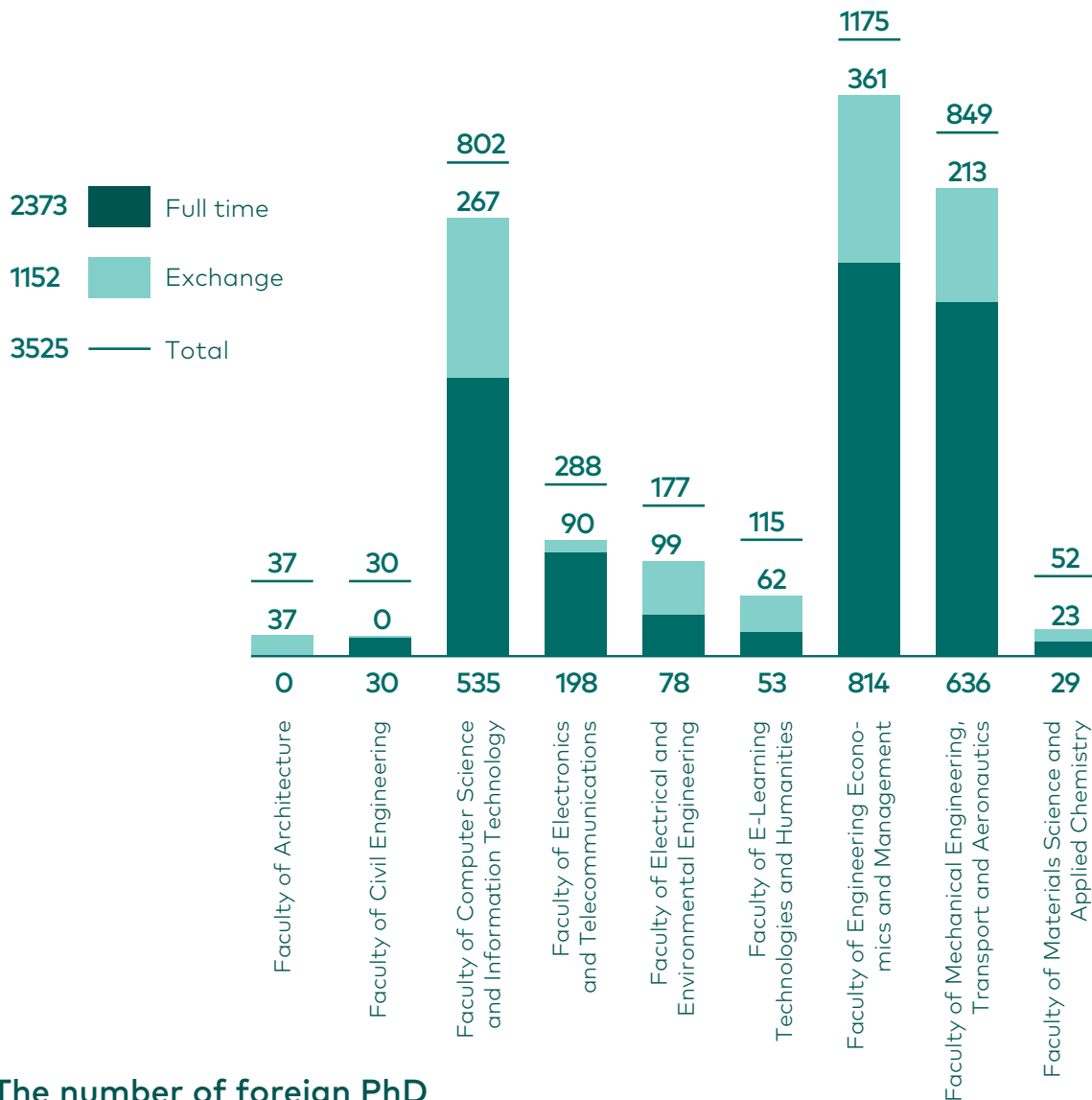
In academic year 2019/2020, the record number of foreign students studied at RTU – 3,525. The number of foreign students at RTU has been growing considerably during the last years, having increased more than ten times in nine years.

Internationalization is one of the most significant strategic objectives of RTU and the growing number of foreign students is the result of the targeted activities in attraction of these students. The largest number of foreign students came from India, Uzbekistan, France, Sri Lanka and Kazakhstan.



## f. Number of Foreign Students by Faculty

(1 October 2019–1 October 2020)



### The number of foreign PhD students grew by 30%

As a result of the support financing program for the PhD students from the third countries (DAD) successfully implemented by RTU International Cooperation and Foreign Students Department (ICFSD), the number of foreign PhD students in 2020 grew by 30%, attracting four PhD students from India, two – from Russia and one – from Egypt, Columbia, Libia and Nigeria each.

The aim of DAD is to increase research capacity of RTU and attract a larger number of foreign students at the PhD level, engaging the talented young researchers in RTU research activities.

The program was launched on 1 December 2019. The ICFSD will provide financing throughout its implementation period – four years for each PhD student.

## g. Further education

As a result of the support financing program for the PhD students from the third countries (DAD) successfully implemented by RTU International Cooperation and Foreign Students Department (ICFSD), the number of foreign PhD students in 2020 grew by 30%, attracting four PhD students from India, two – from Russia and one – from Egypt, Columbia, Libia and Nigeria each. The aim of DAD is to increase research capacity of RTU and attract a larger number of foreign students at the PhD level, engaging the talented young researchers in RTU research activities. The program was launched on 1 December 2019. The ICFSD will provide financing throughout its implementation period – four years for each PhD student.

### **More than 1,000 employees remotely undertake the study courses offered by RTU**

In cooperation with the State Education and Development Agency, RTU organized online courses, providing opportunity to acquire one out of fifteen study courses in the remote format. Course offer is mainly focused on the development and advancement of digital and ICT skills, making particular emphasis on programming, although students could also enroll in the programs related to personal data protection and information security, project management, robotics, etc.

More than 1,000 employees completed the courses within the project; the course «Programming Language Python» was the most popular – more than 200 people improved their skills and competences at this course.

RTU continues participating in the project «Development of Professional Competencies of the Employees». At the end of 2020, more than 400 participants started learning at 12 professional development study programs.

## h. Engineering High School

**RTU Engineering High School (EHS) was established in 2015 in order to provide opportunity to the most talented Latvian schoolchildren to study exact study courses in depth under the guidance of the best teachers in Latvia and after graduation to connect their future with engineering. The EHS was recognized the best school in Latvia, since for the fifth consecutive year it was ranked first in the Small School Ranking system of Atis Kronvalds Foundation. In 2020, EHS students demonstrated the highest results**

**at the state centralized exams in mathematics and the Latvian language, and the second-best results at the exams in English, as well as won numerous national and international student Olympiads.**

### **«Large Owl»**

RTU EHS was recognized the best school in the small school category and for the fifth consecutive year received Atis Kronvalds Foundation award «Large Owl», which is awarded for secondary school student achievements in the city and state level Olympiads.



## «Star Rating »

RTU EHS received the second place in the Star Rating drawn up by Atis Kronvalds Foundation, which lists the schools that demonstrated the top results in the international student Olympiads.

## Students of RTU Engineering High School Demonstrate Excellent Results at the State Olympiads

- Students of RTU Engineering High School received 12 awards in the 3rd round of the 61st State Chemistry Olympiad and thus became the school with the largest number of Olympic prizes.
- EHS students demonstrated excellent results in the State Olympiad in Mathematics, having received 11 awards, Physics – 6 awards, Geography – 5 awards, Biology and History – 3 in each.

## Achievements at the International Olympiads

- Daniels Stabulis won the silver medal at the International Economics Olympiad.
- Kārlis Šusters got the bronze medal at the International Olympiad in Informatics.
- Džonatans Miks Melgalvis, Edvards Miķelis Mežciems and Filips Ēcis got the bronze medal at the International Olympiad in Chemistry.
- Atis Krebss received the bronze medal at the European Geography Olympiad.

President of Latvia Egils Levits greeted the students – the winners of the international Olympiads and their teachers – economics teacher Līga Kamola, geography teacher Agris Lipsbergs, chemistry teacher Laura Fjodorova, and programming teacher Andrejs Liepiņš.

## Awards of the Latvian Scientific Research Paper Conference

12 RTU EHS students received awards for 8 research papers they developed and presented at the 44th Latvian Schoolchildren Research Paper Conference. The conference was held in the remote format on 3 April 2020.

## Friendly Appeal Foundation Awards

In 2020, the EHS was nominated in numerous nominations of the Friendly Appeal Foundation, however, due to pandemic caused restrictions, the award ceremony was not held. The EHS was nominated in the category «Best Urban Secondary School», it won in this category both in 2018 and 2019. The EHS was nominated for award for the best results in mathematics, the Latvian language, the English language, and natural sciences. Awards of the Friendly Appeal Foundation to the best schools are granted taking into consideration the data on the results of centralized exams summarized by the National Centre for Education.

## 24 Talented Young People Finish the Engineering High School

On 25 June, 24 young people received secondary school certificates upon graduation from RTU Engineering High School; it was the third graduate class of the school. The Graduation Ceremony was solemnly opened by RTU Rector Leonīds Ribickis. Graduates were greeted by the President of the Latvian Academy of Sciences Academician Ojārs Spārītis and a member of the board of JSC Latvenergo Kaspars Cikmačs. Video greetings to the graduates were sent by the Minister of Education and Science Ilga Šuplinska and Former President of Latvia (1999–2007) Vaira Vīķe-Freiberga.

The EHS graduates also received special notes of acknowledgement and awards. The following students received the notes of acknowledgement from the Prime Minister for excellent and outstanding academic achievements: Henriks Bērmanis, Reinis Rozenbahs, Kārlis Rimaševskis, Alisa Mazore, and Kārlis Šusters. K. Rimaševskis also received the Honors Student of the Century Scholarship from the Ministry of Education and Science and the Ministry of Finance. RTU award was granted to Alisa Mazore, and Ltd Tet award was received by Artūrs Kovrigo.

## i. RTU Scientific Library

RTU Scientific Library provides the necessary information to ensure study and research process at RTU, as well as renders library, bibliographic and information services to RTU students, academic personnel, and employees. The Library stocks 1.3 million printed documents and electronic resources. There are 713 work stations at the Scientific Library and RTU branches. There are four common halls and six individual boxes, rare book reading hall, and a conference hall. The Library is accessible to the users with movement impairments.

### The most significant services and events in 2020

- On student request, in January 2020 during the examination session, five storeys of the Library, work stations and its entire stock were available for the users on a 24/7 basis.
- Book registration and return were organized with the help of self-service issue-return machines and return-sorting machine. Self-service machines ensured contactless book issuing/return process during the state of emergency.
- In September and October, the demand for printed editions and opportunities to use library reading halls grew.
- 59 individual consultations of different kind and group trainings in information management were provided to the students, academic personnel and schoolchildren both remotely and onsite. Ten library trips were organized for different visitor groups.
- Video materials have been developed:
  - a) «How to use the e-catalogue of RTU Scientific Library»
  - b) «Briefly on using PRIMO search system»
  - c) «Library section at RTU ORTUS portal»
- Exhibitions at Retumu Reading Room:
  - a) «How to use the e-catalogue of RTU Scientific Library»
  - b) «Graduate of the Engineering Department of Riga Polytechnicum Gustavs Ādolfs Agte – 170»
- Virtual exhibitions::
  - a) «Professor Emīlija Gudriniece – 100»
  - b) «Academic Integrity»
- Creation of the Korean Room in the reading room of the library

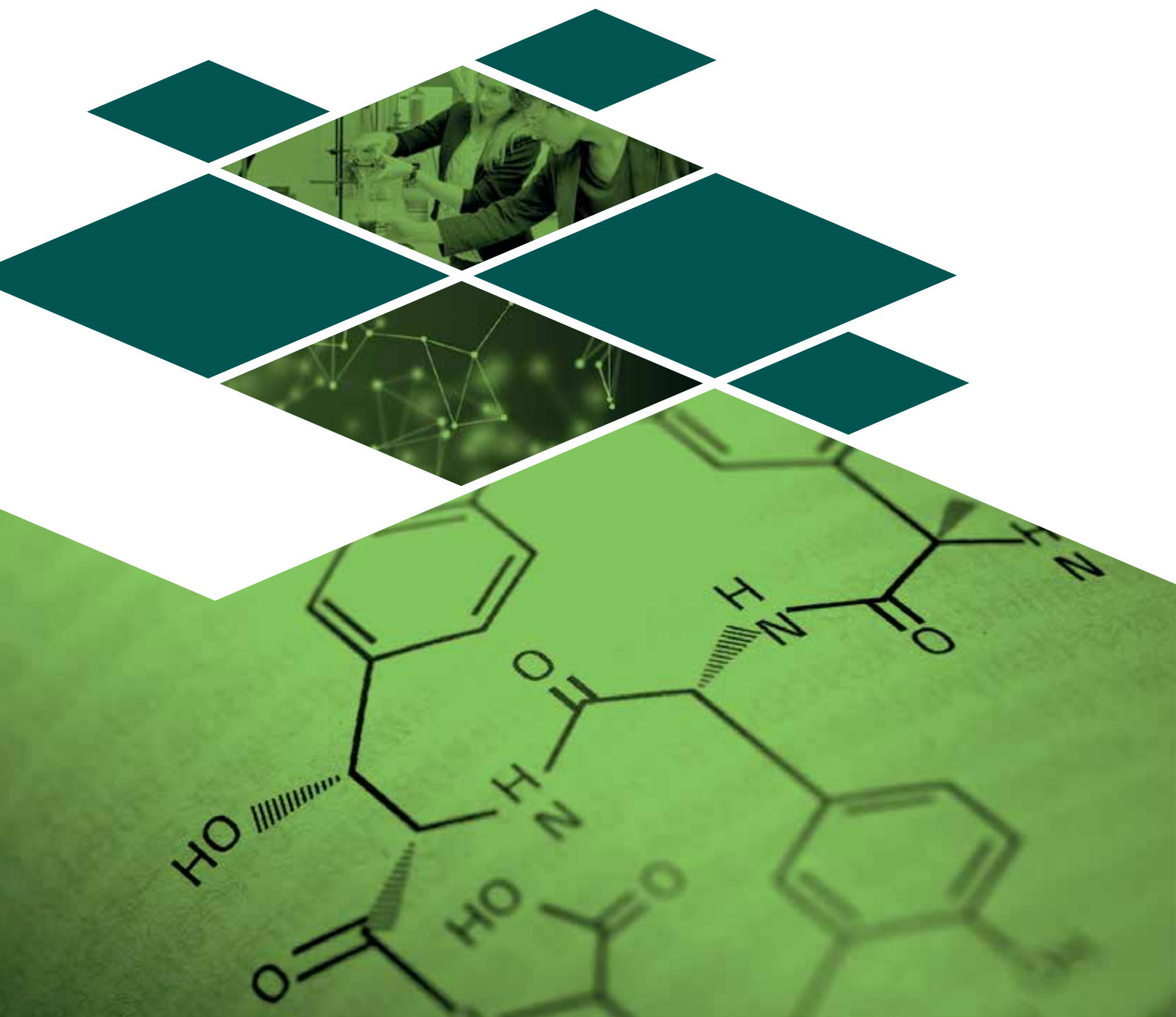
### Databases Subscribed by RTU Scientific Library in 2020

- ProQuest Ebook Central
- Academic Search Complete EBSCOhost
- Applied Science & Technology Source EBSCOhost
- Business Source Ultimate EBSCOhost
- EBSCOhost eBook Academic Collection
- Wiley Online Library
- SpringerLink
- The International Monetary Fund
- ScienceDirect
- SCOPUS (Elsevier)
- Web of Science
- Latvian databases LETA, Letonika, database of Latvian standards (available only in the library premises)

Usage of databases at RTU Scientific Library has been increasing since 2016. In 2020, the number of issues reached 417,849.

10

# Excellent Scientific Research



**Scientific research at the university is an integral part of the study process, which is implemented at all study programs. The strategic objective of the fundamental and applied research activities carried out at RTU is to analyze and provide solutions to the required technical and social challenges. In**

**the course of fundamental and applied scientific research, the accumulated knowledge potential is being gradually implemented in business activities.**

**The aim of RTU is to become one of the leading universities of science and technology in Europe.**

## a. Research Platforms

The rapid development of technologies in the industry requires complex solutions to the issues that surpass the borders of specialization of one faculty. Therefore, researchers from different faculties of Riga Technical University cooperate in interdisciplinary research within six research platforms that are of special importance for the national economy and society.

### Energy and Environment Vision

Leading competence center in the field of power engineering and environment in the Baltics

#### Fields of research

- Safety of energy supply systems and optimal operation modes to increase their performance and economic returns;
- Methods and technologies for increasing efficiency of electricity and heat generation, transmission, distribution and consumption;
- Methods and technologies for promoting the use of renewable energy sources to increase energy independence in the region and minimize environmental impacts;
- Climate technology and environmental methods for the circular economy.

### Cities and Development Vision

Significant competence center for urban development in the Baltic States

#### Fields of research

- Sustainable living environment;
- Efficient urban infrastructure;
- Identification, protection and development of cultural heritage;
- Urban development (development of new technologies);
- Urban planning economy;
- Evaluation of urban infrastructure activities and risks to economic growth.

## Information and Communication Technologies Vision

Internationally acknowledged, leading platform of knowledge society technologies in Latvia

### Fields of researchs

- Exploration of the usability of e-learning systems and development of new e-learning technologies, methods and systems;
- Research of the Internet of Things and Big Data transfer and processing, information transfer;
- Research on ICT applications in linguistics;
- Development of technologies for smart cities and regions and creation of new e-services to increase the quality of life;
- Research and development of cyberphysical system technologies, based on innovative high-speed optical transmission system technologies;
- Comprehensive data processing research in complex distributed environments;
- Comprehensive intellect for development of smart and autonomous systems and their integration;
- High-performance signal processing and rapid transformations;
- Development of new generation radio frequency and microwave communication systems.
- Research on transport communication systems and complex processing of information.

## Transport Vision

Excellent and internationally acknowledged center of research and expertise in the field of road and aviation transport in the Baltic States

### Fields of researchs

- Energy efficient and safe road and rail transport;
- Safe and financially efficient air transport;
- Efficient transport infrastructure;
- Reliable and safe methods for diagnostics of technical condition of vehicles and transport infrastructure.

## Materials, Processes and Technologies Vision

Leading competence center in the field of materials, processes and technologies in the Baltic States

### Fields of researchs

- Development and functionality of biocompatible, biodegradable materials integrable within and outside the human body;
- Development of high value-added materials from local and renewable resources;
- Smart materials for environmental monitoring and purification – development, research and integration into the existing infrastructure;
- Development of smart materials for alternative energy generation (water cleavage, piezoelectric nano-structures);
- Electro-optical materials in construction, automotive industry and defense – research and development;
- Organic chemistry and pharmaceutical processes and technologies.

## Security and Defense Vision

Internationally acknowledged center of strategic significance in the field of development of security products and control of their circulation

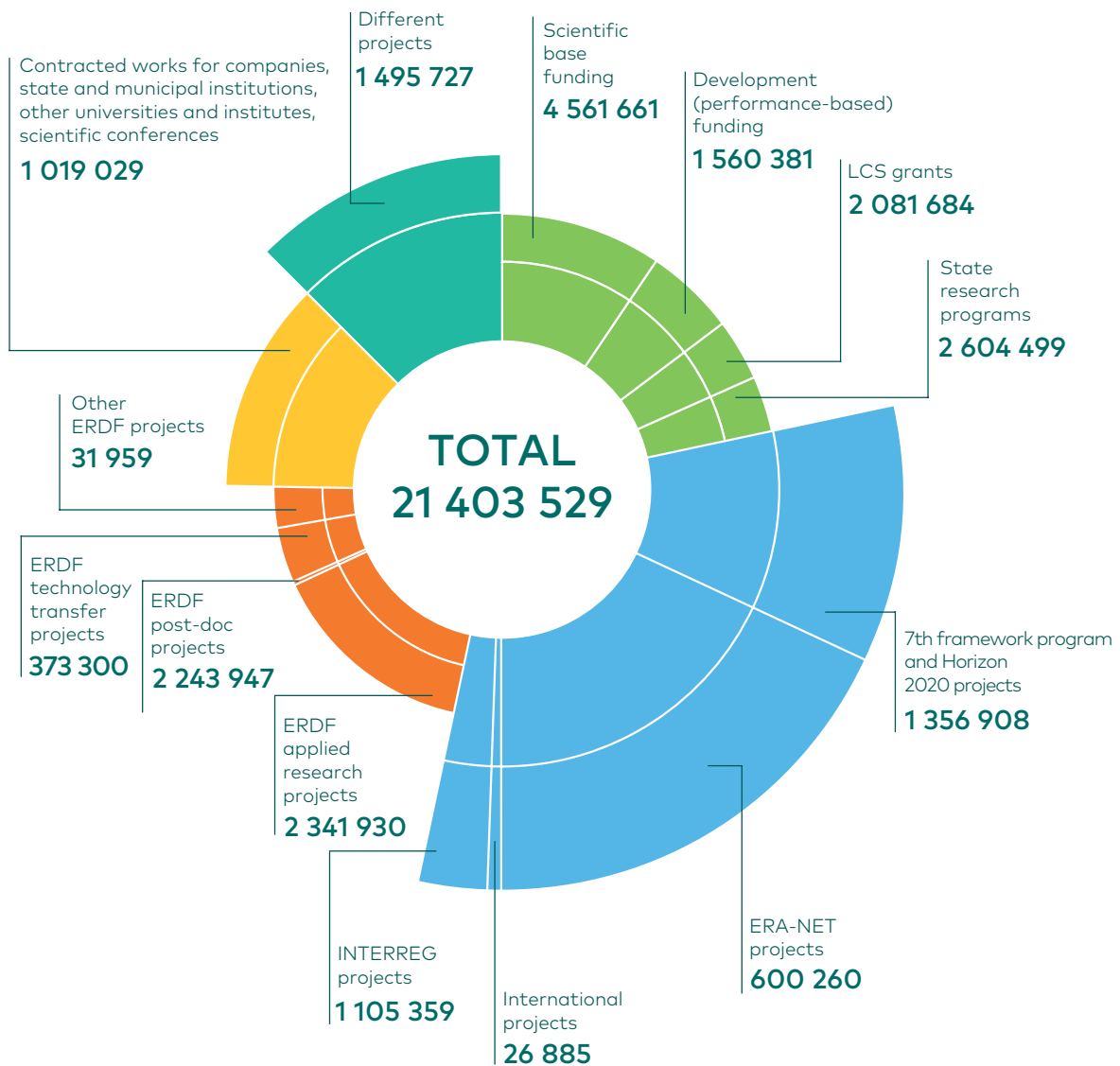
### Fields of researchs

- Strategic products for international security;
- Border security;
- National economic security;
- Civil defense.



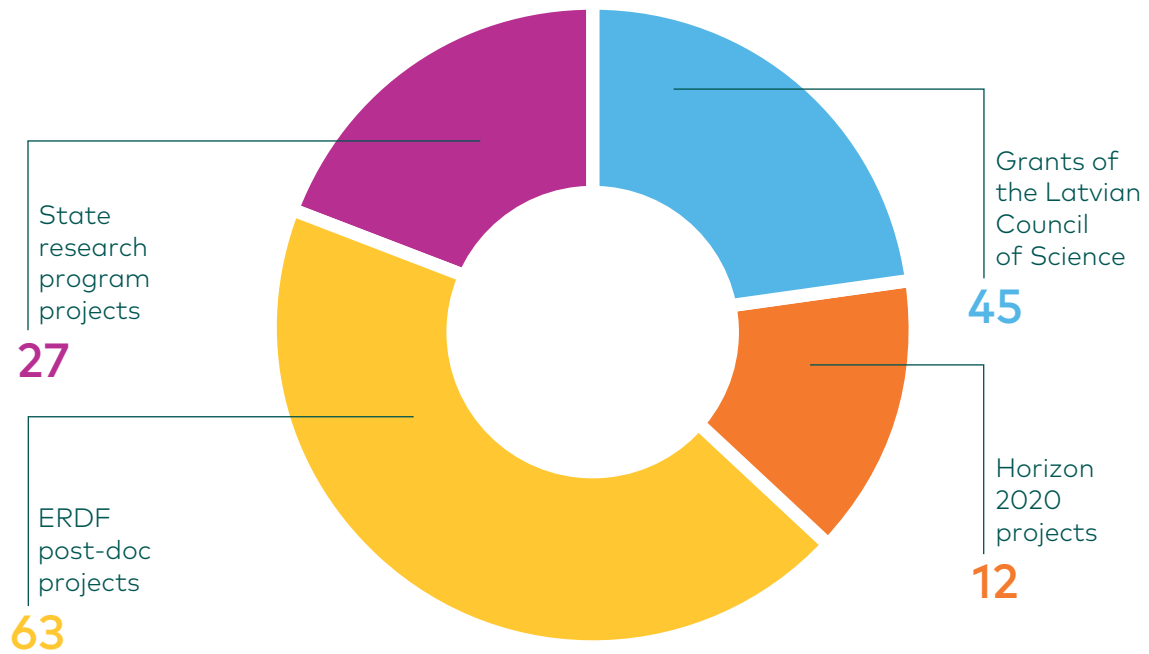
## b. Financing of Science

### Financing attracted to science in 2020 (EUR)



- State financing for science and state-funded research projects
- EU structural fund projects
- Commissioned projects
- International projects
- Different projects

## c. Scientific Projects



### RTU Researchers Develop Engineering Solutions to Limit COVID-19 Spreading

In cooperation with the researchers and engineers from four universities and five scientific institutes, in a half-year period, the prototypes of technologies that would help protect human health and life in health facilities and other places at high risk of COVID -19 infection were developed.

A number of automated prototypes of surface and air disinfectant equipment have been developed under the COVID -19 National Research Program for mitigation of COVID -19 impacts. They include a mobile cleaning robot capable of recognizing and automatically disinfecting vertical surfaces, disinfection gates and equipment for disinfecting air and surfaces with ultraviolet radiation and ozone. Researchers have also

developed prototypes for special coatings that will help destroy bacteria and viruses on different surfaces. In order to strengthen individual and collective protection, the prototypes have been created for a new type of face mask, which can also be used as a respiratory, ergonomic protective wear for physiotherapists, and a filter composite material with fungal hives and a manual washing monitoring system.

Participants of the National Research Program: RTU, Rezekne Academy of Technologies (RAT), University of Latvia (LU), Institute of Electronics and Computer Science (IECS), Latvian Institute of Organic Synthesis (LIOS), LU Institute of Solid Physics, Latvian Biomedical Research and Study Centre, Riga Stradins University (RSU) and the Latvian State Institute of Wood Chemistry.



## Researchers are Developing a Method to Determine the Spread of Coronavirus in the Environment

Latvian researchers are developing a new monitoring method that will help determine the transfer of coronavirus to wastewater and its spread in the environment. It is necessary in order to understand what virus-restrictive measures should be introduced and what preventive measures should be taken, with account of not only the human-to-human transmission of the virus, but more broadly across the ecosystem. The study is carried out at RTU together with the Latvian Biomedical Research and Study Centre and the Institute of Food Safety, Animal Health and Environment.

## RTU with Partners Studies Security Management of Computer Networks of Organizations and Companies and Develops Secure Services

Within the framework of the National Research Program for mitigation of the consequences of COVID-19, the Institute of Information Technology of the RTU Faculty of Computer Science and Information Technology, with the partners from the University of Latvia, Vidzeme University of Applied Sciences, Rezekne Academy of Technologies and Liepaja University, have developed solutions to ensure the secure remote functioning of organizations and companies.

Within the project «Prospective Technology for Sustainable and Secure Services», security management problems have been studied by analyzing usage cases both at the level of the computer network and at the level of applications in such areas as ICT infrastructure, telemedicine, remote work and mobility. Big Data, knowledge management and digital twinning technologies have been used to develop the services, which allow simulating and controlling service activities in crisis situations.

In the course of the project, a solution has been developed for identifying and eliminating security threats on a computer network with mixed-mode security management, known as the school/campus network.

## Project of the Baltic Biomaterials Centre of Excellence Launched

In January, with participation of the President of Latvia Egils Levits, the project of the Baltic Biomaterials Centre of Excellence (BBCE) was launched at RTU Faculty of Materials Science and Applied Chemistry.

BBCE will strengthen the biomaterials sector in the region, will provide the scientists the opportunity to study, develop and commercialize new biomaterials for bone recovery, facial, mouth and jaw surgery, orthopedics and other areas. The project is focused on acquiring new knowledge that will allow increasing efficiency and achieving excellence in the field of human resources, knowledge, research, technological development and infrastructure. Large funds will be invested in training of researchers and medical staff, advancement of scientific expertise and modernization of the research infrastructure. The headquarters of BBCE will be established in the next few years at the RTU Campus in Ķīpsala on the basis of the RTU Rūdolfs Cimdiņš Riga Biomaterial Innovation and Development Centre. The project is implemented by RTU, Latvian Institute of Organic Synthesis, Riga Stradins University, AO Research Institute Davos, Switzerland, Friedrich–Alexander University Erlangen–Nürnberg, Germany, and RSU Institute of Stomatology.

## Professor Jānis Ločs Elected a Full Member of LAS

At the general meeting of the Latvian Academy of Sciences (LAS), the Director of the Institute of General Chemical Engineering of RTU Faculty of Materials Science and Applied Chemistry, project manager of the Baltic Biomaterials Centre of Excellence Jānis Ločs was elected a full member of LAS.

## Scientists Develop an Internet Tool Helping to Provide Secure Heat Insulation of Historical Buildings

In order to increase energy efficiency of historical buildings without compromising their architectural and cultural historical value, researchers from RTU Institute of Environment and Energy Systems in cooperation with their counterparts from other countries under an international project have developed an Internet tool that helps select the most appropriate thermal insulation material. RTU is the only university from Eastern Europe that has participated in the development of this tool.

For five years, scientists and construction companies from Latvia, Denmark, Sweden, Germany, Belgium, Italy, and Switzerland have been developing science-based guidelines and an Internet tool within the «RIBuild» project of the European Union program Horizon 2020, which helps house owners, engineers, researchers and others who might be interested to choose the most appropriate thermal insulation material for warming buildings from inside.

In the course of the project, researchers have obtained a large amount of information on building and thermal insulation materials, their physical properties, changes in use, have performed tests in laboratories and real buildings, have performed millions of simulations with the help of artificial intelligence.

The [www.ribuild.eu/](http://www.ribuild.eu/) website provides guidelines for setting the purpose of heat insulation, allows exploring the benefits and risks, finding out about available thermal insulation materials and systems and assessing whether the building may be heat insulated.

## System 'Waze' Developed by RTU Researcher Makes Data Transparent and Analyzable for Road Builders

Jānis Kampars, Associate Professor of RTU Faculty of Computer Science and

Information Technology, has developed a data analysis system for Waze, which will be used by the company «Latvijas autoceļu uzturētājs» (Latvian Road Maintainer) to respond more effectively to sudden traffic limitations on the Latvian road network, using the data submitted in the navigation application Waze.

## RTU Researchers Created a Device for Repelling Birds from Fish Farms

Researchers from the Institute of Radioelectronics of RTU Faculty of Electronics and Telecommunications have developed a system for repelling birds from fish ponds. The system is unique because it combines two fundamentally different hazing approaches, significantly increasing its effectiveness compared to other solutions in the market.

## RTU Researchers Perform CT Examination for Baroque Sculptures

For the first time, RTU Faculty of Mechanical Engineering, Transport and Aeronautics will perform CT examination of wooden sculptures made at the turn of the 17th-18th centuries – protected art monuments of national significance. The examination is part of the study of the sculptures to obtain comprehensive information about their condition prior to restoration.

CT crosscut images are obtained by a device designed to examine a human body. A wooden structure is very much suitable for using the same mode as the one used for CT to examine the lungs. During the examination, the sculpture is «cut» into 1.5 mm thin «slices», providing detailed information on the condition of the wood, cracks, gaps, wood-grained passageways and nails. When processing the information, three-dimensional images of the sculptures are also created.

## RTU Cooperation with CERN

In January 2018, the Latvian government made a decision to start the country's accession process to the European Organization for Nuclear Research (CERN) that would allow Latvia to become a full-fledged member of CERN in a few years' time. 2020 became the major milestone on the way to Latvia's participation in CERN, as this year very important decisions were made, which is likely to allow Latvia to become an associated Member State of CERN already in 2021.

Latvia's advance towards CERN is the result of the targeted activities of RTU, since RTU already entered into a cooperation agreement with CERN in 2012 and have been working successfully with it on a number of scientific projects.

CERN has been the world's leading scientific center for 60 years, with global major scientific discoveries taking place. It is CERN where the Internet was invented. One of the most widely known discoveries made with the help of the Great Hadron Accelerator six years ago has proved the existence of Higgs boson.

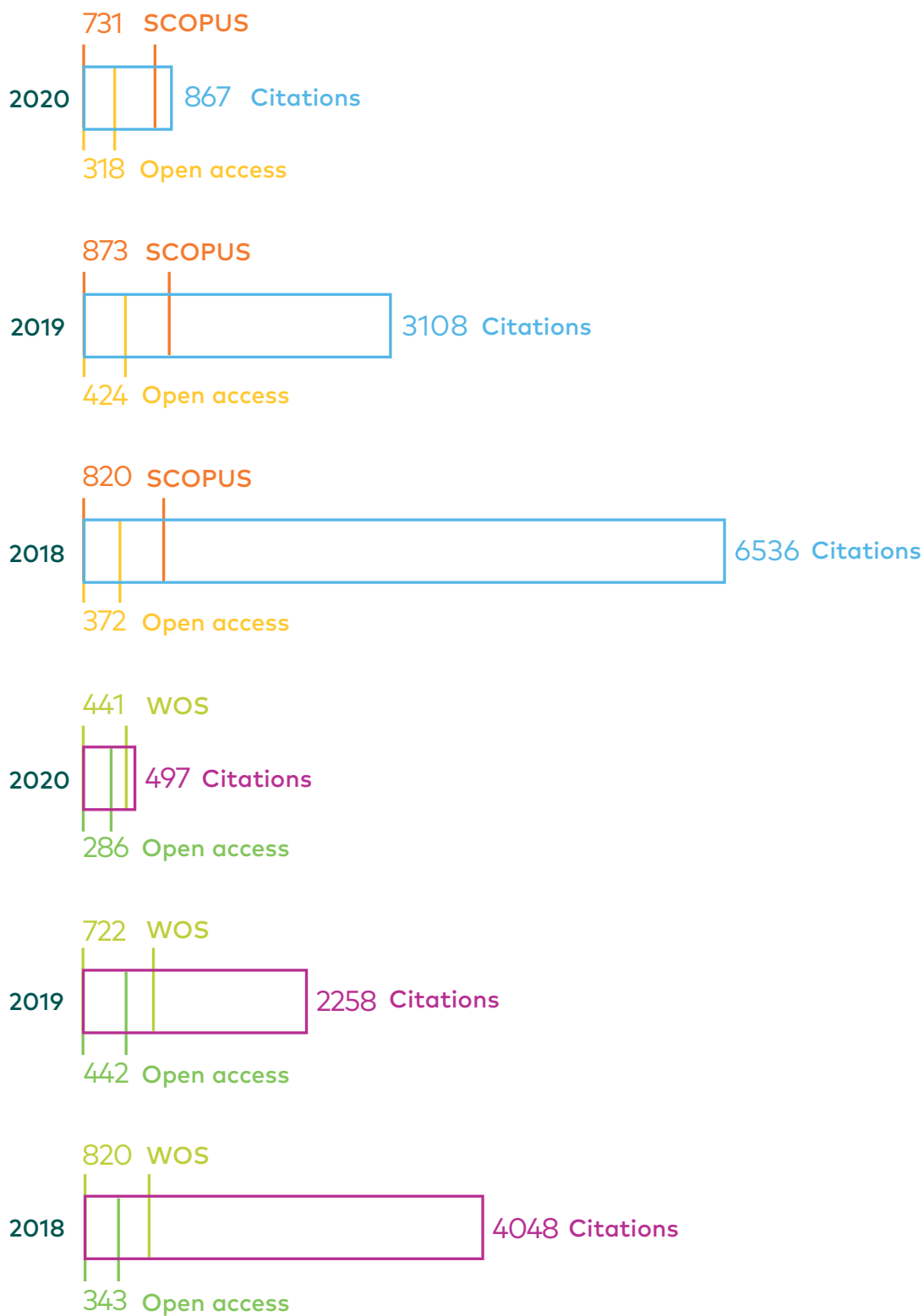
- On 24 February, the Minister of Foreign Affairs Edgars Rinkēvičs submitted an application drawn up by the Ministry of Education and Science to CERN Director General Fabiola Gianotti, confirming the country's willingness to join CERN as an associated Member State.
- In April, Latvian scientists engaged in research projects launched by CERN to fight the global COVID-19 pandemic. RTU scientists working in CERN participated in the development of a lung fan, while CERN's Baltic partner institutions – RTU and the University of Latvia (LU), as well as the National Library of Latvia were engaged in the global activity Folding@Home, offering their supercomputers – high performance computing resources, so that scientists in Latvia and the world could do computing by studying COVID-19 and searching for medicinal products to limit and eradicate the virus. The technical coordination of the work was ensured by the company Dati Group. In five months, in competition with over 245.2 thousand teams, the CERN's Baltic Group initiative reached the Global Top's first five hundred of Folding@Home. This shows the capacity of Latvia and the Baltics in high performance computing.
- In July, CERN Council made a decision to organize Task Force in order to evaluate the readiness of Latvia to become associated Member State of CERN. Establishment of the Task Force is a significant step to facilitate the participation of Latvia in CERN, as it means that CERN representatives of the Member States with voting rights have positively evaluated the application drawn up and submitted by RTU and the Ministry of Education and Science, which was prepared by Latvia when getting ready to become an associated Member State of CERN.
- RTU and LU launched a joint new PhD study program on Particle Physics and Accelerator Technology. It is intended primarily for PhD students from Latvia and the other Baltic States, thereby strengthening a single Baltic education and research area. The program is intended to educate and train specialists who are able to create innovation based on knowledge in particle physics, engineering, information technology in the management of complex processes, the practical processing and use of Big Data in research and national economy, and modern sensing

and detection systems for the control and management of various technological processes. PhD students will have the opportunity to undergo internship at CERN during their studies.

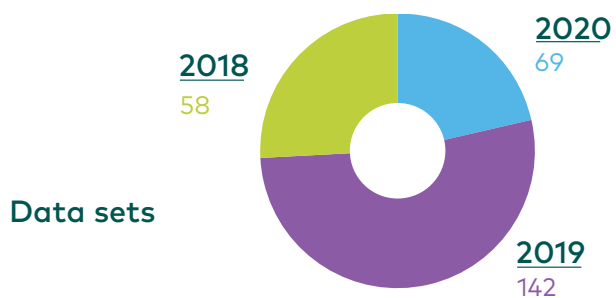
- In October, the CERN Task Force arrived to Latvia to assess Latvia's compliance with the status of an associated Member State. Latvia was assessed according to the following three criteria:
  - a) whether Latvia has political will and adequate financial instruments that ensure a meaningful participation in CERN's scientific programs in the long term;
  - b) how strong the country is in the high-energy physics (HEP) community and whether it is funded sufficiently in order to participate fully in CERN research projects;
  - c) whether the Latvian industry has adequate capacity to successfully participate in CERN procurements.
- To establish the high-energy physics community in Latvia, RTU Center of High Energy Physics and Accelerator Technologies set the work with physics teachers as one of its priorities. On 7 November, on the Physics Teacher Day, RTU researchers Toms Torims, Kārlis Dreimanis and Guntis Pikurs told Latvian physics teachers about their work at CERN, as well as offered them to go on a virtual tour around CERN.
- In autumn, a national research program «High Energy Physics and Accelerator Technologies» was launched in Latvia for the first time in order to strengthen the development of the Latvian scientific community in cooperation with CERN and to implement interdisciplinary research in science and engineering in the field of high energy physics and accelerator technologies. Under this program, a project entitled «Higher quark and Higgs boson studies in the CMS experiment, developing crystal scintillators, CMS subdetectors and particle accelerators technologies for applied purposes, in cooperation with CERN» was launched, led by the Center of High Energy Physics and Accelerator Technologies, which aims to strengthen research capacity in high energy particle physics and the development and maintenance of a sustainable research community of both fields of research in Latvia.
- A researcher of RTU Center of High Energy Physics and Accelerator Technologies Kārlis Dreimanis, who works at CERN, became the head of the CMS Latvian Group. In the CMS (the Compact Muon Solenoid) experiment, which aims to detect new physics phenomena, the Latvian research group has been working since 2017. The group unites RTU and LU scientists working in the field of Top Quark Physics, Big Data Processing and Mechanical Technology.
- On 10 December, CERN Council acknowledged that Latvia fully complies with the criteria set for CERN associated Member State and authorized CERN Director General Fabiola Gianotti to start negotiations with Latvia on concluding the Association Agreement with CERN. Latvia is expected to become an associated Member State of CERN already in 2021.

## d. Publications

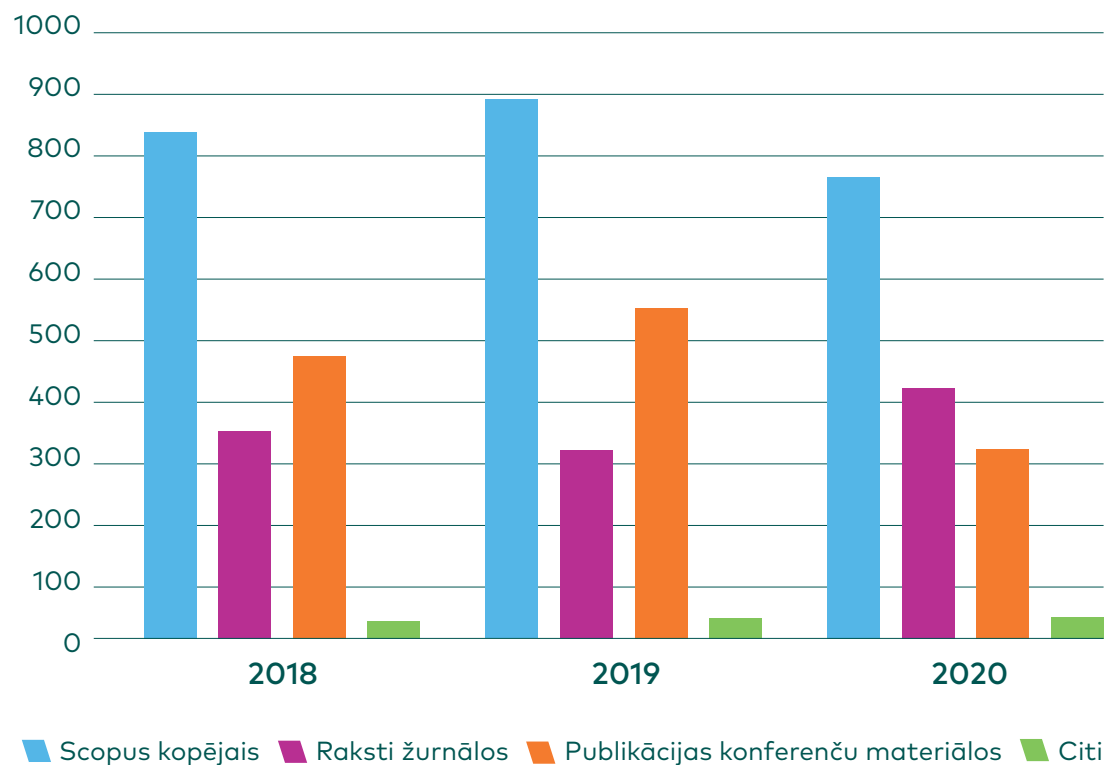
RTU publications, indexed and cited in SCOPUS and WOS databases



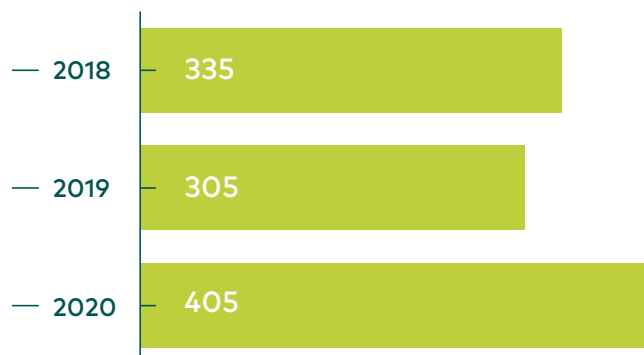
RTU research data sets included in the RTU support system for scientific activities



PuPublications in SCOPUS database



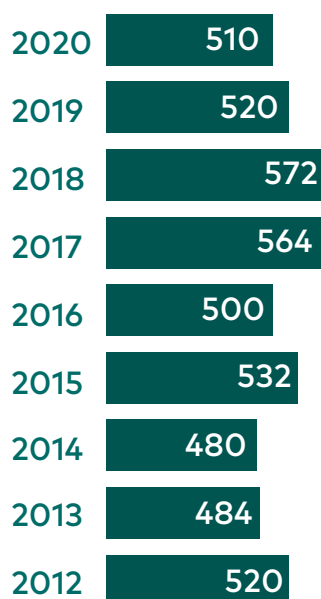
**Raksti žurnālos**



## e. PhD Studies

RTU implements 20 accredited PhD study programs in engineering, natural sciences, architecture, social and service sciences.

### Number of PhD students



### PhD Studies

- Improvement of research skills
- PhD students and other stakeholders are offered a series of seminars and activities for the development of different general skills, including the Short PhD Course seminar for first-year PhD students.
- Quality assessment
- Since 2011, an annual survey of PhD students and graduates has been carried out to assess the quality of PhD studies at RTU and to identify

opportunities and challenges for the development of programs. An admission survey was also carried out in 2020 to assess the admission process and the start of PhD studies.

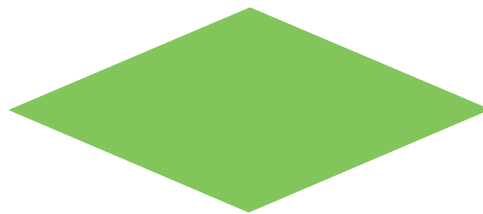
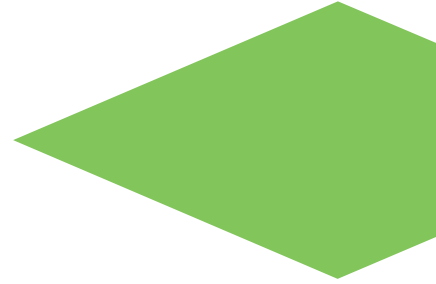
### RTU PhD Student Develops Innovation for More Efficient Biological Farming

A PhD student of RTU Faculty of Materials Science and Applied Chemistry Kristīne Irtiševa is developing an innovative technology for soil enrichment using Latvia's swamp wealth – peat.

She is developing the idea of using valuable substances available in peat for plant enrichment. With the use of cavitation and extraction methods, a concentrated solution of humus substances is obtained from peat. Diluted at a specified concentration, it is suitable for rural spraying systems. In turn, the remaining substances can be used to make granules which are also suitable for soil improvement.

### Post-Doctoral Studies

Since 2017, RTU has started providing post-doc research projects within the operational program «Growth and Employment» in the framework of the specific objective 1.1.1 «To Increase the Research and Innovative Capacity of Scientific Institutions of Latvia and the Ability to Attract External Financing, Investing in Human Resources and Infrastructure» of the 1.1.1.2 measure «Post-Doctoral Research Support». In 2020, 63 post-doc research projects were implemented at RTU, encompassing a wide range of themes and directions. The majority of projects are devoted to developing new technological solutions and addressing societal challenges.





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# Sustainable Valorization



## a. Innovation and Technology Transfer Centre

The Innovation and Technology Transfer Centre (ITTC) supports the involvement of RTU scientists in valorization activities, provides supervision and protection of university intellectual property, promotes innovation and technology transfer, ensuring the implementation of scientific research results in a commercially exploitable manner, and builds sustainable relations and professional communication with external partners, representing the interests of RTU and promoting local and international visibility.

Main activity areas:

- Support to RTU scientists in valorization activities;
- Technology transfer;
- Protection and supervision of intellectual property;
- Cooperation with the industry and external partners.

### Support in Commercialization of Research Results

One of the most important technology transfer activities is the involvement of RTU scientists in the «Support to Commercialization of the Research Organization Results» program administered by the Investment and Development Agency of Latvia (LIAA). Under this program, RTU has already attracted EUR 3.28 million for the development and improvement of new technologies.

The Innovation and Technology Transfer Centre helps researchers by providing support in drawing up and implementation of project applications, providing training for the presentation of ideas, coordinating the application and implementation process and maintaining communication with the LAA. Using the attracted funding, RTU researchers develop and improve different technologies that will be later offered to the manufacturers.

- RTU Research Laboratory of Functional Materials Technologies is developing a zero-energy technology for treatment and purification of wastewater of pharmaceutical companies from particularly persistent organic pollution. Associate Professor of RTU Andris Šutka is the head of the project «Treatment of Pharmaceutical Industry Wastewater».
- Researchers of RTU Institute of Materials and Structures are developing high-strength hybrid fiber for 3D printing, which will significantly increase the market for 3D printing materials and expand 3D printing possibilities. The project «Thermoplastic Hybrid Fiber for Additive Manufacturing Technologies – 3D TEHART» is led by the leading researcher of RTU Kaspars Kalniņš.
- Within the project «Natural Thermo Packaging», RTU Institute of Environmental Protection and Heating Systems is developing a technology for production of secondary thermo packaging and construction panels from wood-processing waste – conifer needle foliage – which is widely available in Latvia, but is barely used. The Director of the Institute of Environment and Energy Systems, Professor Dagnija Blumberga is the head of the project.
- RTU Institute of Energy Systems and Environment is developing a technology for extracting oil suitable for fish consumption from biodegradable by-products from other industries using micro-organisms. Krišs Spalviņš is the leading researcher of the project «Supercritical Omega-3 Oil from Processing By-Products».
- RTU researchers are developing multi-robot systems for maintenance of industrial premises. The project is led by of the Head of the Department of Artificial Intelligence and Systems of RTU Faculty

- of Computer Science and Information Technology Professor Agris Nikitenko.
- Under the «Online drinking water quality monitoring and early warning system», the Water Research and Environmental Biotechnology Laboratory is developing a technology that will allow the microbiological quality of water to be assessed almost online. The project manager is the leading researcher of the Water Research and Environmental Biotechnology Laboratory Sandis Dejus.
  - RTU Institute of Applied Chemistry is developing and experimentally testing a technology that allows innovative production of biodiesel from a lipid-soap mixture arising from the process of producing plant oil (alkali oil washing). The Director of the Institute of Applied Chemistry, Professor Valdis Kampars is the manager of this project.
  - RTU Institute of Energy Systems and Environment is developing a technology that would replace the chemical binding agent used in the manufacturing of wood plates with natural and human health and environmentally friendly raw materials. A leading researcher of the Institute of Energy Systems and Environment Vladimirs Krisanovs is the head of the Sustainable Solutions for Biomass Plants project.
  - RTU Institute of Energy Systems and Environment is developing a technology for the cultivation of micro-organisms producing proteins, using biodegradable agricultural residues, by-products of manufacturing and invasive plants as feed material. The project is managed by a leading researcher of the Institute of Energy Systems and Environment Jeļena Pubule.

## Intellectual Property Protection

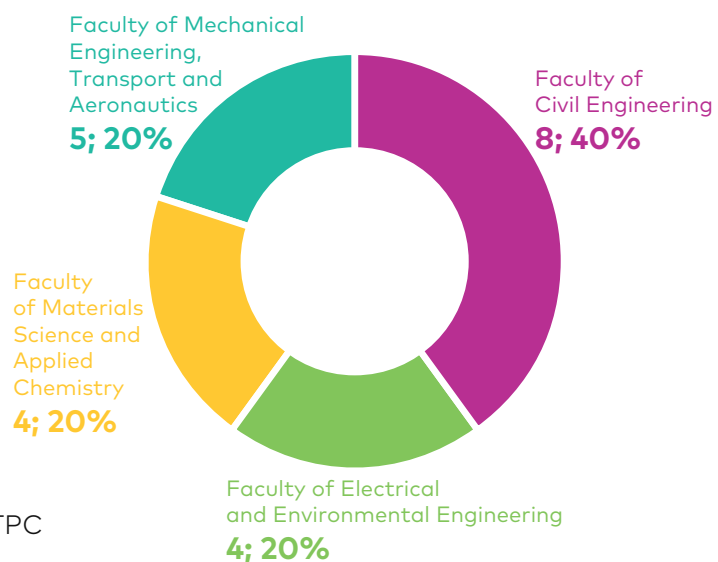
Protection and monitoring of intellectual property at RTU is one of the tasks of the Innovation and Technology Transfer Centre, which includes providing support to RTU researchers and students in drawing up and submission of applications for Latvian and foreign patents, as well as in maintaining patents. Attention is also paid to raising awareness of the importance of intellectual property issues, particularly in the commercialization process.

## Patenti

In 2020, 19 patent applications were filed in the Republic of Latvia, as well as one foreign patent application (PCT). The largest number of patent applications — nine, including one foreign patent application — was filed by RTU Faculty of Civil Engineering.

## Latvian Patent Applications by Faculty | 2020

\*Data as of 31.12.2020. Source: ITPC

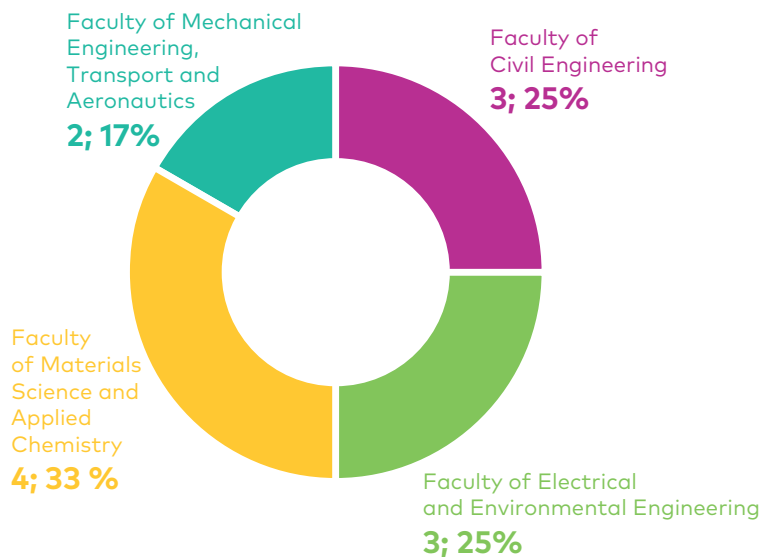


In 2020, the Patent Office of the Republic of Latvia registered 10 RTU patents. The largest number of registered patents are attributable to the Faculty of Materials Science and Applied Chemistry (FMSAC), followed by the Faculty of

Civil Engineering (FCE), the Faculty of Electrical and Environmental Engineering (FEEE) and the Faculty of Mechanical Engineering, Transport and Aeronautics (FMETA).

### Registered Latvian Patents by Faculty | 2020

Data as of 31.12.2020. Source: ITPC



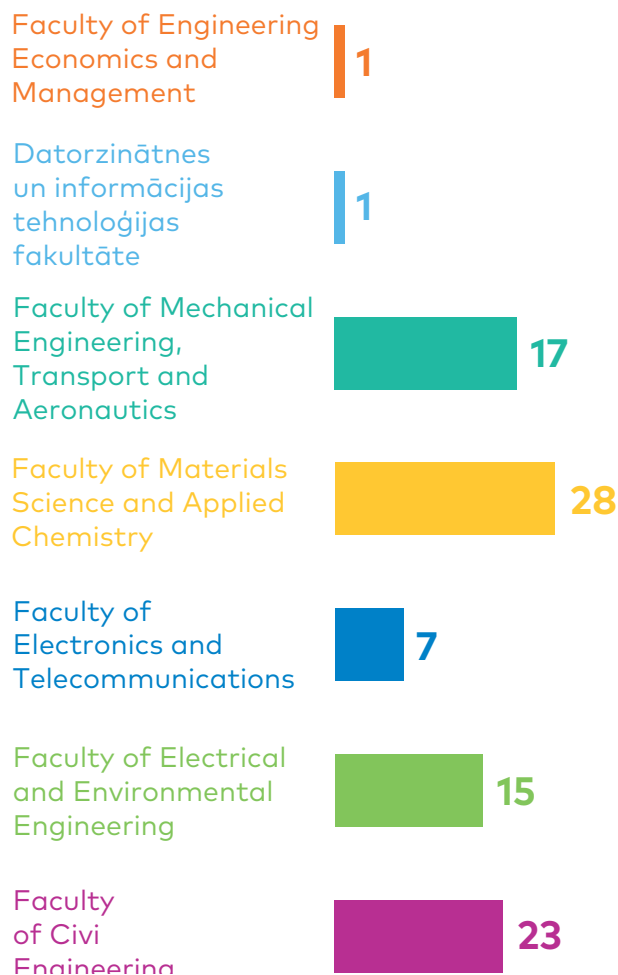
In 2020, RTU held the total of 75 effective Latvian and 3 European patents.

The largest number of patents maintained is at the Faculty of Materials Science and Applied Chemistry (FMSAC) and the Faculty of Civil Engineering (FCE),

followed by the Faculty of Electrical and Environmental Engineering (FEEE) and the Faculty of Mechanical Engineering, Transport and Aeronautics (FMETA).

## Number of Maintained Latvian Patents by Faculty | 2020

Data as of 31.12.2020. Source: ITPC



## Licensing and Selling of Technologies

RTU suggests to license or transfer to companies the intellectual property, inventions, copyright objects, trade marks, designs or know-how, which have the potential to be used for creating new products or services or solving problems. In the case of licensing, companies are granted the right to use RTU intellectual property for commercial purposes. In the event of a sale, intellectual property rights are fully transferred to a company that has acquired this intellectual property.

Both licensing and selling contribute to the development and spreading of the

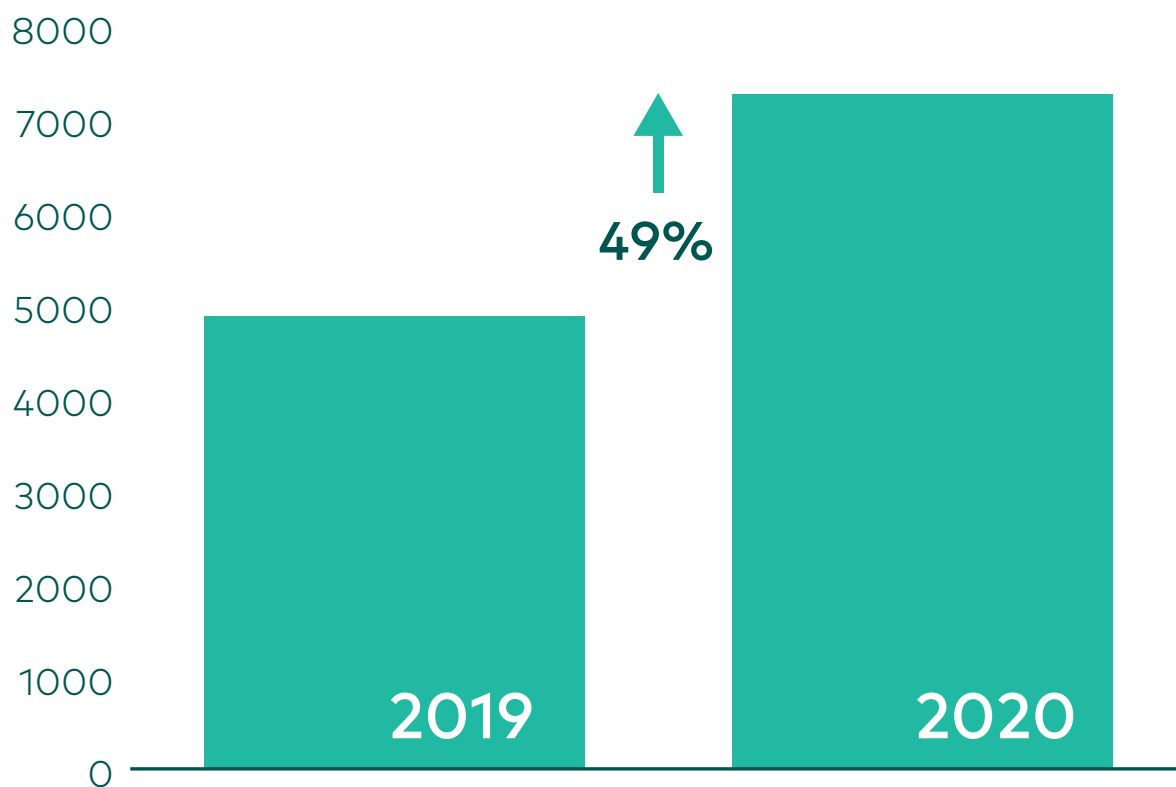
intellectual property to the general public and enable application of new technologies and knowledge for creation of competitive products.

In 2020, two licensing agreements and one technology sale agreement were concluded. In total, RTU has four active licensing agreements.

Intellectual property licensing is ensured by RTU Innovation and Technology Transfer Centre.

**Revenue (EUR) from Licensing and Sale of RTU Technologies (2019 and 2020)**

Data as of 31.12.2020. Source: ITPC

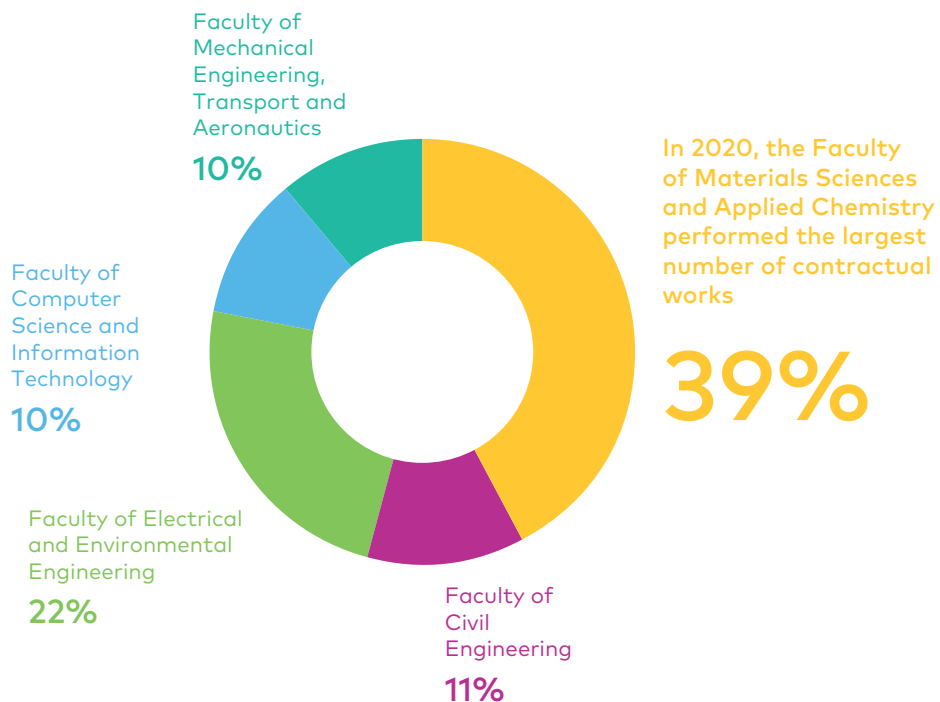
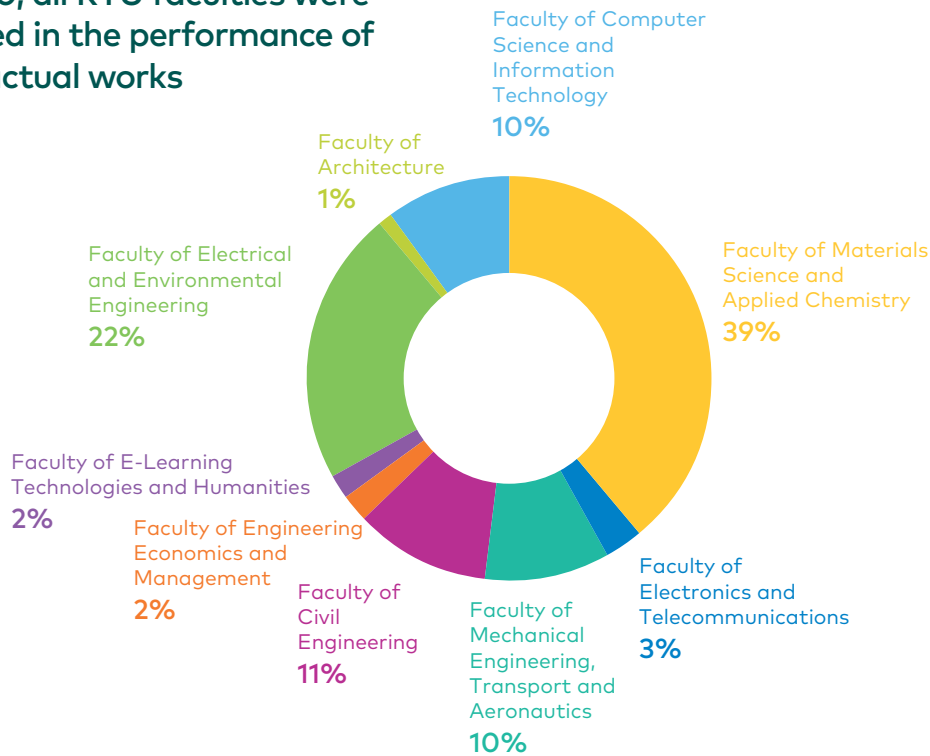


### Cooperation with the Industry and External Partners

RTU researchers actively cooperate with the Latvian and foreign companies and organizations, providing an opportunity to improve current products and

technologies, as well as to develop new ones. Different types of services are provided, starting from consultations and testing materials to development of new products.

### In 2020, all RTU faculties were involved in the performance of contractual works





**70%**  
Contract partners  
and companies

- Uzņēmumi (69,31%)
- Valsts institūcijas (9,9%)
- Izglītības iestādes (3,96%)
- Pašvaldības un to iestādes (4,95%)
- Pētniecības institūti (4,95%)
- Biedrības (2,97%)
- Nevalstiskās organizācijas (0,99%)
- Privātpersonas (2,97%)

**In 2020, RTU  
implemented  
more than 130  
commissioned  
projects**

Every year more than a hundred contractual works are implemented. The biggest cooperation partners of RTU to be mentioned are the following: SJSC Latvenergo, SJSC Latvijas dzelzceļš, JSC Grindex, JSC Sadales tīkls, JSC Latvijas Valsts meži, Ltd Mobilly, SJSC Latvijas Valsts ceļi, JSC SAF Tehnika, Ltd Latvijas Mobilais Telefons, JSC Olainfarm, JSC Valmieras stikla šķiedra, Ltd Tet, Ltd Rīgas ūdens, Ltd TENAX, Ministry of Education and Science, National Centre for Education, Ministry of Economics, Procurement Command of the National Armed Forces. Companies are invited to invest in innovative knowledge and technology projects in order to create products with high added value in cooperation with RTU researchers.



## b. RTU Design Factory

RTU Design Factory is an innovation and entrepreneurship platform with the best-equipped prototyping workshop in the Baltics and a team of highly qualified experts providing support to entrepreneurs, researchers and students in developing innovative ideas, high value-added products and engineering solutions

RTU Design Factory offers:

- product and concept design development services;
- prototyping;
- R&D or research and development;
- entrepreneurship support programs.

A team of engineers and product designers of RTU Design Factory has accrued experience in the development of a wide variety of products, prototypes and high added value solutions. When required within the specific product development projects, additional experts or RTU researchers in the respective areas are also invited.

### «theLAB» Workshop Opened

«theLAB» is an open-type workshop established under the auspices of RTU Design Factory, where students, employees and researchers have the opportunity to materialize their inventions using the technological capabilities provided by 3D printing, laser cutting and gradation, plotting, large-format printing and other auxiliary tools. In 2020, seven trainees worked within the «theLAB» trainee program.

### Innovation Grants for Students

Latvia's leading universities are implementing an unprecedented project, developing the skills promoting student employability. The RTU project «RTU

Innovation Grants to Students» offers students to engage in activities and programs focusing on the development of innovative thinking, support for technology transfer, commercialization of research, development of business ideas and new products, and to receive scholarships and support grants.

57 teams were accepted for innovation grant activities in 2020. RTU students are the most active participants of the project. Since a number of project activities and programs are being implemented in cooperation with other universities, students from 15 universities and high schools and pupils from RTU Engineering High School participated in the project in 2020.

### EIT Climate-KIC Hub Latvia

«EIT Climate-KIC Hub Latvia» of RTU Design Factory implements the programs of Knowledge and Innovation Community «Climate-KIC» of the European Institute of Innovation & Technology (EIT) in Latvia, as RTU has been a partner of «Climate-KIC» already since 2016. These programs are implemented in two areas – support to entrepreneurship and education.

«EIT Climate-KIC Accelerator Latvia» is an accelerator of green technology companies, where enterprises can gain access to a wide network of contacts, education opportunities, intensive mentoring and financial support amounting to up to EUR 50,000. In 2020, EIT Climate-KIC Accelerator Latvia supported five startups. Students were given the opportunity to apply for the Journey program and the Pioneers into Practice mobility program, organized by the EIT, aimed at reducing climate change. The Journey summer school was attended by 40 young people and the Pioneers into Practice – by 12 young professionals.

## EIT Food Hub Latvia

EIT Food is the knowledge and innovation community of the European Institute of Innovation and Technology, which RTU joined in 2019, gaining the right to create an innovation and co-creation contact point or HUB in Latvia. Activities of EIT Food Hub Latvia are carried out in cooperation with Riga Stradins University, the Latvia University of Life Sciences and Technologies, the Food and Veterinary Service and the Scientific Institute for Food Safety, Animal Health and Environment BIOR.

Building close links between consumers, businesses, start-ups, researchers and students from all over Europe, EIT Food supports innovation and sustainable economic initiatives that boost access to quality food, improve the environment and health, as well as create new jobs and increase the competitiveness of Europe. EIT Food promotes innovation in the food industry, from agriculture and production to supply and customer service, by offering business support programs and education and mobility programs to professionals, opening research and innovation projects. Activities are aimed at supporting commercialization of new ideas, providing training, mentoring, coaching, early incubation, acceleration, and help in prototyping. It is also essential to promote cooperation among industry, start-ups and researchers and creation of the network. In 2020, EIT Food Hub Latvia organized an innovative Innovation Prize competition involving eight food start-ups which represented the entire food farm-to-table line, ranging from novel food products to logistical solutions and packages. The first two winners received cash awards of EUR 3,000 and EUR 2,000 respectively.

EIT Food Hub Latvia also implements the RIS Talents and RIS Fellowships internship programs, which allow Masters and PhD students receive paid internships at European food companies, as well as the Government Executive Academy, which unites public administration staff working on food issues.

## RTU Design Factory Creates a Robotic System for Energy Construction

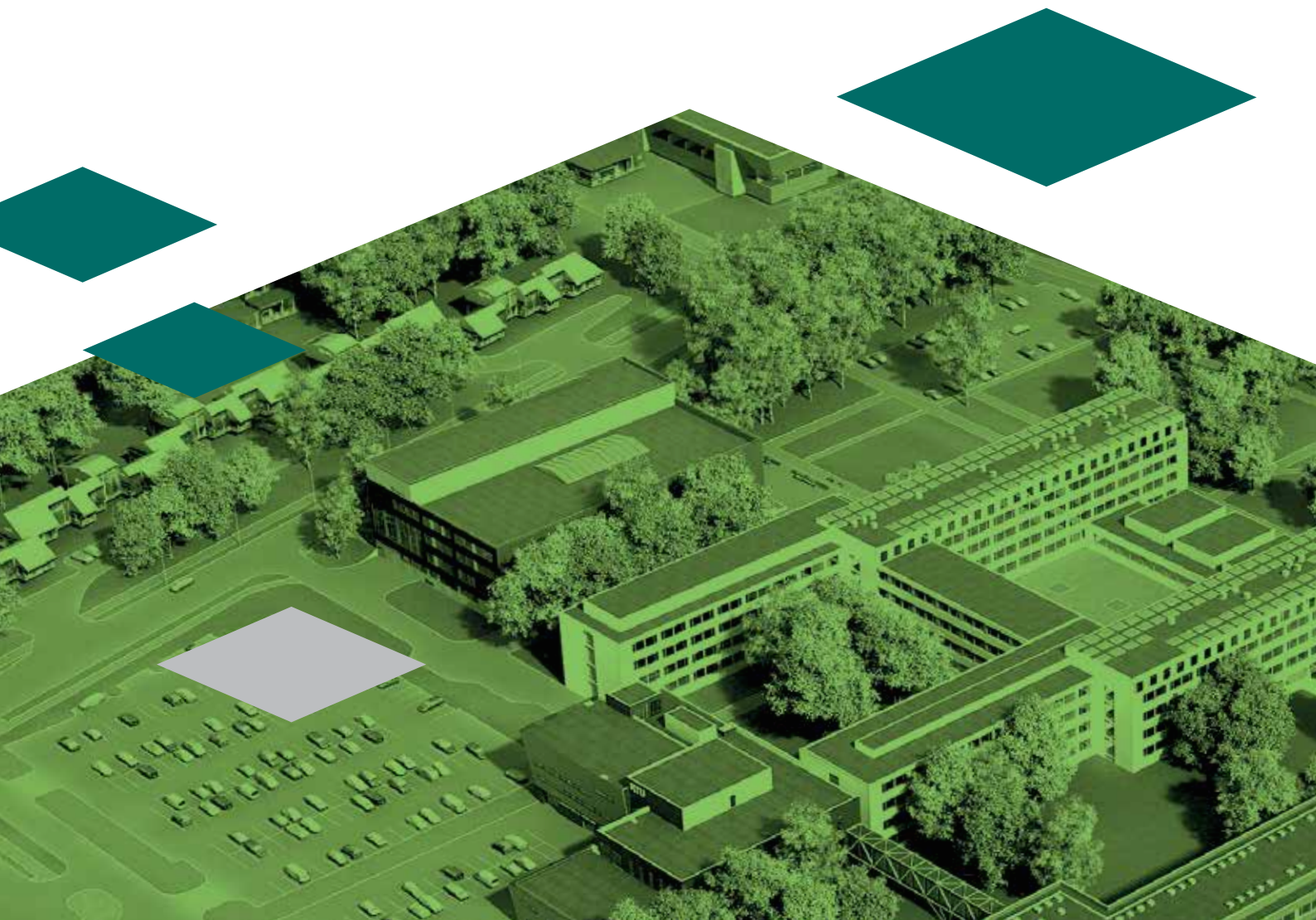
In order to protect birds from colliding with power lines, RTU Design Factory has developed a special robotic system for installing bird scarers on high-voltage lines for an energy and technology company «Empower».

The robot moves along the line, placing a special light reflecting plastic flag every ten meters. The system operates in semi-automatic mode – the operator moves the robot from one section of the power line to the next and monitors the movement with a console, while the robot makes a stop at a certain distance and fixes the flag.



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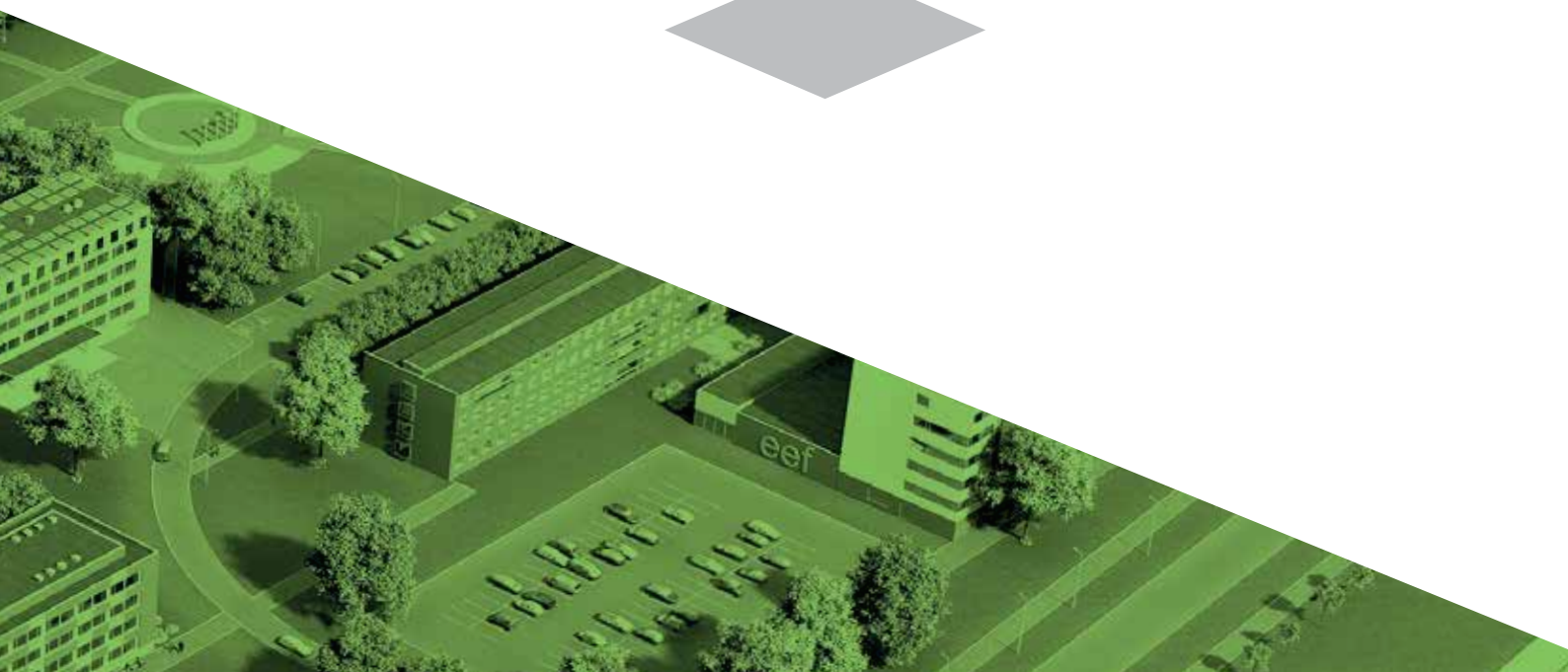
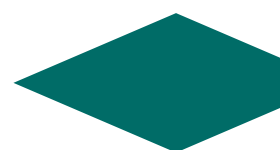
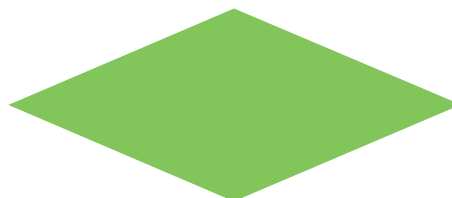
# Development of RTU Student Campus in Kīpsala



## Using the ERDF funding for 2017–2021, RTU continues working at concentration of its organizational units at RTU Campus in Ķīpsala

Currently, the following projects are implemented in synergy:

- Infrastructure Development of Riga Technical University for Modernization of STEM Study Programs;
- Infrastructure Development of the Centre of Engineering Sciences and Smart Technology of Riga Technical University in Smart Specialization Areas;
- Increase of Energy Efficiency of the Centre of Engineering Sciences and Smart Technology of Riga Technical University at 6A Ķīpsalas Street, Riga.



## 1. Reconstruction of the Faculty of Civil Engineering

Reconstruction of the building of the Faculty of Civil Engineering (FCE) at 6A Ķīpsalas Street, where the Centre of Engineering Sciences and Smart Technology will also be located after the reconstruction, started in August 2019. It is scheduled to be completed in 2021.

The reconstruction project is intended to change the internal design of the building retaining the corridors and the location of the stairways. All old engineering communications will be changed. In order to increase the useful space of the premises, the areas of the earlier constructed technical shafts will be reduced. Another floor will be built in the lower part of the building, levelling the height of the two connected buildings and providing additional areas for lecture rooms and space for the research staff. It is intended to replace the windows by selecting multiple glass units and to restore and thermally insulate the facade and roof, significantly improving the overall thermal efficiency of the building. The reconstruction project anticipates designing of a new air recovery ventilation system to manage engineering communications of the building and maintain a comfortable microclimate. A building management system will be constructed. In order to avoid unnecessary warming of the premises during the warmest period of the year, sunscreen surges will be installed on the southern facade. The building will meet the latest fire safety standards applicable to public buildings.

## 2. Establishment of the Centre of Science and Innovation

The Centre of Science and Innovation is anticipated to be integrated in the building at 6A Ķīpsalas Street, where the Faculty of Civil Engineering is located. The building reconstruction works were started at the end of summer to be continued until 2021. The development of the Centre of Science and Innovation will provide students with much wider opportunities to engage in science and various research projects, while researchers

will have greater opportunities to transfer their knowledge, experience and skills to students. Emphasis is placed on higher-level (Master and PhD) studies, research and innovation, and on activities in the education and research services market. Such centers of excellence and innovation act as generators which contribute significantly to the international competitiveness of the country.

## 3. New Building of the Faculty of Computer Science and Information Technology

Continuing the concentration of RTU in the campus at Ķīpsala, construction of a new educational building for the Faculty of Computer Science and Information Technology (FCSIT) was started at 10 Zunda Embankment to accommodate a research building housing the Centre of Engineering Sciences and Smart Technology, including the construction of a center of the joint-use lecture-rooms. In April 2020, a time capsule with a message to future generations was embedded in the foundation of the newly built building, and already in September RTU and the builders – the company Skonto Būve – had the ridgepole celebrations, perching a wreath of oak leaves above the roofs of RTU Campus. The ridgepole celebrations are a sign that one important stage in the construction of the new building has been completed – the roof-bearing structure has been erected and all the heaviest works have come to an end. Now only the finishing works shall be performed. FCSIT is expected to move to Ķīpsala in 2021.

## 4. New Building of the Baltic Biomaterials Centre of Excellence

In April 2020, amendments to the project «Development of the infrastructure of the Centre of Engineering Sciences and Smart Technology of Riga Technical University in the fields of Smart Specialization» were signed, which included the establishment of the Baltic Biomaterials Excellence Centre (BBEC). It is planned to build the BBEC building near the building of the Faculty of Materials

Science and Applied Chemistry at 3 Paula Valdena Street. It is envisioned that the building will be connected to the faculty by a passageway. The area of the building will be approximately 1,600 m<sup>2</sup>. The new building will also accommodate RTU Rudolf Cimdin's Riga Biomaterials Innovation and Development Centre, which will move here from 3 Pulka Street, thereby ensuring a more successful cooperation between various faculties of RTU housed in Ķīpsala and thus promoting multidisciplinary research. Equipment will be installed in the fully equipped BBEC building, creating a modern laboratory environment for research, study and product transfer from the laboratory to the industry. The building will include chemical laboratories, in vitro research laboratories and prototyping laboratories. With the arrangement of in vitro laboratories, a new research area related to deep implanted material research in the cell environment will be developed at RTU. In addition to laboratory premises, premises for researchers will also be equipped.

### **RTU Researchers Use Modern 3D Scanning Technique in Development of an Innovative Property Management System**

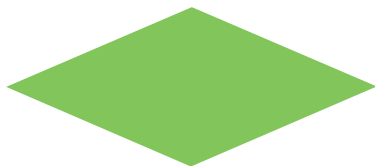
In cooperation with the researchers from several RTU faculties, a conceptually new property management system designed for experimental use at RTU will be developed. It will include 3D models of existing and emerging buildings of RTU, and the construction process of the future

building – the Faculty of Computer Science and Information Technology (CSITF) – in the 3D format, both exterior and interior of the building will be perpetuated from the foundation to the roof. The scanning of the buildings takes place under the supervision of the specialists from the Department of Geomatics of the RTU Faculty of Civil Engineering (FCE).

The aim of the RTU researchers is to create a more user-friendly system containing substantially expanded and conveniently usable information needed for building management purposes. It is particularly important for the 3D models of buildings developed for the purposes of the system by RTU specialists and students in geomatics, since digital models allow easily reviewing all spaces, their engineering communications networks – ventilation, heating and water supply systems, electricity supply. 3D models are also useful for designing buildings under repair or renovation and retaining historical outlines.

The 3D documentation process for RTU buildings should be used not only for the purposes of building management or construction process, but also as an essential part of the study and research process, allowing future geomatic specialists to master modern technologies in practice by developing new applications for them.

The new property management system has been developed by RTU FCE specialists in cooperation with the academic staff of CSITF, the Faculty of Engineering Economics and Management and the Faculty of Architecture.



13

# International Cooperation



Promotion and implementation of international institutional cooperation is one of the cornerstones of the RTU Development Strategy. Based on the vast network of partner universities worldwide, as well as participation in international organizations and alliances, academic and scientific cooperation is being pursued, the mobility of students and academic staff is promoted, providing extensive opportunities for exchange of experience and enabling active participation in global scientific centers. Although various restrictions were imposed in 2020 due to COVID-19, the activities carried out by RTU International Cooperation and Foreign Student Department did not stop but were increasingly transformed into the digital format – project meetings and decision-making, open door days and educational exhibitions took place remotely.

## a. International projects

### RTU – Part of the European University of Technology (EUt+)

On 1 November 2020, RTU, jointly with its seven international partners, officially started implementing the development of their offer to establish the European University of Technology (EUt+). The International Projects Division of the International Cooperation and Foreign Student Department is the RTU unit responsible for the development and implementation of the initiative applications.

RTU jointly with the University of Technology of Troyes, France, Dublin Technological University, Ireland, Sofia Technical University, Bulgaria, Cyprus University of Technology, Darmstadt University of Applied Sciences, Germany, the Technical University of Cluj-Napoca, Romania and Technical University of Cartagena, Spain, have committed themselves to development of an innovative confederative EUt+ model within three years.

The development of EUt+ will take advantage of the best opportunities offered by each university in the study and research process. The universities will closely coordinate their activities on a variety of issues, and it is expected that at least 50% of RTU students will have to gain experience at partner universities. In parallel with the development of the EUt+ model, project applications are being developed to strengthen the newly created consortium and open up new cooperation opportunities. Currently, the EUt+ partners are jointly implementing two strategic partnership



projects «EthiCo» (Ethics and Ecology in Technological Education) and «LUDEIA» (Universal Language for Academic Information Exchange).

The initiative is implemented under the Erasmus+ program «European Universities». It is anticipated that a total of 41 European universities, or an alliance of universities, will be set up with the involvement of 280 higher education institutions of the EU Member States and other countries. This process is supported by the European Commission, which awards the funding of EUR 287 million. According to the pilot project, the Single European Higher Education Area will be established by 2025.

## RTU Joins Latvian Diversity Charter

In November 2020, RTU became the first Baltic university to sign the Latvian Diversity Charter, confirming that it supports diversity and equal opportunities in the study and work environment. The Diversity Charter is a voluntary agreement aimed at promoting dignity and inclusion of different social groups.

RTU is committed to reinforce 15 principles of the Charter, such as preventing discrimination on the basis of gender, ethnicity, skin color, age, disability, sexual orientation and religious or political persuasion, and protecting its employees from discrimination, as well as creating an organization culture that appreciates mutual respect, diversity, inclusion and the principle of equal treatment.

The Diversity Charter has already been introduced in 24 EU Member States, and it has been signed by 50 companies and organizations in Latvia. Simultaneously with RTU, the Charter was signed by AirBaltic, Cognizant, Circle K, IPF Digital Latvia, Law Office COBALT, International College of Cosmetology and financial institution Altum.

## Ambassador of Mexico Visiting RTU

On 13 February, the Ambassador of Mexico to Latvia Francisco Eduardo del Río López and the Honorary Consul of Mexico to Latvia Carlos Arredondo Martinez met with the representatives of RTU administration, getting acquainted with the activities of RTU and its various cooperation projects with Mexico. RTU representatives familiarized the guests with RTU operation, history, scientific activities and various cooperation projects implemented in cooperation with the Mexican higher education institutions.

RTU maintains eight cooperation agreements concluded with different higher education institutions in Mexico. In 2014, an agreement was signed with Regiomontana University, in 2015, with National Polytechnic Institute of Mexico, University of Michoacana, Monterrey Institute of Technology and Higher Education, in 2016, with the University College of Jahuallica, and in 2019, with the Western Institute of Technology and Higher Education, University of Albert Einstein and Autonomous University of Queretaro.

As a result of the agreements, active implementation of student exchange and other projects takes place. The closest cooperation has been established with Monterrey Institute of Technology and Higher Education, 40 exchange students annually arrive to RTU from this university, as well as with National Polytechnic Institute of Mexico, which sends 10 students to RTU every year to study within an exchange program. Currently, six full-time students from Mexico are studying at Bachelor and Master study programs at RTU.

Cooperation between RTU and Mexico in studies and research is also promoted by the agreement concluded between the governments of Latvia and Mexico, which offers scholarships to the Mexican students for studies and research in Latvia, as well as participation in RTU summer schools.

## **RTU Rector and Ambassador of Italy Negotiate Further Cooperation Areas**

On 27 February, RTU Rector Leonīds Ribickis welcomed the Italian Ambassador to Latvia Stefano Taliani de Marchio to discuss the past cooperation with the Italian higher education institutions and to highlight its further development areas. The parties made a particular emphasis on the coordination of activities between RTU and the Italian Embassy in Latvia, which may promote successful cooperation.

RTU informed the Ambassador about the cooperation between RTU and Italian higher education institutions, i.e., exchange of students and academic staff within Erasmus+ program. RTU has signed 25 cooperation agreements with Italian universities and their active cooperation has promoted the increase in the number of Italian students at RTU – in the period from 1 October 2019 to 1 October 2020, RTU had 51 students from Italy.

The development of the International Summer School «Nonlinear Life», set up by RTU in 2017, was also discussed. For the second time in a row, it was organized in Italy.

## **Cooperation Opportunities between RTU and Toulouse School of Business in France Discussed**

On 13 July, the Head of the Space Aviation MBA program implemented by Toulouse School of Business, the Head of Aviation and Space Cluster in France and the candidate for the position of the Latvian Honorary Consul in Toulouse Christophe Benaroya paid a visit to RTU.

During the meeting, the parties made a deeper focus on the activities of RTU and Toulouse School of Business in studies, research and innovation, as well as

discussed possible lines of cooperation, with a special emphasis on the field of space engineering.

## **Delegation of Mykolo Romerio University Paid a Visit to RTU**

On 21 August, a delegation from the Lithuanian Mykolo Romerio University (MRU) was hosted by RTU to explore the potential and areas of cooperation. In the first part of the visit, the guests met with the representatives of RTU administration, presenting to each other the most important aspects of activities of each university, while in the second part of the visit, the MRU delegation went to Ķīpsala to see RTU Campus.

MRU was established in 1991, it is located in Vilnius and Kaunas. It has 7,500 students, including 600 foreign students. MRU offers study programs in law, humanities, social sciences and other areas.

## **International Research Centre for Education Established**

In order to strengthen scientific activities in the field of higher education research, RTU International Research Centre for Education was opened by the International Cooperation and Foreign Student Department in 2020. The Centre was opened in cooperation with RTU Faculty of E-Learning Technologies and Humanities, and its research activities will aim at providing representation of RTU at international education conferences, development of scientific publications and other activities related to international education research.

## b. Erasmus+

In academic year 2019/2020, RTU continued its activities under Erasmus+ program, implementing different projects. One of them was KA103 – «Higher education student and staff mobility within Program Countries». Within the project, RTU students have an opportunity to go to one of the RTU partner schools for exchange studies or to the European Union companies for internship, while RTU employees may get involved in mobility for teaching or experience exchange at RTU partner universities, organizations or companies, receiving the Erasmus+ grant. The aforementioned projects are implemented by the International Mobility Division of the Study Department.

Cooperation agreements have been signed with 332 universities from Erasmus+ program countries. In terms of the number of students involved, the leading positions are taken by Germany (57 universities), France (40), Poland and Italy (26), Turkey (21) and Spain (20).

In academic year 2019/2020, the following mobility trips were organized to the European countries:

- 148 study mobility trips
- 190 internship mobility trips
- 63 staff mobility trips

The number of internship mobility trips, implemented by RTU graduates within a year upon graduation, is steadily growing. In academic year 2019/2020, the post-study internship was implemented by 121 RTU graduates, i.e., by 40 participants more than in the previous year.

The involvement of foreign students in Erasmus+ mobility also continued growing. In academic year 2019/2020, 163 RTU foreign students participated in Erasmus+ project mobility in European countries, which is by 47 more than in the previous academic year. The countries most favored by RTU students for exchange studies are the Czechia (18), Spain (18), Lithuania (17), Italy (14), and Cyprus (9). The most popular countries for internship are Spain (31), Estonia (19), the Czechia (17), Italy (14), Portugal (14), and Lithuania (13).

The total funding involved in the project

exceeded EUR 1,200,000.

### RTU Continues Implementing Erasmus+ Mobility Trips beyond Europe and Strengthens its Leading Positions among Latvian Universities

Starting from 2015, operation of Erasmus+ exchange program was extended, allowing higher education institutions of the European countries to apply for the financing to promote cooperation with partner universities beyond Europe. Since the beginning of the new program, RTU could ensure and maintain leadership in terms of funding and the number of mobility trips implemented in Latvia by carrying out study, as well as the teaching and experience exchange mobility trips of the academic staff, with universities from around the world. The network established by Erasmus Mundus program was used as the basis for the launch of the program, which was strengthened and significantly expanded over five years.

During the program operation period from September 2015 to July 2020, RTU in total implemented 696 staff and student mobility trips in cooperation with higher education institutions from 43 countries, taking a stable leader position among Latvian universities. The financing received for program implementation during this period amounted to EUR 2,730,070.

## c. International Events

### RTU Study and Information Centre Opened in Turkey

On February 2020, with participation of the Latvian Ambassador to Turkey Pēteris Elferts, the Head of RTU International Cooperation and Foreign Student Department Igors Tipāns and

his deputy Zane Purlaura, RTU Study and Information Centre was solemnly opened in Ankara, a cooperation agreement was signed with the SINAV association of educational establishments to facilitate the process of passing entrance examinations to RTU for the students from Turkey.

### **RTU Participates in the Conference of the Study Program «Management of Logistics Systems and Supply Chain» in Germany**

From 29 January to 1 February, a conference of the academic staff involved in the provision of scientific curriculum of the International Joint Master's Study Program «Management of Logistics Systems and Supply Chain» and a meeting of the Management Committee were held in the town of Vildava, near Berlin, Germany.

Four universities were involved in the implementation of this joint study program in English – RTU, Autonomous University of Barcelona, Spain, Montan University of Leoben, Austria, and University of Applied Science of Wilday, Germany.

### **Activities of RTU Confucius Class**

In 2020, RTU Confucius Class continued its activities in the remote mode. Those interested learned Chinese in three-level groups, all students also had access to library books at RTU Faculty of E-Learning Technologies and Humanities (EETH). In June, a student of the study program «Computer Systems» of RTU Faculty of Computer Science and Information Technology Artūrs Rimašs won 1st place in the international contest «The Chinese Bridge» in the 17th Latvian selection stage. In total, 29 RTU students and graduates learned Chinese in 2020.

### **Record Number of Students at Riga King Sejong Institute**

In the spring and autumn semesters of 2020, a record number of participants – 245 – took part in the activities organized by Riga King Sejong Institute (RKSI) in learning the Korean language and raising and disseminating cultural awareness. The majority of participants were primary and secondary school pupils. A number of activities, such as a class in Korean cooking, Asian and Korean painting, etc., were organized within the «Academy of Culture» project launched by RKSI.

The aim of RKSI is to promote the acquisition of the Korean language and the raising and dissemination of cultural awareness in the Latvian society by contributing to the development of bilateral cooperation between Latvia and Korea. The activities of RKSI are carried out by four academic staff members from Korea.

## **d. International Summer Schools**

In 2020, the Foreign Student Foundation and Short-Course Division of the RTU International Cooperation and Foreign Student Department (RTU FSPSCD) organized five summer and one winter schools intramurally. Four of the provided summer schools received financial support from the State Education Development Agency (SEDA). Alongside with lectures and practical classes, a diverse entertainment program was provided for summer school participants – Riga was introduced by walking, cycling, yachting, tasting Latvian traditional dishes, travelling to Koknese, standup paddleboarding on the Pērses River, covering the Barefoot Trail, cooking soup on fire, dancing Latvian folk dances, playing volleyball on Ķīpsala

Beach during dinner breaks and in the evening.

In total, 85 students from 13 countries took part in the summer and winter schools organized by RTU.

### **«Robotics. Real-Life Applications of Intelligent Design»**

In 2020, the robotics school was held twice – in winter and summer. The school participants included the students from Australia, Azerbaijan, Belarus, Greece, Kazakhstan, China, Turkey and Uzbekistan. During four weeks, the summer school participants created two robots – the hand disinfection robot CoroRob and app-controlled drug-carrying robot for the patients BICIPTO. Implementing their ideas, the students of the robotics summer school used the intellectual and technical resources offered by the RTU Faculty of Computer Science and Information Technology, Design Factory, RTU Latvenergo creative laboratories, the Laboratory House and a robotics company RobotNest.

During the summer school, students were provided a unique opportunity to visit the Latvian companies Catchbox and Aeronex, which represent the IT, mechanics, mechatronics and electronics industry. The summer school participants found out about the product manufacturing cycle, as well as could ask questions directly to responsible engineers of the companies. It was one of the four summer schools of RTU FSPSCD that received support from SEDA.

### **«Riga – the Pearl of Latvian Wooden Architecture»**

In 2020, the summer school «Riga – the Pearl of Latvian Wooden Architecture» was organized for the first time, with participation of students from Azerbaijan, Italy, Mexico, Turkey, Finland and Germany. During two weeks, 10

students got familiar with a lifetime of a tree – from a small plant to an elegant wooden house. They saw not only pearls of wooden architecture such as Pardaugava house ensembles, Ungurmuiža and buildings in the Latvian Ethnographic open-air museum, but also visited a plant nursery of JSC Latvian State Forests, several timber companies, as well as paid a visit to the architect Zaiga Gaile.

### **«3D Animation World»**

This summer school took place for the second year in succession and it was attended by 12 students from six countries – Azerbaijan, Kazakhstan, Mexico, Spain, Uzbekistan and Germany. During three weeks, the summer school participants found out about the history of Latvian animation, evaluated various examples of Latvian and world animations, learned the steps of creating animations and created their own short animation film. Members of the summer school also attended Latvian animation studios.

The establishment and implementation of the 3D animation summer school took place with the participation of representatives of the Latvian Animation Association and the industry professionals. This summer school was also organized with the financial support from SEDA.

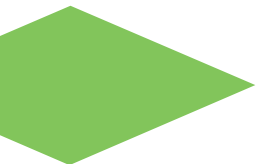
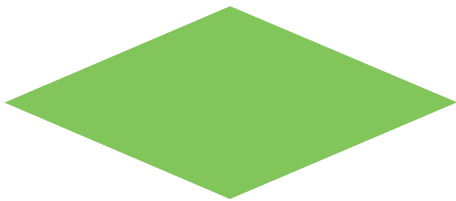
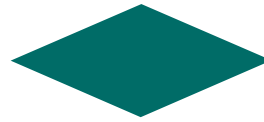
### **«Smart Emerging Technology. IoT for Smart Cities»**

The summer school «Smart Emerging Technology. IoT for Smart Cities» was organized in cooperation with RTU Faculty of Electronics and Telecommunications and was held for the first time. It was held for four weeks, during which students had a unique opportunity to improve their knowledge in smart technologies. The participants attended lectures and could also essay their powers at practical works in RTU laboratories.

Excursions to different companies and research centers engaged in the development of smart technologies in Latvia were organized for the students. 10 students from six countries attended the summer school – Azerbaijan, Greece, Mexico, Ukraine, Uzbekistan and Germany. This summer school also received financial support from SEDA.

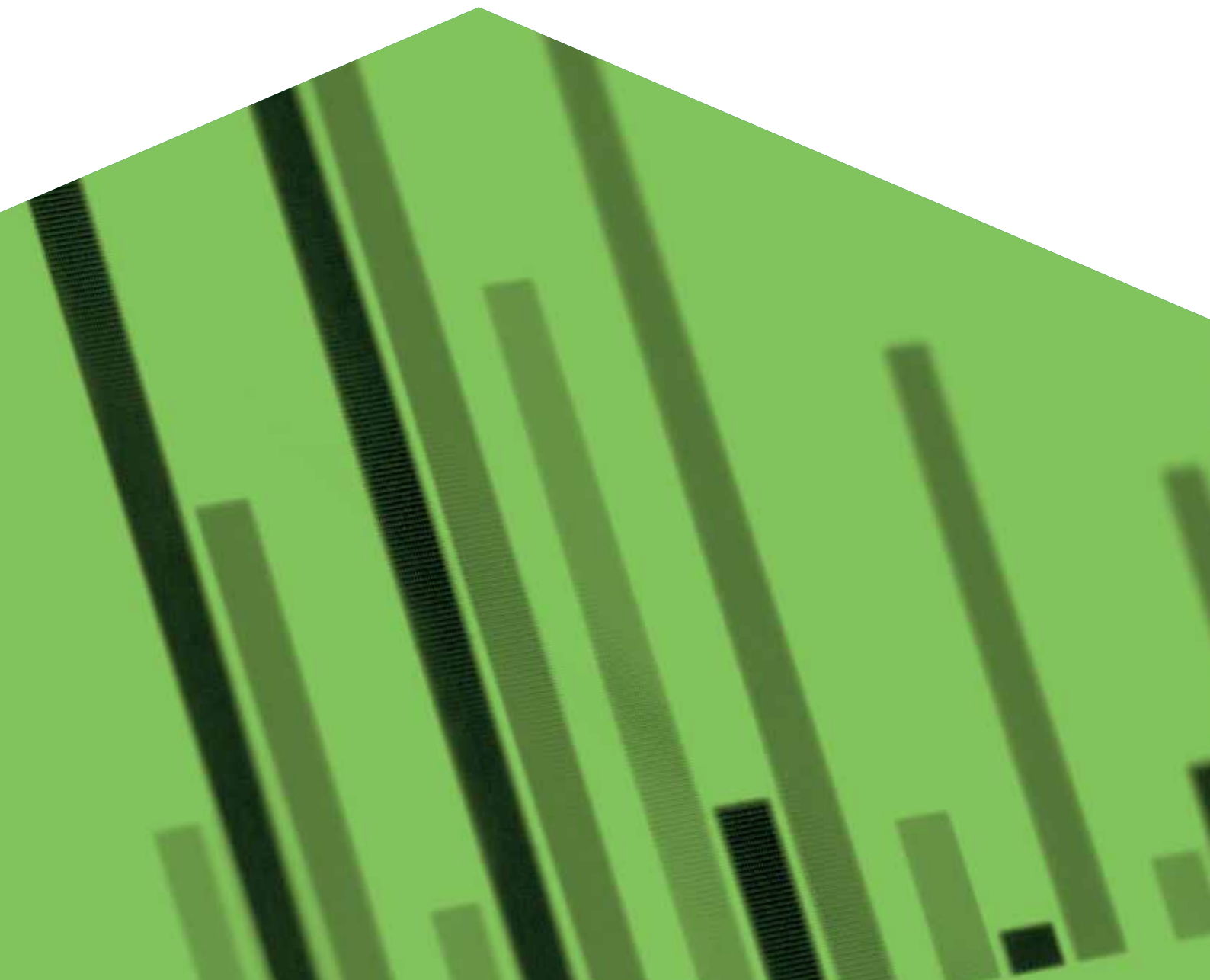
### «Intensive English and Cross-Cultural Communication»

This summer school was organized in cooperation with a partner university from France. 43 students improved their knowledge of English, got familiar with Latvia, its culture and enjoyed the beauty of the Latvian nature. Academic staff who are native speakers of English participated in the summer school.



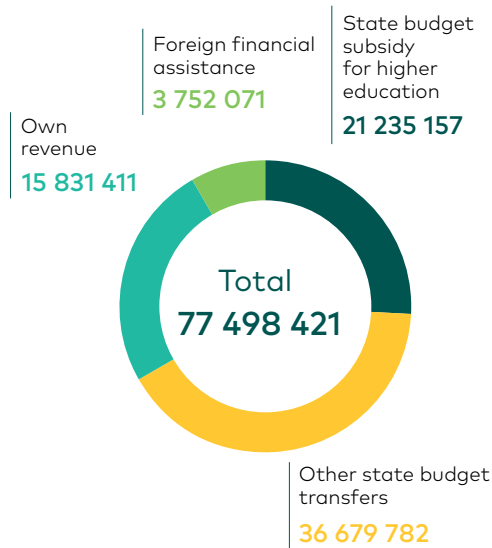
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# Finances



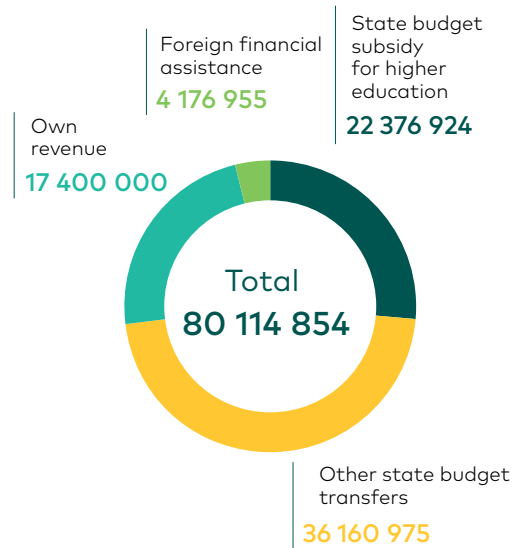
## 2020 Budget

### Revenue in 2020, EUR Mio

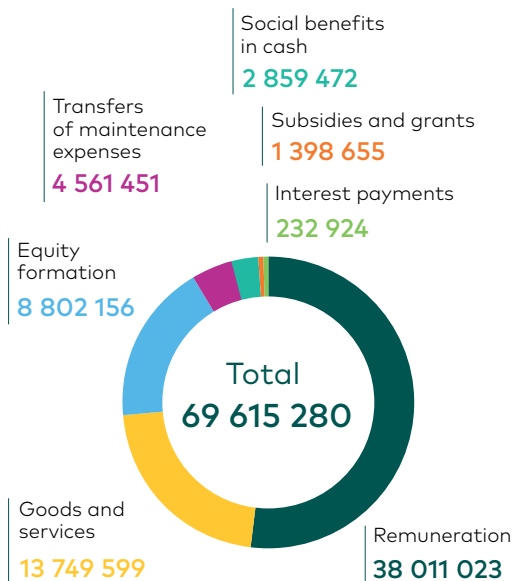


## Planned Budget in 2021

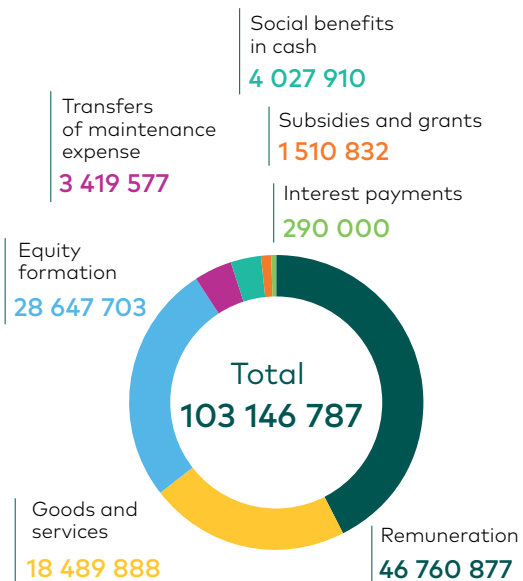
### Planned Revenue in 2021, EUR Mio



### Expenses in 2020, EUR Mio



### Planned Expenses in 2021, EUR Mio





## RTU Development Fund

The Development Fund of Riga Technical University is an organization that «brings together» companies with students – future specialists. The Fund collaborates with different companies, organizations and individuals to offer scholarships to students, implement different projects and take care of the development of RTU as a modern center of education, science, culture and sport.

The main objectives of the Fund are: to promote the development of higher education in Latvia that meets the needs of society and market requirements;

- to promote the advancement of the level of education and training of new specialists;
- to support the implementation of university development programs not only for education but also for scientific research;
- to award scholarships to students for training and scientific activities, and also for qualification advancement of the academic staff and employees.

The Ministry of Finance granted the status of a public benefit organization to RTU Development Fund to support education, science, culture and sport.

In 2020, RTU Development Fund attracted more than EUR 532,000 in donations.

The largest donation of 2020 – over EUR 250,000 – was received from Ltd Mikrotīkls (MikroTik brand).

The following projects were implemented using these funds in 2020:

- Modernization of RTU HPC (High Performance Computing) Centre;
- Modernization of the Software Research and Development Laboratory;
- Development of a training set for learning C++ languages in the context of robotics;
- Modernization of the Digital Equipment Training Laboratory;
- Improvement of the material and technical base for the telecommunication study courses;
- Development of RTU Children and Youth University (CYU) Centre;
- Development of optical flow positioning sensor.

Thanks to the attracted donations, the following projects could be supported and implemented:

- Replenishment and upgrading of the Latvenergo creative laboratory;
- Development of the Business Intelligence Lab of RTU Riga Business School;
- Support to RTU Engineering High School;
- RTU Grand Drive-in Graduation Ceremony;
- MINOX international exhibition of inventions and innovations;
- Release of a CD album of the postfolkrock group Daba San.

## Scholarships of RTU Development Fund

By attracting donations and gifts from organizations, legal and natural persons, RTU Development Fund grants scholarships to students of RTU and other universities and colleges, as well as students of vocational educational institutions.

- In cooperation with the supporters, scholarships are offered:
- for academic achievements;
- for achievements in science and research;
- for promotion of practical skills;
- for achievements in sports.

## Scholarships Awarded for Achievements in Science and Research

- «ZIBIT 2020» scholarships for graduation papers of the students in information technology and computer science;
- «Accenture» scholarships for the students of RTU Faculty of Computer Science and Information Technology;
- Ltd «Peikko Latvija» scholarships for the students of RTU Faculty of Civil Engineering;
- Jānis Alksnis scholarships for the students of RTU Faculty of Architecture.

## Scholarships for Academic Achievements

- Ltd PERI support scholarship for the students of RTU Faculty of Civil Engineering;
- Ltd ITERA Latvija scholarships for the students of RTU and the Latvia University of Life Sciences and Technologies;
- Alfreds Raisters scholarships for the students of different fields, who have demonstrated excellent academic achievements and who are involved in popularizing of engineering sciences on a daily basis;
- Ltd Severstal Distribution excellency scholarships for the pupils of RTU Engineering High School;
- Ltd Severstal Distribution excellency scholarships for the students of RTU Faculty of Mechanical Engineering, Transport and Aeronautics;
- Ltd SAKRET support scholarship for the students of RTU Faculty of Civil Engineering;
- Ltd SAKRET support scholarship for the students of RTU Faculty of Materials Science and Applied Chemistry;
- Ltd Severstal Distribution support scholarship for the students of RTU Faculty of Mechanical Engineering,

Transport and Aeronautics;

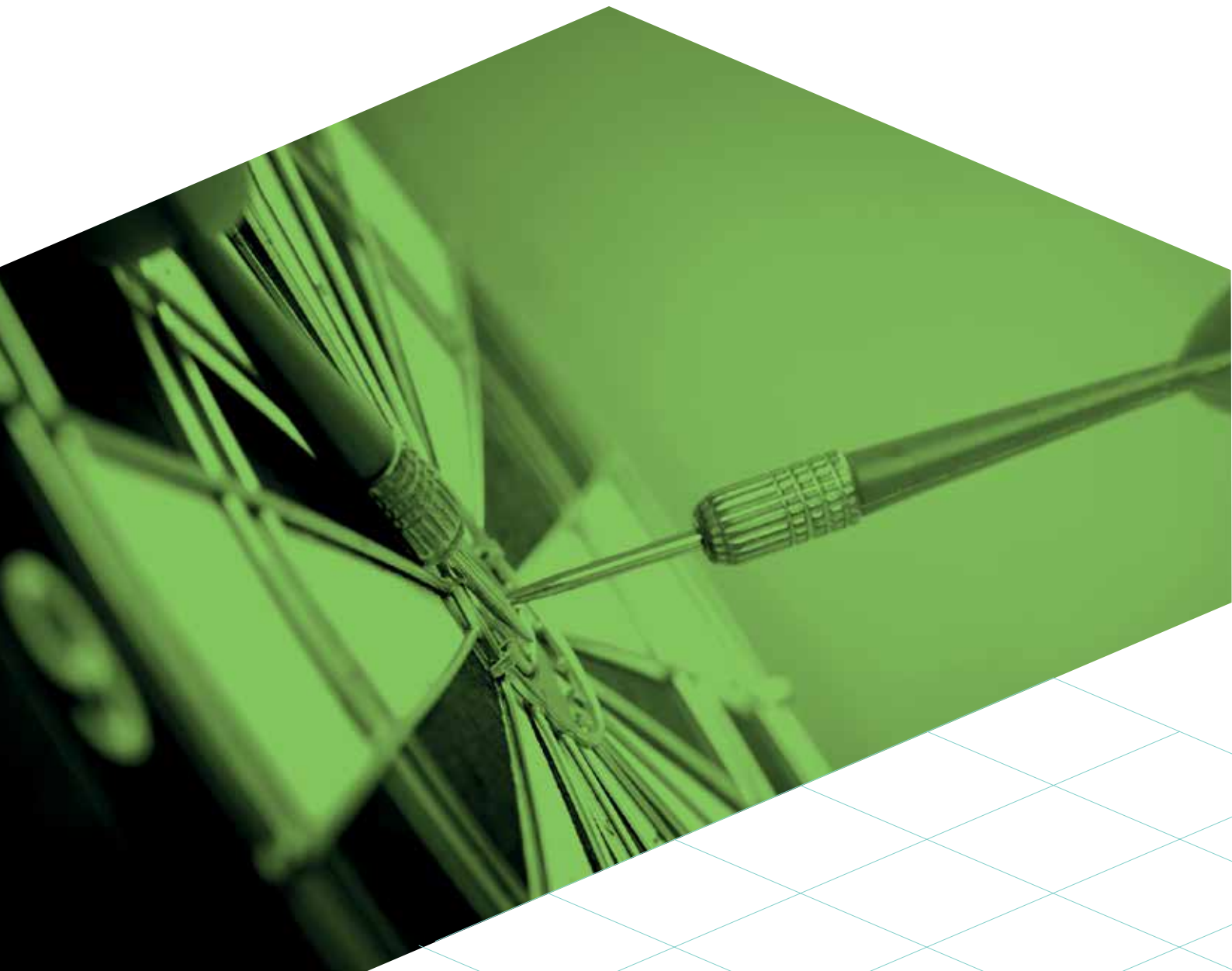
- RTU support scholarship for the pupils of RTU Engineering High School;
- Ltd Tieto Latvia, Ltd WeAreDots, Ltd DPA, JSC Swedbank, JSC Luminor Bank, JSC BlueOrange Bank, JSC Citadele banka excellency scholarships for the students of Riga Business School;
- Ltd Mikrotīkls support scholarship «Future Professional» for RTU students;
- Ltd SCHWENK Latvija scholarship for the students in power engineering, electrical engineering, mechanical engineering and mechanics;
- Ltd Mikrotīkls support scholarship for the students of RTU Faculty of Computer Science and Information Technology, Faculty of Electronics and Telecommunications, Faculty of Electrical and Environmental Engineering;
- JSC Latvijas Balzams support scholarship for the students of RTU Faculty of Mechanical Engineering, Transport and Aeronautics;
- Ltd Light Guide Optics International scholarship for the students of the Faculty of Materials Science and Applied Chemistry;
- RTU Student innovation grant scholarships in different activities, e.g., Product Development Project (PDP) and Vertically Integrated Project (VIP).

## RTU Development Fund also Grants Awards for Special Achievements in Science

- Solomon Hiller Doctor of Chemical Sciences Award;
- Annual Award of the Latvian Academy of Sciences, Ltd ITERA Latvija and RTU Development Fund;
- Annual Academic Excellence Award and the Young Academic Staff of the Year Award;
- Honorary Graduate Award of RTU Engineering High School.

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# Achievements and Awards



## RTU – Higher Education Institution Most Recommended by Employers

In 2020, for the ninth consecutive year, RTU gained the title of the higher education institution most recommended by employers in a survey conducted by the Employers' Confederation of Latvia in cooperation with the career and education portal *prakse.lv*.

The assessment of employers is very important for RTU, as it confirms to the existing and future students that the study programs implemented by RTU comply with the labor market requirements and employers evaluate the knowledge obtained by RTU graduates.

### a. Ratings

International ratings enable RTU to assess progress according to internationally defined criteria and to compare itself with other higher education institutions in Latvia and in the world. Based on the assessments obtained from the ratings, it is possible to draw conclusions and set new objectives for the sustainable growth and development of the study process, scientific activities and the entire university.

#### «Times Higher Education World University Rankings» 2021

RTU is ranked in the 1000+ rating group. The RTU was recognized the 284th World Best University in terms of university cooperation with the industry. The ranking of the university cooperation with the industry is evaluated considering the amount of revenue the university has generated from knowledge transfer. It also analyzes the contribution of the university to business development through innovation, inventions and expertise, as well as the ability of universities to raise funding from

the commercial sector. The ranking includes the best universities in the world, assessing their performance in studies, cooperation with industry, internationalization, science and citation rate.

#### «Times Higher Education BRICS & Emerging Economies University Rankings» 2021

RTU is ranked 251-300 in the rating of universities of the emerging economies. Two areas of RTU activity are most highly valued: industrial revenues and the international perspective. Overall, the ranking includes 606 universities from 48 countries and regions. The rating assessed the performance of universities on the basis of the Times Higher Education World University Rankings methodology, adapting it to the priorities for the development of emerging economies, in five areas of activity: studies (study environment), research (volume, revenue and reputation), citation (research impact), international perspective (staff, students, research) and industry income (knowledge transfer).

#### «Times Higher Education Impact Rankings» 2020

Having evaluated the performance of RTU in the framework of the United Nations (UN) Sustainable Development Goal (CDG) 17 cooperation program, RTU is ranked 101-200 in the rating of best universities, having become the most highly evaluated out of four Latvian universities included in The Times Higher Education Impact Rankings 2020. This ranking was made for the second time and RTU demonstrated better results by raising from the group of 201-300 the highest-ranked universities to the group of 101-200 best-performing universities. The efforts of RTU to achieve the «Protection of the Planet» goal have been evaluated the highest – in this area

RTU is acknowledged as the 14th best in the world. RTU shares the 34th ranking in terms of reaching the «Renewable Energy» goal, shares the 45th ranking, through the activities by implementing the «Good Work and Economic Growth» goal, and is the 70th best by meeting the expectations of the «Innovation and Infrastructure» goal.

### «QS World University Rankings» 2021

RTU is included in the QS World University Rankings 2021 in the group 701-750, which is the highest position among the three Latvian universities included in the ranking. The rating highlights the increase of foreign students at RTU, moreover, RTU has improved its position by 66 points, reaching the rating of 371 on the global score. The ranking includes 1002 best universities in the world from 93 countries. Universities have been evaluated on the basis of six criteria: academic reputation, employers' reputation, citation, the proportion of students and academic staff, as well as the share of foreign students and foreign academic staff. Compared to the previous year, RTU has improved its performance in four out of six criteria: the share of foreign students, the proportion of students and academic staff, citation figures and academic reputation.

### «QS University Rankings: EECA» 2021

RTU was ranked 57th in several evaluation criteria, for example, experiencing growth in employers' reputation compared to the previous year. The ECCA is a regional university rating for Europe and Central Asia, covering a total of 400 regional universities.

At the regional level, the reputation of RTU among employers has been evaluated the highest, ranking the university as the 29th. RTU has climbed up in this position, as well as in three more criteria – the proportion

of academic staff and students, the share of foreign students and international cooperation in research.

### «QS Graduate Employability Rankings» 2020

In the QS Graduate Employability Rankings made by the prestigious rating agency QS World University Rankings, RTU has climbed up by 100 positions and now holds 201–250th place. The ranking assesses the reputation of universities among employers, graduate performance, university and employer cooperation, student and employer cooperation and graduate employment. The cooperation between employers and students has been evaluated the highest, the second-best indicator is graduate employment and the third is graduate performance. A total of 758 higher education institutions are included in the 2020 rating, which is 15% more than in the previous year.

### «QS Stars» 2018

RTU has received an excellent assessment – five stars – of the international «QS Stars» university ranking. The five-star system evaluates the university performance in eight categories and RTU has scored five stars in six of them. The performance of RTU has been assessed with five stars in the following categories: quality of studies, graduate employment, internationalization, study environment, innovation and social responsibility.

### «UI GreenMetric World University Ranking» 2020

In the global rating of green policy and sustainability, RTU has significantly improved its position and now is among the 60 greenest universities in the world. In 2020, RTU was ranked 56th and this is a remarkable climb compared with 2019, when RTU was ranked as the 93rd–95th greenest world university. Moreover, RTU is the only Latvian university that ranks so high in the ranking, as no other

Latvian university has succeeded in being included even between 500 greenest universities. The GreenMetric ranking rates world universities according to their commitment to minimize harmful effects on the environment. The approach of universities to the green principles has been assessed in six criteria: total infrastructure, energy efficiency and climate change mitigation activities, waste management, efficient use of water resources, transport infrastructure and environmental education and science.

Compared to the previous year, RTU has improved its performance in all six indicators, but the best results have been achieved in transport infrastructure, environmental education and science and waste management categories.

### «U-Multirank» 2020

RTU was highly valued in the international university ranking «U-Multirank», being identified as one of the 25 leading universities in the world in terms of the share of Open Access Publications. For several years in succession, RTU achieved the most convincing results among all Latvian universities included in this rating. RTU is the only Latvian university that has received A-level rankings in 11 evaluation criteria, such as the share of open access publications, the level of employment of graduates, the number of spin-off companies, funding attracted for science, graduation of Bachelor's and Master's studies at the scheduled time, Bachelor programs in English, the share of undertakings established by graduates and international publications.

B-level rankings have been awarded to RTU in seven criteria. Compared to 2019, RTU results have improved in six ranking criteria.

### «World's Universities with Real Impact» (WURI) 2020

RTU is the only Latvian university included among the best 40 universities in the

section of the international ranking «World's Universities with Real Impact» (WURI), where the capacity of universities in promoting entrepreneurial capacity and developing the business environment is assessed. RTU ranks 36th and this is the best result not only in Latvia but also in the Baltic States. In the «Business Spirit» rating category, RTU received special recognition for the opportunities provided to RTU students to operate in the Student Innovation Grant Program, by training innovative thinking, innovation skills and creating new products, in such a way developing their entrepreneurial capacity already in the course of their studies.

### RTU Business and Management Education is Highly Valued

For the first time in the Eduniversal ranking of the world's best business schools, RTU Faculty of Engineering Economics and Management (FEEM) and RTU Riga Business School (RBS) received the highest assessment in Latvia.

The high-ranking assessment received in 2020 is an evidence of a well thought over internationalization strategy of RTU, which opted to cooperate with the recognized world universities to form a worldwide network of partner universities and to engage in international higher education consortia. For the fifth consecutive year, RTU FEEM and RBS were included in the 4 Palms League of the international Eduniversal ranking of the world's best business schools, which denotes a particularly high academic level, excellent quality and strong international influence in business and management education. The international rating of universities and business schools «Eduniversal Business Schools Ranking» includes 1000 best higher education institutions in the world that provide business and management education.

## b. Achievements

### Platinum Category in the «Sustainability Index 2020»

For the third consecutive year, RTU has been ranked in the highest or Platinum Category of the Sustainability Index. This is a high assessment of RTU efforts to promote green lifestyle and make scientific contributions to the development of environmentally friendly technologies.

According to the «Sustainability Index» methodology, the companies in the Platinum Category have fully integrated corporate responsibility into their activities and have assigned responsible persons on the level of both administration and the performers. Companies are systematically collecting data and assessing the impact, as well as are accounting for their activities with a high-level transparency and engagement of impact audiences, and their published data have been approved by an external auditor.

## c. Awards

RTU, celebrating its 158th anniversary, traditionally rewarded the best scientists for both their contribution to science and commercialization of the developed technologies and products.

### Scientists of the Year 2020

The honorary title «RTU Scientist of the Year 2020» was awarded to the Dean of the Faculty of Materials Science and Applied Chemistry (FMSAC), Academician Māris Turks.

The honorary title «RTU Young Female Scientist of the Year 2020» was awarded to the researcher of FMSAC Institute of General Chemical Engineering Līga Stīpniece.

The honorary title «RTU Young Scientist of the Year 2020» was awarded to the leading researcher of the Institute of Materials and Structures of the Faculty of Civil Engineering (FCE) Ģirts Būmanis.

### Annual Valorization Award

For the fourth year, RTU has been greeting scientists who have successfully cooperated with the industry and have been able to commercialize or valorize their products. The jury have assessed the contribution of applicants to the development and promotion of new technologies, as well as cooperation with industry. In 2020, the Annual Valorization Award was received by the leading researcher of the FCE Institute of Transport Infrastructure Engineering Viktors Haritonovs.

The Annual Valorization Award was also granted to a student and was received by the researcher of the Institute of Telecommunications of the Faculty of Electronics and Telecommunications (FET) Jānis Braunfelds.

### RTU Chemists Receive Honorary Certificates of the LAS President for Achievements in Science in 2020

#### **Honorary Certificate of the LAS President was received by the researchers of the Research Laboratory of Functional Materials and Technologies**

of RTU Faculty of Materials Science and Applied Chemistry (FMSAC) for their research on piezoelectric materials for energy extraction. The research developed a clear and simple methodology for measuring precise internal piezoelectric effects for piezoelectric polymers. The research makes it possible to understand the existing condition in the field of soft piezoelectric materials and will allow identification of true ways to improve their piezoelectric capacity and ensure the development of next-generation polymers piezoelectric generators.

#### **Honorary Certificate of the LAS President was received by a group of researchers**

from the Institute of Applied Chemistry of the RTU Faculty of Materials Science and Applied Chemistry (FMSAC) for systematic research in the field of biofuels. The aim of researchers is to develop biofuel production technologies that do not use food raw

materials as raw materials. Research by scientists of the Institute of Applied Chemistry includes the development of new methods for the production of modern biodiesel and more targeted catalytic pyrolysis of lignocellulose biomass, as well as the development of new catalysts for the conversion of synthesis gas from lignocellulose into low-pressure and temperature fuels.

#### **Honorary Certificate of the LAS President was received by a group of researchers**

from RTU Faculty of Materials Science and Applied Chemistry (FMSAC), the LU Institute of Solid-State Physics and the Latvian Institute of Organic Synthesis. Scientists have developed new possibilities for replacing the purine cycle by using the azido group as a regioselective switch that allows reversing the traditional purine substitution style and creating both C-N and C-S links. The applicability of the new methods is demonstrated by the possibility of transmitting them to quinazolines and other heterocycles used in medical chemistry. New purine derivatives have highly expressed luminescent properties and, based on them, both new metal ion sensors and organic light emitting diodes are created. The development of new synthesis methods to replace purine opens up the possibility for creating hitherto unknown classes of derivatives that allow medical chemists and material scientists to design new types of molecules and their applications.

#### **Contribution of Professor Valdis Kampars to Science was Assessed with the World Intellectual Property Organization Medal**

Professor of RTU Faculty of Materials Science and Applied Chemistry (FMSAC) Valdis Kampars was awarded the WIPO (World Intellectual Property Organization) Medal for Inventors for significant contribution and innovative activities in the development of inventions, particularly in the field of biofuels. The Professor

has developed a new research line called «Biomass Conversion to Fuel and Chemical Products, Chemical and Thermochemical Synthesis of Biofuels, Fuel Properties and Their Provision», in which systematic studies are conducted on optimization of first-generation biofuel extraction processes and the extraction of second-generation biofuels as a result of catalytic hydrogenation, hydrothermal treatment and hydrodeoxygenation, as well as biomass recycling for thermochemical processes.

#### **RTU Professor Jānis Grundspenķis Receives the Cross of Recognition**

President of Latvia Egils Levits granted the Cross of Recognition to Professor of RTU Faculty of Computer Science and Information Technology Jānis Grundspenķis for significant scientific activities and contribution to science and development of tertiary education.

Professor of the Faculty of Architecture Sandra Treija Is Awarded the Honorary Certificate of the Cabinet of Ministers Professor of RTU Faculty of Architecture (AF), Deputy Dean in Scientific Issues and the Head of AF Research Centre for Urban Planning Sandra Treija was awarded the Honorary Certificate of the Cabinet of Ministers for her contribution to training of the specialists in the field of architecture and urban planning and the development of higher education and science.

#### **RTU PhD Student Aiga Ivdre Receives L'Oréal Baltic Grant «Women in Science»**

In 2020, the traditional L'Oréal Baltic Grant «Women in Science» was awarded to a PhD student of RTU Faculty of Materials Science and Applied Chemistry Aiga Ivdre. The young scientist received the award for her research seeking to use wood-based by-products – wood dust from the production of horse litter and plywood – for obtaining nanocellulose, as well as its



use in cryogenic insulation polyurethane foam. Today, the use of by-products of production plays an important role in improving the technological process, reducing production costs and introducing cleaner production principles.

### Young Scientists of RTU Receive Annual Awards in the Energy Sector from Latvenergo and the Latvian Academy of Sciences

Annual Awards of Latvenergo and LAS in the energy sector have been awarded since 1999 to promote the development of industry and science, highlight the performance of excellent young scientists or the lifetime contribution to energy sector. This is one of the main events in the industry, which allows summarizing the results of the work of scientists and look back on the past year.

The awards have been received by:

- A leading researcher of the Institute of Environment and Energy Systems of RTU Faculty of Electrical and Environmental Engineering (FEEE) Miķelis Džikevičs for his work «Solar Energy Accumulation by Free-Standing Phase Change Materials»;
- A Scientific Assistant of the FEEE Institute of Power Engineering Romāns Oļekšijs for his work «Modernization of Combined Cycle Electric Power Units to Adapt their Operations to the Requirements of Modern Electricity Market»;
- A researcher of the FEEE Institute of Power Engineering Zane Broka for her work «Use and Assessment of the Flexibility of Consumption on Electricity Markets»;
- A researcher of the FEEE Institute of Power Engineering Kārlis Baltputnis for his work «Decision Support Methods, Algorithms and Tools for Electricity Market Participants»;
- A researcher of the FEEE Institute of Power Engineering Ivars Zālītis for his

work «Application of the Method for Identifying Model Parameters in the Anti-Accident Automatics of Power Lines».

Promotion awards have been received by:

- A Scientific Assistant of the FEEE Institute of Industrial Electronics and Electrical Engineering Jānis Mārks for his work «Vibration Model for Determining Mechanical Defects in the Active Part of High-Power Transformers»;
- A FEEE graduate Dmitrijs Soboļevskis for his work «Forecasting of Processes Influencing the Energy System Operation».

### Ilze Gudro Receives Award for Promoting Design

The Head of RTU Engineering History Research Centre and Associate Professor of the Department of Design and Materials Technologies of the Faculty of Materials Science and Applied Chemistry Ilze Gudro received the «Woman in Architecture, Construction, Design» Competition-Forum Award «For Contribution. Woman – Design Promoter 2019».

### RTU Professor Agris Ņikitenko Receives the Honorary Certificate of the National Guard of the Republic of Latvia

The Dean of RTU Faculty of Computer Science and Information Technology, Professor Agris Ņikitenko was awarded the Honorary Certificate of the National Guard of the Republic of Latvia for the contribution to the creation of a masking design for the new infantry uniform of the National Armed Forces. The new camouflage drawing «WoodLatPat» is better suited for masking in Latvia's typical vegetation – the forest and rural landscape. It was developed by a team of scientists. The contribution of A. Nikitenko is development of the software capable of combining various photos of Latvian landscape to obtain basic colors

of camouflage drawing. The development group registered the drawing as intellectual property and gave it to the Latvian State.

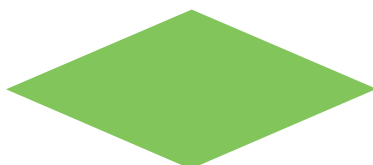
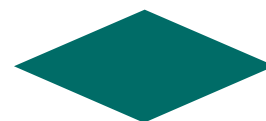
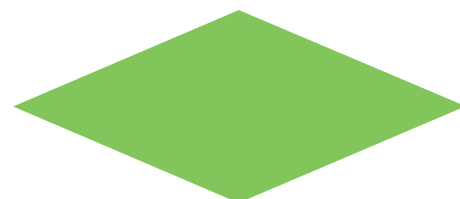
### «Kadru kalve»

RTU received this praising industry assessment during the traditional award ceremony of the «Construction Industry Grand Award 2020». The «Kadru kalve» (Talent Foundry) award was granted to RTU by the company Sakret, which grants this special award to one of the candidates annually. The company chose to grant the award to RTU for the excellent training of new specialists. The award was received by the Dean of RTU Faculty of Architecture (AF) Uģis Bratuškis and the Dean of the Faculty of Civil Engineering (FCE) Juris Smirnovs.

There were also a number of construction industry awards received by RTU students as a proof of the readiness of young students for the labor market. The title «Student of the year 2020» and the money prize were received by a student of RTU FCE Institute of Heat, Gas and Water Technology Raimonds Bogdanovičs and RTU AF student Raivis Jānis Mucenieks.

### Emīlija Gudriniece Award in Chemistry Granted to RTU Young Scientist Jānis Miķelis Zaķis

The Latvian Academy of Sciences granted Emīlija Gudriniece Award in chemistry to a Scientific Assistant of the Institute of Technology of Organic Chemistry of RTU Faculty of Materials Science and Applied Chemistry Jānis Miķelis Zaķis. The award was granted for the work «Application of Azidopurin Maizenhaimer Complexes in the Development of New Synthesis Methods».



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# Sports



**The year 2020 would be marked in the history of the world by COVID-19 pandemic, which had also affected the sports sector – sport competitions were banned, cancelled and postponed.**

**However, also this year RTU has defended its title of the most athletic university. This is reflected not only by the participation of students – team athletes – in Latvian competitions, but also by international achievements.**

### **Achievements in the 30th Latvian Universiade**

The struggle for the Latvia's 30th Universiade Cup ended earlier than expected due to COVID-19 restrictions.

- In men's competition, RTU students ranked 1st with 71.5 points, the Latvia University of Life Sciences and Technologies ranked 2nd (71 points) and Daugavpils University ranked 3rd (67 points). RTU athletes won first places in table tennis, badminton and swimming. Students from 13 Latvian higher education institutions participated in the Universiade, and competitions were held in 7 sports out of 13 sport disciplines.
- In women's competition, RTU students won 1st place (80 points), the University of Latvia ranked 2nd (73 points), and the Latvian Academy of Sport Education was 3rd (70 points). RTU athletes won first places in push-ups, table tennis, powerlifting and badminton. In general, students from 11 Latvian higher education institutions participated in the Universiade, and competitions were held in 7 sports out of 10 sport disciplines.

### **RTU Athletes Participated in International Student Competitions**

- On 6 March, the Baltic Technical Universities Cup was held in Kaunas, Lithuania. The RTU team ranked second with 8,540 points.
- RTU students Rūdolfs Barons (FMSAC), Toms Jansons (FEEM) un Mārtiņš Balodis (CSITF) participated in the FISU organized World Bridge Championship for students. The championship took place online in October 2020.

## Achievements of RTU Athletes

- Gold medal was won by RTU swimmer Daniils Bobrovs (FMETA) at the Baltic States Championship in 200 m breast stroke.
- RTU track athletes received honorary awards in the first stage of the Sportland Cup – Karlis Sondors (FCE) ranked 3rd in 60-m hurdles and Laima Barbane (CSITF) in shot-put.
- Sandis Rošāns (FMETA) got the bronze medal in the second stage of the Sportland Cup in athletics in high jump.
- The winner in the third stage of the Sportland Cup Kārlis Sondors (FEEE) won in 110-m hurdles, Valērijs Valinščikovs ranked 2nd (FET) in 100 m run and Linda Luīze Šalme (FMETA) in spear throwing.
- RTU FCE student Lauris Kaufmanis, who started in the Oskars Ķibermanis bobsleigh team, earned the 3rd place in the World Cup Stage 3 competition on Vinterberg Track.
- Lauris Kaufmanis, who started in the Oskars Ķibermanis team, got the 3rd place in the fifth stage of the World Cup in bobsleigh.
- Medals in the European and World Cups in bobsleigh for RTU students Ralfs Bērziņš, Dāvis Kaufmanis and Lauris Kaufmanis. During the final season of the European Cup, R. Bērziņš, together with Dāvis Sprinģis, won the 2nd place in two-man bob. D. Kaufmanis received the champion's title at the European Junior Championship U-23 in two-man bob. R. Bērziņš got 2nd place in the final stage of the European Cup and silver medal at the U-26 Junior Championship. L. Kaufmanis got 2nd place in the season's final of the World Cup stage in four-man bob.
- In Sigulda, the third stage of the European Bobsleigh Cup culminated with the victory of RTU student Dāvis Kaufmanis (FEEM), starting with Kristis Lindenblats.
- RTU bridge team became champions of the Latvian Couple Championship in Sports Bridge. RTU RBS alumni Jānis Ilziņš, who played in pair with Lauris Lauks, and CSITF leading researcher Ilze Andersone, in pair with CSITF Associate Professor, Head of the RTU Sports Centre Egons Lavendels, ranked 2nd.
- 1st place at the Latvian Badminton Championship in mixed double games and 3rd place in men's double for Teodors Kerimovs (FET), 2nd place in men's singles, men's doubles and mixed double games for Reinis Krauklis (FCE).
- Medals in the Latvian Winter Championship in athletics for Valērijs Valinščikovs (EEF) in 60 m and 200 m, while Marks Harčenko (CSITF) ranked 2nd in pole-jump. 3rd place for Kārlis Sondors (EEF) in the 60 m/b and Sandis Rošāns (FMETA) in high jump.
- Medals in the Latvian Championship in table tennis. Viktorija Majorova (FCE) in women's doubles – 2nd place. Liāna Zeltiņa (CSITF) in pair with Eduards Spāģis (CSITF) – 3rd place in mixed double games.
- RTU swimmers won 2nd place in the Madwave Challenge 100 m brass. Daniils Bobrovs (FMETA) ranked 2nd and Venjamins Mironovs (MTAF) 3rd in 50 m brass.
- RTU student Dārta Estere Zunte (FEEM) won the 2nd place in the European Cup in skeleton.
- In the 96th Latvian Open Championship in swimming, Daniils Bobrovs (FMETA) won silver medal in 200 m and bronze medal in 100 m.
- At Riga Championship in track and field athletics, champions were Valērijs Valinščikovs (FEEE) in 60 m run and Marks Harčenko (CSITF) in pole-jump. 3rd place in high jump was won by Sandis Rošāns (FMETA).
- RTU athletes Eduards Spāģis (CSITF)

and Aleksandrs Maskaļonoks (FEEM) won the third place at Latvian team tennis championship in the top league.

- RTU athletes got medals in mas-wrestling competitions. RTU Sports Centre powerlifting coach Jānis Kalnenieks ranked 1st in his weight category, S. Dzene and A. Babra got the 1st place and K. Rubins – the 3rd.
- Valērijs Valinšičikovs (FEEE) got silver medal in 100 m distance, Matīss Velps (FCE) bronze medal in spear throwing and Kārlis Sondors (FEEE) bronze medal in 110 m hurdles in the Latvian Championship in track and field athletics.
- In the triathlon competitions of the Latvian Cup, in the double-event stage (push-up and traction), a coach of RTU Sports Centre Jānis Kalnenieks started in the weight category up to 120 kg and won the 1st place. Uldis Kleimarāns also climbed to the top of the pedestal, starting in the weight category up to 105 kg, and Sigita Dzene won in the women's competition in the weight category up to 72 kg.
- The Board of the Latvian Volleyball Federation decided to close the 2019/2020 season of the Latvian championship without announcing the champions. Still, the distribution of seats was determined by the results of the regular championship, and RTU/Border Guards team ranked 2nd in the Latvian championship «Credit24».

## RTU Supports Sports Talents

Every year RTU awards special budget study places for young and perspective sport talents. In the academic year 2020/2021, 14 sport talents were selected for studies at RTU. All athletes have demonstrated high achievements in sport and have performed well in their studies. Studies at RTU were started by volleyball players Kristiāna Paula Kukša, Enija Baumgarte, Roberts Kļaviņš, Mareks Maksimovs and Patriks

Pinka, skeletonist Dārta Estere Zunte, sledge athlete Anda Upīte, car athlete Valters Aigars Zviedris, basketball players Pauls Brikmanis, Juris Joņins, Jānis Kāposts, floorball player Rendijs Gulbis, badminton player Kristaps Vārna, whereas track and field athlete Patriks Gailums has already obtained his Bachelor's degree at RTU and continues his Master's studies.

## RTU Students – Talented Athletes – Receive State Scholarships

The sports scholarships of the Latvian Sports Federation Council (LSFP) were awarded to 21 students of RTU during academic year 2020/2021. RTU students received the highest number of scholarships compared to other Latvian universities. RTU students received scholarships ranging from EUR 1500 to EUR 400 – these were received by seven students who study at RTU by using dedicated budget places for young sports talents.

## 2020 Awards to RTU Athletes and Coaches for Their Achievements in 2019

- Assistant Professor of RTU Institute of Design Technologies and badminton coach Uģis Briedis received the Latvian Badminton Annual Awards of the Latvian Badminton Federation in the nomination «Seniors 2019».
- FCE student Reinis Krauklis received an award in the nomination «Player of the Year 2019», as well as an additional award as the leader of the Latvian badminton rating in 2019.
- FEEE student Patriks Gailums was recognized the best track and field athlete in the U-23 group by the Latvian Union of Track and Field Athletics.

## RTU Students – Participants of the Latvian Olympic Union (LOV)

- Bobsleigh athlete Lauris Kaufmanis (FCE) was included in Group A of winter sports athletes, bobsleigh athletes Ralfs Bērziņš (FEEM) and Dāvis Kaufmanis (FEEM) were included in Group A, and skeletonist Dārtis Esters Zuntis (FEEM) was included in the Junior Group.
- Judo player Aleksejs Zarudņevs (FEEM) was included in Group B of summer sports athletes, whereas judo player Artjoms Galaktionovs (CSITF), beach volleyball player Artūrs Rinkevičs (FEEM) and track and field athlete Patriks Gailums (FEEM) were included in the Junior Group.

## RTU Student Got a Voucher to Beijing Paralympic Games

The high 7th place won for the first time in history at the World Wheelchair Curling Championship in A Division, held from 29 February to 7 March in Wetxikon, Switzerland, guarantees the participation of Latvian team in the 2022 Beijing Paralympic Games. An RTU FEEM Master's student Polina Rožkova is a member of the national team.

## RTU Students Participated in the TVNET Social Game

The main goal of the social game was to support young athletes who have a desire to study and combine their studies with career in big sport. For an athlete, education is crucial because the athlete's career is short.

A small video interview was made with each of the athletes and then a vote on the Internet took place for a month. In the vote, the 2nd place and the grant of EUR 1000 were received by the table tennis player Viktorija Majorova (FCE).

The TVNET social game had 19 participants from individual sports.

## Science and Sport

Prior to the expected Olympic Games in Beijing, RTU scientists Inga Dāboliņa and Eva Lapkovska were studying how to improve luge pilot uniforms, whose material and design influence the speed of the journey.

For bobsleigh athletes, who are fighting for hundredths of a second, it is important not only to be in a good athletic shape and have a finely developed technique, their uniform should also fit like the second skin. Therefore, research was started at the Anthropometry Laboratory of the RTU Institute of Design Technologies on how to improve the uniforms of the athletes. Researchers use a human body 3D scanner – a fine and accurate measurement tool that belongs to RTU and is the only one of its kind in Latvia.

The common goal of researchers and athletes is to create individualized world-class luge-riding uniforms with which our athletes could start at the 2022 Winter Olympics in Beijing.

## Doing Sports Together

Despite the restrictions caused by the pandemic, at all times RTU students and employees were offered a maximally wide range of opportunities to do sports.

- **Free sporting using virtual money**

Every semester, RTU Bachelor and High School students could use the opportunity to attend the sporting classes offered by RTU free of charge paying by virtual money. RTU provided an opportunity for full-time students to sport at the time of their convenience, before or after lectures, selecting one of 25 different sports disciplines.

- **Sporting online, individually and outdoors**

During the pandemic, sporting remotely, individually and outdoors became a habitual thing, and organizing and providing athletic activities for both RTU students and employees has been challenging, but a variety of possible solutions have been found. By observing all the requirements, sports classes were mostly provided online for students, while teams had their trainings outdoors.

- **E-learning course for remote sport classes**

In spring 2020, RTU Sports Centre Administration in cooperation with sport coaches started producing video materials for remote sports classes and trainings. Thus, students were able to actively practice and maintain their athletic form at a time when gyms were closed and intramural lessons were canceled. At the same time, it was also an opportunity to find out more about the variety of sports and training activities provided by the RTU Sports Centre and to choose a pleasing and appropriate athletic activity.

The coaches of RTU Sports Centre invited to continue sporting and maintaining active lifestyles at a time of distancing, as well as prepared recommendations and various exercises that everyone could do at home or outdoors.

- **Remedial gymnastics for staff online**

RTU Sports Centre, in cooperation with the remedial gymnastics trainer, created online «RTU exercise» classes to take a break at least twice a week in the middle of the working day and devote 15 minutes to the workout.

- **Sport Challenges «I♥spoRTU» and Virtual Sports Club**

The Sports Center has established a tradition to create athletic challenges in sports apps for both employees and students once or twice a year. This way colleagues are motivated to perform more athletic activities by maintaining

healthy competition with each other and rewarding them for more diligent walking, running and cycling.

The first athletic challenge took place in May 2020 in the Endomondo app, with 72 RTU employees and 225 students covering an impressive distance of 30,664 km.

The second challenge came in November, with employees competing individually, while the Students' Parliament created the «Endomondo Interfax Student Cup» to challenge every RTU student and identify the most active RTU faculty. Overall, 82 employees of RTU participated in the athletic challenge, having covered 8,283 km. Meanwhile, 342 students covered 25,052 km in a month.

The Sports Center has created virtual clubs in the Strava app for both RTU students and employees. Every member of RTU can join this club, set up individual targets, share the results achieved, match forces with others and participate in virtual challenges organized by the RTU Sports Centre.



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# Culture



**The year 2020 was full of restrictions for RTU Culture Centre, similarly to other areas. However, despite the rapid slowdown in the vitality of the cultural space, many valuable and memorable events and projects were implemented. There were bright moments in dance art and music, including theater and culture in general.**

### **RTU Dance Group «Vector» Participated in Festivals, Contests and Concerts**

- The year started with the participation of RTU Folk Dance Ensemble «Vector» (artistic director Dagmāra Bārbale) in the European International Culture Festival «Christmas Tour» in Moscow, where four concerts were held. In Russia, Latvian dance classics were shown and recent dances, including D. Bārbale's choreography «Skaista mana tēvu zeme» («The Beautiful Land of My Fathers»).
- Participation in the finals of XXII Innovation Dance Competition, for which 41 dances were nominated. In category II, two 3rd places were won by Bārbale's choreography «Tautiņas aizveda vērpājiņus» and «Uz Kurzem'!»
- Participation in the folk-dance ensemble concerts «Baltās ziemas deju virpulī» and «Mēs mīlas dejā».
- Two video clips were shot – «Bez gaismiņas nedzīvošu» and «Atmiņu kaleidoskops».

### **Chorus Concerts**

- «Piemini Latviju!» (Honor the Memory of Latvia!) concert of the RTU men's chorus «Gaudeamus» in Riga Dome Church dedicated to remembrance of the 1991 barricade defenders. The program of the musical tribute included the «Piesaukšana» cantata by Uģis Prauliņš, excerpts from Mārtiņš Brauns music for poem «Daugava» by Rainis and M. Brauns music for Uģis Brikmanis poem «Tavā laikā».

- RTU mixed chorus «Vivere» participated in the concert in Ventspils.
- A big concert called «Ieva Parša. Septiņas sievišķības» of the opera singer Ieva Parša and RTU women's chorus Delta.

### **Concerts of RTU Big Band and Student Wind Band «SPO»**

- The sixth jubilee concert «Randiņš Hamletā» of RTU Big Band (Artistic Director Jānis Puķītis).
- The RTU Student Wind Band SPO participated in Riga festivities, in theatrical musical performance «Vai Rīga gatava?» (Is Riga Ready?) at Grīziņkalns together with the RTU vocal group «Jauna Nianse», the RTU student theatre «Spēle» and actors Raimonds Vazdiks and Jānis Skanis.

### **Contests and Festivals**

- The 21st Latvian Student Theatre Day. In 2020, the theme of the festival was «Crossroads».
- The traditional RTU cross-faculty and engineering secondary school student erudite competition «SPICE 2020» took place remotely for the first time. The competition among 10 teams was won by the team of the Faculty of Architecture, leaving the team of the Faculty of Computer Science and Information Technology in the second place and the team of the Faculty of Electrical and Environmental Engineering – in the third place.

### **Events**

- The traditional singing group «Burdons» participated in the creative musical evening «Burdons and Burbons» («Drone Bass and Bourbon»). The event was dedicated to the history and tradition of the use of drone bass and bourbon.
- During the Poetry Month in September, the day of student poetry «Ar Tevi es lasīju kastaņus» (I pick up the chestnuts together with you) is held.





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