

SP FME TUL +2030

**STRATEGIC PLAN OF EDUCATIONAL AND CREATIVE ACTIVITIES
OF THE FACULTY OF MECHANICAL ENGINEERING
OF THE TECHNICAL UNIVERSITY IN LIBEREC
BY 2025 WITH A VIEW TO 2030**

*Education for responsibility for the sustainable development of society.
Education for education and civic responsibility.
Science and research for education and scholarship.*

June 2021

INTRODUCTION

The Strategic Plan of the Educational and Creative Activities of the Faculty of Mechanical Engineering of TUL for the period 2021–2025 with a view to 2030 (SP FME TUL +2030) is the basic document by which the Faculty of Mechanical Engineering of TUL sets out priority areas, objectives, a set of measures and activities that will lead to the fulfillment of the target state in 2025. SP FME TUL +2030 is prepared in accordance with the Strategic Plan of Educational and Creative Activities and the Strategy of Internationalization of TUL for the period 2021–2025 with a view to 2030 and is linked to other disciplinary and conceptual documents.

In all areas of activity, the faculty will support activities that will lead to the elimination of weaknesses and the strengthening of strengths, the exploitation of opportunities and the balancing of threats. At the same time, standard activities in each activity area will be implemented and established and proven activities will be continued.

The SP FME TUL +2030 is a living document, which will be discussed annually in the context of the FME TUL Implementation Plan for the respective year.

A fundamental assessment and possible revision of the targets will take place in 2025 in the context of the preparation of measures and activities for 2030.

THE BASIC FOR SCIENTIFIC, RESEARCH, DEVELOPMENT AND INNOVATION, ARTISTIC AND OTHER CREATIVE ACTIVITIES

Strategic Development Plan of TUL until 2020 with a view to 2030

Strategic plan of the Ministry of Education of the Czech Republic for the field of higher education for the period from 2021+

Liberec Region Development Strategy 2021+

Long-term plan of educational and scientific, research, development and innovation, artistic and other creative activities of FME TUL for the period 2016–2020

Research, Development, Innovation Strategy FME TUL +2030

TUL Technology, Knowledge and Service Transfer Strategy / Analysis and Proposal 2020

Annual reports on the activities of the FME TUL

Current legislation, especially the amendment to Act No.111/1998 Coll., on Higher Education Institutions and on Amendments and Supplements to Other Acts (the Higher Education Act), as amended and subsequent implementing regulations,

National RIS3 Strategy

The strategic framework for European cooperation in education and training ET 2020

PROCESS STEPS

- The strategic plan of the educational and creative activities of the Faculty of Mechanical Engineering of TUL for the period 2021–2025 with a view to 2030 was presented to the Academic
- Community of the Faculty of Mechanical Engineering of TUL on 9 June 2021, discussed by the Scientific Council of the Faculty of Mechanical Engineering of TUL (*FME TUL*) on 16 June 2021 and approved by the Academic Senate of the FME of TUL on 16 June 2021.
- The strategic plan of the FME TUL was prepared from September 2020 to April 2021. During May and June, the process of discussion and approval was carried out.
- The process of elaboration and discussion of the FME TUL 2021–2025 was smoothly linked to the process of discussion, elaboration and discussion of the RDI FME TUL +2030 Strategy and to the preparation and evaluation of the faculty and the university by the International Evaluation Panel according to M2017+ in 2020.
- The process of discussions on the direction of the FME of TUL in the field of scientific research took place from April 2019 to November 2019. In December 2019, the draft Strategy of the Faculty of Mechanical Engineering of TUL was presented at the meeting of the Scientific Council of the Faculty of Mechanical Engineering of TUL, in February 2020 the Strategy was approved by the Academic Senate of the FME of TUL and subsequently by the Scientific Council of the FME of TUL.
- The process of preparation of the Self-Evaluation Report for the International Evaluation Panel (MEP) was initiated in November 2019 under the coordination of the TUL Department of Science and Research, with the Department of Development and Projects providing the input for the Faculty. The Self-Evaluation Report was submitted to the MEP in March 2020, followed by the process of preparation of the evaluation and preparation of the MEP meeting. The actual MEP meeting and evaluation at TUL took place virtually in October 2020. The conclusions of the MEP evaluation were incorporated into the submitted Strategic Plan FME TUL +2030 in accordance with the recommendation of the Ministry of Education of the Czech Republic in May 2021.
- The approval of the strategic plan was preceded by a thorough preparation, which followed the above steps. In September 2020, the concept of the preparation and discussion of the SP FME TUL was approved by the Dean of the Faculty of Mechanical Engineering. A structured intranet platform with methodological, analytical documents, activity standards and other documents and materials was set up, including the evaluation of the implementation of the SP FME of TUL for the period 2016–2020. The departments were involved in the evaluation and the design phase through the heads of the departments. Due to the recent epidemiological situation, the meetings were held online.
- The FME TUL +2030 Strategy will be subsequently concretized by annual Implementation Plans, which will set out the activities and tasks for the year and, in parallel with the preparation, update the status and implementation of the steps of the strategic areas.
- In 2022, the term of office of the new dean of the FME TUL will begin. In this context, it is expected that the objectives will be refined or supplemented by the end of 2022, in accordance with the programme statement of the incoming dean for the period 2022–2026. In 2025, it is expected to evaluate the implementation of the FME TUL +2030 and to present further objectives and measures until 2030.

PREAMBULE

The Faculty of Mechanical Engineering is the founding faculty of the Technical University of Liberec. It was founded in 1953 as the College of Engineering and laid the foundations for the development of higher education in Liberec.

The Faculty of Mechanical Engineering profiles itself as an engineering faculty built on university principles, which it develops and strengthens in its activities.

Education, research, and social responsibility are the mission of the faculty, and together with the belonging of the faculty community are the pillars of the activities that the faculty inherently provides.

PRINCIPLES OF ACTIVITIES

The Faculty of Standing subscribes to the mission of universities as defined by the Higher Education Act and builds its activities on:

- Autonomy, Responsibility, Solidarity
- Partnership and Cooperation
- International Overlap and Internationalization
- Interdisciplinarity and Intersection of disciplines

Strategic Plan of Educational and Creative Activities of the Faculty of Mechanical Engineering of the TUL for 2021–2025–2030 (SP FME TUL +2030)

was discussed by the Scientific Council of the Faculty of Mechanical Engineering of the TUL
on 16 June 2021

and approved by the Academic Senate of the Faculty of Engineering of the TUL
on 16 June 2021.

STRATEGIC AREAS SP FME TUL TO 2025 WITH A VIEW TO 2030

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- A/ EDUCATION AND STUDY**
 - B/ SCIENCE, RESEARCH, DEVELOPMENT AND INNOVATION**
 - C/ SOCIAL RESPONSIBILITY**
 - D/ THE ACADEMIC COMMUNITY AND THE FAKULTY COMMUNITY**
 - E/ MANAGEMETN OF ACTIVITIES**
 - F/ INFRASTRUCTURE**
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A/ EDUCATION AND STUDY

Strategic goal 2030

- The Faculty of Mechanical Engineering is a sought-after faculty in the field of technical education.
- The Faculty of Mechanical Engineering educates quality graduates for industrial practice, professional life and scientific research careers.
- The Faculty of Mechanical Engineering has a high quality of educational activities.
- The Faculty of Mechanical Engineering has increased the proportion of self-pay students in all study programmes.

Assessment of the period 2016–2020

In the field of education and studies, the faculty's activities focused on the preparation, negotiation and launch of new accreditations at all levels of study. In parallel with the preparation of accreditations, the review and setting of activity standards was carried out.

In the period since 2016, the faculty's attention has been focused on preparing and obtaining accreditation of new study programmes, in accordance with legislative and methodological changes resulting from the amendment to the Higher Education Act in 2016.

The Faculty currently guarantees teaching in new study programmes in the Bachelor's degree and in six follow-up Master's degree programmes in the area of education 27 Mechanical Engineering, Technology and Materials, one follow-up Master's degree programme in the area 7 Energy Engineering. Six follow-up Master's degree programmes have been accredited for ten years in both Czech and English versions. One follow-up Master's degree programme was accredited for five years in the Czech version. The Bachelor's degree programme is supported by a strong theoretical basis to prepare graduates for further study and practical and experimental teaching has been strengthened. The Faculty guarantees three doctoral study programmes. In the framework of the discussion on the concept of new DSPs, two projects were prepared and submitted to the OP VVV in 2016 to support and develop new DSPs, especially to retrofit laboratories with infrastructure for solving scientific research topics of doctoral theses. The projects were supported for implementation with the amount of CZK 55 million for the years 2018–2020.

In 2019, the faculty received accreditation for the habilitation procedure and the procedure for appointment as a professor in the field of Applied Mechanics for a period of 10 years.

Approximately 30% of graduates of bachelor's degree programmes currently come from another Czech or foreign university.

Since 2014, the faculty has been teaching self-paying foreigners and government scholarship holders in English-language master's and doctoral degree programmes.

The study parameters in terms of interest in studying, study throughput and completion of studies are not optimal, especially in the area of the bachelor's degree programme. Interest in graduates of the Bachelor's degree programme is still low. On the other hand, interest in Masters and PhD graduates is high.

Funding for educational activities shows a slight upward trend.

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Rules and standards are set in relation to the evaluation of the quality of activities. There is a system of evaluation of the quality of studies by students and a system of feedback from graduates. A Council of Study Programme Guarantors has been established to assess and discuss the quality of educational activities. The coming period will focus on strengthening the study indicators and on implementing the measures resulting from the evaluation of activities and the setting of activity standards.

A critical factor is the interest of high school graduates in technical fields. The number of young people applying to university is expected to grow proportionately, given the size of the prevailing generations in 2023–2027. Other parameters, such as the so-called participation rate in education or in university selection procedures, will remain unchanged. Thus, on average, about one-fifth more applicants could apply for higher education in the Czech Republic between 2023 and 2031 under otherwise unchanged conditions. In the next two years, there should be about the same number of applicants as in 2020.

In 2020, the educational activities were significantly affected by the coronavirus pandemic and the associated government regulations had an impact on the educational activities of the faculty, which were provided remotely for a long time, practical and laboratory teaching within education was significantly reduced and the pandemic had a significant negative impact on the number of self-pay students, on student trips and arrivals.

MILESTONES AND TARGETS 2025

Education

- 1/ Prepare and defend the Institutional Accreditation of TUL in the field of Engineering, Materials and Technology.
- 2/ Prepare and defend the accreditation of existing doctoral study programmes and habilitation procedures.
- 3/ To discuss the content of study programmes in the sense of defining the university standard for technical study programmes implemented at the TUL and the profile of the graduate.
- 4/ Set up a system of study offerings with greater module variation and flexibility of choice for students across the University.
- 5/ Offer the accredited module system also in the framework of lifelong learning. To enable a more flexible response to societal impulses and to the educational needs of the labour market as a result of emerging industries.
- 6/ Strengthen the competencies of academic staff for educational activities.

Bachelor's and Master's studies

- 7/ Increase the number of students in bachelor's and master's degree programmes.
- 8/ Reduce academic failure, i.e. optimize the parameters for admitting students to study, analyze academic failure and prevent it by setting measures and activities.
- 9/ Continuously innovate study programmes, optimize the structure and content of study

programmes by improving the coherence and continuity of courses, continuously innovate the content of courses in relation to scientific research activities and modern knowledge, develop teaching methods and forms.

- 10/ Implement the set system of evaluation of teaching, evaluate and publish results, actively respond to evaluation results.
- 11/ Develop set forms of cooperation with industrial practice.
- 12/ Develop new forms of cooperation with secondary schools.

Doctoral studies

- 13/ Promote and consistently monitor the qualitative parameters of doctoral studies.
- 14/ Increase the success rate and quality of doctoral studies by consistently adhering to and strengthening the set standards of doctoral studies and by strengthening the financial conditions of studies, including the incentive component.
- 15/ Increase the number of PhD students by 15–30%, ideally with graduates from other domestic and foreign universities.
- 16/ Increase the openness of doctoral studies by introducing a double-led doctoral study, the so-called Cotutelle, by carrying out joint accreditations with institutes of the Academy of Sciences of the Czech Republic and by strengthening the elements of internationalisation of doctoral studies.
- 17/ Coordinate doctoral studies within TUL in the area of requirements and standards of the DSP, in the area of implementation of joint seminars, lectures and activities.
- 18/ Electronization of the agenda related to the organization and implementation of doctoral studies.

Internationalisation in education and studies

- 19/ Strengthen the international dimension of educational activities by involving students and academics in international educational activities and mobility.
- 20/ Introduction of short-term study stays and practical internships in combination with preparatory or final combined mobilities, so-called "mobility windows".
- 21/ Integrate foreign students and academics into the life of the academic community and strengthen the presence of foreign academics at the Faculty of Engineering.
- 22/ Maintain and strengthen teaching in English study programmes, extend teaching to Bachelor's degree programmes, internationalise the study environment in all aspects.
- 23/ Continue discussions on a joint double-degree program.

Learning environment and students' creative activities

- 24/ Introduce modern forms of teaching and smart technologies into teaching (virtual twin). Continue to develop forms of cooperation with industrial practice.
- 25/ Use the experience of online teaching during a pandemic and apply it as a standard supplement to face-to-face teaching.
- 26/ Support students' extra-curricular creative activities and involve students in the scientific research activities of the departments.

- 27/ Organise summer schools for students, support participation in Student Scientific Professional Activity TUL and other non-university competitions, support student entrepreneurship and student activities (Student Formula TUL).
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MEASURES AND ACTIVITIES

- To implement the set system of evaluation of study programmes, to reflect the conclusions and recommendations in changes that do not require accreditation.
- Implement measures to reduce academic failure in the BSP, e.g. innovate preparatory courses in mathematics and physics for applicants, then offer seminars in selected subjects to reduce academic failure.
- Discuss and pilot test a system of study group leaders (tutors).
- To offer lifelong learning courses responsive to new scientific research findings and societal demands and trends.
- To support the pedagogical training of teachers through additional pedagogical studies with beginning academics and subsequent further training.
- Support the language skills and individual needs of students.
- Implement summer schools, year-long works of high school students.
- Develop forms of cooperation with faculty schools, including discussions and measures to increase students' chances of success in higher education.
- To continuously innovate study programmes in relation to the results of scientific research activities and to support the creation of study support.
- Introduce new elements into teaching using modern teaching methods, e.g. the use of the digital twin principle in complex simulation models.
- To continue the set system, i.e. to implement elements of doctoral studies, especially colloquia of doctoral students, professional seminars and courses for skills development, professional seminars such as Research Academy (Elsevier), English language courses, foreign internships.
- Encourage student involvement in student grant competition projects, especially as researchers.
- Not to lower the requirements and verification of prerequisites for applicants for doctoral studies.
- Reduce the incidence of cases significantly exceeding the standard study period, ensure more careful monitoring of the implementation of individual study plans, including their adequate evaluation.
- To create conditions for fulfilling study obligations in the DSP, not to overwhelm doctoral students with excessive teaching and operational activities in the departments, to involve students in scientific research projects, especially those led by supervisors.

- Strengthen the education of students to acquire entrepreneurial skills and competencies by offering courses.
- Develop forms of promotion and presentation of the faculty in the field of education and study offer.
- Continuously upgrade classrooms and laboratories, SW, etc.
- To raise the level and quality of teachers for educational activities by evaluating their competences.
- Establishment of a system of evaluation of pedagogical work in relation to the evaluation of studies within the framework of the student survey of teaching evaluation and effective feedback of their results in educational activities.
- Increase the proportion of participation of faculty academics in teaching within the Erasmus+ and CEEPUS programmes and of foreign teachers in teaching in accredited study programmes.
- Involve the application sphere in the implementation and evaluation of study programmes.

Linkage with the objectives and measures of the SP and the TUL Internationalization Strategy 2021–2030:

A-1-1, A-1-2, A-1-4, A-1-7, A-1-9, A-1-12, A-2-1, A-2-2, A-2-3, A-3-1, A-3-2, A-3-3, A-3-6, A-3-7, A-3-8, C-1-1, C-1-2, C-1-3, C-1-7, C-1-8, C-2-1, C-2-3, C-4-2, C-4-3, C-4-5, C-4-6, C-5-4, D-1-1

B/ SCIENCE, RESEARCH, DEVELOPMENT AND INNOVATION

Strategic goal 2030

- The Faculty of Mechanical Engineering is an independent and recognised scientific research organisation.
of European dimension, consistently fulfilling university principles.
- The Faculty of Mechanical Engineering is a financially stable research organization that relies on a strong research base, which guarantees the long-term perspective of the research, development and innovation activities and teams of the faculty.
- The Faculty of Mechanical Engineering is a sought-after workplace for PhD students from Czech and foreign universities.
- The Faculty of Mechanical Engineering is part of research teams and projects within the University, the Czech Republic and the international research area.
- The Faculty of Mechanical Engineering is a research institute with a well-developed infrastructure of international standard.

Assessment of the period 2016–2020

The backbone of the research of the Faculty of Mechanical Engineering is based on the strategic areas defined by the Strategy of the RDI FME TUL +2030 Strategy.

The strategic programme framework consists of research programmes, which are the basic criteria for the functioning or establishment of research teams, a platform for cooperation between departments, and planning of personnel and financial resources.

Applied collaborative research supported by TA CR, MIT CR, and MoI CR constitutes a significant share in the evaluated period. In the M2017+ evaluation (2014–2018), the faculty's research in this segment was evaluated as very good with a broad social and applied benefit, connected with the educational field.

Basic research is mainly supported by institutional funds, the weak point is participation in projects of the GA CR and in international projects. Despite the lack of participation in international projects, the total amount of faculty funding for research and development is increasing every year. The same is true for the number of international projects submitted in the last year and the funds resulting from them. As of 2018, the Faculty of Mechanical Engineering is the main coordinator and also the investigator of two university interdisciplinary projects of excellent research and excellent pre-application research.

The strength of the faculty is the competitive scientific research infrastructure built in recent years, including laboratory and academic staff offices, instrumentation and machinery in laboratories and semi-operations.

An indicator of the quality of R&D activities is the structure and number of results and outputs. In the results for the last period there is a visible trend towards an increase in the number of quality outputs and the number of patents granted abroad. Approximately 90% of the results classified under the Faculty of Engineering are produced within the scientific area 2. Engineering and Technology. Of these, FORD 2.3 Mechanical Engineering and 2.5 Materials Engineering have continuously the largest representation.

In connection with the implementation of the new M2017+ Evaluation Methodology, the structure of scientific research results is changing. Within the publication results, the number of articles in journals is increasing, especially in impacted journals, and the number of contributions in proceedings is decreasing. Applied results are mainly produced in the framework of collaborative research of the Faculty of Engineering with industrial partners, which leads to their subsequent use in practice.

In the evaluation of the results in Module 1 and 2, the results of the authors and the results with the participation of the authors of the Faculty of Engineering are evaluated very well, the quality of the submitted results of publications and applied results is increasing.

The results are mainly evaluated by the criterion Social Relevance.

For the coming period, it is desirable to focus research efforts on interdisciplinary projects and on a stronger involvement in the international scientific research environment. Within the framework of bibliometrizable outputs, emphasis will be placed on the quality of journals, and for applied results on applicability and commercialization capability.

The coming period will require a change in the organisation of scientific research in the departments and at the same time will require a strategic ideological shift of all parts of the university and coordination by the university management.

MILESTONES AND TARGETS 2025

Scientific research activities

- 1/ To implement the RDI FME TUL +2030 Strategy.
- 2/ Strengthen basic and experimental research, coordinate the practices of the departments of the Faculty of Mechanical Engineering and other departments of the University to strengthen the quality of research as a key to the development of applied research and education.
- 3/ Strengthen research funding, coherence and proportionality between basic and applied research.
- 4/ Develop and implement research programmes, conduct regular internal evaluations in two-year cycles according to set criteria, conduct independent external evaluations in five-year cycles. Subject results to scientific discussion and conclusions.
- 5/ Increase the share of basic and pre-application research, strengthen the quality of outputs and relevant publication results.
- 6/ Deepen cooperation with research institutes such as the Academy of Sciences of the Czech Republic and with other research organisations, especially through industry clusters and research centres.
- 7/ Contribute substantially in the Ford 2000 industry group to at least an industry rating of B.

The international dimension of R&D

- 8/ Increase the involvement of faculty academics in the international scientific community.
- 9/ Increase the involvement of research teams in international networks, platforms and strategic partnerships.
- 10/ Increase participation and success in international grant calls and participation in international project teams.

Personnel area

- 11/ Pay attention to the balance of scientific teams in relation to the evaluation of research programmes, the sustainability of research programmes and education.
- 12/ Proportionately strengthen the research teams with young academics ideally from outside the university or from other parts of the university.
- 13/ Overall, strengthen the faculty staffing area by approximately 10 to 20% of academic staff.
- 14/ Build staff development on doctoral student positions and post-doctoral positions.

MEASURES AND ACTIVITIES

- Initiate discussions with the TUL management on conceptual and financial instruments for R&D support.
- Initiate a university-wide discussion on faculty research programmes and subsequently define the outlines of TUL research platforms to strengthen and develop research capacity and research quality.
- To involve the faculty in national and supranational strategic activities aimed at systemic steps to support R&D funding.

- Strengthen excellence in selected research-oriented areas.
- Support and motivate young researchers.
- Promote scientific growth and involvement of postdocs in R&D activities.
- Strengthen international professional participation in bodies and scientific panels, editorial boards, societies and scientific platforms.
- Strengthen the incentive and support system in place to increase the quality of publication results.
- To adjust the parameters of the system of evaluation of the scientific research activities of the faculty departments by taking into account international projects and important publications in relation to the motivation of departments and the redistribution of financial resources.
- Encourage and motivate the responsibility of departments and staff for publication, mobility and project activities.
- Provide project, methodological and publication support to academics and students.
- Increase the proportion of publications with international authors.
- Support staff development and motivation for skills development with financial instruments.
- Promote the mobility of academics and doctoral students. Support long-term stays at international institutions.
- Internationalization of activities as a space for co-authorship of outputs and results with foreign workers.
- Popularise scientific research activities and the results of scientific work.

Linkage with the objectives and measures of the SP and the TUL Internationalization Strategy 2021–2030:

B-2-1, B-2-2, B-2-3, B-2-4, B-2-6, B-3-1, B-3-2, B-3-3, B-3-4, C-1-6, C-4-6, C-5-2, C-5-3, D-1-1

C/ SOCIAL RESPONSIBILITY

Strategic goal 2030

- The Faculty of Mechanical Engineering is a respected authority that is committed to social responsibility for the sustainable development of society.
- The Faculty of Mechanical Engineering supports the economic development of society and considers intellectual diversity as a driver of development.
- The Faculty of Mechanical Engineering is an independent institution of international dimension in relation to society and industry.
- The Faculty of Mechanical Engineering is a sought-after and sought-after workplace for collaborative and contract research, professional services and activities within the Czech Republic and internationally.
- The Faculty of Mechanical Engineering sees its based on tradition and anchoring in the region for its development as one of its priorities.

Assessment of the period 2016–2020

The Faculty of Mechanical Engineering is an engineering faculty developing university principles, i.e. education based on science, research and innovative approaches. In this context, the social relevance of other activities, i.e. content, volume and scope, should be perceived. The faculty is relatively subtle compared to other engineering faculties, while providing the full spectrum of core engineering disciplines necessary for the preservation and development of the discipline of Mechanical Engineering. The societal importance in this regard is irreplaceable and undeniable.

Following the tradition of the University of Engineering in Liberec and in accordance with the European concept of responsible research, the faculty understands the third pillar as a service to society in the field of technology transfer, knowledge and services. The spectrum of activities includes collaborative and contract research, expert activities, professional services and lifelong learning for industry, which includes seminars and courses tailored to the requirements of partners.

Collaborative research projects produce a high number of applied results with high potential for practical application and bring significant revenues from licensing agreements.

The Faculty carries out a significant volume of contract research addressing topics specified by Czech and foreign sponsors. The volume of contract research has increased slightly each year. Technical, technological and design solutions lead to economic, social and environmental benefits. The faculty is approached from outside, which is due to tradition, awareness of the faculty and the high number of graduates collaborating with the faculty.

The role of partners from the application sphere in the Scientific Council of the Faculty of Mechanical Engineering of TUL, the Industrial Council of the Faculty of Mechanical Engineering of TUL, in state final examination committees, thesis consultations and in other areas of the Faculty of Mechanical Engineering is indispensable.

The social relevance reflected in the activities and results of the Faculty of Engineering was rated very positively by the International Evaluation Panel in 2019. In the structure of the final evaluation, the Faculty's strength is its high quality applied and contract research, in which the Faculty is a technological leader that responds to the needs of the economy, the health and safety of society, and the environmental challenges of society.

The coronavirus situation has shown how much potential academic institutions have in solving societal problems and what the public expects from them. In the spring of 2020, TUL gradually became very significantly involved in assisting the Liberec Region municipality, hospitals and other components of the rescue system in the whole spectrum of activities and services. The Faculty of Mechanical Engineering participated in the production of protective equipment, masks, filters, masks.

MILESTONES AND TARGETS 2025

Cooperation with the application sphere in the field of scientific research

- 1/ Maintain the scope, volume and quality of scientific research cooperation with the application sphere.

- 2/ Develop and offer new contract research topics.
- 3/ Strengthen indicators of quality and volume of transfer of results.
- 4/ Strengthen the offer of scientific research topics, results, services and other forms of cooperation with the application sphere.

Cooperation with the application sphere in the field of education

- 5/ Develop the implemented forms of cooperation with the application sphere, involvement in the educational process and in the preparation of students for their future employment and knowledge.
- 6/ To develop forms of Centre of Further Education in the field of technical education and to extend the offer to education within the TUL University of the Third Age.

Cooperation with the external environment

- 7/ To develop the interaction between the academic environment and the non-university environment and to strengthen the awareness of the responsibility of the academic community of the faculty for governance.
- 8/ Strengthen the national and regional anchorage of the Faculty by participating in the creation of strategic and development documents of the Liberec Region.
- 9/ Strengthen the role of the faculty as a natural authority in the region through intensive cooperation with regional and local government.
- 10/ To develop and offer activities for all generations in the field of knowledge, science and technology.

MEASURES AND ACTIVITIES

- Continue to link the activities of the faculty with the application sphere in educational and scientific research activities in the existing scope and forms, develop new forms of cooperation.
- To present a range of topics in relation to the RDI FME TUL +2030 Strategy.
- To implement student internships in industrial companies, to define the topics of bachelor, diploma or dissertation theses in cooperation with industrial partners.
- Promote the employability of graduates in the labour market by incorporating new knowledge into teaching, innovating subjects.
- To develop cooperation with the Industrial Council of TUL with feedback on faculty activities.
- Promote new areas of contract research.
- Maintain links and develop cooperation with FME TUL graduates working in industrial practice.
- Strengthen the competences of academics in the field of technology, knowledge and service transfer, provide information and SW support.
- Provide outreach and project support to academics, strengthen the management associated with project activities and successful transfer, i.e. promotion and bidding, establishing partnerships, pre-project and project support, legal support, pre-commercialisation support.
- To create a new website, to innovate the presentation and promotion of the faculty in the field of scientific research topics, implementation and results, services, cooperation, education.

- Build on the national Transfera platform and the regional Lipo.ink platform.
- Faculty involvement in national and international platforms, institutions.

Linkage with the objectives and measures of the SP and the TUL Internationalization Strategy 2021–2030:

B-1-1, C-2-2, C-5-1, C-5-2, E-1-2, E-1-3, E-1-4, E-1-5, E-1-7

D/ THE ACADEMIC COMMUNITY AND THE FACULTY COMMUNITY

Strategic goal 2030

- The Faculty of Mechanical Engineering and its name are created and shaped by people – students, graduates, academics and other staff.
- The Faculty of Mechanical Engineering is a respected authority and employer.
- The Faculty of Mechanical Engineering is an attractive and inspiring workplace from the point of view of students and graduates.
- The Faculty of Mechanical Engineering is a place for academics to exercise academic freedom with personal responsibility to the Faculty, the University and society.

Assessment of the period 2016–2020

The Faculty is a staff-stabilized unit, the number of staff is more or less comparable in the last five years. The key persons of the scientific research teams are associate professors and professors, and from the point of view of sustainability and development of the faculty, young academic staff in the positions of assistant professors and doctoral students.

In terms of categories, academics predominate and this structure must be maintained in the future. Research teams of academic staff are supported by research staff in terms of links to research and development activities. However, teaching and learning, programme and course sponsorship and creative activity is and will continue to be based on tribal academic staff.

In 2020, the academic community included approximately 150 staff, approximately 110 overcounted. Of these, approx. 12 FTE professors, approx. 21 FTE associate professors, approx. 37 FTE assistant professors, approx. 13 FTE researchers, approx. 27 FTE others.

Over the past five years, the expected natural generational change of personnel has also occurred, and at the same time the faculty has been replenished. The faculty has a favourable age structure, which offers potential for the future development of the faculty. During the period under review, successful habilitation and professorial procedures were carried out, improving the qualification structure of academics, with an expected slight upward trend.

The organizational structure of the faculty is based on the tradition of the departments, which form the basic scientific and research workplaces carrying out research programmes and guaranteeing study programmes. Currently the Faculty consists of ten departments. The functioning of the faculty requires professional management of activities and professional staffing.

Since 2006, the faculty has been developing and setting systemic standards for the organisation and management of the faculty. The faculty is divided into departments and a dean's office. The Dean's Office comprises the top strategic management represented by the Dean and the Vice-Deans for the respective areas of activity, the Secretary and the administrative support apparatus, the Study Department and the Development and Projects Department.

The Faculty of Mechanical Engineering is a faculty with a tradition – the mechanical engineering industry in the Czech Republic has been the backbone industry since the time of the Austro-Hungarian Empire. Our faculty has made a significant contribution to this tradition since its foundation in 1953. During the existence of the College of Mechanical Engineering/College of Mechanical Engineering and Textiles/Technical University in Liberec, more than eleven thousand graduates have graduated from our faculty.

MILESTONES AND TARGETS 2025

Personnel area

- 1/ Increase of academic staff by about 10 to 20%.
- 2/ Strengthen research teams and departments with young academics at the positions of PhDs and Associate Professors.
- 3/ Increase faculty diversity, ideally from outside the university or from other parts of the university.
- 4/ To set up an adequate system of evaluation of academic staff and faculty members.
- 5/ Strengthen the competences of academics in their respective fields of activity.

Community area

- 6/ Realize community activities and discussion forums within the faculty, promoting discussions, exchanges of experiences and opinions.
- 7/ Promote student involvement in the academic self-government of the faculty and in student activities.

Cooperation with graduates

- 8/ To prepare the celebration of the 70th anniversary of the foundation of the University of Applied Sciences in 2023.
- 9/ Continue cooperation in the field of education, teaching and scientific research.
- 10/ Expand forms of cooperation with alumni and hold meetings with alumni.
- 11/ To present the stories of our graduates.

MEASURES AND ACTIVITIES

- Create and set up a system of evaluation of academic and other staff, taking into account teaching, scientific research and creative activities and results and other activities.
- Support and motivate young researchers.
- Promote the scientific growth and involvement of postdocs in scientific research activities.
- Open personnel policy towards heads of departments and feedback to faculty management.
- Strengthen accountability for the implementation of the departmental development plan and research directions.
- Financially motivate skills development.

- Improve internal communication, strengthen patriotism and accountability for faculty activities.

Linkage with the objectives and measures of the SP and the TUL Internationalization Strategy 2021–2030:

A-3-4, A-3-5, A-3-9, C-1-4, C-4-3, C-4-4, C-5-3, D-1-5, D-1-6, D-1-10, E-1-1, E-1-2, E-1-4, E-1-6

E/ MANAGEMENT OF ACTIVITIES

Strategic Goal 2030

- The Faculty of Mechanical Engineering is a faculty operating on the principles of professional management of activities and services with functioning information systems.
- The Faculty of Mechanical Engineering has a strategy for the management and coordination of activities, sufficient staff and carries out evaluation of activities to set parameters for its development.

Assessment of the period 2016–2020

During the period under review, several major strategic and conceptual steps were implemented, which predetermine the direction of the Faculty and which build on the steps initiated in 2006.

In 2016, discussions on the structure of new study programmes were initiated and a review of the standards of activities related to education and teaching in relation to scientific research was carried out in the framework of the preparation of study programmes. New degree programme accreditations were prepared and submitted to NAU during 2018-2019, and the process was successfully completed in spring 2020.

In 2018, a faculty discussion on the direction of the faculty's scientific research activities was initiated. The process was completed in January 2019 with the approval of the FME TUL R&D&I Strategy +2030. In autumn 2019, the preparation of the documents according to the M2017+ methodology for Module 3 Social Relevance of FME TUL and the documents for Modules 4 and 5 of TUL started. The standing faculty succeeded and was evaluated as very good in Module 3.

In September 2020, the process of preparing the Strategic Plan of the FME TUL for the years 2021–2025, with a view to 2030, was initiated, based on the above-mentioned strategic and conceptual steps. From the organisational and personnel point of view, the process of setting up the Faculty management in line with the general principles of functioning of self-governing units was completed.

The weak point of the university remains the information system, which is fragmented into many applications. The IS STAG system is beginning to show some deficiencies in relation to activities and required standards.

MILESTONES AND TARGETS 2025

Strategic management

- 1/ Continue with the set steps of strategic planning for faculty development.

- 2/ Strengthen the system of strategically oriented management based on planning and organizing activities, leading and coordinating people, and evaluating and controlling set objectives.
- 3/ Revise the set system of evaluation of the quality of faculty activities, determine and evaluate follow-up measures.
- 4/ Implement the principles of the European Charter for Researchers.
- 5/ Initiate discussions on the future direction of the faculty and the university.

Support activities

- 6/ Strengthen the functioning of administrative, managerial and professional facilities, including information and legal services.
- 7/ Improve the quality of management and activities related to project activities, including pre-and post-project steps and activities.
- 8/ To set and raise the standards of support apparatus activities at all organizational levels of the faculty.
- 9/ Continuously analyse the needs of the workplaces and set up systemic measures.
- 10/ Base decisions on analysis and data evaluation.

Presentation and promotion of the faculty

- 11/ To carry out technological and graphic innovation of the faculty's website.
- 12/ Continue the steps set in the area of presentation and promotion of the faculty with a focus on the use of digital platforms.
- 13/ Strengthen promotion and presentation with new forms and elements, including an international dimension.
- 14/ Popularise science, research and technology for all age groups.

MEASURES AND ACTIVITIES

- Increase the functioning of administrative, managerial and professional facilities, including information and legal support.
- Create and coordinate a platform for faculty staff as a space to share and address practical issues and real-world experiences across the spectrum of activities.
- Actively participate in the development of the TUL information system and the interconnection of individual modules of activity management, including the computerization of processes and document management.
- Work with TUL to change the system for managing international activities.
- Systematically build the brand of the Faculty, work on the promotion and perception of the brand of the Faculty of Engineering in the external environment.
- Promote the offer of all forms of study and scientific research topics, seek new forms of promotion and presentation in the Czech Republic and abroad.
- Introduce training activities to support management and other administrative activities.
- Enhance the management skills of managers through professional courses and seminars.

Linkage with the objectives and measures of the SP and the TUL Internationalization Strategy 2021–2030:

C-1-4, C-1-5, C-3-1, C-4-1, C-4-4, C-4-5, C-4-6, C-4-7, C-4-8, C-5-5, D-1-1, D-1-3, D-1-5, D-1-8, D-1-9, D-1-10, D-1-12, D-1-13, D-2-1

F/ INFRASTRUCTURE

Strategic goal 2030

- The Faculty of Mechanical Engineering is a research institute with a well-developed infrastructure of international standard.
- The Faculty of Mechanical Engineering is a financially stable research organisation that is able to ensure the renewal of its research and development infrastructure.
- The Faculty of Mechanical Engineering is in terms of its laboratory and experimental equipment a desirable workplace for researchers and PhD students from the Czech Republic and abroad.

Assessment of the period 2016–2020

In the period under review, the construction and technical reconstruction and completion of the faculty's departments and laboratories were in progress. The planned relocation of the faculty departments to the Husova campus from Building P and from Vesec to the newly built Building G was carried out. Buildings C and E1 were modernised and renovated, Building T was renovated and equipped, including new laboratories for two faculty departments. In 2019, faculty laboratories were relocated to Building L from Building E2 and the Vesec campus.

These steps completed the process of faculty development and concentration in the main campus of the university, which started in 2006 with the definition of the requirements of the Faculty of Mechanical Engineering of TUL for laboratory space. This step resulted from the approved Strategy of Science, Research and Development of the Faculty of Mechanical Engineering of TUL for 2006–2013. In the following years, the development of infrastructure, especially laboratories, was carried out in parallel with significant support from European funds.

Since 2012, there has been a significant and substantial development and strengthening of the RDI infrastructure as a result of the Structural Funds. During the period 2016–2020 the modernisation and instrumentation of the faculty continued and currently the faculty equipment is of a high standard and corresponds to international standards. In the last three years, more than 200 million EUR have been invested in the infrastructure of the faculty. CZK both from structural funds and from investment funds from grants and projects and from investment funds of departments.

In the context of rapid developments in technology, equipment needs to be continuously optimally updated, upgraded and adapted to new trends in order to maximise the benefits of past investments through their development. It is essential to maintain the pace of optimal renewal and investment, particularly in the areas of microscopy and analytical equipment, recording equipment, laboratory process lines, testing equipment, models, industrial robots, etc.

In the last year, we have managed to significantly increase the resources for HW and SW equipment

in classrooms, both in terms of the quality and level of the educational process and in terms of distance learning, evaluation of studies and testing. The Faculty has several classrooms that are prepared for multimedia teaching and online testing.

MILESTONES AND TARGETS 2025

Construction and technical development

- 1 / Reconstruct departments, classrooms and laboratories in Building F.
- 2 / To implement the construction of a new laboratory of the Department of Energy Equipment according to Green Deal principles next to the L building.
- 3/ To carry out ongoing construction and technical development, routine maintenance and repairs.
- 4/ In cooperation with TUL, reconstruct the Vesec laboratory facilities for the possible use of spaces and areas for prototype testing of research outputs and results.

Laboratory and classroom infrastructure

- 5/ Continuous upgrade and renewal of laboratory infrastructure for the development of research programmes.
- 6/ Investment development and modernization of classroom equipment and technology for new forms and methods of teaching.
- 7/ Create joint laboratories with industrial partners, so-called shared laboratories for educational and scientific research activities.

Information facilities and resources, SW

- 8/ Digitalization of technological and production processes, virtual laboratories.
- 9/ Ongoing purchase and upgrade of software for educational, research and retrieval activities.
- 10/ Introduction and interconnection of information systems for the management and registration of projects, publications, contract research, commercialisation outputs, R&D evaluation, personnel, etc.

MEASURES AND ACTIVITIES

- Prepare projects from European Structural Funds in the programming period 2021–2027 for the renewal and development of infrastructure.
- Use depreciation funds, positive management results, institutional funds and FRIM funds for infrastructure renewal.
- To cooperate with other parts of TUL in the purchase and acquisition of capital costly units on the principle of equality.
- Prepare an inventory of the status and requirements for the acquisition of HW and SW classrooms and laboratories.

Linkage with the objectives and measures of the SP and the TUL Internationalization Strategy 2021–2030:

A-1-12, D-1-7, D-2-2

FINANCIAL RESOURCES

- Contribution from the state budget
- Subsidies from the state budget
- Investment programme for the development of university infrastructure of the Ministry of Education, Youth and Sports of the Czech Republic
- Institutional development programmes of the Ministry of Education, Youth and Sports of the Czech Republic
- Subsidy programmes of regions and Prague,
- Projects of the Academy of Sciences of the Czech Republic, Grant Agency of the Czech Republic, Technology Agency of the Czech Republic, Ministry of Industry and Trade of the Czech Republic, Ministry of the Interior of the Czech Republic and others
- Projects of the OP Research, Development, Education, of the OP Business for innovation and other EU operational programmes
- HorizonEurope according to current calls
- International cooperation programmes in research and development
- Cross-border cooperation projects
- Programmes to support the mobility of university students and academics
- Own resources
- Contract research
- Complementary activities
- ad.

LIST OF ABBREVIATIONS

CR	Czech Republic
FME	Faculty of Mechanical Engineering
TUL	Technical University of Liberec
AS CR	Academy of Sciences of the Czech Republic
EU	European Union
ET	Education and Training
TA CR	Technology Agency of the Czech Republic
GA CR	Grant Agency of the Czech Republic
MIT CR	Ministry of Industry and Trade of the Czech Republic
MEYS CR	Ministry of Education, Youth and Sports of the Czech Republic
MI CR	Ministry of the Interior of the Czech Republic
MA CR	Ministry of Agriculture Czech Republic
M2017+	Methodology for evaluation of research organisations and evaluation of special purpose programmes support for research, development and innovation and Education

RIS	Regional Innovation Strategy
RIS3	National Research and Innovation Strategy for Smart Specialisation of the CR
SSPA	Student scientific and professional activities
SRI	Science, Research and Innovation
OP	operational programmes