UNIVERSITY OF RIJEKA
FACULTY OF CIVIL ENGINEERING

DEVELOPMENT STRATEGY 2024 – 2028

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INTRODUCTION

The decision on the establishment of the College for Technical Construction Trades (Viša tehnička građevinska škola – VTGŠ) from May 1969 marks the beginning of higher education for civil engineers in Rijeka. The university study of civil engineering (VII. level) was carried out from 1971 – 1976 at Civil Engineering Department of the Faculty of Mechanical Engineering and Naval Architecture Rijeka. In 1976, an organization of associated labor under the name Faculty of Civil Engineering Rijeka (hereinafter referred to as the Faculty) was registered, with the purpose of educating "civil engineering experts with college and university degree". In 1977, the Faculty was affiliated with the University of Rijeka. In 1978, the Faculty changed its name to the Faculty of Construction Sciences of the University of Rijeka. Since 1982, the Faculty has become the basic organization of associated labor within the Zagreb Institute of Civil Engineering labor organization, and since 1991, the Faculty of Civil Engineering in Rijeka has been an independent teaching and research and scientific-research institution.

The Faculty has its premises in the building at Radmile Matejčić 3 in Rijeka with a total of 14 modernly equipped lecture halls, 6 classrooms for practical training, 3 IT cabinets and 2 rooms for students' individual work. The Faculty has a new library with a spacious reading room equipped with computers. Since 2015, the Faculty has had valuable laboratory equipment acquired as part of the project "Development of research infrastructure on the University of Rijeka Campus" financed by the European Fund for Regional Development and the Ministry of Science, Education and Sports of the Republic of Croatia, with which five laboratories are equipped, namely Geotechnical Laboratory, Hydraulic Engineering Laboratory, Structures Laboratory, Materials Testing Laboratory and Laboratory of Roads and Traffic. The implementation of laboratory equipment created conditions for high-quality research, improvement of professional activity and connection with industry, increase in human resources, increase in the number of projects and transfer of knowledge, but also improvement of the teaching process.

The mission of Faculty of Civil Engineering Rijeka is based on Article 2 of the Act on Higher Education and Scientific Activity and the Statute of the University of Rijeka.

MISSION AND VISION

The mission of the Faculty is the education and training of academic staff in the field of construction and related technical and natural science disciplines based on the indivisibility of scientific work and higher education. Moreover, the mission of the Faculty is also to promote the civil engineering profession and raise awareness in the wider community of the significance and importance of this industry in terms of sustainable development as a whole, while simultaneously promoting academic principles and values and thereby contributing to the development of the city, the region and the Republic of Croatia. The Faculty operates on the principles of scientific integrity and professional ethics, academic freedom, social responsibility and equal opportunities for all employees and students, and adopts international quality standards in evaluating its work.	**In the future, the Faculty of Civil Engineering Rijeka sees itself as an active and internationally recognized factor in promoting the existing and creating new knowledge in the field of civil engineering and related scientific disciplines through synergy with higher education at all levels based on learning outcomes and lifelong education. To that end, the Faculty shall actively cooperate with other constituents of the University on implementing its own programs and those of the University of Rijeka, especially encouraging the expertise, creativity, and professional and social responsibility of its employees and students. In addition, the Faculty shall develop cooperation with public institutions and economic entities and be included in the European research and higher education area through international cooperation and mobility programs.**

HUMAN RESOURCES AND INFRASTRUCTURE

Since its foundation, when the Faculty had six teachers and two teaching assistants as full time employees, the continuous development of human resources has ensured the current engagement of 85 employees (68 within the teaching and research organizational units at teaching and research, teaching and collaborative positions, 5 laboratory employees and 12 employees in administrative and professional units). The organization of the Faculty is defined by the Ordinance on the Internal Organization and Organization of Positions.

Table 1 shows the total amount of the full-time-equivalent (FTE) coefficient for staff employed at the teaching and research, teaching and collaborative positions, which is calculated as the ratio of the percentage of working hours achieved and the full standard hours.

Table 1. The amount of the full-time equivalent (FTE) coefficient for employees of scientific and teaching organizational units

POSITION	NUMBER OF EMPLOYEES	FTE
FULL PROFESSOR WITH TENURE	7	6.35
FULL PROFESSOR	5	4.88
ASSOCIATE PROFESSOR	18	17.5
ASSISTANT PROFESSOR	13	13
SENIOR TEACHING ASSISTANT	3	3
SENIOR LECTURER	3	2.5
LECTURER	1	1
ASSISTANT	13	13
LABORATORY TECHNICIAN	5	5

The following organizational units have been established to carry out the activities of the Faculty prescribed by the Statute: departments, chairs, laboratories, administrative and professional-administrative organizational units, centers. The teaching and research organizational units of the Faculty consist of five departments, within which seven chairs and five laboratories are established (Figure 1).

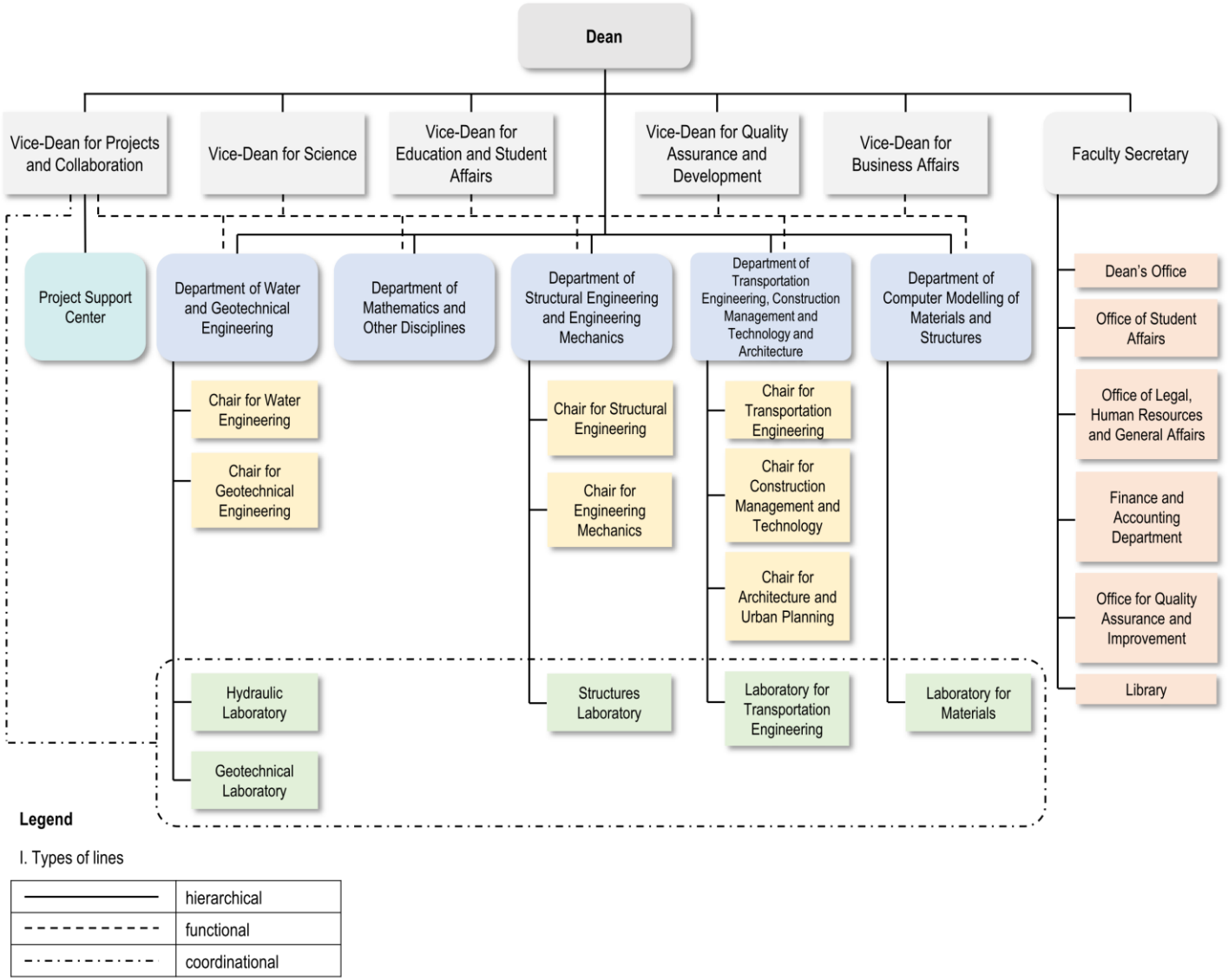

Figure 1. Organization of the Faculty of Civil Engineering Rijeka

STARTING POINTS OF THE STRATEGY

The strategic policy of the Faculty in the following period (2024 - 2028) is based on the current position and results of the Faculty at the institutional, university, and international level. Through its activities, the Faculty strives to achieve the set development goals related to scientific excellence, strengthening cooperation with the economy, increasing the quality and efficiency of studies and social responsibility, as well as the set strategic goals of the University of Rijeka.

The most significant improvements in the activity of the Faculty, carried out in the past period, include the increase of enrollment quotas in accordance with the recommendations of the CES, changes in entry qualifications, the introduction of multiple assessment of final and graduate theses and innovative teaching methods, an increase in the share of traineeship in all study programs, the introduction of micro-qualifications as an element of flexible ways of learning and preparation for the labor market, the establishment of an Office for Student and Teacher Support, the introduction of procedures for analyzing exam questions and evaluating student papers within the framework of collaborative assessment, increasing the number of measures to encourage a personalized approach to learning, adopting the Faculty Library Development Strategy and the Scientific Research Strategy, the introduction of annual awards for scientific and teaching excellence and knowledge transfer, the establishment of a fund for financing scientific research projects in cooperation with the economy, and the adoption of the Open Access Policy and the Communication Plan. In an effort to achieve the goals set so far, the Faculty has changed and adjusted its organization, the responsibilities of the vice-deans and the duties of the heads of organizational units, as well as the laboratory management model. Therefore, based on the analysis carried out, a draft of the new organization (Figure 1) was adopted, which proposed organizing the coordination of the laboratories and the Project Center, while on the other hand organizational units with a small number of employees were merged. Today, the laboratories are used in teaching, scientific research, and expert work, and are very well established on the regional and national market.

The analysis on the success of the implementation of the Faculty's Development Strategy in the period 2018-2022 shows that there is room for increasing cooperation with partners from the economy and the local community, even though it has been implemented in all aspects of the Faculty activities. The number of active scientific projects involving stakeholders from the economy, or the community is increasing, and the goals aimed at doubling the annual requested funding per teacher have been exceeded. However, it is important to emphasize that there is room for increasing competitive financing from national and international sources. The analysis on the success of the implementation of the strategy shows a continuity in the number of outgoing mobility of teachers lasting for longer than 2 weeks, and measures are being considered to encourage this element of internationalization in the future as an important aspect of networking. The same can be concluded regarding the mobility of students. The success and completion of studies in all study programs has not significantly increased in the last five years despite the implementation of various measures to improve this aspect, and more effective measures should be introduced with an emphasis on maintaining

the level of knowledge and competence of students. Changes to study programs carried out so far are planned to be supplemented by changes and modernization of graduate studies and the introduction of new lifelong education programs in Croatian and English.

The analysis on the success of the implementation of the Scientific Research Strategy 2021 - 2025 showed that a greater number of goals in the past two years were fully achieved, while a smaller number of goals did not reach the target value. A positive trend is visible in the increase in the number of projects and the number of papers published in the Web of Science database, although the set goal of a double increase, defined by the previous Development Strategy, has not been reached. Very good results have been achieved in the publication of books and editorial books, as well as in the share of works published in collaboration between scientists from different scientific fields or subject areas, as well as colleagues from different organizational units. In the past period, the Faculty has made a significant number of appearances in the media, pursued activities in the popularization of science and has hosted a large number of organized visits and events at the Faculty, which confirms not only the increase in visibility, but also the social responsibility of the Faculty. Significant results have also been achieved within the goal of Improving quality of doctoral studies. What needs to be worked on is the promotion of research resources, and systematic monitoring of their quality and sustainability. In the future, the Faculty sees the improvement of cooperation between higher education institutions and scientific institutes in the country and abroad as a key task that would lead to progress in all areas of the Faculty's activities.

SWOT ANALYSIS

The analysis of Strengths and Weaknesses as internal characteristics and Opportunities and Threats as external characteristics was carried out in 2023 at all organizational units, including the Administrative and Professional Services of the Faculty, and among students, representatives of external stakeholders, economy and communities the Faculty cooperates with. A SWOT analysis was conducted with each target group for four thematic areas in accordance with the Strategy of the University of Rijeka 2021 – 2025: Learning and Teaching, Research, Knowledge Transfer and Regional Involvement, and Internationalization.

Through the conducted analysis, the following key opportunities were raised:

- revision and modernization of study programs
- introduction of new lifelong education programs
- introduction of micro-qualifications harmonized with the Croatian Qualifications Framework – CROQF (HKO)
- strengthening international recognition and increasing the number of competitive projects
- increasing professional and research cooperation with the economy, and increasing regional involvement
- increasing the number of and strengthening interdisciplinary research
- employment through projects
- improving the competences of employees and students

The conclusions of the SWOT analysis of all involved stakeholders are summarized below by each of the four thematic units and represent the starting point for defining the goals within the Faculty's Development Strategy for the period 2024 – 2028.

LEARNING AND TEACHING

Strengths

- labor market needs for the qualification obtained at the Faculty
- level of equipment of the Faculty premises
- modern laboratory infrastructure is at disposal for teaching purposes, and performing practical exercises in small groups at all levels of study
- implementation of incoming and outgoing mobility of students and teachers through the ERASMUS, CEEPUS and YUFE networks
- implementation of extensive and varied field courses
- the quality of learning outcomes is improved by the application of digital technologies in learning processes
- according to student ratings there is high quality of teaching on most courses
- harmonization and correlation of teaching content with the labor market needs
- correlation and continuity of teaching content through different courses
- procedures developed for monitoring the quality of teaching and rewarding teachers for teaching excellence
- cooperation with teachers from external institutions and experts from the economy when teaching individual courses
- continuous improvement of teacher competencies
- connecting theory, science, and practice in teaching processes
- readiness of teaching staff for modernization of teaching and creation of new innovative formats and teaching materials
- preparation of final and graduate theses in cooperation with the private and public sector in order to improve the quality of studies
- adequate and equipped library premises for Faculty students and an established system for purchasing study literature

Weaknesses

- lack of teaching assistants and insufficient equipment of some chairs and departments
- insufficient interconnectedness of organizational units in teaching, scientific and professional work (departments, chairs, laboratories)
- lack of materials and incomplete knowledge of procedures for financing laboratory testing for teaching purposes
- difficult coordination/balancing of teacher workload due to exceptional enrollment of incoming exchange students
- excessive teaching and administrative workload
- insufficient use of funding for teacher and student mobility
- lack of rewarding innovation in teaching processes
- teacher performance is largely evaluated based on student surveys
- weak correlation between theory and practice in a certain number of courses due to ignorance of practical problems and lack of interest for cooperation with the economy and the community
- lack of innovation in teaching methods and adapting teaching materials to the generation of students who grew up using new technologies
- lack of study programs in English
- equipment of IT cabinets with lower performance computers and a small number of computer classrooms considering the direction labor market development and today's study program requirements
- impossibility of procuring older literature required by the curriculum
- the number of individual literature units for student needs and the number of digitized literatures is insufficient
- lack of own textbooks for most subjects

LEARNING AND TEACHING

Opportunities

- training of students at foreign institutions as part of mobility (ERASMUS, CEEPUS and others) or international scientific projects
- using the virtual learning environment possibilities and advanced technologies to support learning methods and formats (VR/AR, twin simulations, AI, gamification, etc.)
- changes in study programs in order to increase student motivation (introduction of vocational subjects in the first study year, motivating graduate students for research work)
- launching a new professional graduate study, proposing new micro-qualifications in English and launching new attractive graduate study courses
- activation of existing and accreditation of new lifelong learning programs and creation of digital learning modules
- improving the quality of doctoral studies (mentoring capacities, introduction of new courses)
- harmonizing and connecting field teaching that is carried out and introducing field teaching and laboratory work in courses which do not include them, although they may be introduced
- increasing the number of assistants and senior assistants through new projects and increasing the number of teachers through the returnee scientist program
- better cooperation of lower organizational units within the departments
- strengthening the Faculty cooperation with the community and economy through service learning
- the involvement of library staff in the teaching process through holding workshops for students
- establishment of new procurement methods for acquiring exam literature (by purchasing Ministry of Science and Education (MZO) or e-books through the ProQuest system)
- systematic development of a multimedia library of learning materials available for use by former and current participants in the program with the possibility of use for a fee by the interested professionals
- inclusion of the fundamental dimensions of the EU New Bauhaus initiative in teaching programs
- revision of study programs for the purpose of effective management of educational resources
- registration of qualification standards in the Register of the Croatian Qualification Framework and harmonization of study programs

Threats

- unfavorable economic conditions and poor social situation
- impossibility of launching new courses/studies and offering elective courses/courses for foreign students
- insufficient number of teachers in case of emergency situations (sick leave, unforeseen situations, substitutes for maternity leave)
- irresponsible completion of student surveys, which are of great importance
- reduced levels of prior knowledge and competence of students
- lack of motivation and interest in studying by students
- curriculum lagging behind rapid technological development
- competitiveness of foreign and domestic related institutions
- insufficient interest of students in enrolling in graduate and doctoral studies
- the risk of a lack of teaching staff due to unattractive working conditions at the Faculty in relation to a career and the conditions ensured by working in the real sector

Strengths

- location of the Faculty, spatial resources, scientific and research infrastructure and working conditions at the Faculty and on the Campus
- number of employees holding scientific and teaching positions
- a good ratio of experienced to young scientists
- high motivation of individual employees for research work
- networking and active cooperation with other research institutions in the country and abroad
- YUFE, YERUN, ERASMUS and CEEPUS networks membership
- cooperation and exchange of methodological approaches, knowledge and skills through research with colleagues from other departments/chairs
- research funding through existing projects
- experience in theoretical (analytical and numerical) and experimental research
- significant share of applied research and experience in working on innovations
- involvement of teachers in doctoral studies and mentoring of doctoral students
- inclusion of excellent students in scientific research work
- timely information about the possibilities of financing and scientific training
- established system of procurement of scientific research literature in cooperation with scientific staff
- participation of administrative and professional services employees in scientific and research work
- involvement of the institution in the media space, local science popularization events and participation in education in the wider community (open days, education in kindergartens and schools)

Weaknesses

- an unsatisfactory number of publications in high-ranking databases, especially EXC papers and the impact of scientific production
- a small number of applications for open tenders for financing competitive research projects compared to opportunities
- lack of time to engage in scientific and research work
- poor evaluation of top research and the holders of competitive projects
- poor teamwork and information of the employees of individual organizational units about the research and project activities of colleagues
- lack of support in the administration of existing projects, which results in an additional workload on project managers
- uneven scientific production among teachers and among organizational units
- reduced interest of new users in library materials and library use
- lack of funds for independent subscription to e-sources (e.g. databases)
- lack of adequate space for archiving individual library materials
- providing funds for scientific equipment maintenance

Opportunities

- networking and increasing cooperation with scientists from other related institutions and increasing cooperation with the economy through professional and scientific projects
- publication in high-ranking databases and journals
- strengthening interdisciplinarity in research
- use of tenders for mobility and training at foreign institutions
- attracting significant financial resources through application of competitive scientific research projects (Croatian Science Foundation HRZZ, Horizon Europe)
- strengthening research topics in the focus of European and world trends
- intensification of research and development in the field of green construction, green and sustainable infrastructure and materials, which represents the key concept of the green construction transformation in the EU
- improving the criteria for recognizing and rewarding successful scientists
- involving more students in research activities
- establishing a service to support project applications and a service to administer projects that are being implemented
- increasing the number of postdoctoral researchers through new projects
- increasing the number of doctoral students and defended doctoral theses through new projects
- strengthening scientific communication to increase the number of projects, regional involvement, promotion of doctoral studies
- establishing a consortium with related Faculties for the purpose of joint subscription to electronic resources
- establishing a procurement of e-books necessary for scientific and research work through the ProQuest system
- development and promotion of new products and services offered by the Faculty
- application of socially useful research
- implementation of open science policy

Threats

- lack of interest of quality associates for employment on research projects and enrollment in doctoral studies
- lack of time for research due to being overburdened with administrative duties (teaching process administration, updating profiles, reporting on activities carried out)
- restrictions in the field of employment – by the Ministry of Science, Education and Sports (MZOS)
- poor interest of the economy and the community in conducting research in cooperation with the Faculty
- insufficient and inadequate financing of scientific and research activities by the national foundation
- increase in negative competitiveness among scientists
- challenges of collecting certain research data

KNOWLEDGE TRANSFER AND REGIONAL INVOLVEMENT

Strengths

- a need felt by the community and economy to cooperate in solving challenges
- initial collaboration with individual economic entities was achieved through joint project applications
- increasing research and professional partnerships and involvement of the Faculty in regional projects
- involvement in standardization and adoption of by-laws in the field of construction
- the equipment of the laboratory enables expert work to be carried out
- significant number of existing references and level of achieved knowledge transfer
- Faculty administration support in taking the professional exam
- the possibility of using platforms for linking the economy and the research community (RIMAP)
- rewarding cooperation with the economy and knowledge transfer
- the existence of a significant innovative capacity

Opportunities

- presentation of infrastructural and research capacities and services that the Faculty can offer to the economy and the wider community
- strengthening applied research through applications for tenders for project financing in cooperation with the economic community using innovative models and tools
- establishment of strategic cooperation with economic entities
- strengthening the network of professional base networks and targeted intensification of cooperation with alumni, the economy and the community
- stepping out of the "comfort zone" of established knowledge and mode of operation through more significant involvement of scientists in solving challenges in the region
- institutional as well as personal linking of scientists with external subjects
- development of lifelong learning programs for the economy and the community
- laboratory accreditation
- internal cooperation on applications for tenders for the performance of professional work (within the Department, Faculty)

Weaknesses

- a small number of professional activities of Faculty employees affects the quality of teaching
- failure to recognize the full range of benefits of knowledge transfer
- closed nature of the Faculty's professional capacity and lack of time due to focusing on own projects, teacher workload and fulfilling advancement requirements
- lack of interest of individual employees in presenting their services to the economic community (e.g. through the RIMAP platform)
- lack of interest in connecting knowledge transfer and research through solving real needs in the environment
- the market-generated income redistribution method
- administrative support for professional work at the Faculty level (from tender application to technical editing and business management)
- the non-competitiveness of the Faculty service prices on the market
- the Faculty income reduction due to lesser transfer of knowledge, but also the implementation of certain expert work through private companies, and not through the parent institution
- difficulties in maintaining laboratory equipment due to insufficient profit made by expert work
- laboratories are not accredited

Threats

- lack of information of business entities about the services the Faculty offers
- unrecognizability of innovative and highly specialized activities by the community
- limited opportunities to acquire professional competences at collaborative workplaces
- lack of interest of the local community for more intensive collaboration due to the poor economic situation
- dropping out of market competition by reducing the services the Faculty offers

INTERNATIONALIZATION

Strengths

- membership in international associations (YUFE, YERUN, ERASMUS, CEEPUS)
- active international cooperation with many EU countries (Germany, France, Italy, Austria, Belgium, Slovenia, Greece, Czech Republic) and beyond (Great Britain, China, Japan)
- achieved inter-institutional cooperation carried out through contractual relations
- spreading experience and knowledge through the organization of international congresses, workshops, summer/winter schools
- strengthening existing resources through the implementation of a large number of international projects
- continuity in the application and implementation of bilateral projects (Ministry of Science and Education MZO and Croatian Science Foundation HRZZ) with partnerexperience in mentoring doctoral students and postdoctoral researchers from abroad
- increasing the number of active Erasmus+ projects
- regular guest appearances of young scientists at foreign institutions and hosting of scientists (young and experienced) from abroad
- continuity in publishing scientific papers in co-authorship with partners from abroad

Weaknesses

- poor international recognizability of part of the researchers
- unsatisfactory level of achieved incoming and outgoing mobility, little interest in mobility and internationalization opportunities
- closedness of individual scientists and researcher circles to cooperation with foreign institutions
- inactive cooperation with a certain part of partner institutions
- low awareness about YUFE and YERUN networks and possibilities
- insufficient number of library materials and digital content in English
- a small number of foreign students due to the lack of programs and modules in foreign languages

INTERNATIONALIZATION

Opportunities

- strengthening international recognition through improving the quality and recognition of research work
- encouraging and increasing mobility and the use of tenders and scholarships for mobility implementation
- networking and presentation of research infrastructure, human capacities and innovative concepts through various activities of management and scientists
- stronger connection of teaching, professional and scientific projects with foreign institutions
- exchange of experience and examples of good practice through strengthening collaboration with existing foreign institutions and concluding new collaboration contracts
- applying for tenders for financing competitive scientific and research projects with foreign partners (Croatian Science Foundation HRZZ Weave, Horizon Europe)
- conducting new study programs in English
- increasing the number of doctoral students and senior assistants from abroad through new projects
- employment through the returnees of the expatriate scientists' program

Threats

- underestimating the importance of internationalization
- pandemics, wars and other global challenges can lead to a greater national shutdown
- increasing teacher workload and online environment possibilities reduce the need for personal contacts among scientists
- weak networking affects the results of competitive project financing
- recognized foreign institutions already have partially established collaboration networks that are difficult to change
- outflow of personnel due to better conditions abroad, and training of own talents for the needs of other national economies
- lack of participation in projects on the international market as a key basis for acquiring respectable references

In the following period, the general goal of this strategy is to carry out activities to achieve the goals of the Strategy of the University of Rijeka 2021 – 2025 in the fields of *Learning and Teaching, Research, Knowledge Transfer and Regional Involvement and Internationalization* and 10 strategic goals defined in the previously mentioned Scientific Research Strategy of the Faculty for the period 2021 - 2025. The strategic and specific goals of the Faculty defined below are in line with the Regulation on Program Financing of Public Higher Education Institutions and Public Scientific Institutes in the Republic of Croatia and are divided into four groups of main strategic goals: *i) promoting scientific excellence, ii) strengthening of collaboration with the economy and development of national and regional identity and culture, iii) increasing the relevance, quality and efficiency of studies, iv) strengthening of social responsibility*. The set goals are in accordance with the action plan for improving the social dimension of higher education for the period 2023 – 2025 and the national plan for the development of the education system for the period until 2027. Within each of the set main strategic goals, specific goals and additional institutional goals are defined.

STRATEGIC GOALS FOR THE PERIOD 2024 – 2028

The strategic goals defined for the period 2024 – 2028 are based on the monitoring of national guidelines and further development of the Faculty's key areas of activity, with an emphasis on scientific excellence, competitive project funding, collaboration with foreign partners and networking, strengthening of connections with the economic community, strengthening of visibility through the implementation of open science policy, the improvement of studies and teaching competencies, as well as the optimization of management processes and turning to sustainable management of resources and energy. In the following period, the synergy of the set goals should be reflected in financial stability, strengthening of research teams, recognition of the Faculty in the community, orientation towards innovations and development of new technologies and improvement of all teaching processes and programs.

The defined goals include the four main goals listed in Tables 2 to 5:

1. Promoting scientific excellence
2. Strengthening of collaboration with the economy and development of national and regional identity and culture
3. Increasing the relevance, quality and efficiency of studies
4. Strengthening of social responsibility

The results of the specific goals are defined through measurable and clearly defined indicators. The Faculty shall implement the set goals through a series of activities and measures, encouraging excellence in all segments of its operation.

STRATEGIC GOAL 1 – PROMOTING SCIENTIFIC EXCELLENCE implies increasing the quality and impact of scientific work at the level of public higher education institution, increasing the volume of competitive national and European scientific projects, increasing the accessibility and visibility of scientific work at the international level and ensuring the prerequisites and resources necessary for the implementation of excellent science. Within the first strategic goal, eight special goals were set, three of which are institutional goals.

Table 2. Specific goals and indicators included in the first strategic goal

STRATEGIC GOAL	SPECIFIC GOALS	MEASURABLE INDICATORS	INDICATOR DESCRIPTION
1-PROMOTING SCIENTIFIC EXCELLENCE	1-1 Increasing the Faculty's participation in competitive project funding	The number of successful project applications to competitive funding sources	The indicator measures the number of successful project applications for obtaining grants, submitted to competitive funding sources that primarily finance scientific activities (but not professional ones). Funding sources include national (funding from the National Recovery and Resilience Plan NPOO, European Structural and Investment Funds ESIF, Croatian Science Foundation HRZZ, etc.) and international tenders for the allocation of grants (ERC/Horizon Europe, Interreg, Erasmus, ESA, NSF USA, etc.). Successful applications are defined as: (a) contracted for funding or (b) positively assessed applications proposed for funding, but not funded due to insufficient funds (reserve list).
		The value of competitive scientific projects	The implementation of the indicators includes projects for which the grant allocation process has been successfully completed (decision on financing or equivalent document). Sources of funding include national (the National Recovery and Resilience Plan NPOO, European Structural and Investment Funds ESIF, Croatian Science Foundation HRZZ, etc.) and international grant tenders (ERC/Horizon Europe, NSF USA, etc.).
		The number of scientific papers in SCOPUS and WoS	The total number of scientific papers published at the level of a public higher education institution, which were published in scientific journals ranked in the SCOPUS and WoS index databases.
	1-2 Strengthening of international scientific	The number of successful project applications in collaboration with foreign partners	The indicator tracks the number of successful project applications to competitive funding sources of the public higher education institution, in collaboration with foreign partners. Successful applications are defined as: (a) contracted for funding or (b) positively assessed applications proposed for funding, but not funded due to insufficient funds (reserve list).

1- PROMOTING SCIENTIFIC EXCELLENCE	collaboration and scientific activity	The number of collaborations with foreign partners	Collaborations that count towards the achievement of the indicators include at least one employee from a public higher education institution, and at least one employee employed at a public higher education institution, a public scientific institute or a company with its seat outside the Republic of Croatia. The term collaboration may, for example, refer to the publication of at least five joint publications, an agreed new joint research and development project, or other formal agreements and contracts, memoranda of understanding, and other forms of scientific collaboration involving the public higher education institution or their employees.
		The number of scientists included in the scientific mobility activities	The number of scientists employed at a public higher education institution, who are included in international mobility activities. An international mobility activity is defined as a visit by a scientist to a scientific organization in another country for at least one month, in order to carry out research activities as a visiting scientist. The indicator does not include attending events such as meetings, workshops and conferences.
	1-3 Strengthening of human resources in administrative and professional services	The number of attended and held training events with the aim of strengthening the potential of administrative and professional services	The indicator measures the number of training events that the employees of the administrative and professional services attended, as well as the number of training events that they organized with the aim of strengthening the capacity of the public higher education institution for the implementation of scientific and professional projects.
	1-4 Contribution to open science	The number of measures implemented, and tools introduced to encourage open science policy	The number of concrete measures taken by the institution and tools introduced to encourage and support open science policy. This may include activities such as adopting guidelines for open science, organizing training workshops on open science, developing open research platforms or tools, supporting researchers in data sharing, and participating in initiatives that promote open science.

1- PROMOTING SCIENTIFIC EXCELLENCE	1-5 Strengthening of interdisciplinary approach to scientific work	The number of successful project applications for interdisciplinary scientific projects	The number of successful project applications of a public higher education institution for grants for the implementation of scientific projects in which scientists from at least two different scientific fields of study participate. Successful applications are defined as: (a) contracted for funding or (b) positively assessed applications proposed for funding, but not funded due to insufficient funds (reserve list).
		The number of science books	The total number of science books, original titles and editorial books, published at the level of a public higher education institution, which have at least two academic reviews. A science book is considered to be a non-periodical publication that contains scientific knowledge from the teaching and research discipline it has been written for.
	1-6 Institutional goal – Employment of young researchers	The number of newly employed new doctoral students and postdoctoral researchers	The indicator counts the number of newly employed doctoral students and postdoctoral researchers on projects.
	1-7 Institutional goal – Increase in competitive project applications	The total number of applications to competitive projects	All applications submitted for funding from the National Recovery and Resilience Plan NPOO, European Structural and Investment Funds ESIF, Croatian Science Foundation HRZZ, and similar programs, as well as international tenders for the allocation of grants (ERC/Horizon Europe, NSF USA, etc.) are counted.
	1-8 Institutional goal – Increase in quality of published papers	The number of published Q1/EXC papers per year (WoS)	The indicator counts papers published in the Web of Science database.


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STRATEGIC GOAL 2 – STRENGTHENING OF COLLABORATION WITH THE ECONOMY AND DEVELOPMENT OF NATIONAL AND REGIONAL IDENTITY AND CULTURE implies strengthening the orientation towards applied research, encouraging the management of intellectual property, commercialization of scientific work and results, overcoming the gap between the research and business sectors and the implementation of activities that contribute to the development of national and regional identity and culture. Within the set strategic goal, four specific goals were set, two of which are institutional goals.

Table 3. Specific goals and indicators included in the second strategic goal

STRATEGIC GOAL	SPECIFIC GOALS	MEASURABLE INDICATORS	INDICATOR DESCRIPTION
2- STRENGTHENING OF COLLABORATION WITH THE ECONOMY AND DEVELOPMENT OF NATIONAL AND REGIONAL IDENTITY AND CULTURE	2-1 Encouraging the implementation of applied scientific activities, including projects of collaboration with the economy	The number of successful project applications for applied research projects (projects in collaboration with the economy or in the field of culture and education)	The indicator measures the number of successful project applications for obtaining grants for the implementation of applied research (categories of industrial research and experimental development, i.e. activities of technological readiness level TRL 2-8.), including collaborative projects in collaboration with economic entities and operators or in the field of culture and education. The achievement of the indicators includes applications to competitive funding sources that primarily finance scientific activities (but not professional ones). Sources of funding include national (the National Recovery and Resilience Plan NPOO, European Structural and Investment Funds ESIF, Croatian Science Foundation HRZZ, etc.) and international grant tenders (ERC/Horizon Europe, NSF USA, etc.). Successful applications are defined as: (a) contracted for funding or (b) positively assessed applications proposed for funding, but not funded due to insufficient funds (reserve list). They include projects with the aim of acquiring new knowledge and skills for the development of new products, processes or services, i.e. to achieve a significant improvement of existing products, processes or services, and may also include the creation of prototypes, demonstration activities, pilot projects, testing and verification of new or improved products, processes or services in an environment that reflects operational conditions, etc.
		The number of formal collaborations with economic entities and operators, and cultural and educational institutions	The indicator refers to the number of collaborations with partners from the economy, culture and education sectors. Collaborations that count towards the achievement of indicators include at least one employee from a public higher education institution and at least one representative from the economy or culture and education sector. The term collaboration can, for example, refer to a joint publication, an internship, a contracted new joint research and development project, and other formal agreements and contracts, memoranda of understanding,

			and other forms of scientific collaboration involving a public higher education institution or its employees.
2- STRENGTHENING OF COLLABORATION WITH THE ECONOMY AND DEVELOPMENT OF NATIONAL AND REGIONAL IDENTITY AND CULTURE	2-2 Improving the provision of scientific, research or technological services on the free market, including services for the development of culture and education	The number of contracted projects for the provision of services to the economy and public authorities in the development of culture and education	The indicator tracks the number of contracted projects at the public higher education institution related to the provision of services to economic and other public entities in the development of culture and education. The indicator refers to projects, which may include contractual research, creation of publications, analysis and studies, and services provided to various business and other entities and operators.
		The value of projects for providing services to the economy and public authorities in the development of culture and education	The indicator tracks the number of contracted projects that provided services to economic and other entities and operators in the development of culture and education. The indicator refers to projects, which may include contractual research, creation of publications, analyses and studies, and services provided to various business and other entities.
	2-3 Institutional goal – Defining the services and products offered to the economy and the community, in accordance with the defined procedure	The number of defined services and products for the economy and the community	The indicator counts services and products defined for the economy and the community. The services may include the preparation of expert studies, expertise, project solutions, implementation of audits and supervision, laboratory and field tests, numerical modeling, development of software solutions, etc.
	2-4 Institutional goal - Improvement of the professional competencies of all those involved in the performance of expert tasks for the economy and the community	The number of all activities undertaken for improvement of professional competencies (passed license exam, attending professional trainings, etc.)	The indicator counts the activities of improving professional competences. The number of employees who passed the license exam and the total number of attended professional educations for performing expert tasks for the economy and the community are counted.

STRATEGIC GOAL 3 – INCREASING THE RELEVANCE, QUALITY AND EFFICIENCY OF STUDIES implies improving the efficiency of study execution and their adaptation in accordance with the enrollment interests and needs of the labor market, including the creation of new economies and raising the attractiveness of the institution at the international level. Within the set goal, six specific goals are defined, two of which are institutional goals.

Table 4. Specific goals and indicators included in the third strategic goal

STRATEGIC GOAL	SPECIFIC GOALS	MEASURABLE INDICATORS	INDICATOR DESCRIPTION
3- INCREASING THE RELEVANCE, QUALITY AND EFFICIENCY OF STUDIES	3-1 Improving the studies	The number of innovative teaching methods introduced	The indicator refers to the number of innovative study methods introduced at a public higher education institution. Innovative methods are understood as activities aimed at innovation of teaching methods and knowledge acquisition, which include the use of modern methods and technologies in teaching, learning based on project work, active participation in writing scientific and professional papers, practical training with commercial and public entities, establishing student incubators, designing, writing and implementing joint projects with teachers, introducing digital tools for checking knowledge, establishing student entrepreneurial centers for the development of entrepreneurial ideas, etc.
		Percentage of teacher working hours of employed teachers and associates per study in the total working hours of accredited graduate and undergraduate studies (SVP/STP/SVD/STD)	The indicator refers to the percentage of the total working hours of employed teachers and associates for each accredited graduate and undergraduate study in the total working hours of all employed teachers and associates. The indicator measures how much of the average percentage of the working hours of all employed teachers and associates pertains to a particular study program. It is obtained by calculating the average working hours per individual study program and dividing it by the total working hours of all employees. Elective courses that are offered at several studies are counted only once.
		The number of students who gained at least 5 ECTS credits through practical training	The indicator refers to the number of students who achieved 5 or more ECTS points through attending practical training during their studies.

3- INCREASING THE RELEVANCE, QUALITY AND EFFICIENCY OF STUDIES		The number of students participating in national and international competitions in the field of study	The indicator refers to the number of students who participated in national and/or international competitions in the field of study.
	3-2 Increasing the study regularity and completion of studies	The share of students who enrolled in the next study year on schedule	The indicator refers to students who have gained a sufficient number of ECTS credits on schedule and enrolled in the next year of study, i.e. the share of students who, by taking exams in subjects prescribed by the curriculum and who are included in the quota defined for the completion of studies, have gained 55 or more ECTS credits compared to the total number of students.
	3-3 Increasing the international higher education collaboration	The number of teachers participating in international exchange	The exchange includes the number of teachers at a public higher education institution who are involved in incoming and outgoing international mobility activities that include teaching. Teaching is understood as holding at least 5 classes.
		The number of students participating in international exchange	The indicator refers to the number of students at a public higher education institution who are involved in incoming and outgoing international mobility activities. International mobility activity is defined as student mobility for at least one semester.
	3-4 Targeting study programs towards the development of skills that strengthen competitiveness on the labor market	Study admission quotas in relation to labor market needs	The indicator tracks admission quotas for studies according to the labor market needs, i.e. recommendations for educational enrollment policy and scholarship policy of the Croatian Employment Service – HZZ. Within the activities that are monitored by the program agreement, the public higher education institution can choose to reduce (or increase) admission quotas for such study programs for which there is no (or there is) need on the labor market. The need is defined by the Croatian Employment Service following recommendations it publishes for the following year each year in December.
		Number of study programs aligned with the Croatian Qualifications Framework	
		The number of qualification standards entered in the Croatian Qualifications Framework Register	The indicator refers to the number of entered qualification standards for which the public higher education institution has submitted a request for entry into the Croatian Qualifications Framework Register.

	3-5 Institutional goal - Improvement of teacher competencies	The number of teachers who have undergone some kind of teacher competency improvement	The indicator refers to all forms of training without a limit on the number of ECTS credits and the condition that the program is accredited (training courses, workshops, lifelong programs).
	3-6 Institutional goal - Encouraging a personalized approach to learning	The number of measures, procedures and educations that have been introduced and organized in order to encourage a personalized approach to learning	The indicator refers to the procedures for recognizing prior learning (formal, informal and non-formal), issuing opinions with the equivalent of ECTS credits in a certain area, advising students, organizing training events, adapting classes and working with vulnerable and underrepresented groups, approving accelerated studies for successful students, etc.

STRATEGIC GOAL 4 – STRENGTHENING OF SOCIAL RESPONSIBILITY implies improving the involvement of the public higher education institution in addressing societal challenges, including topics of national interest, and raising the level of the overall efficiency of the public higher education institution's operations. Within the set goal, five special goals are defined, one of which is an institutional goal.

Table 5. Specific goals and indicators included in the fourth strategic goal

STRATEGIC GOAL	SPECIFIC GOALS	MEASURABLE INDICATORS	INDICATOR DESCRIPTION
4- STRENGTHENING OF SOCIAL RESPONSIBILITY	4-1 Strengthening the culture of lifelong education and equality	The number of measures taken to promote a culture of equality	The indicator tracks the number of measures taken to promote equality between women and men, the prohibition of discrimination, and/or to promote accessibility for persons with disabilities. The achievement of indicators includes measures that can be quantified (e.g. the number of organized workshops or lectures on the topic of promoting gender equality, the number of works to improve the accessibility of the physical infrastructure of public higher education institutions for people with disabilities). The indicator refers to measures that are not already prescribed as mandatory by the Law on Gender Equality and other regulations regulating equality.
		The number of employees who have completed professional development programs	Professional development programs are understood to be accredited professional development programs (approved by the Ministry of Science and Education or have passed the internal quality assurance system at a public higher education institution in accordance with the regulations on lifelong education) of employees that are related to the successful performance of tasks described in the job descriptions of the employees.
		The number of lifelong education programs implemented at public higher education institution aligned with the Croatian Qualifications Framework	The indicator measures the number of lifelong education programs at public higher education institution, aligned with the Croatian Qualifications Framework.

4- STRENGTHENING OF SOCIAL RESPONSIBILITY	4-2 Digitalization of operations	The amount of own and unearmarked funds spent on projects with the aim of digital transformation of operations	The indicator measures the amount of Faculty's own and unearmarked funds spent on implemented projects to improve business processes through the introduction of digital forms of operation. The achievement of indicators includes, for example, the introduction of digital registers, the introduction of digital storage and delivery of internal documents, digital repositories, digitization of bookkeeping, accounting or project administration, etc.
	4-3 Popularization of science	The number of science and art popularization activities	The activities may include open days, presentations of scientific projects or new scientific achievements or artistic works and installations, events aimed at young audience to popularize science or art, exhibitions, etc., which relate to stakeholders of all levels of education, from the lowest level and the earliest age. They also include radio and TV shows and activities with a significant dissemination component, specifically, an audience of 50 or more people.
	4-4 Institutional goal – Engaging in activities of national importance	The number of experts involved through formalized collaboration with state administration and public sector bodies	The indicator includes formal appointments of experts for collaboration in projects of public interest under the jurisdiction of a state or public body, preparation of studies and analytical data for the purpose of decision-making in state and public bodies, participation in the creation of strategic documents, norms and other forms of cooperation with state and public bodies in the areas of research and activity of the Faculty. Collaboration refers to engagement that is not done on a commercial basis and is carried out as part of regular work.
	4-5 Institutional goal – Measures related to environmental protection	The number of new systems and processes implemented at the institution related to energy efficiency, measures related to the circular economy, investment in green infrastructure and environmental protection	The indicator counts new measures implemented with the aim of environmental protection.

IMPLEMENTATION PERFORMANCE INDICATORS

The indicators that follow the implementation of the defined goals of the Faculty are presented in Table 6, whereby individual goals have different number of defined indicators. The target values represent the annual target value unless otherwise stated. The target values were set based on the analyzed values in the period 2020 – 2023 and based on goals set by individual organizational units.

Table 6. Faculty of Civil Engineering Development strategy implementation performance indicators in the period 2024 – 2028

STRATEGIC GOAL	SPECIFIC GOALS	MEASURABLE INDICATORS	TARGET VALUE
1- PROMOTING SCIENTIFIC EXCELLENCE	1-1	The number of successful project applications to competitive sources	4
		The value of competitive scientific projects	320,000
		The number of scientific papers in SCOPUS /WoS	55/45
	1-2	The number of successful project applications in collaboration with foreign partners	3
		The number of collaborations with foreign partners	5
		The number of scientists included in the scientific mobility activities	5
	1-3	The number of attended and held training events with the aim of strengthening the potential of administrative and professional services	10
	1-4	The number of measures implemented, and tools introduced to encourage open science policy	5
	1-5	The number of successful project applications for interdisciplinary scientific projects	2
		The number of science books	2
	1-6	The number of newly employed new doctoral students and postdoctoral researchers	4
	1-7	The total number of applications to competitive projects	7

	1-8	The number of published Q1/EXC papers per year (WoS)	18/14
2- STRENGTHENING OF COLLABORATION WITH THE ECONOMY AND DEVELOPMENT OF NATIONAL AND REGIONAL IDENTITY AND CULTURE	2-1	The number of successful project applications for applied research projects	1
		The number of formal collaborations with economic entities and operators, and cultural and educational institutions	10
	2-2	The number of contracted projects for the provision of services to the economy and public authorities in the development of culture and education	50
		The value of projects for providing services to the economy and public authorities in the development of culture and education	250,000 EUR
	2-3	The number of defined services and products for the economy and the community	60 (until 2028)
	2-4	The number of all activities undertaken for improvement of professional competencies	25
3- INCREASING THE RELEVANCE, QUALITY AND EFFICIENCY OF STUDIES	3-1	The number of innovative teaching methods introduced	15
		Percentage of teacher working hours of employed teachers and associates per study in the total working hours of accredited graduate and undergraduate studies (SVP/STP/SVD/STD)	35 % /25 % /25 % /15 %
		The number of students who gained at least 5 ECTS credits through practical training	100
		The number of students participating in national and international competitions in the field of study	20
	3-2	The share of students who enrolled in the next study year on schedule	25 %
	3-3	The number of teachers participating in international exchange	15
		The number of students participating in international exchange	30
	3-4	Study admission quotas in relation to labor market needs (SVP/ STP/SVD/STD)	120/60/60/30

		Number of study programs aligned with the Croatian Qualifications Framework	4 (until 2028)
		The number of qualification standards entered in the Croatian Qualifications Framework Register	2 (until 2028)
	3-5	The number of teachers who have undergone some kind of teacher competency improvement	30
	3-6	The number of measures, procedures and educations that have been introduced and organized in order to encourage a personalized approach to learning	10
4- STRENGTHENING OF SOCIAL RESPONSIBILITY	4-1	The number of measures taken to promote a culture of equality	3
		The number of employees who have completed professional development programs	2
		The number of lifelong education programs implemented at public higher education institutions aligned with the Croatian Qualifications Framework	2 (until 2028)
	4-2	The amount of own and unearmarked funds spent on projects with the aim of digital transformation of operations	1,500 EUR
	4-3	The number of science and art popularization activities	50
	4-4	The number of experts involved through formalized collaboration with state administration and public sector bodies	30
	4-5	The number of new systems and processes implemented at the institution related to energy efficiency, measures related to the circular economy, investment in green infrastructure and environmental protection	1