UNIVERSITY OF RIJEKA
FACULTY OF ENGINEERING

STRATEGY OF THE FACULTY OF ENGINEERING, UNIVERSITY OF RIJEKA 2021. – 2025.

Rijeka, July 2021.

Contents

Introduction

The Faculty of Engineering, a constituent of the University of Rijeka, is a leading higher education and scientific research institution in the field of engineering not only at the University of Rijeka, but also in the region. It is at the forefront of engineering research, as an institution that is competitive in both the European and global knowledge markets.

Nowadays, the Faculty comprises 11 institutes, 36 departments and 50 laboratories, a computer centre, a library and professional and administrative services. Out of 187 employees, 80 hold scientific-teaching titles, 7 hold teaching titles and 42 hold associate titles; 6 staff members work on projects funded by the Croatian Science Foundation, 44 work in the administrative and professional services, and 8 work on EU projects. A number of external associates, prominent entrepreneurs, and scientists from other institutions collaborate with the Faculty.

The Faculty delivers undergraduate and graduate university study programs in mechanical engineering, naval architecture, electrical engineering and computer engineering, as well as undergraduate professional study programs in mechanical engineering, naval architecture and electrical engineering. It also delivers three-year third cycle (doctoral) programs in engineering sciences, in the fields of mechanical engineering, naval architecture, electrical engineering, fundamental engineering sciences, interdisciplinary engineering sciences and computer science.

To date, the Faculty of Engineering in Rijeka has awarded degrees to 154 doctors of science, 95 masters of science, 2899 graduate engineers, 1536 engineers, 1614 masters of engineering, 2138 university bachelors of engineering, and 719 professional bachelors of engineering. In the academic year 2020/2021, there were 1946 students studying at the Faculty.

In addition to teaching, the Faculty engages in a variety of research activities, the majority of which are focused on scientific initiatives funded by the Croatian Science Foundation, EU funds, the University of Rijeka, economic operators, and other sources. Given the productivity of research activities, the results of scientific research are presented at various scientific

and professional congresses and through publishing research papers in journals with the highest impact factor.

Collaboration with entrepreneurs and with other scientific and educational institutions is a major aspect of the Faculty's activities. Consequently, a special emphasis is placed on the improvement and enhancement of this particular component of the Faculty's work. The Faculty also promotes networking, joint work on scientific and professional projects with collaborators from other institutions, and the importance of interdisciplinary approach. The Faculty is a party to a number of agreements on scientific, research, educational and professional cooperation.

Improving working conditions in classrooms and laboratories has always been at the core of the Faculty's activities, and the Faculty continuously invests in improving the quality of these vitally important resources, as per its capabilities. The importance of investing in the Faculty's own research infrastructure became even more apparent during the pandemic, when scientists' mobility was limited.

The Faculty of Engineering's 2021-2025 Strategy is a key strategic document that outlines the Faculty's mission and vision and lays out its basic strategic areas, quantitative indicators, and actions aimed at achieving the set goals.

The Faculty of Engineering's Strategy directly builds upon the University of Rijeka's 2021-2025 Strategy. As a constituent of the University, the Faculty of Engineering has actively participated in its adoption and is committed to working on its implementation in a way that acknowledges the specificities of the scientific fields represented at the Faculty. As a result of the foregoing, in implementing the University Strategy, all of the unique characteristics and specificities of the Faculty of Engineering are taken into account and even reinforced by this Strategy.

The Strategy of the Faculty of Engineering has been developed with a view of improving the quality, relevance, and efficiency of higher education, as well as international competitiveness, scientific impact, and ties and collaboration with the society at large. The Strategy promotes scientific excellence and interdisciplinary research. It strengthens the Faculty's human resources and scientific infrastructure, reinforces the connection between scientific and professional work and the society as a whole, and promotes international visibility and

competitiveness of higher education and science.

In line with the Strategy of the University of Rijeka, in the upcoming five-year period, the Faculty of Engineering plans to evaluate and monitor its activities in four key areas: (1) Learning and teaching; (2) Research; (3) Knowledge transfer and regional involvement; and (4) Internationalization.

In addition to the twenty objectives defined within these four key areas, the Faculty has defined additional six objectives reflective of its specific profile and pertaining to the areas in which it wishes to achieve additional development and affirmation.

The 2021 - 2025 Strategy of the Faculty of Engineering was adopted at the 11th meeting of the Faculty Council, held on 15 July 2021.

Mission and vision

Mission:

The University of Rijeka's Faculty of Engineering conducts scientific research and professional work in the field of engineering sciences, focusing on the programs of strategic importance for the region wherein it operates and for the Republic of Croatia as a whole, and organizing undergraduate, graduate, and postgraduate education based on such programs. The Faculty works closely with partner academic institutions and businesses based in Croatia and abroad. It promotes student and staff mobility, ensures efficient use of human and material resources, and supports the development of multidisciplinary scientific-teaching activities by monitoring and continuously improving the quality, standard and international competitiveness of educational, scientific and professional work.

Vision:

The Faculty of Engineering of the University of Rijeka will be a scientific-research centre of excellence in the field of engineering sciences, with a distinct research profile and a commitment to providing high-quality, all-round education based on cutting-edge scientific achievements. Through active interaction with businesses, establishment of partnerships for community improvement, involvement in the European Research Area and the European Higher Education Area, and achievement of the highest degree of organization, the Faculty of Engineering will demonstrate its public responsibility and contribute to the creation of a modern knowledge-based society by bolstering green and digital transition. The Faculty of Engineering will systematically support mobility, the advancement of research careers, and the development of each individual's entrepreneurial potential.

Strategic areas, quantitative indicators and activities planned

Learning and teaching

MOTIVATION	OBJECTIVE	INDICATOR	2021. start value	2025. target value
✓ **Improving HE quality** ✓ **Improving HE relevance** ✓ **Improving HE availability** ✓ **Improving HE efficiency**	Maintain the quality of teaching conditions	Student-teacher ratio	**1 : 15.82**	**1:15**
	Develop a personalized approach to learning	Share of ECTS credits acquired through prior learning recognition	**1.85%**	**2%**
	Maintain student satisfaction with their study program	Graduate student satisfaction index	**3.95**	**4.00**
	Foster students' practical competences	Share of ECTS credits from courses involving generic and practical competences	**11.5%**	**12%**
	Improve the organization and effectiveness of teaching	Share of graduate students	**76.6%**	**80%**
	Gain practical competences through field work, laboratory work and project tasks	Share of courses involving field work, laboratory work and project tasks	**75%**	**78%**
	Further advancement and digitalization of teaching support systems	Share of classrooms equipped with teaching support systems	**32%**	**100%**

Learning and teaching

ACTIVITIES:

- Periodically reviewing and modernizing university study programs.
- Encouraging higher share of problem-based and project-based teaching and appropriate assessment of learning outcomes so attained.
- Developing innovative learning and teaching methods that foster students' critical thinking, as well as their inference and deduction skills focused on problem-solving in engineering.
- Continuing with investments in new teaching and laboratory equipment and expanding of laboratories to improve the quality of studying.
- Encouraging the organization and carrying out of professional traineeship in various companies with the purpose of gaining better practical competences.
- Including prominent practical experts in the teaching process in the courses related to practical work.
- Raising the number of professional teaching sites for students' professional traineeships and preparing master's theses in cooperation with the business sector, and connecting the students with employers through events such as Career Day and alike.
- Promoting study programs, students' and other projects, as well as the Faculty's activities by utilizing modern and appealing platforms and tools with the aim of increasing the Faculty's visibility, attracting talented students and increasing the number of students taking STEM majors.
- Encouraging teaching and non-teaching staff to take advantage of the opportunities for participation in competence development programs.
- Encouraging hiring of scientists-returnees, and the hiring of new assistants and associates on research and professional projects.
- Digitalizing enrolment in the first year of study, as well as enrolment in the following years of study.
- Digitalizing the process of managing descriptions of individual study programs and syllabi.
- Introducing an access control system for laboratories, lecture halls, classrooms and computer labs.
- Introducing an automatic attendance tracking system.

Research

MOTIVATION	OBJECTIVE	INDICATOR	2021. start value	2025. target value
Improving the international competitiveness of science **Improving the international impact of scientific work** **Strengthening the scientific infrastructure and science system** **Encouraging scientific excellence and strengthening human resources**	Increase scientific productivity	The number of scientific papers per scientist [1]	**a. 0.94** **b. 0.00** **c. 2**	**1.00** **0.00** **2**
	Increase scientific impact	The number of Q1 and Exc papers per scientist [2]	**a. 40%** **b. 21.33%**	**42%** **23%**
	Attract research funding	Share of research income[3]	**a. 3.62%** **b. 23.113 kn**	**5%** **27.000 kn**
	Strengthen doctoral education	Number of defended doctoral theses	**5**	**5**
	Attract postdoctoral students	The number of postdoctoral positions	**0**	**0**
	Strengthen scientific infrastructure	Funds invested in purchasing research equipment	**4%**	**5%**
	Strengthen research through projects	Number of projects	**56**	**60**

[1] a. The number of scientific papers according to Scopus/WoS database, divided by scientists' FTE
b. The number of creative and performing arts works divided by artists' FTE
c. The number of books and edited books

[2] The number of papers in scientific journals categorized as a. Q1 and b. Exc in the previous year divided by the number of papers referred to in 1.a

[3] a. Income from national and international competitive projects divided by total income
b. Income from national and international competitive projects per scientific paper

Research

ACTIVITIES:

- Encouraging the interdisciplinarity of study programs and research.
- Providing financial rewards for authors of scientific papers published in prestigious journals (Q1 and Exc).
- Providing financial rewards for principal investigators in scientific-research projects.
- Expanding and continually modernizing laboratories and laboratory equipment.
- Increasing the number of scientists from abroad in the postgraduate doctoral study program.
- Internationalizing the postgraduate doctoral study programs.
- Applying research projects that provide opportunities for researcher employment.
- Generating additional income from application of research and professional projects.
- Encouraging employment through projects.
- Encouraging and facilitating international cooperation and exchange.
- Monitoring the publishing of research results.
- Ensuring access to relevant scientific bibliographic sources.
- Strengthening relationships with external stakeholders and alumni and increasing their involvement in doctoral studies.
- Improving mentoring through training and defining the relevant criteria.
- Continually maintaining the existing catalogue of scientific and teaching equipment.
- Continually maintaining the existing catalogue of specialized software.

Knowledge transfer and regional involvement

MOTIVATION	OBJECTIVE	INDICATOR	2021. start value	2025. target value
Promoting cooperation with the society as a whole **Strengthening connections between scientific and professional work and society as a whole** **Promoting networking between HE and society as a whole** **Strengthening the regional impact of HE on the community** **Encouraging interdisciplinary research and developmental impact on society as a whole**	Increase cooperation between the University and the community	The number of active institutional cooperation agreements with the economic sector and the community	**58**	**65**
	Attract project funding for knowledge transfer purposes	Income from all professional projects for the economic sector and the community, divided by total income	**2.84%**	**3%**
	Offer educational programs for the economic sector and the community	The number of participants (outside the University) in educational programs for the economic sector and the community (lifelong education, lectures)	**357**	**400**
	Increase regional impact	The number of alumni employed in the region (Primorje-Gorski Kotar County), divided by the total number of alumni employed in the Republic of Croatia	**51.86%**	**51.86%**
	Strengthen interdisciplinary research and development	The number of interdisciplinary research and development projects involving business or community stakeholders	**2**	**3**

Knowledge transfer and regional involvement

ACTIVITIES:

- Strengthening cooperation with educational institutions.
- Collaborating on research projects with partners from the industry and disseminating project results.
- In collaboration with alumni and business experts, promoting practical skills to students in the form of lectures, webinars and online workshops.
- Establishing and maintaining professional teaching sites for student traineeships, preparation of final and diploma theses and dissertations, all in cooperation with interested companies.
- Preparing and implementing the Job Fair project, as well as the Open Lab Days event, both online and onsite.
- Encouraging the making of bachelor's and master's theses in cooperation with the business sector.
- Promoting the publishing of scientific and professional papers in co-authorship with stakeholders from the business sector.
- Informing the public on the Faculty's activities and operations.
- Actively involving the Economic Council in the transfer of knowledge between the economic and academic communities.

Internationalization

MOTIVATION	OBJECTIVE	INDICATOR	2021. start value	2025. target value
✓ **Improving HE efficiency** ✓ **Improving HE availability** ✓ **Strengthening international visibility and competitiveness of HE and science** **Strengthening international impact of HE and scienc**	Enrol more international students	Share of international students	**0.75%**	**1%**
	Offer more study programs in foreign languages	The number of study programs in foreign languages	**3**	**3**
	Increase academic staff mobility	The number of academic staff members in incoming and outgoing mobility	**91**	**95**
	Increase cooperation with international institutions	Number of cooperation agreements with international institutions	**41**	**45**
	Encourage international activities	Number of participants in international activities	**80**	**80**
	Encourage the Faculty's international visibility	Number of international visits to the Faculty's web site	**17462**	**25000**
	Strengthen international strategic partnerships in research	Number of researchers working on scientific projects in international partnership	**29**	**35**

Internationalization

ACTIVITIES:

- Developing new web pages of the Faculty in Croatian and in English.
- Heightening international visibility of study programs by using modern and appealing platforms and tools.
- Informing the community about the opportunities of conducting research, collaborations realized and results achieved.
- Supporting teachers' involvement in developing language competences to implement study programs in a foreign language.
- Developing a quality assurance system for teaching courses in a foreign language.
- Supporting the development of international summer/winter schools.
- Promoting international lecturers' participation in the teaching process.
- Developing study programs in English.
- Developing partnerships with universities abroad in accordance with quality standards in terms of their international reputation, accreditation of study programs, methods of prior learning recognition and research compatibility.
- Supporting the establishment and development of international research cooperation and international scientific-research projects, and working toward increasing the number of collaborative research projects and individual research grants.
- Encouraging eminent scientists from abroad to publish research results and participate in the Scientific Committee of the international journal published by the Faculty.
- Supporting international scientific conferences organized or co-organized by the Faculty.
- Encouraging researchers to participate in international research organizations or editorial boards of leading international journals and publications.
- Increasing the visibility of the alumni club to strengthen contacts in the international environment.
- Organizing popular lectures by foreign experts from the scientific and professional community.

Rijeka, July 2021