Strategy for the Development of the

Faculty of Computer Science and Mathematics

Tadeusz Kościuszko Cracow University of Technology

for the years 2023 – 2027

Introduction

The present strategy for the development of the Faculty of Computer Science and Mathematics of the Cracow University of Technology is aimed at the dynamic growth of our institution. We focus on delivering high-quality education, conducting innovative scientific research, and cooperating with the public and private sectors. To this end, we have developed an action plan that includes strengthening educational programs, expanding research, tightening cooperation, and creating favorable conditions for the development of academic staff, teaching staff, and students. This strategy is aligned with the development strategy of Cracow University of Technology and constitutes the basis for decision-making and the assessment of progress in order to achieve our developmental goals.

Mission and vision

Mission

The Faculty of Computer Science and Mathematics of the Cracow University of Technology strives to develop knowledge, skills, and technologies in the disciplines of technical computer science and telecommunications as well as mathematics. Our goal is to educate highly qualified specialists, conduct scientific research in accordance with the highest international standards, and cooperate with industry and society in order to create innovative solutions.

Vision

The Faculty of Computer Science and Mathematics of the Cracow University of Technology strives to be a leading academic center in the disciplines of technical computer science, telecommunications, and mathematics on the national and international stage. Our vision includes:

- **Educational excellence**: We emphasize high-quality education that integrates knowledge of computer science and mathematics. Our curriculum enables students to gain solid theoretical foundations and practical skills essential in a dynamic technological environment, as well as social competences important in the labor market.
- **Innovation and research**: We focus on conducting advanced scientific research in technical computer science, telecommunications, and mathematics. Our research work aims to develop new technologies, computer science and mathematical solutions, and to contribute to scientific and technological progress.
- **Partnership with industry and society**: We cooperate with enterprises, social organizations, and other institutions to create relationships based on creative collaboration. Our partnerships aim to develop innovative projects, transfer knowledge and technology, and influence social and economic development.

- **International scope**: We strive for active participation in international educational and research programs. We enable students and staff to exchange knowledge and experience with foreign universities and institutions. In this way, we promote cultural diversity and a global perspective on science and technology.

The mission and vision of the Faculty of Computer Science and Mathematics of the Cracow University of Technology constitute the foundation of our activity, in which we aim to create innovative solutions and contribute to civilizational development.

Objective and scope of the strategy

The objective and scope of the development strategy of the Faculty of Computer Science and Mathematics encompass the creation of a dynamic environment enabling the achievement of a leading position in the areas of computer science, telecommunications, and mathematics. Efforts will be concentrated on enhancing the quality of educational programs, expanding infrastructure, developing innovative scientific research, establishing strong partnerships with the public and private sectors as well as the international academic community.

The scope of the strategy includes:

- Improving educational programs through their updating, introduction of new technologies and teaching methods, and the development of students' practical skills.
- Developing academic staff and students by providing access to training, conferences, and development programs, as well as supporting students through scholarships, academic exchange programs, and opportunities to participate in research projects.
- Strengthening scientific research by creating a research environment, supporting research initiatives financially and organizationally, and promoting interdisciplinary and international cooperation.
- Cooperation with the public and private sectors through building strong partnerships that enable students to gain practical experience and co-create solutions of social and economic value.
- Modernization of currently utilized facilities and expansion of infrastructure through the construction of a new building that will provide appropriate teaching conditions, laboratories, research workshops, and collaborative spaces for students, researchers, and external partners.
- Rational management of the Faculty consisting of the effective use of resources, optimization of administrative processes, and improvement of organizational structures in order to ensure the efficient functioning of the Faculty of Computer Science and Mathematics of the Cracow University of Technology.

Detailed strategic objectives

Development of strong research groups and raising the level of scientific research

- **Maintaining Category A in the discipline of technical computer science and telecommunications**: The goal is to maintain Category A in the discipline of technical computer science and telecommunications in the upcoming evaluation of scientific units, and to strive for obtaining Category A+. To achieve this, it is necessary to continuously monitor the achievements of all staff members and respond in real time to emerging signals of threats, as well as to recruit new, valuable employees.
- **Striving for the evaluation of the discipline of mathematics**: The goal is to obtain in the future a category of at least B+ in the discipline of mathematics in the evaluation of scientific units. To achieve this, it is necessary to strengthen the academic staff of the Department of Applied Mathematics (in compliance with the good practices defined in the OTM-R Policy) and to increase publication and project output.
- **Increasing the number of projects carried out at the Faculty**: The goal is to intensify the efforts of staff aimed at applying for grant funding to carry out research projects. Staff will be supported organizationally both at the stage of preparing applications and during their implementation. An appropriate motivation mechanism will be developed for active staff members.
- **Strengthening existing research groups**: Concentrating efforts on further strengthening already existing research groups by providing adequate resources, infrastructure, and funding. Promoting collaboration within these groups and creating conditions conducive to innovative research projects.
- **Creating new research groups**: Identifying areas with high research potential and creating new research groups that will focus on these areas. Providing support for these groups through the recruitment of highly qualified researchers (in compliance with the good practices defined in the OTM-R Policy) and supplying them with appropriate resources and infrastructure.
- **International research cooperation**: Developing and strengthening cooperation with renowned universities, research institutes, and industrial partners on the international stage. Exchanging knowledge, experiences, and resources, organizing joint research projects, and participating in international conferences and scientific programs.
- **Raising the scientific qualifications of staff**: Providing appropriate opportunities for development and training for academic staff so that they continually improve their qualifications and stay up to date with the latest achievements in their fields. Stimulating participation in scientific conferences, publication in renowned journals, and the acquisition of research grants.
- **Commercialization of research results**: Supporting the commercialization of research results by promoting technology transfer and cooperation with the business sector. Creating mechanisms and structures enabling the transfer of innovative solutions to the market and contributing to the economic growth of the region. Intensifying cooperation with the units of the Cracow University of Technology that assist in commercialization.
- **Cooperation with other units**: Strengthening cooperation with other units at the university, such as other faculties, and especially the Research Excellence Center of the Cracow University of Technology. Creating interdisciplinary research projects that will utilize the diverse competences and resources available at the university.

Improvement of the quality of all forms of education and skillful alignment of graduate qualifications with labor market needs

- **Enhancing the quality of curricula**: The goal is the continuous improvement of curricula through the updating of content, methodologies, and teaching tools, in order to provide graduates with access to modern knowledge and skills necessary in the labor market.
- **Improvement of academic teachers**: Continuous development of teachers in the broadly understood field of didactics. Development of the teaching staff's competences, such as teaching methods, the use of modern educational technologies, and the ability to effectively transfer knowledge and skills. Maintaining a balance between teaching and scientific activity.
- **Cooperation with employers and industry**: The objectives include developing close cooperation with enterprises and industry organizations in order to adapt curricula to the real needs of the labor market and to provide students with opportunities to gain practical experience.
- **Improvement of practical skills**: The goal is to strengthen the practical dimension of education by increasing the participation of internships, team projects, placements, and workshops, which will enable students to develop skills necessary in professional practice.
- **Supporting students' self-development**: The goal is to create a supportive environment in which students have access to resources and development programs, such as career planning counseling, training that enables the acquisition of soft skills, and the opportunity to participate in research projects and other initiatives that support their personal and professional development.
- **Continuous improvement of educational processes**: The objectives include analyzing and improving educational processes, such as recruitment, student assessment, student support, and monitoring of educational progress, in order to ensure effective and efficient implementation of all forms of education.

Modernization and expansion of infrastructure

- **Construction of a new building for the Faculty**: The goal is to carry out the process of requirements gathering, design, and construction of a new building that will serve as the main headquarters of the Faculty. The new building will provide appropriate teaching rooms, laboratories, conference halls, and research spaces that meet the requirements of modern and effective teaching and research.
- **Modernization of existing infrastructure**: The goal is to modernize the existing facilities of the Faculty to adapt them to contemporary standards and scientific needs. Modernization will include, for example, equipping with modern devices, improving technical infrastructure, and adapting rooms to the requirements of specialized laboratories.
- **Equipping modern laboratories**: The goal is the purchase and installation of modern equipment and laboratory tools that will enable the conduct of advanced scientific research and practical teaching classes. The introduction of new technologies and tools will allow students and staff to acquire practical skills in line with the latest trends.
- **Improvement of technological infrastructure**: The goal is to expand and improve the Faculty's technological infrastructure, such as computer networks, information systems, telecommunication connectivity, etc. Improvement of technological infrastructure will ensure efficient communication, access to information resources, and the possibility of conducting advanced experiments and scientific research.

- **Creation of creative and interactive spaces**: The goal is to provide spaces that foster creative thinking, the exchange of ideas, and collaboration between students and staff. The creation of interactive educational and research spaces supports innovation, integration of the academic community, and the development of new projects.
- **Ensuring appropriate conditions for students and staff**: The goal is to create an attractive and comfortable learning and working environment at the Faculty. This includes adapting rooms to the needs of people with disabilities, providing appropriate social rooms, relaxation areas, meeting places, and other amenities that affect well-being and work efficiency.
- **Sustainable infrastructure**: The goal is to introduce, as far as possible, sustainable ecological solutions in the Faculty's infrastructure. This includes the use of energy-efficient technologies, the utilization of renewable energy sources, optimization of water and other resource consumption, and the promotion of environmental awareness among students and staff.

Cooperation with the socio-economic environment and building the image of a strong faculty

- **Development of partnerships with the public and private sectors**: The goal is to establish and strengthen strategic partnerships with enterprises, public institutions, and surrounding organizations for the exchange of knowledge, experience, and the joint implementation of research and development projects. These partnerships will allow for the practical application of knowledge and technology, as well as for obtaining financial resources for innovative projects.
- **Building relationships with employers**: The goal is to maintain regular contact with employers through the Social and Economic Council. By organizing meetings, conferences, internships, and training programs, the Faculty will enable graduates' professional development and ensure the updating of curricula in line with labor market needs.
- **Promotion of the Faculty's achievements and successes**: The goal is to strengthen the Faculty's image through active promotion of scientific, technological, and educational achievements. By participating in conferences, publishing scientific articles, and disseminating research results and innovations, the Faculty will build its reputation as a strong and reliable scientific and educational partner.
- **Participation in international projects and exchange programs**: The goal is active participation in international projects and exchange programs for students, teachers, and researchers. Participation in these activities will enable the exchange of knowledge, culture, and experience with foreign universities and institutions, as well as enhance the quality of education and research at the international level.
- **Organization of conferences, seminars, and training**: The goal is to organize prestigious conferences, seminars, and training sessions in the fields of computer science, telecommunications, and mathematics, which will attract leading experts, scientists, and practitioners from Poland and abroad. Such events will promote the Faculty as a recognized scientific center and serve as a platform for the exchange of knowledge and innovative ideas.
- **Active engagement in local community life**: The goal is the active participation of the Faculty in social activities, local projects, and initiatives. Through involvement in local community events, the Faculty will build a positive image, strengthen relationships with local partners, and demonstrate its commitment to the social and economic development of the region.

Rational management of the faculty

- **Improvement of administrative processes**: The goal is the continuous improvement of administrative processes at the Faculty through the identification of areas requiring enhancement, the introduction of effective management tools and automation, and the elimination of unnecessary procedures. Improving the efficiency of administrative processes will contribute to the smooth functioning of the Faculty and increase the productivity of administrative staff.
- **Optimization of resource utilization**: The goal is the effective use of available resources, such as rooms, equipment, research and teaching staff, and the budget. Through the analysis and planning of optimal resource utilization, the Faculty will be able to ensure better use of infrastructure and more efficient implementation of research and teaching tasks.
- **Improvement of organizational structures**: The goal is the continuous analysis and improvement of organizational structures at the Faculty in order to ensure appropriate hierarchy, functioning, and coordination of activities. Through the review and possible restructuring of organizational structures, the Faculty will be able to better adapt to dynamic new requirements and changes.
- **Monitoring of activities**: The goal is the continuous monitoring of the Faculty's activities in order to assess the degree of achievement of strategic objectives and to identify areas requiring further improvement. Through ongoing monitoring, the Faculty authorities will be able to make rational decisions and introduce adjustments to ensure smooth functioning and the implementation of the strategy.