

Developing entrepreneurship education with international expert networks

Kaunas University of Technology, Lithuania

Abstract

This case study provides an update on the approach to entrepreneurship and innovation taken by the Kaunas University of Technology (KTU)¹, representing the status at the end of 2024. The original case study, was written in 2015. Since then, KTU has developed its entrepreneurial profile and approach further. It developed its curricular teaching of entrepreneurship, extra-curricular activities, research, provision of services related to support of entrepreneurship, and relevant external relationships.

As regards entrepreneurship education, KTU established study programmes related to entrepreneurship, added a course for students from all faculties, and operated various Erasmus+ projects related to entrepreneurship. Moreover, links with international experts and institutions to develop entrepreneurship education are still strong. In particular, links with the European Institute of Technology have become deeper, and KTU has joined two European university alliances. However, international links at the end of 2024 are relatively less important than in 2015, while local competencies have become stronger and cooperation with local businesses have become wider and more intense. KTU established an additional unit for partnership management.



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Table of Contents

The university's entrepreneurial profile	3
Overview of curricular entrepreneurship teaching	3
Overview of extra-curricular entrepreneurship activities.....	5
Research facilities for entrepreneurial students	5
Development of services for entrepreneurship and innovation	6
External relationships to foster entrepreneurship	6
Output, impact and lessons learned	6
Sources.....	7

The university's entrepreneurial profile

KTU's strategy paper for 2021 – 2025 explicitly points to **entrepreneurship**, entrepreneurial activities and entrepreneurs. This is in contrast to KTU's strategy paper from 2012, which applied to the original case study in 2015. The current strategy paper mentions "innovation management and entrepreneurship" as a point relevant for pursuing the "priorities of KTU activities".¹ The strategy also mentions the importance of "the development of entrepreneurial activities" (p. 19) and that the University assumes "the responsibility for the development of responsible creators of future technologies and entrepreneurs". In 2016, KTU joined the European Consortium of Innovative Universities (ECIU), a network of universities that consider themselves as particularly entrepreneurial.² This indicates the increased relevance of entrepreneurship for KTU.

Similarly important has been a shift towards **sustainability** as a key objective of teaching, research and knowledge transfer at KTU. In 2019, KTU joined the Copernicus University Alliance, which is dedicated towards sustainability and fulfilling the United Nation's Sustainable Development Goals.³ KTU considers entrepreneurship and innovation as tools towards sustainability.

Overview of curricular entrepreneurship teaching

In 2024, KTU's School of Economics and Business highlights educating students with entrepreneurial ambitions. The School's mission is "empowering future leaders and professionals with an entrepreneurial mindset by integrating business and technology in education and research, while actively contributing to the economic advancement of the Baltics through societal engagement".⁴ Hence, entrepreneurship has become mainstream at the School, integrated in study programmes and represented in dedicated courses. In contrast, in 2015, entrepreneurship was a relatively new subject with only two courses. In 2024, KTU offers the following study programmes in entrepreneurship: On Bachelor's level, "Business and Entrepreneurship"⁵. On Master's level, "Innovation Management and Entrepreneurship"⁶ as well as "Enterprise Management"⁷. While there is as yet no PhD programme dedicated towards entrepreneurship, the Business School offers a PhD programme in "Management" that includes a module "Innovation and Global Knowledge Economy"⁸ that is largely oriented towards innovation management.

¹ See KTU (without year), p. 22.

² See <https://eciu-en.ktu.edu/about-eciu-university/>.

³ See <https://www.copernicus-alliance.org/about/vision-mission-goals>.

⁴ Quoted from <https://seb.ktu.edu/>.

⁵ See <https://admissions.ktu.edu/programme/b-business-and-entrepreneurship/>.

⁶ See <https://admissions.ktu.edu/programme/m-innovation-management-and-entrepreneurship/>.

⁷ See <https://admissions.ktu.edu/programme/m-enterprise-management/>.

⁸ See <https://admissions.ktu.edu/programme/d-management/#T180D001>.

Moreover, several **Erasmus+** projects at the School of Economics and Business address or addressed entrepreneurship:

- Paving the way for Digital Learning in Higher Education with Enterprise Community (PATHFINDER, 2023 – 2026);
- Women on the RISE: Upskilling Ukrainian Refugees women through sustainable and digital entrepreneurship learning pathways (2023 – 2026);
- Game it Away! Entrepreneurship Education through Game Design and Maker-Centred Learning (2022 – 2025);
- Joint Multidisciplinary training program on Entrepreneurship in the field of artificial intelligence for industry 5.0 (JoinMe, 2021 – 2024);
- Enhancing the ENTRepreneurial mindset of non-business Academics in Europe (2020 – 2022);
- Integrated Interdisciplinary Education Module on Art, Entrepreneurship, Innovation and Science (ArtIST, 2020 – 2023).

These six projects are among 62 projects listed by the School of Economics and Business, that is roughly one tenth.

Moreover, the School of Economics and Business established a dedicated **research group for innovation and entrepreneurship**. The group's mission is to develop a competence centre for cooperation-based multidisciplinary innovation, entrepreneurship and organisation of digital transformation. The group emphasises research in national and international context in "destructive digital technologies" that affect consumers, organisations, industry branches and regions.

Finally, the School of Economics and Business cooperates with businesses in the framework of a programme named **Business Clinics**. It comprises, for example, a platform for lifelong learning courses named UP4SKILL⁹, internships in export and sales in the framework of the Business and Entrepreneurship Bachelor's study programme as well as an Executive MBA for "determined and talented leaders".

In a wider view, beyond entrepreneurship-related study programmes and projects in the School of Business and Economics, KTU is developing entrepreneurial methods of teaching also in other Faculties. A recently introduced methodical approach is **challenge-based learning**,¹⁰ that is learning through working on solutions for practical problems. Such learning commonly takes place in groups of students, and it deals with local challenges that may be related to business or the community. Positive impact on society is an intended result of challenge-based learning. Based on KTU's strategic priorities, the University is training educators to acquire didactic competences for managing challenged-based learning.

⁹ See <https://up4skill-en.ktu.edu/>.

¹⁰ See <https://edulab-en.ktu.edu/developing-teachers-competences/set-of-teaching-learning-methods/challenge-based-learning/>.

Overview of extra-curricular entrepreneurship activities

KTU bundles its extra-curricular entrepreneurship activities in a facility named **Start-up Space**. The Start-up Space, founded in 2012, is meant to “actively work with innovative start-ups, trying to discover a potential of young entrepreneurs and encourage them to make their dreams come true”.¹¹ The Start-up Space offers team coordination, consultations, mentorship, office space, training, events and assistance to find partners. Since 2015, the Start-up Space has extended its activities considerably. Since its inception, the Space reports that it supported the establishment of 75 companies and the creation of more than 260 jobs, examined more than 200 minimum viable products and supported over 4,000 participants. One of the Start-up Space’s main activities is the annual event Technorama, an international innovation exhibition that convenes innovators from different spheres: students, researchers, investors, industry professionals and enthusiasts of new technologies.¹²

For aspiring young entrepreneurs, the Start-up Space offers an **Incubation Programme**. The Programme comprises three stages: Stage I, Development of the business idea; Stage II, Development of the prototype; and Stage III, Development of the company.

The Start-up Space also coordinates cooperation with the **European Institute of Innovation and Technology** (EIT), namely in three fields, so-called knowledge and innovation communities (KICs): EIT Health, Raw Materials and Food.¹³ KTU operates as the local hub for these three fields in Lithuania, organising the related Knowledge and Innovation Communities. The hubs offer support instruments for scientists, company founders and innovators in established businesses. They strengthen cooperation and facilitate knowledge exchange, and they help establish new businesses, develop innovative solutions, engage in large-scale research projects and access industry partners. In recent years, KTU has strengthened links with these KICs and widened related activities.

Research facilities for entrepreneurial students

In curricular and extra-curricular activities, KTU students can use dedicated facilities to test and develop entrepreneurial ideas and prototypes for start-ups. Towards this end, KTU established the **Young Lab**, a creative space for young researchers. As the Lab’s website says, it “offers the opportunity to test risky projects on a smaller scale without significant time and financial costs.”¹⁴ The Young Lab is open to undergraduate and postgraduate interdisciplinary projects. Student-researchers from different disciplines work in teams to find solutions for technical problems. Mentors from business guide the teams. The Young Lab is part of the “Interdisciplinary Prototyping Laboratory Centre – M-Lab”, that combines

¹¹ Quoted from <https://startupspace-en.ktu.edu>.

¹² See <https://technorama-en.ktu.edu/technorama-2024/>.

¹³ See <https://startupspace-en.ktu.edu/activities/>.

¹⁴ Quoted from <https://mlab-en.ktu.edu/young-lab/>.

twelve thematic laboratories for cooperation between science and business, strengthening researchers' competences.¹⁵

Development of services for entrepreneurship and innovation

The head institution that supports entrepreneurship, innovation and knowledge transfer at KTU is the National Innovation and Entrepreneurship Centre (NIEC), as in 2015, located in Kaunas. Its predecessor, the KTU Innovation and Entrepreneurship Centre, was founded in 2012. In 2014, Lithuanian University of Health Sciences and Lithuanian Energy Institute signed a joint activities agreement with KTU and established the NIEC. In 2015, Vytautas Magnus University joined the partnership.

NIEC understands itself as a one-stop-shop for interaction between science and business, seeking to make science-business communication more efficient. It has three main activities: (1) Facilitating business-related research, that is research assignments for business and joint research projects; (2) supporting the establishment of new businesses through the Start-up Space; and (3) protecting intellectual property generated at the participating higher education institutions. Hence, in common terms, NIEC acts as the technology transfer office for KTU and the other affiliated higher education institutions.

External relationships to foster entrepreneurship

One of KTU's most important cooperation partners in terms of entrepreneurship and innovation is the **European Consortium of Innovative Universities** (ECIU). Since 2019, the 14 ECIU member institutions have been creating a joint European university, named ECIU University. It considers itself as "the first European university where learners, teachers and researchers cooperate with cities and businesses to solve real-life challenges". In a pilot phase from 2019 to 2022, members sourced over 160 cases for European-wide challenges. In these challenges, more than 600 learners worked on real-life problems, accompanied by more than 150 teachers. The second phase of ECIU, since 2022, focuses on flexible learning pathways, a challenge-based learning method and micro-credentials. The vision of ECIU University for 2030 is to create an ECIU University ecosystem that would bring together study, lifelong learning, research and innovation activities across the 14 ECIU members. It would allow the sharing of resources and the development of a virtual European campus.¹⁶

Output, impact and lessons learned

In recent years, KTU has increased its output and impact from entrepreneurship and innovation. Start-ups, patents and projects can serve as indicators.

¹⁵ See <https://mlab-en.ktu.edu/>.

¹⁶ See <https://eciu-en.ktu.edu/about-eciu-university/>.

The Start-up Space website lists 21 **start-ups** that emerged from KTU research between 2012 and 2019.¹⁷ One of the most prominent start-ups to which KTU contributed technology is the cyber security company Nord Security, a so-called unicorn in terms of capital invested.¹⁸ The company originates in a company named NordVPN launched in 2012.

The number of **patents** for US, Japan and Europe awarded to KTU increased from two in 2021 via four in 2022 to eight in 2023. The number of patent applications also increased: from 17 (2021), via 18 (2022) to 23 (2023). Revenues from licences developed from 116,000 Euro via 241,000 Euro (2022) to 200,000 (2023).¹⁹

In 2023, KTU completed a **lighthouse project** on entrepreneurship, the 32-month project "Development of Commercialisation of University R&D Products and Development of Entrepreneurship". In the framework of this project, KTU presented twelve technologies developed from KTU research and development at six international exhibitions.²⁰

All in all, the KTU case shows how a strong technical university can develop entrepreneurial mindsets and activities in a setting that did not use to be open to business start-ups and science-business cooperation. KTU's approach is to develop relevant institutions, education and links. KTU has been persistently developing related institutions such as the NIEC and its Start-up Center, it is establishing entrepreneurship-related study programmes and innovative educational methods such as challenge-based learning, and it continuously builds up ties to international experts and institutions such as EIT KICs and the ECIU and the Copernicus University Alliances. In 2024, this approach is similar to 2015, but it has become more mature.

Sources

- KTU (2024): Annual Report of Kaunas University of Technology. (Download from <https://en.ktu.edu/wp-content/uploads/sites/5/2024/05/KTU-ataskaita-2023-EN.pdf>.)
- KTU (without year): Strategy of Kaunas University of Technology 2021 – 2025. The human side of technology. (Download from <https://en.ktu.edu/wp-content/uploads/sites/5/2021/03/KTU-strategy-2021-2025.pdf>.)

¹⁷ See <https://startupspace-en.ktu.edu/our-startups/>.

¹⁸ See <https://nordsecurity.com/blog/the-unicorn-journey>.

¹⁹ See KTU Annual Report 2023, p. 43.

²⁰ See KTU Annual Report 2023, p. 53.