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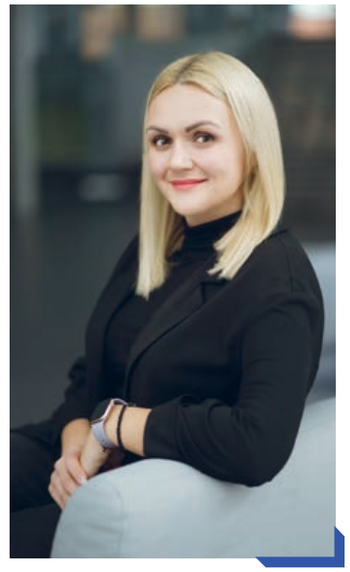
Dear readers,



I have no doubt that you will agree - sustainability is becoming a necessity in today's world. We need to pay significant attention to it not only as scientists, students, or representatives of the business sector, but also as responsible inhabitants of this planet. Sustainability should become a conscious choice for each of us, a part of our daily habits.

A significant portion of people view sustainability as a way of life: adopting a considerate approach to natural resources and the environment, building a future – oriented society, and assessing one's actions not only from today's perspective but also with regard to tomorrow.

Due to the enormous scale of the impacts of climate change, society requires a significant and rapid green transformation. Therefore, one of the most important roles today falls on science – we need to develop as many sustainable technologies and solutions as possible. The world needs more talented, active, and courageous individuals.

This issue of the magazine is dedicated to sustainability. Within its pages, we will discuss popular concepts of sustainability and seek simple answers to what sustainability means for the modern individual and the scientist, as well as how it is reflected in our latest solutions.

Equally important is the fact that within the pages of the magazine, we will explore sustainability from various perspectives - raging from innovative technological solutions that reduce negative impacts on the environment to social initiatives that emphasize the role of communities in the sustainability process.

It is particularly encouraging that the cover of this issue was created by a talented VILNIUS TECH student. This serves as a great testament to the undeniable involvement of young people in the creation of a more sustainable society.

It is important to understand that sustainability is not just about individual projects or initiatives. It is the responsibility of each of us to make decisions that foster a more sustainable future.

I believe that the stories and initiatives found in this publication will encourage each reader to reflect on what sustainability means to them and to consider how sustainable principles can be applied in their daily activities – both in their work and personal lives.

Let us not hesitate to change our habits!

Inspiring stories,
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Content

Rector Romualdas Kliukas stated, **“Sustainability is not just a trend”**

In 2025, Vilnius has been designated as the European Green Capital. Sustainability is a strategic value for VILNIUS TECH, representing a lifestyle and an approach to educating future-oriented individuals.

The institution focuses on not only enlightening young people but also enhancing the qualifications of sustainability specialists. By integrating various disciplines and employing challenge-based learning, VILNIUS TECH prepares students to tackle the real challenges companies present. Additionally, during hackathons, students have the opportunity to develop innovations aimed at addressing sustainability issues.

The ideas of a sustainable and clean world require a long-term process and continuity. However, due to the rapid pace and scale of climate change, implementing a swift green transformation is essential.

One of the most significant roles belongs to science—it is crucial to urgently develop innovative sustainable solutions and create conditions for businesses to safely and responsibly test them at the university.

However, sustainability encompasses more than just technological solutions. It also involves our daily choices: how we consume, how we travel, and how we live at the university. It is essential to understand that a university becomes sustainable not only by installing solar panels on building rooftops or sorting paper but when all members of the community start to think and, most importantly, act sustainably. For instance, our solar power plants alone saved 223 tons of CO_2 emissions last year, which is equivalent to planting 7,704 trees.

The university, as part of this year’s admissions campaign, invites everyone to embrace the courage to change the world. It is commendable that members of the VILNIUS TECH community are taking this approach: they make decisions that broaden perspectives, continuously gain experience, challenge established myths, inspire others with their enthusiasm, and, most importantly, promote change.

Last year, VILNIUS TECH opened the doors to the Sustainability Center, where our students are already addressing real sustainability challenges posed by companies. The centre fosters the development of solutions, brings together sustainability enthusiasts, and cultivates sustainability professionals. It is the first centre of its kind established at a university in Lithuania, integrating science, education, and business.

With the opening of the new centre, we also introduced new study programs to the public. This fall, VILNIUS TECH launched the country’s first bachelor’s degree in Sustainability Technologies and a master’s degree in Sustainability Management, both of which have garnered significant interest. Equally important is our focus on professionals who already know the field of sustainability;

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we regularly organize various qualification enhancement courses to support their development.

The Sustainability Center includes an experimental demonstration space for sustainable consumption, where food crops are grown. These crops will later be used for cooking, and any food and kitchen waste generated will be processed in a bioreactor through anaerobic digestion to produce biogas and compost, which will return as fertilizer to the food crop growing cycle. Additionally, the Eco Design area within the Sustainability Center promotes the secondary and multiple use of materials, as well as the recycling of new product prototypes. Environmental solutions and products that utilize recycled plastics, textiles, and 3D printing technologies are also developed there.

In recent years, VILNIUS TECH established the Competence Center for Smart and Climate-Neutral Manufacturing Processes, aimed at developing smart manufacturing processes, materials, and technologies that align with climate-neutral goals.

This center is distinguished by significant investments in research infrastructure, with a total of €17 million allocated for its development. This represents one of the largest investments in the modernization of scientific infrastructure in the university's history. The investment will not only help modernize the research facilities but will also strengthen VILNIUS TECH's position as one of the leading universities and scientific centres in the region.

We contribute to the development and implementation of sustainable solutions in collaboration with university partners. A prime example of this is the collaboration platform LSEPO, created in partnership with the Lithuanian Builders Association (LSA). This platform provides an opportunity for construction companies and individuals to exchange and reuse surplus construction materials.

223 tonnes

of CO_2 emmisions were saved by the VILNIUS TECH solar power plant over the past year

Members of the university community are also implementing sustainable solutions. This spring, colleagues from the Faculty of Transport Engineering (TIF) participated in the social campaign "I Love the Forest," planting 400 new trees. According to researchers, all the trees planted by the TIF community during this campaign are projected to absorb a total of 43 tons of CO_2 in the future (15 tons by 2024 and 28 tons by 2025). This initiative represents a meaningful educational contribution to combating climate change and building a sustainable future.

Researchers at the Environmental Protection Institute of VILNIUS TECH are also contributing to the reuse of waste in the production of acoustic materials. They are developing relevant designs for ventilation systems, specifically internal acoustic barriers that are air-permeable yet effective in absorbing and reducing sound. These constructions can be recycled afterwards, minimizing environmental impact. Additionally, acoustic panels made from shredded tyre granules are being produced, fully aligning with the concept of a circular economy. In collaboration with the business sector, a noise-reducing barrier composed of recycled plastics and rubber from worn-out tyres has also been created.

The institute has developed a technology capable of reducing the concentrations of environmentally hazardous chemicals—namely nitrogen and phosphorus—in wastewater.

One of the most significant events this year is the NORDTEK conference centred on the theme "Sustainable and Digital Transformation of Universities," which is linked to Vilnius being named the European Green Capital for 2025. The conference will bring together representatives from the entire NORDTEK network community, who will share best practices and engage in discussions about the adaptation of universities to the ongoing global changes.

During the 2024–2025 academic year, the majority of decisions related to the university's development will focus on sustainability, particularly in relation to projects for the energy modernization of the laboratory building (S3) and the Faculty of Environmental Engineering (S5), as well as Dormitory No. 5. Partial funding has also been secured for the renovation of building S3 and the dormitory. Additionally, energy-neutral laboratories will be constructed in Juodkrantė and at the Klaipėda University of Applied Sciences.

I am proud of VILNIUS TECH community members who demonstrate through their work and dedication that sustainability is not just a short-term trend, but a focused and long-term strategy for the university. In various areas of activity, from research to daily community decisions, sustainable solutions are becoming an integral part of the university's operations.

Continuing to embrace challenges, developing solutions for the future, and inspiring others to act sustainably are essential goals. By doing so, it is believed that the university's leadership will be further strengthened, not only within Lithuania but also in the international higher education community.

Striving for Sustainability: from infrastructure renewal to process improvement

In April, the annual conference of the European University Association took place, which aimed to outline the strategic direction for European universities so that they continue developing activities in accordance with the highest sustainability standards.

At the conference, held at the University of Latvia in Riga, VILNIUS TECH was represented by **Vice-Rector for Studies Assoc. Prof. Dr. Zivile Sedereviciute-Paciauskiene** and **Chancellor Assoc. Prof. Dr. Vaidotas Trinkunas**. This year, the conference, under the title of "Connecting the Dots for Sustainability and Resilience," focused on sharing best practices and discussing how universities can contribute to a more sustainable future.

"Today, sustainability has become an integral value of every responsible organization. Universities, as institutions for the dissemination of knowledge and science, must set an example for society by passing this value on to future generations through real, visible actions and results. That's why this year's event focused on how universities across Europe can transform the value of sustainability into action, how they can contribute to building a quality future within their institutions and strengthen the resilience of society. It was important to evaluate what sustainability means in terms of funding, digitization, academic careers, and university leadership," explains the Vice-Rector.

Sustainability is one of the five core values of VILNIUS TECH. For the university, it represents a responsible approach to natural resources and the environment, the establishment of a foundation for long-term economic well-being, and the creation of a future-oriented, sustainable society. It means prioritizing environmental and societal needs above personal ones and assessing actions not only from today's perspective but also from that of the future.

"In recent years, VILNIUS TECH has placed significant focus on infrastructure renewal. First, energy-inefficient buildings that were unsuitable for studies and scientific experiments were sold, and the proceeds were used to construct two modern building complexes that meet contemporary standards. These buildings are equipped with well-designed science, study, and leisure spaces," says Chancellor Assoc. Prof. Dr. V. Trinkunas.

According to him, based on energy audit findings, the university's old buildings fall under energy class G and are not only in extremely poor condition in terms of energy efficiency but also fail to provide the necessary microclimate for employees and students as it becomes very hot in summer and cold in winter. Improper temperature conditions also hinder the operation of modern, especially sensitive scientific equipment. Therefore, renovating the old buildings is a priority in infrastructure updates. Some buildings have already been renovated, and work on others will begin soon.

> **Today, sustainability has become an integral value of every responsible organization.**
>
> Zivile Sederevičiute-Paciauskiene

"We are continuously improving university processes to reduce energy use and are implementing advanced, environmentally friendly technologies. Computer-controlled automatic heating, cooling, and ventilation systems are being installed. These systems not only help maintain a proper indoor climate but also allow for energy savings. In October 2024, a 39.6 kWp solar power plant was launched on the laboratory building of the Faculties of Mechanics, Electronics, and Transport. Soon, similar power plants will begin operating in the Central Building and the Linkmenu Fabrikas, and the share of electricity from renewable sources will account for up to 10% of the university's total electricity demand," the Chancellor emphasizes.

According to Prof. Dr. V. Trinkunas, the implementation of sustainability ideas also extends to restoring the university's surroundings. By revitalizing neglected areas and redesigning outdoor recreational zones, it is hoped that university staff and students will enjoy spending time in the outdoor spaces arranged around the campus, closer to nature, and appreciate the pine trees growing nearby.

In response to recommendations from the Association of Lithuanian Banks and market needs in the sustainability field, VILNIUS TECH has developed two new study programs: a Bachelor's in Sustainability Technologies and a Master's in Sustainability Management. This spring, the first cohort of students completed their first year in these interdisciplinary programs. These programs, offered by the Faculty of Environmental Engineering, prepare sustainability specialists capable of planning and implementing sustainable solutions in companies, preparing sustainability reports, and developing sustainable technological innovations.

The VILNIUS TECH Sustainability Center, which opened last summer, also organizes business courses and training programs on various sustainability topics. Community members are regularly invited to participate in educational activities that encourage reuse of materials, waste reduction, and expansion of sustainability knowledge.

The Sustainability Center also includes a DEK'ui Station, where anyone can leave or take items they (no longer) need.

VILNIUS TECH researchers conduct sustainability-related studies and seek environmentally friendly innovations and climate-neutral solutions. For example, researchers from the Faculty of Transport Engineering are developing a dual hydrogen and conventional fuel power system that allows adjusting the fuel mix. Researchers from the Lithuanian Maritime Academy are conducting research on ship traffic parameters in ports, helping optimize ship movement, reduce fuel consumption, and lower emissions. Meanwhile, researchers from the Faculty of Environmental Engineering are creating noise-reducing acoustic materials from secondary raw materials.

Students also explore the topic of sustainability in various areas through their final theses, seeking climate-neutral solutions. This highlights the particularly significant contribution of the VILNIUS TECH academic community to a cleaner environment.

In March, the Center of Excellence for Smart and Climate-Neutral Production Processes, Materials, and Technologies opened its doors. It will soon provide VILNIUS TECH researchers and business partners with access to modern equipment, enabling them to conduct advanced research, test innovations, and develop solutions applicable in industry.

Doc. Dr. Vaidotas Trinkūnas stated, “By renovating the infrastructure, we are taking care of the community‘s needs.”

At VILNIUS TECH, innovations are born daily, significant scientific research is conducted, and ongoing investments are made in infrastructure to ensure the highest quality of education and a conducive working environment for the entire university community.

In recent years, the university has implemented numerous important infrastructure renovation projects, ranging from the establishment of modern lecture halls and educational laboratories to the development of sustainable buildings. At the beginning of 2023, a teaching and laboratory building for the Faculties of Mechanics, Electronics, and Transport Engineering was completed on Plytinė Street, known as the Plytinė Building.

These buildings were designed and constructed using advanced Building Information Modeling (BIM) methods, incorporating modern, environmentally friendly materials. Energy-efficient engineering solutions have been implemented to ensure sustainability, effective resource use, and the long-term value of the buildings. Additionally, the laboratories in the Plytinė Building are equipped with modern research equipment for students, who learn in well-furnished lecture halls. There are also dedicated areas for work, leisure, and relaxation, all of which contribute to a comfortable, innovative, and high-quality learning environment that meets the needs of contemporary students and faculty.

Currently, a public procurement competition for construction works has been announced, and plans are in place to begin the construction of the Lithuanian Maritime Academy (LJA) training center in Klaipėda in the near future. This project is an important part of VILNIUS TECH‘s strategic development plan, aiming to modernize infrastructure and create a contemporary study and research environment for specialists in the maritime transport sector.

According to VILNIUS TECH Chancellor Doc. Dr. Vaidotas Trinkūnas, two laboratory buildings currently being renovated in Juodkrantė will contribute to the development of research infrastructure at the Lithuanian Maritime Academy (LJA). After reconstruction, these buildings will be adapted to meet modern research and practical training needs, complying with the highest contemporary quality standards. The upgrades will enable VILNIUS TECH students and researchers to work with advanced laboratory equipment, accelerating research processes and the development of practical skills. One of the main challenges in designing these buildings was not only to ensure their functionality but also to integrate them harmoniously into one of Lithuania’s most beautiful natural environments—Juodkrantė. There is confidence that the architects successfully addressed this challenge.

Currently, the reconstruction of a building designated for scientific purposes is underway, which will house the VILNIUS TECH Antanas Gustaitis Aviation Institute (AGAI) in 2026. The modern extension will be constructed using sustainable architectural and engineering solutions, and the environment will be enhanced with distinctive features, including a scaled-down model of Vilnius Airport and a miniature runway.

The new AGAI building will feature spaces designated for research, studies, administration, and common use. This includes an amphitheater-style auditorium and conference hall, several smaller lecture rooms, a reading room, a meeting room equipped with multimedia resources, and the faculty dean’s office.

The initiation of construction was prompted by the sale of the old AGAI buildings located near Vilnius Airport. The new extension, covering an area of 840 m² on Linkmenų Street, will be connected to the AGAI training and laboratory facilities that were relocated there earlier. The completion of the construction is planned for the autumn of 2026.

This project marks an important milestone—the complete relocation of AGAI from Rodūnios Kelias and other locations to a single campus on Linkmenų Street, thus ensuring a higher quality of studies, research, and work.

“As we develop our infrastructure, we also keep VILNIUS TECH students in mind. For their convenience, we are continuously updating the dormitories: rooms are being modernized, common relaxation areas are becoming cozier, and attention is being paid to wireless connectivity. In all the dormitories that have been renovated to date, rooms and common areas—such as corridors, kitchens, and sanitary facilities—have been repaired, and household appliances and other inventory have been updated.

VILNIUS TECH dormitories accommodate many young people not only from Lithuania but also from various countries around the world. Each student has their own needs, but they must also learn to coexist harmoniously with individuals from different cultures, perspectives, characters, and traditions. These are important life skills that will be valuable in both personal and professional contexts. Successful companies often operate internationally, where understanding people from diverse cultures presents its own challenges. To ensure quality living conditions in the dormitories, the aim is for student housing to be not only comfortable but also safe. Each year, increasing attention is dedicated to ensuring safe living conditions in collaboration with students, the municipality, and the police, as highlighted by VILNIUS TECH Chancellor Doc. Dr. Vaidotas Trinkūnas.

THE INFRASTRUCTURE PROJECTS PLANNED FOR 2025-2026 AT VILNIUS TECH INCLUDE :

- the establishment of modern lecture halls
- the creation of teaching laboratories
- the construction of the LJA training center
- the reconstruction of the AGAI science building
- the renovation of student dormitories

As public awareness of sustainability increases, the creation of a sustainable environment is gaining greater importance. VILNIUS TECH, a technical university, is keeping pace with the latest technologies and modern infrastructure development requirements. In 2023, the university established a Sustainability Center, which serves as a space where education, business, and science converge. The center’s activities are aimed at promoting sustainable development and innovation by integrating environmental, social, and economic aspects into educational processes, research, and daily university operations. Research is conducted, educational initiatives are organized, practical projects are implemented, and collaborations are formed with the academic community, business representatives, and government institutions. The performance of universities is increasingly evaluated not only based on the quality of education or research outcomes but also according to sustainability indexes. Sustainability encompasses not only infrastructure but also a conscious and responsible attitude toward the environment by the entire community for future generations. It is hoped that the Sustainability Center will serve as a link that helps the entire VILNIUS TECH community grow as a sustainable university.

VILNIUS TECH Chancellor Doc. Dr. Vaidotas Trinkūnas emphasizes that every construction project presents a unique challenge.

Doc. Dr. Vaidotas Trinkūnas, the Chancellor of VILNIUS TECH, notes that the greatest challenge faced when developing infrastructure projects at the university is ensuring high quality. He states that efforts are made to meet established standards by using quality materials, consistently monitoring the ongoing work, and ensuring control at every stage. This approach helps to keep the buildings functional and safe, minimizing the need for urgent additional investments and contributing to the development of a sustainable future.

At VILNIUS TECH, the principles of sustainability are not just a declaration but also a practical implementation. Currently, six solar power plants have been installed on the roofs of the university buildings. These installations contribute to reducing air pollution and combating climate change while enabling the university to generate a portion of its electricity independently. The solar power plants cover approximately 7% of the university’s annual electricity consumption, thereby decreasing reliance on external energy suppliers.

The university collaborates closely with the Vilnius City Municipality. In the near future, a project is planned to renovate the pedestrian pathway connecting the VILNIUS TECH and Vilnius University student campuses. The project will involve the installation of lighting, recreational areas, green spaces, and other infrastructure aimed at enhancing mobility options for students and the broader community.

Doc. Dr. Vaidotas Trinkūnas emphasizes that when developing infrastructure, the needs of all community members are taken into consideration. The university aims to ensure appropriate heating and ventilation throughout the year, while also continuously updating furniture and educational computer equipment. These efforts contribute to creating a more comfortable and modern study and work environment.

According to the Chancellor, the infrastructure development at VILNIUS TECH is a multifaceted process filled with challenges. However, a clear university vision and a commitment to sustainability enable the successful overcoming of these challenges and the consistent implementation of changes that are significant for the entire community.

Prof. J. Valivonis: “Sustainable construction is only possible through comprehensive solutions”

Prof. J. Valivonis: In recent years, sustainability has been receiving increasing global attention. The construction sector is no exception. The necessity for change in this field is becoming ever more apparent. Construction consumes a great deal of energy, generates a significant amount of waste, and the materials used often have negative impacts not only on nature but also on human health. For these reasons, sustainable construction is becoming a necessity.

“I would define sustainable construction as buildings whose entire life cycles – from design choices, construction processes, usage (operation), to demolition – meet environmental, economic, and social requirements,” emphasizes Professor Dr. Juozas Valivonis, Head of the Department of Reinforced Concrete Structures and Geotechnics.

According to him, environmental requirements involve preserving the environment throughout all life cycle stages, which involves using rational, environmentally- and human-friendly materials that meet essential construction standards. Equally important are economic requirements – including the costs of construction and use. All this along with social requirements creates a suitable and comfortable living environment for society.

Prof. Dr. Valivonis states that sustainable construction principles should be applied throughout the building’s entire life cycle: design, construction, operation, and demolition.

“People often think that sustainable construction refers only to sustainable construction processes. However, a building’s sustainability is greatly influenced by its use (operation). Environmental pollution during usage – for example, CO_2 emissions – can be just as significant as during the construction phase. This stage can also involve considerable economic costs. It’s also important to remember that buildings are an integral part of our living environment, which has a direct impact on people’s social well-being,” says the VILNIUS TECH professor.

The Head of the Department of Reinforced Concrete Structures and Geotechnics points out that wood is currently considered one of the sustainable materials. However, its processing, transportation, gluing, and treatment with chemicals can also negatively impact sustainability.

“Reusing various materials for the production of new products and structures contributes to sustainable construction. Reusing construction elements – especially load-bearing structures – can also be considered a successful sustainable solution. In my opinion, there is no single sustainable solution. Sustainable construction can only be achieved by applying comprehensive solutions,” notes Dr. Valivonis.

According to the VILNIUS TECH professor, without the use of modern technologies, reaching the desired level of sustainability in construction would be difficult. Starting from the design phase, the latest digital design systems are currently used, allowing for the most rational solutions. In the production of building materials, products, and structures, automated lines ensure high precision, rational material use, and reduced environmental pollution. The latest technologies are also used in construction processes. During the operation of buildings and structures, various modern engineering systems are used to provide optimal conditions for residents and workers so that to ensure building safety.

> **Reusing various materials for the production of new products and structures contributes to sustainable construction. Reusing construction elements – especially load-bearing structures – can also be considered a successful sustainable solution.**
>
> J. Valivonis

“The construction industry in Lithuania – including designers, builders, and maintenance services – is keeping pace with the global construction sector. In the coming years, buildings and structures, their structural solutions, the materials and constructions used, engineering equipment for operation, and maintenance systems will continue to improve. The construction sector is inevitably moving toward process automation, robotics, and the automation of building and structure management. Artificial intelligence will soon be used in construction – we will be building smart homes, bridges, and other structures,” says the Head of the Department of Reinforced Concrete Structures and Geotechnics.

Dr. Valivonis also notes that sustainability comes at a cost, so many sustainable construction solutions are currently more expensive than conventional ones. It is difficult to say how long it will take for them to pay off. However, it is important to remember that sustainable solutions provide enormous benefits not only to the environment but also to people.

Assoc. Prof. Dr. R. Grubliauskas: “Implementing sustainable innovations contributes to creating a quieter environment”

TODAY AND TOMORROW‘S VISION

VILNIUS TECH researchers constantly seek ways to apply various waste materials in the development of sound-absorbing structures. For example, perforated plastic sheets, rubber granules from used tires, and air gaps (which often provide additional sound insulation) can all be used. A combination of these components makes it possible to create effective noise-reducing barriers that can be installed in urban areas.

“By using waste as a raw material for new products, we not only reduce noise but also contribute to mitigating climate change. Waste that could otherwise be incinerated or sent to landfills becomes a valuable resource. This reduces the amount of CO_2 needed to produce new materials and extends the product’s life cycle. Noise reduction and waste recycling can go hand in hand. The symbiosis of these two fields allows us to create solutions that are not only functional but also sustainable,” notes VILNIUS TECH Sustainability Center director, Assoc. Prof. Dr. Raimondas Grubliauskas.

According to him, noise reduction is not only a practical but also a creative field.

Topics related to sustainability, such as the use of secondary raw materials, are important not only from an environmental perspective but also from engineering and social viewpoints.

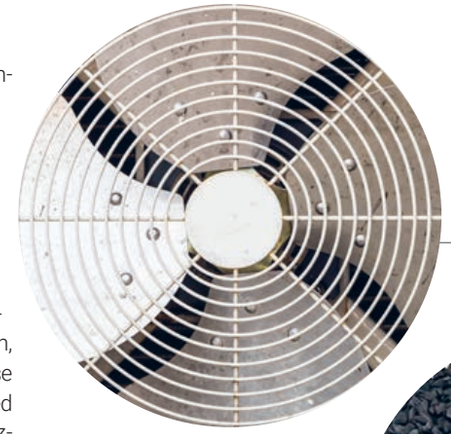
The more research and cooperation there is between institutions, the quieter, healthier, and more resident-friendly our everyday environment can become.

> **Sound-absorbing materials can also be made from electronic waste. For instance, hollow cables, which might seem unusual at first glance, are actually very effective for sound absorption.**
>
> R. Grubliauskas

“To effectively reduce noise, we first need to assess its sources. These can be grouped into several main categories: road traffic, rail transport, aircraft, and industrial companies. Each of these categories has different noise characteristics—sound frequency, wavelength, noise level, etc. For this reason, noise reduction measures must be tailored to specific conditions,” emphasizes Assoc. Prof. Dr. R. Grubliauskas.

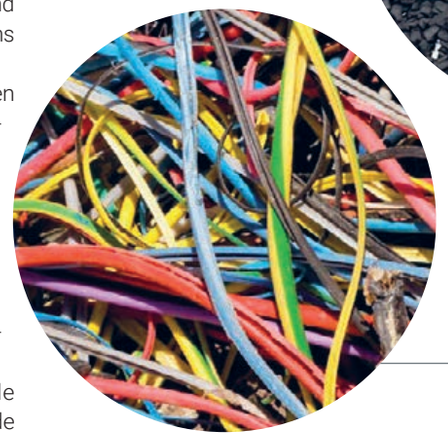
According to Dr. Grubliauskas, effective administrative and technological measures are used in the industrial sector such as regulation or the use of quieter equipment. However, the most important and advanced noise reduction solutions come from scientific research.

“Indoor noise sources are often related to ventilation or other engineering systems, as well as external environmental noise. These can be effectively managed by using sound-reflecting, sound-absorbing surfaces or by covering them with special materials,” says the director of the Sustainability Center.



Indoor noise sources are often related to ventilation or other engineering systems.

The rubber granulate obtained from old tires can be used in the production of sound-absorbing panels.



Sound-absorbing materials can be made from electronic waste.

Speaking about sustainable noise-absorbing materials made from waste, Assoc. Prof. Dr. R. Grubliauskas highlights used tires, which provides rubber granulate. This can be used in the production of sound-absorbing panels. Also, textile waste from tires can be an additional raw material for creating insulation materials with good acoustic and thermal properties.

“Perhaps most importantly, these materials must be long-lasting, environmentally friendly, and effective in reducing noise. They can be used in noise barriers alongside roads and railways, in sound-dampening enclosures for technical equipment, or in interior sound-absorbing elements,” notes the VILNIUS TECH expert.

According to the director of the Sustainability Center, innovative environmental solutions sometimes arise in unexpected and unusual situations.

One such example is electrical and electronic equipment waste. As the volume of this waste grows, increasing attention is being paid to its recycling and reuse. This opens up opportunities—such waste can become an effective sound-insulation material.

“Sound-absorbing materials can also be made from electronic waste. For instance, hollow cables, which might seem unusual at first glance, are actually very effective for sound absorption. Their effectiveness depends on many parameters: thickness, diameter, length, material hardness, as well as density. Such cables can effectively absorb a wide range of sound frequencies. This is just one example of how scientific research leads to innovations that contribute to creating a quieter environment,” the associate professor explains.

Signal processing:
from nature to modern technologies

In today's world, where technology is constantly advancing, signal processing is an important field that positively impacts the lives of members of society—ranging from audio and video transmission to medical research and communication systems.

According to Prof. Dr. Darius Plonis from the Department of Electronic Systems at VILNIUS TECH, a signal refers to a phenomenon that describes the variation of one, several, or multiple non-electrical parameters of a specific physical system. Signal-generating systems exist in nature. However, it is important to note that humans can also create systems that are designed to enhance the quality of their lives and activities.

„Nature generates a wide variety of signals. For example, the sounds and sights surrounding us, occurring storms, earthquakes, tsunamis, and other similar phenomena. Systems that enhance the quality of human life and activities include communication systems, television, computer systems, and various automated production and management systems, such as robotic car assembly lines," states the professor.

According to Professor D. Plonis from the Department of Electronic Systems, there is an increasing focus on implementing sustainable solutions in the field of electronics each year. Electronic devices, such as phones, computers, and televisions, are designed in a way that allows users to easily replace certain parts themselves. A notable example is the „Fairphone" mobile phones, which enable users to replace the screen, battery, or camera without the need for specialized tools. The company that produces these phones claims that this approach has resulted in a 48% reduction in CO_2 emissions.

„When developing sustainable electronics, it is essential to consider energy efficiency—devices must consume less electrical energy during operation. Laptops equipped with ‚Intel Evo' or ‚Apple M1/M2' processors already demonstrate very low energy consumption. Apple incorporates recycled aluminum and rare metals in its devices, while HP uses ocean-bound plastic in the production of its products. Recently, there have also been advancements in technologies related to biodegradable materials," emphasizes the expert from VILNIUS TECH.

When developing sustainable electronics, it is essential to consider energy efficiency—devices must consume less electrical energy during operation.

D. Plonis

According to Prof. Dr. Andrius Katkevičius from the Department of Electronic Systems at VILNIUS TECH, strategic decisions aimed at reducing environmental pollution and promoting sustainable consumption are currently being adopted in the European Union (EU). One such decision is the USB-C directive, which mandates that, starting in 2025, all mobile devices that charge via cable must be equipped with a universal USB-C connector. This initiative aims to reduce electronic waste, enhance consumer convenience, and address market fragmentation. The directive applies not only to phones but also to tablets, headphones, digital cameras, e-readers, keyboards, mice, and other portable devices with a charging capacity not exceeding 100 watts. Manufacturers will have the option to provide devices without a charger, allowing consumers to use a single charger for multiple devices. This move represents a significant step toward a more sustainable and harmonized technology market throughout the EU and globally.

Signals play a crucial role in the development of various systems for detecting radio signal sources, particularly in electronic defense systems. According to Professor D. Plonis, electronic defense systems are advanced technological tools designed to protect military and strategic assets from various threats, especially those related to electronic signals, radars, communication systems, or command infrastructure. These systems encompass both active and passive measures that can detect, disrupt, or neutralize signals sent by adversaries, such as radio communications or even the control of unmanned aerial vehicles (UAVs).

Electronic defense systems are crucial in modern defense frameworks as they protect forces from enemy intelligence, ensure secure communications, and maintain informational superiority.

A. Katkevicius

The operating principle of electronic defense systems is based on the control of the electromagnetic spectrum. These systems analyze the environment, identify potential threats, and implement countermeasures such as jamming, deception, or even physical neutralization. Electronic defense systems are crucial in modern defense frameworks as they protect forces from enemy intelligence, ensure secure communications, and maintain informational superiority. They also have applications in civilian sectors, such as airports, where they help safeguard against radio signal disruptions, false data transmission, and unauthorized intrusions into airspace.

According to Professor Dr. A. Katkevičius from the Department of Electronic Systems, signal composition is widely applied in noise reduction, signal filtering, image blending, and more. This composition technique can be used for various types of electrical signals, including video, audio, and sensor data. For instance, wearable health monitoring systems collect different physiological signals in real time, such as heart rate, movement activity, skin temperature, and blood oxygen levels. These signals vary in nature, and their analysis requires a structured approach. Composition serves as a method that allows for the separate processing of each signal and later integrates them into a comprehensive health status model.

The reduction in heart rate variability, along with increased temperature and decreased activity, may signify the onset of an infection, while decreased oxygen levels in the blood during sleep could indicate potential sleep apnea. The data obtained from sensors is composed into a unified health model, which facilitates decision-making by sending alerts to users or healthcare professionals, providing recommendations, and ultimately creating a personalized health profile. Another example of composition application relates to audio signals. In electronic music, different instruments (such as drums, bass, and melody) are recorded separately and later, through composition, combined into a single audio track, allowing for flexible control over the characteristics of each component.

The Role of the university in strengthening cybersecurity in the country: science, technology, and practice

INTERDISCIPLINARY ENVIRONMENT

In modern society, it is hard to imagine everyday life without technology. It is a part of our work environments, healthcare, education, and government administration. For this reason, the topic of cybersecurity is becoming increasingly important – the growing number of cyberattacks shows that online threats are constantly increasing.

„Organizations should not focus solely on cyber protection while forgetting about the security of physical documents and data backups," draws attention Professor Dr. Nikolaj Goranin, head of the Department of Information Systems at VILNIUS TECH.

The VILNIUS TECH expert notes that for people, the most important things are private life and personal data protection. In today's digital space, personal data can be easily leaked, misused, shared on social networks, or stolen through phishing attacks. A lack of knowledge often becomes the reason for successful attacks, when data and other sensitive information is deceived out of someone.

"When it comes to business, information security becomes even more critical. The priority here is protecting customer data, ensuring business continuity, and compliance with legal regulations. Due to tightening regulations, companies must continuously improve their information security systems and processes to safeguard customer security. Additionally, it is important for businesses to ensure that information systems are reliable and resistant to attacks that could disrupt service delivery," emphasizes Professor Dr. N. Goranin.

The head of the Department of Information Systems points out that at the state level, information security becomes even more complex. State institutions manage critical systems – from tax collection to currency issuance, military technologies, and digital services for citizens.

"Modern states depend on information technologies, so cyberattacks can have serious consequences not only for the economy but also for national security. For example, if the military communications system were compromised, weaponry could be directed against the country itself," says the VILNIUS TECH expert.

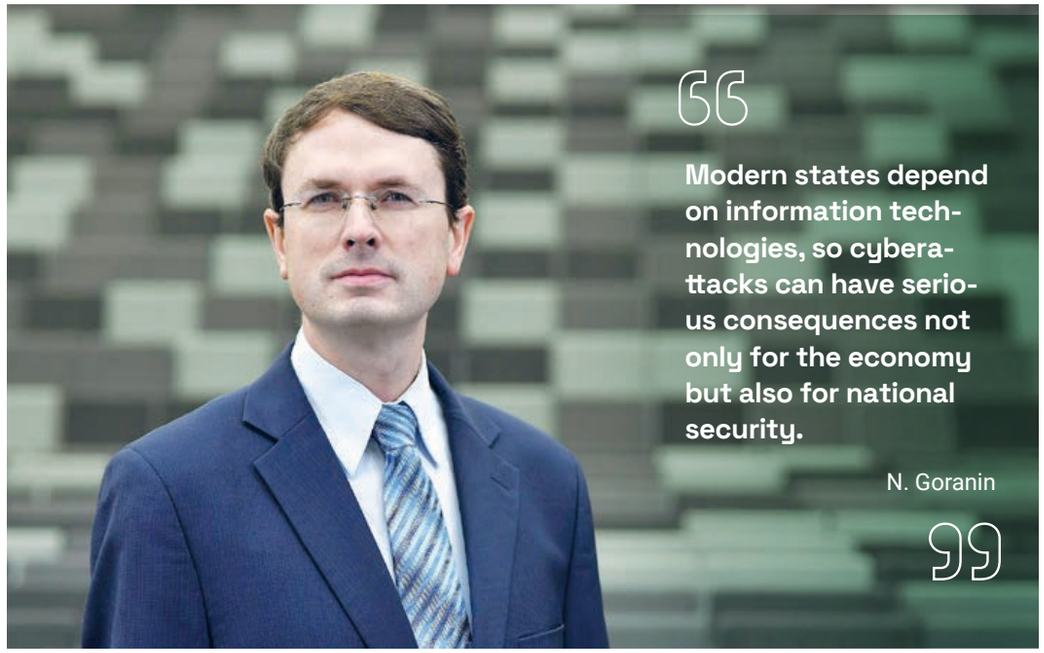
It is important to mention that this spring VILNIUS TECH received funding of 669 thousand euros to train Lithuanian cybersecurity specialists, which was allocated by the international technology corporation Google's charitable organization Google.org.

> **We receive a certain amount of funding as well as other materials. There is a talk about certain artificial intelligence tools that students will be able to use to better prepare themselves and it will also allow them to study certain programs independently.**
>
> V. Gurcinas

The financial support will enable scientists to offer a Cybersecurity Seminar program for students and prepare multiple groups of qualified cybersecurity specialists who will strengthen the digital resilience of various Lithuanian institutions.

"We receive a certain amount of funding as well as other materials. There is a talk about certain artificial intelligence tools that students will be able to use to better prepare themselves and it will also allow them to study certain programs independently. Students who acquire these competencies will enter the labor market and also assist non-profit organizations facing emerging challenges," states Vitalijus Gurcinas, head of the VILNIUS TECH Digital Defense Competence Center.

He also emphasized the expectation that students who gain competencies will not only enter the labor market but also help non-profit organizations with their challenges.



An extraordinary recognition for university scientists as they become full members of the Lithuanian Academy of Sciences (LMA)

At the general meeting of the Lithuanian Academy of Sciences (LMA), full members of the academy were elected – Professor Dr. Tomas Kacerauskas, Head of the Department of Philosophy and Cultural Studies at VILNIUS TECH, and Professor Dr. Juozas Valivonis, Head of the Department of Reinforced Concrete Structures and Geotechnics.

– Why do you think you were elected as a full member of the LMA?

T. Kacerauskas: In answering this question, I would like to open the doors to the LMA "kitchen." First of all, I want to confirm that the elections of LMA members are a truly transparent system that evaluates candidates according to established criteria. The evaluation includes the level of scientific recognition: published works, their citations, presentations in plenary sessions of international conferences, received awards, signs of established scientific schools, scientific organizational activity, recognition in Lithuania and internationally, as well as involvement in LMA activities.

It should be emphasized that this is a competition, so the best candidates are selected from all applicants. Although the system is transparent, the luck is also needed as the criteria is quite high. Since it is mandatory to have internationally recognized works, and Lithuania is not a global science center (except in some fields, such as Lithuanian studies), it often takes several decades.

Moreover, in certain fields, one may have to wait for the competition for ten or even more years. A candidate is usually nominated by their university. Imagine a situation where a prominent scientist works in several institutions and does not identify with any of them. In such cases, it is hard to expect any of them to nominate the candidate. If a candidate conducts interdisciplinary research, they face a difficult choice – in which field to participate in the competition?

Something similar happened to me, as my research covers both philosophy and communication. In such a case, you just have to roll the dice: you never know in which field the competition will be stronger.

Another criterion is election within the LMA section. In my case, it was the Humanities and Social Sciences section. But this is not the final procedure, as a vote by LMA members at the general meeting still awaits.

Although this last procedure seems formal, there have been cases where one or another candidate lacked votes. I think I was elected because of the entirety of my activities and due to favorable circumstances.

J. Valivonis: I think that by working systematically in my scientific field together with the students, I have conducted many studies whose results have been published in prestigious foreign journals. These research results have been widely implemented in business companies.

I have supervised many master's and doctoral students – they form my scientific school. I have also carried out numerous consistent, systematic scientific studies. I believe this influenced not only my nomination as an LMA candidate but also my election.

I cannot attribute all merits only to myself – this is an appreciation of the entire team of our department.

– What does being elected a full member of the LMA mean to you?

T. Kacerauskas: Although it indicates a certain recognition, the most important thing for me is that I found myself under one roof with people I have regarded as Lithuania's luminaries since school.

It is another opportunity to learn from them.

J. Valivonis: It shows that my consistent and focused research was the right path. Also, that the school I lead has been recognized nationally. I won't hide it – every recognition is pleasant.

Becoming a full LMA member only confirms that I must continue scientific research and prepare young scientists.

– What added value does LMA membership provide?

T. Kacerauskas: I want to point out that the topics (studies of creativity, philosophy of communication, philosophy of the city) for which I was recognized I discovered after coming to work at VILNIUS TECH, having completed philosophy studies and gained work experience at Vilnius University.

In other words, this environment shaped me as a scientist. Therefore, I am grateful to everyone around me on this scientific path. Alone, I would have achieved nothing.

J. Valivonis: I believe that my election to the LMA is a recognition of the VILNIUS TECH Construction Engineering scientific field.

– What would you wish to colleagues who want to try their chances at the LMA?

T. Kacerauskas: Courage and involvement, for example, participation in various scientific activities both in Lithuania and abroad. To be honest, by taking action, we gain courage.

J. Valivonis: One must always dare to take on new challenges. If you don't try, you won't get results.

The most prominent Lithuanian scientists, recognized in society and the scientific community both in Lithuania and internationally, who have established scientific schools, achieved significant scientific results, and enriched science and culture with important works, are elected as full members of the Academy of Sciences.

Alumnus T. Dauskurdas: “The knowledge gained at university provided a solid foundation for continuous improvement”

ALUMNI VOICE

Every year VILNIUS TECH prepares many talented graduates for the labor market, whose achievements bring recognition to the university beyond Lithuania. One of them is Tomas Dauskurdas, Sustainability Manager at the asset management company “Lords LB Asset Management.”

Today, the VILNIUS TECH alumnus is not only a professional in his field but also an active member of the Alumni Club, who contributes through his active involvement in the development of young specialists.

“While studying at school, I developed a liking for natural sciences, so studies in the technology field was an obvious choice for me. When I was considering bachelor’s studies, VILNIUS TECH was the only university I wanted to go for. I had already chosen an area of specialty before that. After deciding to pursue a master’s degree, I deepened my already acquired specialized knowledge. Since I already knew university environment and lecturers, continuing studies at VILNIUS TECH was a natural choice,” says T. Dauskurdas.

According to the VILNIUS TECH alumnus, the Bachelor’s in Building Energy and Master’s in Building Energy Engineering studies attracted him due to their versatility, and the knowledge gained during the studies was very useful for reaching career heights.

The studies provided a solid engineering foundation, which over time could be supplemented with specific skills. Equally important was that the study program covered not only technical aspects but also environmental protection, energy efficiency, sustainability principles, and basics of digital modeling. This is relevant in today’s labor market and especially important when working in the sustainable business sector.

“I studied at university in English. I think this added extra charm to the studies – I studied together with students from different countries, which allowed me to better understand what it means to learn and work in an international community. It was interesting not only to delve into the subject matter but also to observe how students from different cultures solved tasks, discussed among themselves, and collaborated on team projects,” says T. Dauskurdas.

Talking about his workday at the asset management company “Lords LB Asset Management,” sustainability manager T. Dauskurdas emphasizes that the company works with real estate and renewable energy funds, which entailed both building sustainability issues and solar as well as wind power plant projects.

“I start my workday by reviewing sustainability data – energy consumption, emissions, water, waste indicators. I prepare Environmental, Social, and Governance (ESG) reports, coordinate the implementation of the sustainability strategy, work on building certification and climate risk assessment. I closely collaborate with fund managers, project engineers, and consultants, advise company employees on environmental protection, social responsibility, and governance issues, monitor the sustainability progress of the company and managed funds, and provide suggestions how to make improvements.

My goal is to ensure that the funds’ activities are not only profitable but also responsible towards the environment and society,” notes T. Dauskurdas.

The VILNIUS TECH alumnus shares that the analytical thinking, problem-solving, and critical evaluation skills developed during his studies help him make decisions faster, assess situations more effectively, and propose well-founded solutions.

Moreover, theoretical knowledge provides a foundation for continuous improvement and makes it easier to generate new ideas.

“Working in sustainability involves balancing requirements from different countries, coordinating specialists from various fields, or managing information and expectations that are not always clearly defined.

For this reason, patience and the ability to communicate clearly and convincingly are very important in my work.

If a challenge is complex, I always consult with colleagues – teamwork always helps to find the right solution faster,” shares the Sustainability Manager at “Lords LB Asset Management.”

According to the VILNIUS TECH alumnus, it is not difficult to find a job related to the acquired specialty in today’s labor market, especially if one acts purposefully and consistently.

The demand for employees is high, particularly in engineering and technology fields, but it is important to understand that the first or second job may not necessarily offer the highest salary.

“The shortest path to start a career is simply to try to take on the offered job or internship because it will provide first real experience, help understand the specifics of the work, and start building professional connections. In the long run, it is experience and skills that will enable advancement to higher positions and better pay. Of course, one should not forget that you can always create a job yourself – initiate projects, propose your ideas, or seek opportunities to work independently.

It’s easier and bolder to do this with like-minded people,” says Tomas Dauskurdas, Sustainability Manager at “Lords LB Asset Management.”

VILNIUS TECH
ESHOP

Buy VILNIUS TECH merchandise

and get stylish SOCKS OR REFLECTOR!

*The offer is valid on selected items and for limited time only

MAKER CULTURE

University students proved that **engineering thinking perfectly blends with creativity**

VILNIUS TECH students – Vakaris Miceika, Rugile Svagzdyte, and Jokubas Setkauskas – took the initiative to present the university from a new perspective, that is, through their own eyes. While carrying out this unique project, they created a video that reveals not only VILNIUS TECH's architecture and study environment but also community spirit, an innovative atmosphere, and the rhythm of student life. ➔

Vakaris Miceika – project producer, 1st-year student of Multimedia and Computer Design at the Faculty of Fundamental Sciences

A team member whom VILNIUS TECH representatives asked to assemble a team and film the best advertisement the university has ever seen. He is the main cameraman. He also edited all the shots and turned them into a wonderful one-minute-long university promoting video.

Rugile Svagzdyte – project director, 1st-year student of Entertainment Production at the Faculty of Creative Industries

A team member who supervised everything down to the last detail. She organized filming schedules, corrected mistakes made by other team members, and managed them.

Jokubas Setkauskas – cameraman, 1st-year student of Multimedia and Computer Design at the Faculty of Fundamental Sciences

A team member who ensured the cameraman didn't make mistakes, during each shot carefully watched what was being filmed through the monitor. He invested a large part of himself into the project, constantly thinking about what additional shots to film or what to add.

– How did the idea to create an advertisement about VILNIUS TECH come about?

V. Miceika: The idea came when the Dean of the Faculty of Fundamental Sciences, Associate Professor Dr. Dovile Deltuviene, called me and hinted that the university needed an interesting advertisement to help attract new students.

The Vice-Dean shared her expectations with me, and without hesitation, I started working and assembling the team.

> **This work not only shows how much the university offers but also reminds us to constantly strive, take action as well as advantage of every opportunity given.**
>
> R. Svagzdyte

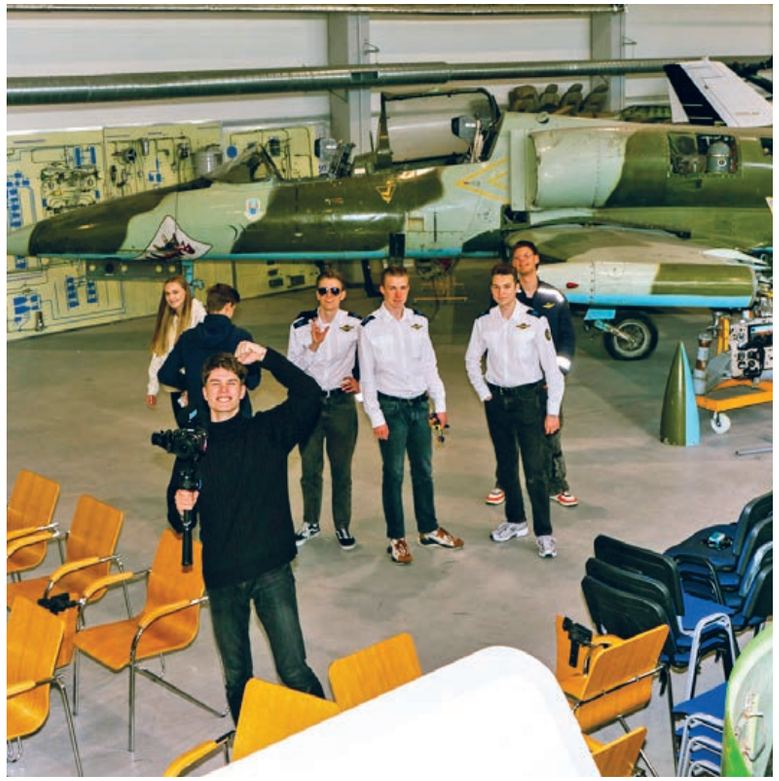
– What challenges did you face while creating the advertisement about VILNIUS TECH?

V. Miceika: There were countless challenges – lack of time, bad weather, creative crisis, fatigue, and more. I'm glad we managed to handle all the problems excellently.

J. Setkauskas: Creating the advertisement took a lot of time and effort. Sometimes we even worked through the night.

R. Svagzdyte: We wanted to start filming as soon as possible even without a final advertisement plan or idea.

Getting various permits, scouting locations, casting actors – also was not an easy part of creating the advertisement.



– What is the main idea of this advertisement?

V. Miceika: The main idea is to show everything a first-year student, coming to the university, can take from it during four years. This educational institution offers an immense amount, not to mention the high level of science. We decided to emphasize this in the advertisement right from the first meeting with the team members.

The advertisement is in the style of a documentary film trailer. Two main actors play first-year students who arrive at VILNIUS TECH knowing nothing about it. The main part shows how students study at the university for four years, practically trying almost everything the university offers. At the end, it shows very happy students graduating from VILNIUS TECH.

J. Setkauskas: Four years at university will pass very quickly, so young people must take everything from their study environment and, of course, strive for academic heights.

R. Svagzdyte: Take everything the university offers, that is, all opportunities. Time passes mercilessly, and everything can end very soon.

– What makes this advertisement unique?

V. Miceika: I think for several reasons: with this advertisement, we send a message to the viewer and show what VILNIUS TECH will give them; besides, the short advertisement is very immersive.

J. Setkauskas: Young people create it for young people, so maybe this way it will be easier to reach future students.

R. Svagzdyte: It reveals each one of us – first-year students who timidly crossed the university threshold not knowing what to expect. In my first years of study, I realized that VILNIUS TECH offers many opportunities to students that many either do not know about or simply do not try to use.

This work not only shows how much the university offers but also reminds us to constantly strive, take action as well as advantage of every opportunity given.

V. Miceika: I want to thank everyone who contributed to implementing this project. We had an insanely large amount of work and emotional swings – from sadness to joy. However, we are extremely satisfied with the final result of our work. I especially want to thank my team colleagues – Rugile and Jokubas, without whose contribution this project would not have been realized.

Thank you to the VILNIUS TECH community for their trust!

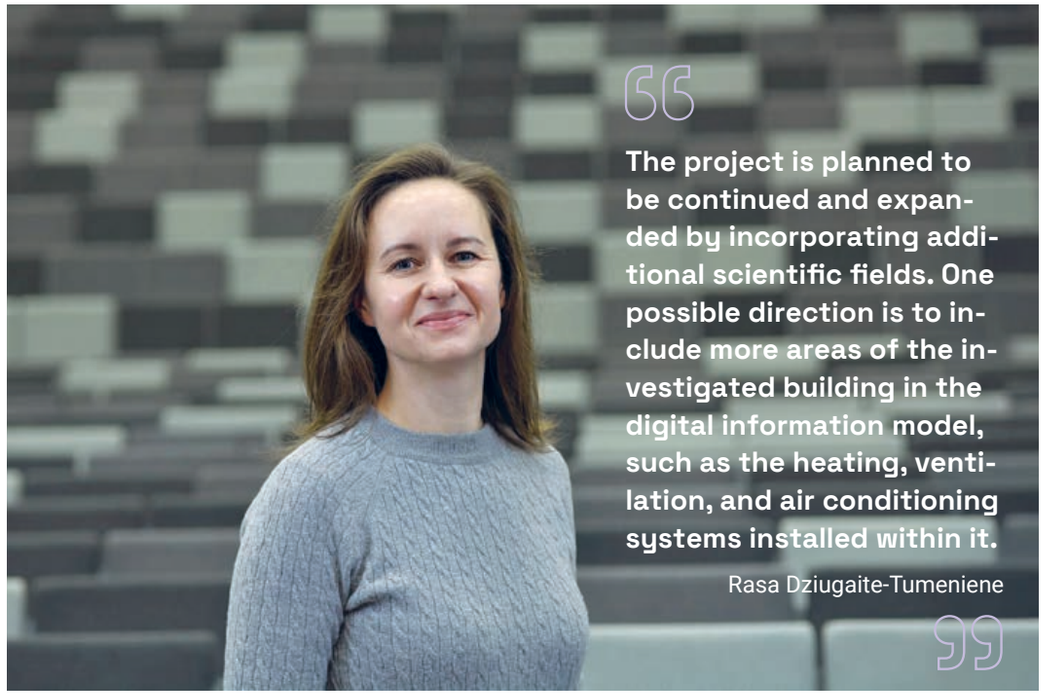
The digital twin being developed by researchers serves as a tool for microclimate analysis of the Sustainability Center

VILNIUS TECH students are developing a digital twin for the Sustainability Center, focusing on the microclimate monitoring and analysis. This innovative tool will enable real – time assessments of thermal comfort and air quality. The initiative promotes practical student engagement in advanced technology development and contributes to creating a greener, more efficient, and responsible environment within the university.

Valdas Kondratovič, a first-year master's student in the Building Information Modeling program at the Faculty of Civil Engineering, explains, "The idea to create a digital information model for the Sustainability Center's facilities arose from observing the increasingly widespread application of digital twin technology in various fields, particularly in construction and sustainable building management. Since VILNIUS TECH is an advanced university that continuously promotes the implementation and application of new technologies, we decided to focus the project on the Sustainability Center, which previously did not have its own digital model."

According to him, the model will integrate real-time microclimate data, which will assist in analyzing and optimizing indoor air quality, temperature, and humidity levels. The building will also ensure efficient management of energy resources, enhance the comfort of employees and visitors, and reduce negative impacts on the environment. All these factors will contribute to the sustainable regulation of the microclimate within the Sustainability Center.

Valdas Kondratovič highlights, "While implementing this project, we encountered several challenges. One of them was the need to model an existing building in a virtual environment, which was constructed before BIM technologies were introduced in Lithuania. We only had 2D drawings from the existing documentation, so we utilized 3D modeling and reality capture technologies. The reality model of the Sustainability Center was captured using a specialized ‚Dalux 360°' camera mounted on a helmet and transferred into the Dalux ‚SiteWalk' functional module, where we combined the 3D geometric model of the Sustainability Center with the reality model. The data from the reality model helped refine and enhance the 3D model of the Sustainability Center. Another challenge we will face during this project is integrating the BIM model with sensor data and ensuring uninterrupted real-time data transmission. We hope to resolve these issues through collaboration and thorough testing of various technological solutions and software."



Project coordinator, Associate Professor Dr. Rasa Dziugaite-Tumeniene, emphasizes that students are enhancing their interdisciplinary collaboration skills while developing the twin model of the Sustainability Center. The project integrates knowledge from building information modeling, building energy engineering, and information technology fields. It also strengthens practical skills in working with digital modeling platforms and data collection technologies, as well as their integration into a digital environment. Additionally, gaining experience with real microclimate data is of significant importance.

"The project is planned to be continued and expanded by incorporating additional scientific fields. One possible direction is to include more areas of the investigated building in the digital information model, such as the heating, ventilation, and air conditioning systems installed within it. Once the initial objectives set for this project are achieved, there would be potential to integrate advanced data analysis and artificial intelligence solutions that could forecast microclimate changes and provide recommendations for building management", as noted by the associate professor.

The twin model of the Sustainability Center will serve as an interactive tool for monitoring indoor microclimate, analyzing thermal comfort, and assessing air quality. This will enable building managers to make informed decisions regarding energy consumption reduction and improvements in air quality.

The project authors hope that this model, along with other buildings, will be successfully integrated into the existing virtual campus of Saulėtekis.

University Student Receives **Distinguished Emeritus Award**

TECHNOLOGICAL SOLUTIONS

VILNIUS TECH Faculty of Architecture student **Ausrine Neniskyte** has been awarded this year's one-time named Emeritus Scholarship.

This scholarship is a symbol of the Emeritus Club, demonstrating that the honorable club does not forget young people, continues to take an interest in their achievements and invests in the future of science. They continue to practise meaningful traditions that connect generations.

– What does receiving the Emeritus Scholarship mean to you?

This scholarship is more than just financial recognition. I'm happy that my projects and achievements were noticed. Studying architecture, each semester presents new challenges and requires creative solutions. One must constantly look for new ways to solve problems and not be afraid to generate ideas. This recognition has given me more motivation and confidence, it also confirmed that I am on the right path.

– What were the key achievements that led to receiving the scholarship?

I believe several factors played a role – both high academic results and my portfolio of work. I included projects that are personally meaningful and interesting to me, which perhaps caught the committee's attention.

Also, a project I completed with my classmate Gabriele Gecaite received the faculty's GERAS award.

– What challenges do you face in your studies?

The main challenge in studying architecture is time management. It always takes much more time to implement project ideas than it seems at first.

Since I'm in my final year, I'm getting better at maintaining a healthy balance between studies and free time, which is achieved by setting priorities and planning time realistically.

– What motivates you to improve?

It's probably more a result of personal traits – diligence and determination. My motivation comes from an internal desire to grow. I always try to do things in a more interesting and professional way than I did before.

– Where do you find inspiration?

I see my field of study as very diverse and often requiring an interdisciplinary approach, so inspiration can come from experiences in many areas.

During my Erasmus+ studies in Italy, I got acquainted with the concept and research of neuroarchitecture. This inspired me to delve deeper into the applicability of such research and became the foundation of my master's thesis on mental well-being in cities.

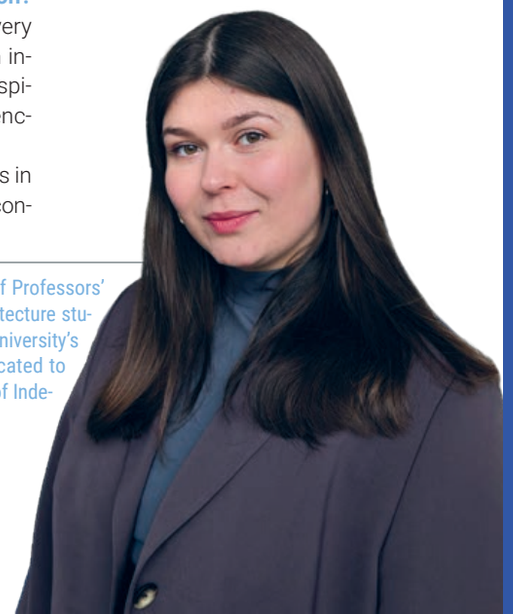
– How has receiving the award influenced your future study plans?

My main goal right now is to successfully defend my final thesis, so my immediate plans are focused on completing my studies.

Nonetheless, this award has strengthened my self-confidence and encouraged me to think more broadly about future opportunities – both academic and professional.

– What advice would you give to students striving for academic excellence?

I encourage you to value your progress and the learning process itself, not just the final result. Everyone grows in their own way – avoid comparing yourself to others and trust yourself.



The VILNIUS TECH Emeritus Club of Professors' scholarship was presented to Architecture student Ausrine Neniskyte during the university's annual celebratory afternoon dedicated to March 11 – the Day of Restoration of Independence of Lithuania.

VILNIUS TECH PhDs contribute to the development of sustainable business solutions

Doctoral studies are not something everyone dares to pursue, as it is the endeavour that requires a lot of work, effort, and discipline. The world and scientific research are constantly evolving: they are becoming more complex, new developments keep appearing, and expectations for researchers are increasing. However, each completed dissertation changes the world — opening up wide opportunities not only for career advancement but also for a broader perspective on science.

Each completed dissertation encourages career shifts and contributes to the creation of knowledge in the wider academic community.

DR. EDVARDAS LIACHOVICIUS

Dissertation: Data-driven method for increasing efficiency in road freight transportation

Dissertation title in Lithuanian: Duomenimis grįstas metodas krovinių vežimo keliais efektyvumui didinti

Supervisor: Assoc. Prof. Dr. Viktor Skrickij

Large and medium-sized road transport companies with their own vehicle fleets tend to have long-term growth strategies. The logistics business is cyclical, so companies with their own fleets must align their growth ambitions with market cycles.

Growth, when demand for transport services is declining and rates are falling, can negatively affect the business. Resources may be underutilized, leading to problems that result in major financial losses.

When demand picks up and transport rates increase, companies are often unprepared — lacking human and other resources (such as the number of trucks needed). This can lead to untapped market potential, loss of competitiveness, and difficulties in achieving strategic goals.

Business digitalization enables the creation of new technological solutions that can improve efficiency in the transport sector.

In the dissertation, artificial intelligence and econometric models — including multivariate models — are applied to thoroughly analyze the topic and solve the problem. These models take into account various factors affecting demand and pricing, such as economic indicators, accumulated practical experience, and market trends.

The research highlights the importance of forecasting demand and freight rates to increase the efficiency of the road freight sector. A method is proposed for the companies to apply for forecasting. Based on the research, a data-based method was developed for improving efficiency in road transport and for exploring how it could be integrated into a company's IT system.

DR. TADAS VENGALIS

Dissertation: Investigation of thermal flows occurring in refrigeration equipment

Research object: Open-type industrial refrigeration display with single- or double-layer air curtain.

Supervisors:
Prof. Dr. Mindaugas Jurevicius and Prof. Dr. Vadim Moksin

The dissertation uses numerical and experimental methods to study thermal flows in refrigeration devices — that is, in open industrial refrigerators.

The work presents an overview of numerical methods and experimental techniques used to model thermal flows.

It also describes and applies the geometric models of industrial refrigeration devices, differential equations of thermal flows, boundary conditions, finite element numerical schemes, and the finite element method itself. The dissertation uses unstructured meshes of varying density.

The final part of the work discusses the numerical and experimental studies and compares them.

LECTURER AJA TUMAVICE, DEPARTMENT OF ROADS

Dissertation: Investigation of parameters of noise-reducing walls for railway transportation

Research object:
Effectiveness of high and low noise-reducing walls installed along straight railway segments.

Scientific advisor:
Prof. Dr. Alfredas Laurinavicius

The work presents studies of low noise-reducing walls along railways. Such walls have been implemented worldwide for more than 20 years, but they are still not widely used, and have not been installed at all in Lithuania.

Although the insertion loss values of low walls are usually lower than those of typical (high) ones, their installation costs are lower, they cause less visual disturbance, ensure greater traffic safety, and so on.

Currently in Lithuania, the biggest issue related to railway noise comes from track segments between stations that run through residential areas, especially at level crossings. When rolling speeds range from 50 km/h to 240–250 km/h, the dominant noise is rolling noise caused by wheel-rail interaction. Low noise barriers are designed specifically to reduce this type of noise. However, Lithuania applies a relatively large clearance gauge (3.1 m), meaning that low barriers within that space are not effective.

The main idea of the dissertation is to determine such parameters for low barriers that would make them effective even with a larger clearance.

Dr. Raimonda Bubliene: “Through education and prevention, we can stop equal opportunity violations”

VILNIUS TECH is not only a center of science and knowledge but also an environment where respect, diversity, and equal opportunities for all members of the university community are nurtured daily. To ensure that every student, lecturer, and administrative employee can realize themselves through feeling valued and empowered, the role of the Equal Opportunities Officer is becoming increasingly important.

We spoke with **VILNIUS TECH Equal Opportunities Officer Dr. Raimonda Bubliene** about the efforts to create an inclusive, gender-stereotype-free study and work environment.

Ensuring equal opportunities covers various areas, as individuals in everyday activities face barriers that prevent them from fully realizing their potential.

“While performing the duties of an Equal Opportunities Officer, I constantly work on ensuring equal opportunities at the university, conduct research on discrimination, consult staff, and carry out educational as well as preventive activities,” says Dr. R. Bubliene.

Speaking about the added value that the Equal Opportunities Officer brings to the university, Dr. Bubliene highlights that the importance of ensuring equal opportunities in education comes from the attention paid by state institutions and the recommendations they prepare. Recently, the Office of the Equal Opportunities Ombudsperson of the Republic of Lithuania prepared and distributed a guide for the country’s higher education institutions titled “How to integrate gender equality principles into teaching?” The guide provides the academic community with clear and applicable recommendations for creating an inclusive, gender-stereotype-free study environment.

The attention given to ensuring equal opportunities in education also underscores the importance of developing an inclusive society. Moreover, equality, gender parity, and inclusion are significant to the activities of the **ATHENA** (Advanced Technology Higher Education Network Alliance), of which VILNIUS TECH is a member. Equally important is the role of inclusion and equal opportunity assurance in the project funded by **Google.org**, the philanthropic arm of Google, which is implemented by VILNIUS TECH.

> **While performing the duties of an Equal Opportunities Officer, I constantly work on ensuring equal opportunities at the university, conduct research on discrimination, consult staff, and carry out educational as well as preventive activities**
>
> R. Bubliene

“Ongoing challenges in the field of equal opportunities, as in others, motivate me to keep growing. I believe that my doctoral dissertation, defended in the field of law on anti-discrimination law, also contributes to the work I do in this area. While I am interested in all aspects of ensuring equal opportunities, I would highlight educational and preventive activities as the most engaging. I also serve as a lecturer at VILNIUS TECH, and I believe that through education and prevention, we can stop equal opportunity violations. In fact, I would consider education and prevention as the areas that bring the most benefit to the university community,” Dr. R. Bubliene emphasizes.

To date, three complaints regarding equal opportunity violations have been reviewed at VILNIUS TECH. These were consolidated into a single case, while other situations and inquiries have been resolved through preventive measures. This only proves that members of the VILNIUS TECH community recognize the importance of equal opportunities and are making every effort to ensure them.

You can find the help box here:

Dr. Agne Vaiciukeviciute:

“Sustainable and digital transformation is changing universities – they’re becoming catalysts for change”

In today’s world, the sustainable and digital transformation of universities is not just relevant—it is essential. The importance of these topics is not news; for several decades now, the European Union (EU) strategy has clearly emphasized sustainability and digitalization as key directions for higher education and global movement.

“Sustainability is the foundation of meaningful activity, and digitalization is the tool that enables the implementation of sustainable solutions. Universities, like other organizations, are striving for sustainability both in their operations and in shaping public attitudes, as well as preparing professionals capable of developing and implementing sustainable solutions in various fields. These future leaders not only introduce digital solutions in institutions, but more importantly, contribute to broader changes within the state and society,” says Dr. Agne Vaiciukeviciute, member of the Vilnius City Municipal Council, who is also a VILNIUS TECH alumna.

According to her, universities are becoming hubs of knowledge where the directions of sustainability and digitalization are being shaped—from energy and transport to public services and business innovations. The upcoming NORDTEK conference **“Sustainable and Digital Transformation of Universities”** at VILNIUS TECH is especially meaningful for the academic community—it will be a space for ideas to be born and later transformed into real-world solutions.

“The role of keynote speaker at the conference is special. It’s a great opportunity not only to share my experience and speak out about the things that matter to me, which are technology and responsibility, but also to encourage a broader public perspective on how universities can empower society to act in smart and sustainable ways. Lithuania, especially Vilnius, is becoming a green capital, which is emerging as an important platform for dialogue, where university representatives from different countries can exchange experiences,” emphasizes Dr. A. Vaiciukeviciute.

The VILNIUS TECH alumna points out that her past four years in politics, particularly while serving as Deputy Minister of Transport and Communications, have shown how vital the role of universities is in the decision-making process. In sectors like energy and transport it encompasses everything from research to practical solutions. Universities are the source of the knowledge that policymakers rely when shaping a smart and sustainable future for the country.

“Today, as we face geopolitical challenges, sustainability takes on even greater significance—it becomes a competitive advantage. Sustainability means the ability to act effectively and create greater value. People are more likely to take action when they see tangible results, and sustainability combined with digitalization helps achieve those results faster as well as more efficiently,” says Dr. A. Vaiciukeviciute.

According to the member of the Vilnius City Council, the digital solutions implemented in Lithuania—from the deployment of eSIM technologies in the energy sector to the use of drones in Vilnius for tree scanning and order monitoring—show that the country is on the path of progress.

The digitalization of public transport and the integration of bus and train ticketing systems are excellent examples of how technology improves everyday life for citizens. It also encourages them to choose more sustainable alternatives. Vilnius is becoming a data hub, where city processes are analyzed digitally, and data is made available to both the public and private sectors.

“Universities’ involvement in national projects is evident—researchers participate in working groups, prepare analyses that become the basis for political decisions. So, there’s no question of whether universities should be more involved in creating and implementing sustainable solutions—they already are an integral part of that change,” says the council member.

Speaking about how to engage young people in the fields of sustainability and engineering studies, the VILNIUS TECH alumna notes that these fields are not only highly relevant in today’s world but also exciting. Artificial intelligence (AI) and other digital technologies are changing our everyday world, but to implement them, we still need engineers—people who understand processes and can apply technologies in real-world scenarios. Engineers are not only needed—they are inseparable from the innovations of the future.

“The biggest challenge universities face when promoting engineering studies is showing that engineering is not just about difficult studies. It is also about the opportunity to create meaningful outcomes for future generations. We must help young people understand and believe that their choices can have a positive—and most importantly, real—impact on the world,” says VILNIUS TECH alumna Dr. Agne Vaiciukeviciute.

Energy efficiency Symposium: **building the future today**

To mark Energy Professionals' Day, ABB initiated and, together with VILNIUS TECH, hosted the Energy Efficiency Symposium. The event brought together the academic community, representatives of industrial companies, and sustainability experts to discuss innovative solutions, promote cooperation between industry and science as well as explore practical ways for Lithuania's industry to operate more efficiently and sustainably.

Justinas Pesliakas, head of ABB's motors and drives business in Lithuania, emphasized that energy efficiency is not just about introducing or developing innovative technologies but also about a shift in organizational thinking.

"Technologies that promote energy efficiency are already developed. All it takes is the will and a strategic mindset to implement them. If organizations saw a clear return on investment and benefits, decisions would be made faster and would become a shared goal of the team."

Pesliakas highlighted that energy efficiency creates triple benefits: a positive effect on climate change, increased energy security, and a competitive advantage.

"By implementing already available energy-efficient technologies, the fastest return on investment opportunities lie in industry and buildings. To accelerate this, we need consistent and stable financing policies. When energy efficiency is combined with renewable energy sources and electrification, we can achieve truly outstanding results," says Pesliakas.

According to him, the involvement of various roles and teams within an organization is crucial for implementing new technologies and aligning them with strategic business goals.

"As global electricity demand rises—due to population growth expected to reach 10 billion by 2050, urbanization, data centers, industry, and building electrification—energy efficiency is not only a smart approach but also a necessary one," Pesliakas notes.

> **By implementing already available energy-efficient technologies, the fastest return on investment opportunities lie in industry and buildings.**
>
> J. Pesliakas

KEY HIGHLIGHTS AND INSIGHTS FROM THE SYMPOSIUM

The symposium was opened by Daiva Dediniene, sustainability expert at UAB "Audifina," head of the Sustainability Group, independent board member of LAVA, and member of EFRAG DRCF. In her presentation, she emphasized the importance of ESG (environmental, social, and governance) strategies for industrial enterprises. She stressed that energy efficiency is not only an economic necessity but also a cornerstone for achieving sustainability goals that align with the EU's latest sustainability requirements.

Audrone Janulaityte, coordinator of the GreenTech Hub at the Innovation Agency, presented national support programs encouraging industrial companies to invest in energy-saving solutions. Green finance expert Nora Laurinaityte, CFA PhD, introduced ILTE's funding directions and the activities of the Green Finance Institute.

Discussion: Business changes and investment in science

An engaging panel session invited participants to get actively involved and share their ideas. Participants included:

- **Dr. Ruta Mikucioniene,** Deputy Director of the VILNIUS TECH Sustainability Center
- **Prof. Dr. Arturas Kilikevicius,** Director and Senior Researcher of the Institute of Mechanics
- **Rasa Jaciniciene,** Head of the Energy Efficiency Competence Center at the Lithuanian Energy Agency
- **Darius Lasionis,** Director of LINPRA
- **Albertas Trakimavicius,** Energy Engineer at UAB "Retal Lithuania"

Simonas Barsteiga, moderator from VILNIUS TECH's Center for Smart and Climate-Neutral Manufacturing Processes, stressed that stronger cooperation between business and science is a key factor in achieving long-term sustainability goals. The discussion also addressed current issues such as indus-

trial support measures and their role in promoting energy efficiency, innovation, and digitalization.

Dr. Ruta Mikucioniene shared that energy efficiency starts with data and understanding what exists today:

"First, we must assess the current situation—what are the actual energy efficiency figures, and where is energy being consumed the most? Without this analysis, no proper decisions can be made. Unfortunately, many companies build strategies without sufficient data or foundational education."

INDUSTRY EXPERIENCE AND REAL SOLUTIONS

Participants had the opportunity to visit VILNIUS TECH's Sustainable Consumption Demonstration Space, based on circular economy principles in the food supply chain. The space showcases how to reduce environmental impact and climate footprint in food systems, cultivate sustainable habits, and implement them in daily life.

In the second session, Karolis Janusevicius presented Lithuania's progress toward energy efficiency goals. Energy auditor Vladas Jablonskis shared practical industrial case studies—from identifying energy losses to precise measurements that help evaluate efficiency opportunities. According to Jablonskis:

"Both quantitative (how much energy is used) and qualitative (where and how it's used) aspects matter. Targeted measurements mean capturing specific, often overlooked or non-automated points of energy consumption using various instruments. Once the data appears, even ten experts with different opinions start to align," says Jablonskis.

ENERGY EFFICIENCY MOVEMENT

Justinas Pesliakas presented the Energy Efficiency Movement, which now unites over 570 organizations worldwide. The final discussion, "What challenges do industrial companies face and what solutions are applied to achieve energy goals?" focused on strategic planning, engagement at all levels, and collaboration.

The session included representatives from AB "Akmenes cementas," UAB "Skadec LT," "Vilniaus silumos tinklai," AB "Achema," and ABB. The discussion was moderated by sustainability consultant and Agenda'50 director Viktorija Jakubauskyte-Andriuliene, invited by the Baltic Automotive Components Cluster (BACC).

According to her, the balance between mandatory and voluntary involvement in sustainability initiatives often depends on basic sustainability literacy:

"Sustainability is not just one person's responsibility. Energy, environmental, and engineering experts should work closely with communication professionals. If we only talk in numbers and indicators, no one will understand their meaning," she adds.

> **Sustainability is not just one person's responsibility. Energy, environmental, and engineering experts should work closely with communication professionals. If we only talk in numbers and indicators, no one will understand their meaning.**
>
> V. Jakubauskyte –Andriuliene

VILNIUS TECH SUSTAINABILITY CENTER – A PLATFORM FOR COLLABORATION

The venue was no coincidence—VILNIUS TECH's Sustainability Center symbolizes the synergy between science, business, and innovation in the field of sustainability. By joining the global Energy Efficiency Movement with over 570 members, the university reaffirmed its commitment to promoting energy efficiency and sustainability by sharing best practices. Hosting the symposium in this space underscores the shared mission of VILNIUS TECH and ABB to strengthen dialogue between academia and industry for a sustainable future.

ABOUT THE ENERGY EFFICIENCY MOVEMENT

- **The Energy Efficiency Movement is a global initiative promoting energy efficiency solutions across industries and accelerating the shift to net-zero emissions.**
- **It addresses urgent energy challenges while laying the foundation for future innovations in transport, construction, and beyond.**

Learn more and explore solutions at:

The latest books published by VILNIUS TECH

Viktorija Skvarciany, Laura Gudelyte-Zilinskiene, Renata Cincikaite, Milena Serzante

QUANTITATIVE AND EXPERT DECISION-MAKING METHODS IN SOCIAL SCIENCES

Textbook

This publication analyzes statistical methods applied in social science research. It discusses descriptive statistics methods, statistical hypothesis testing, regression analysis, forecasting models, multi-criteria decision-making methods, and more. The book thoroughly examines methods of analysis such as ANOVA, factor analysis, and cluster analysis, which help identify data structure and discover certain patterns. Each chapter is illustrated with practical examples demonstrating how these methods are applied in real research scenarios. Special attention is given to the use of statistical software – SPSS, STATA, MS Excel, and EViews. These programs allow for efficient data analysis, results visualization, and diverse calculations. Readers will find detailed algorithms and step-by-step instructions on how to perform analysis using the mentioned software. The book also includes tasks with real data, encouraging critical thinking and the ability to apply learned methods in practice.

This textbook is intended for undergraduate and graduate social science students, whose goal is to acquire a solid foundation in statistical analysis and practical skills in applying various methods using different statistical software tools.

Vytautas Kudzys, Algirdas Kudzys, Ona Lukoseviciene, Ona Jursaite

I CHOSE THE PATH OF A SCIENTIST: TO ACADEMICIAN ANTANAS KUDZYS ON HIS 100TH BIRTHDAY

Publicistic Publication

This is a piece of publicistic literature dedicated to celebrating the 100th birth anniversary of Antanas Kudzys – a creative, intellectual man of broad horizons, educator, and scientist. The book provides a focused narrative of the life, achievements, and success story of Professor Antanas Kudzys, Doctor Habilitatus, Academician – a story that is closely linked to the Vilnius Gediminas Technical University.

Danute Krapavickaite

FUNDAMENTALS OF STATISTICAL QUALITY CONTROL

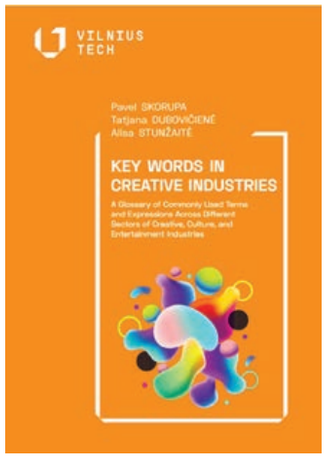
Textbook

Statistical quality control involves the statistical management of process quality, statistical process control, experimental design, and product acceptance testing. The book primarily focuses on methods for statistical control of manufacturing, service provision, and other processes. The objective of these methods is to monitor the processes of product manufacturing and service delivery. It also aims to alert the producer or service provider to possible process deviations, in order to prevent the production of non-compliant products or the provision of inadequate services.

For process monitoring, the construction of statistical process control charts is examined. These charts apply to sample series and individual observations. It includes mean, attribute, time-dependent, and multivariate process control charts. The capability of a process to meet manufacturer requirements is assessed.

The textbook briefly addresses issues of experimental design and product acceptance testing, which help determine whether to accept or reject a batch of products. The QCC package in the R programming environment is used to calculate and apply control chart limits. The methods presented are based on probability theory and mathematical statistics; therefore, the book includes a section on these foundational topics.

This textbook is designed for students of data analysis, engineering, and management programs, as well as for engineers and managers.



Pavel Skorupa, Tatjana Duboviciene, Alisa Stunzaite

KEY WORDS IN CREATIVE INDUSTRIES: A GLOSSARY OF COMMONLY USED TERMS AND EXPRESSIONS ACROSS DIFFERENT SECTORS OF CREATIVE, CULTURE, AND ENTERTAINMENT INDUSTRIES

Study Book

In the rapidly evolving world of creative, cultural, and entertainment industries as well as other related fields, understanding industry-specific terminology is essential. This book serves as an indispensable resource for professionals, students, and enthusiasts. The comprehensive glossary explains the professional jargon used in these dynamic sectors and provides clear, concise definitions of essential terms.

This book helps bridge the gap between creativity, technology, and commerce. It supports not only the learning of industry-specific language but also the development of professional and communication skills. As such, it is a key reference for those already working in these fields or seeking to enter the dynamic world of creative industries and pursue successful career.

University from Students' Perspectives: What a Day in the Life of Content Creators Looks Like

#IAMPARTOFVILNIUSTECH

There is nothing more convincing than stories about university life told from the perspective of the students themselves. Their authentic narratives and images shared on social media create a true and vibrant representation of the university that is easy to relate to.

Such communication not only strengthens community engagement but is also sustainable, relying on existing resources, encouraging participation, and creating long-term value.

JOANA DACEVIČ is a first-year student in the Creative Industries study program.

Being a content creator means constantly seeking new ideas and sharing them with others – it's a form of self-expression that can be inspiring.

I chose VILNIUS TECH because I am here every day and always discover the beauty of my surroundings. It is a place where one can grow not only academically but also creatively.

One of the most common challenges I face while creating content is effectively bringing an idea to life in a way that is both aesthetically pleasing and of high quality. Ideas often emerge from observing everyday life, including university experiences, social media, and current events.

I seek inspiration from other creators and, of course, from my university friends. It's essential to stay open and continuously observe what is happening around me.

AURĖJA GOŠTAUTAITĖ is a second-year student in the Construction Engineering study program.

Choosing to study at VILNIUS TECH was the best decision for me. I have always known that I wanted to live in Vilnius, so I opted for what I believe to be the best university.

Content creation allows me to contribute to the university's social media presence. I am pleased that through this work, I can provide people with an opportunity to observe more closely the environment where students gather.

All content creation ideas arise naturally, for example, by taking an interest in foreign content creators or engaging in everyday activities.

Everything happens very simply, and when I have a curator and a good guide who always provides advice on refining the idea, it all becomes straightforward.

It's true that preparing and editing everything can be more challenging; however, it's primarily a matter of time management.

GABRIELĖ TVASKAITĖ is a first-year student in the Entertainment Production study program.

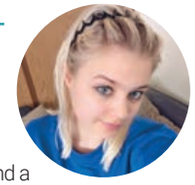
Being a content creator is an opportunity to express oneself and share small, yet significant moments from life.

I have created a few simple yet personal videos about my day, a week of lectures, or just what my daily life looks like. It's important for me to convey authenticity, sincerity, and the experiences I live through.

While creating content, I feel that I can capture and preserve moments and experiences that are dear to me. This is just the beginning of my journey, but I am eager to continue learning and improving in this field.

It is true that I encounter challenges—sometimes I run out of ideas or have doubts about what to create next.

In such moments, I often draw inspiration from social media by observing the work, themes, and aesthetics of other creators. This helps to refresh my creative ideas.



AMELIJA ŽAKŠAUSKAITĖ is a first-year student in the Entertainment Production study program.

At VILNIUS TECH, I found a study program that I enjoy and that I can balance with work, as well as pursue my initiatives and projects.

The university has become not only a place where I study but also a space where I can gain work experience. I contribute to the creation of promotional videos, which helps reveal the areas where I perform best.

Since I am interested in editing, I usually do not film the content myself but rather edit promotional videos created by my colleagues.

I am pleased I have found a place where I have the opportunity to improve and develop my skills.

VILNIUS TECH students create sustainable solutions for Vilnius

VILNIUS TECH Multimedia and Computer Design students have once again confirmed that creativity, technology, and innovation go hand in hand and that unity helps create exceptional visual solutions. The graduation project exhibition at the university is the result of academic studies. Students' artistic projects reveal current social themes and the possibilities of applying modern media in the field.

VILNIUS RESIDENT GARDEN

This is a community garden for city residents, located near the most famous landmark in the capital – the Gediminas Castle Tower. It contributes to promoting a sustainable lifestyle and helps to foster a closer connection with nature.

This initiative was inspired by the desire to create green spaces in the city and to encourage residents' cooperation as well as ecological awareness.

PEDESTRIAN PATH – NOT FOR PEDESTRIANS?

Pedestrians, beware! Behind beautiful promises hides a great plan – to conquer your paths.

IMMATURE VILNIUS

Although Vilnius isn't very mature yet, we feel drawn to it. Green, but worth attention.

ON THE LEAF MOVING WITH A GREEN STREAM

Tranquility, water, and green banks. The city flows – and what about us? We're observing, choosing, or changing?