TALLINNA TEHNIKAKÕRGKOOL
TTK UNIVERSITY OF APPLIED SCIENCES

SELF-EVALUATION REPORT FOR INSTITUTIONAL ACCREDITATION

Tallinn 2021
www.tktk.ee

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LIST OF ABBREVIATIONS

ADAPTER –	Estonian Research and Development (R&D) Community
ASTRA –	Institutional Development Programme for Research and Development Institutions and Higher Education Institutions
EHIS –	Estonian Education Information System
EKIS –	Estonian Schools Information System
EKKA –	Estonian Quality Agency for Higher and Vocational Education
ETIS –	Estonian Research Information System
EURASHE –	European Association of Higher Education Institutions
ICT –	information and communication technology
IT –	information technology
KPI -	Key Performance Indicator
LVRKK –	Lääne-Viru Rakenduskõrgkool
MER –	Ministry of Education and Research
OSKA –	Labour demand monitoring and forecasting system
R&D&I –	research, development, innovation
RPL –	Recognition of Prior Learning and Work Experience
RTIP –	Government Employee Self-Service Portal
SAIS –	Study Admission Information System
SIS –	Study Information System
TTK –	Tallinna Tehnikakõrgkool/ TTK University of Applied Sciences
TTK Lean –	TTK's project based on principles of Lean Higher Education
TTK UAS –	Tallinna Tehnikakõrgkool/ TTK University of Applied Sciences
UAS –	University of Applied Sciences
VPN –	Virtual Private Network

1. OVERVIEW OF TTK UNIVERSITY OF APPLIED SCIENCES

1.1. BRIEF INTRODUCTION OF TTK UAS

TTK University of Applied Sciences (hereinafter TTK UAS) is a state institution governed by the Ministry of Education and Research (hereinafter MER), which began operating as an institution of professional higher education in 1992 after the restructuring of TTK UAS' predecessor, Tallinn Technical School of Building and Mechanics, which operated from 1961 to 1992. The Garment and Textile Faculty was opened at TTK UAS in 2006 on the basis of the specialities taught at the Tallinn Technical School of Light Industry. TTK UAS and Lääne-Viru College (hereinafter LVRKK) merged in 01.09.2019 as a result of restructuring and the Institute of Service Economy was established on the basis of the former LVRKK.

TTK UAS' main building is located in Tallinn, at Pärnu mnt. 62. The laboratories of the Institute of Technology, the Institute of Civil Engineering and the Institute of Engineering and Circular Economy are located in Tallinn, at Siidisaba 7 and 8. The study buildings of the Institute of Service Economy are located 110 km from Tallinn at Tiigivahe tee 2 in Mõdriku, in Lääne-Viru County. TTK UAS' Study and Sports Centre is located in Topu, Kiviküla, Ridala municipality in Lääne County.

According to the Statutes of TTK UAS, the purpose of the university is to offer internationally recognized and competitive professional higher education based on science and technology in the area of engineering, manufacturing and construction; in the field of transport services in the area of services; in the field of business and administration in the area of business, administration and law; in the field of welfare in the area of health and welfare, and to provide public services based on instruction, applied research and creative activity areas.

The main functions provided in TTK UAS' Statutes are as follows:

1) conducting tuition in compliance with curricula of professional higher education and in-service training.
2) conducting applied research and providing expert opinion in the university's areas of activity.
3) contributing to innovation, knowledge and technology transfer and promoting professional higher education.
4) creating favourable conditions to the university's staff and students for study, applied research and development activities, for professional development and cooperation with other academic staff and students in Estonia and abroad.
5) ensuring organization of work which supports study and development and allows students to acquire knowledge, skills and ethical convictions for life and work.
6) cooperating with other educational institutions and partner organizations.
7) promoting other activities directed at achieving objectives.

The **mission** of TTK UAS, as a leader in professional higher education is to help design a learning path suitable for the learner and to be a reliable partner for the private and public sector. TTK UAS' **vision** is to be an internationally renowned professional higher education institution committed to top-level learning and applied research. TTK UAS' students and staff follow the university's **core values** in daily operations: people-focused approach, responsibility and entrepreneurship.

1.2. ORGANISATIONAL STRUCTURE

TTK UAS operates on the basis of the its Statutes adopted on 23.08.2019. The organisational structure of TTK UAS is provided in Figure 1. The university's structure comprises academic and support structure. The academic structure consists of six institutes, the Centre for Humanities and Economics and the Centre for Sciences. The support structure comprises the support units supporting the operations of the academic structure. TTK UAS' management bodies and principles are as follows:

- TTK UAS' Council is the highest collegial decision-making body of TTK UAS. Members of the Council represent the management, the academic staff and the student body. The competence of the Council is provided in the Statutes of TTK UAS and the work of the Council is regulated by the Rules of Procedure. As a rule, the Council's sessions take place once a month.
- The Advisory Board is the university's advisory body uniting the university and society. Members of the Advisory Board include members external to TTK UAS representing economy and culture, registered professional and occupational associations, employers' associations, and national and local municipal agencies. The Advisory Board proceeds from the Higher Education Act and TTK UAS' Statutes. The Minister of Education and Research appoints the members of the Advisory Board and approves its Rules of Procedure. The Advisory Board assesses the university's annual report and can make proposals to the Minister of Education and Research. TTK UAS' Advisory Board sessions take place 2 to 3 times a year.

- The Board of Professors is an advisory body of the Rector in academic issues and in strategic decision-making regarding research, development and innovation. The Board of Professors consists of ordinary professors and professors emeriti. The Board of Professors is managed by the head of the Board of Professors and the work format is assembly.
- TTK UAS is managed by the Rector. The Rector is in charge of the general state, development and for the legitimate and practical use of the financial resources of the university. The Rector is elected by way of a public competition for five years. The obligations, appointment and release from office are regulated by the Statutes of TTK UAS.
- Vice Rectors manage the areas of activity assigned by the Rector and the activities of the subordinate structural units. The Rector appoints the Vice Rectors. TTK UAS' areas of activity are managed by the Vice Rector for Academic Affairs and the Vice Rector for Development, whose areas of responsibility, rights and obligations are provided in job descriptions and other university regulations.
- The Rectorate is an advisory body to the Rector composed of the heads of areas of responsibility. The Rectorate is composed of the Rector, Vice Rectors, and other persons appointed by the Rector. The Rectorate has eight members in total, and depending on the issue under discussion, managers and specialists from other areas of responsibility are engaged. The Rectorate's meeting takes place once a week and the Rector enforces the decisions of the Rectorate or these are referred to TTK UAS' management for further discussion or to the TTK UAS' Council for approval. The Rectorate follows the university's Statutes, the Rules of Procedure of the Rectorate and other legal acts in its operations.
- The Management Board is formed to discuss operational management issues and to involve structural units and the Student Council in the decision-making process. The management consists of the Rector, the Vice Rectors, managers of the structural units, the lawyer and members of the Student Council. As a rule, the management convenes twice a month.
- Heads of structural units are appointed by the Rector. The structural units fulfil the objectives of the university operating in their respective area, in accordance with the Statutes and other legal instruments approved by the Council in the area of responsibility of the Rector or the person appointed by the Rector. The head of a structural unit reports to the Rector or the person appointed by the Rector and the Council.
- The Curriculum Council is an advisory body to the curriculum coordinator in development of the curriculum. The members of the Curriculum Council are appointed by the director of the institute for up to five years and the members include the curriculum coordinator, at least two speciality lecturers of the curriculum, at least two external members from professional associations or from representatives of employers and at least one representative of students.
- The Student Council is a representative body elected by the student body, which operates on the basis of the Statutes of the Student Body. The Student Council is run by the chair of the board. Student representatives belong to TTK UAS' decision-making and advisory bodies and working groups.
- The membership of TTK UAS is formed by the students, the employees and the emeriti. The membership assembles about three times a year, at the beginning and end of the academic year and at the end of the year, in addition to staff meetings, TTK UAS' anniversary, and Independence Day and Christmas events.

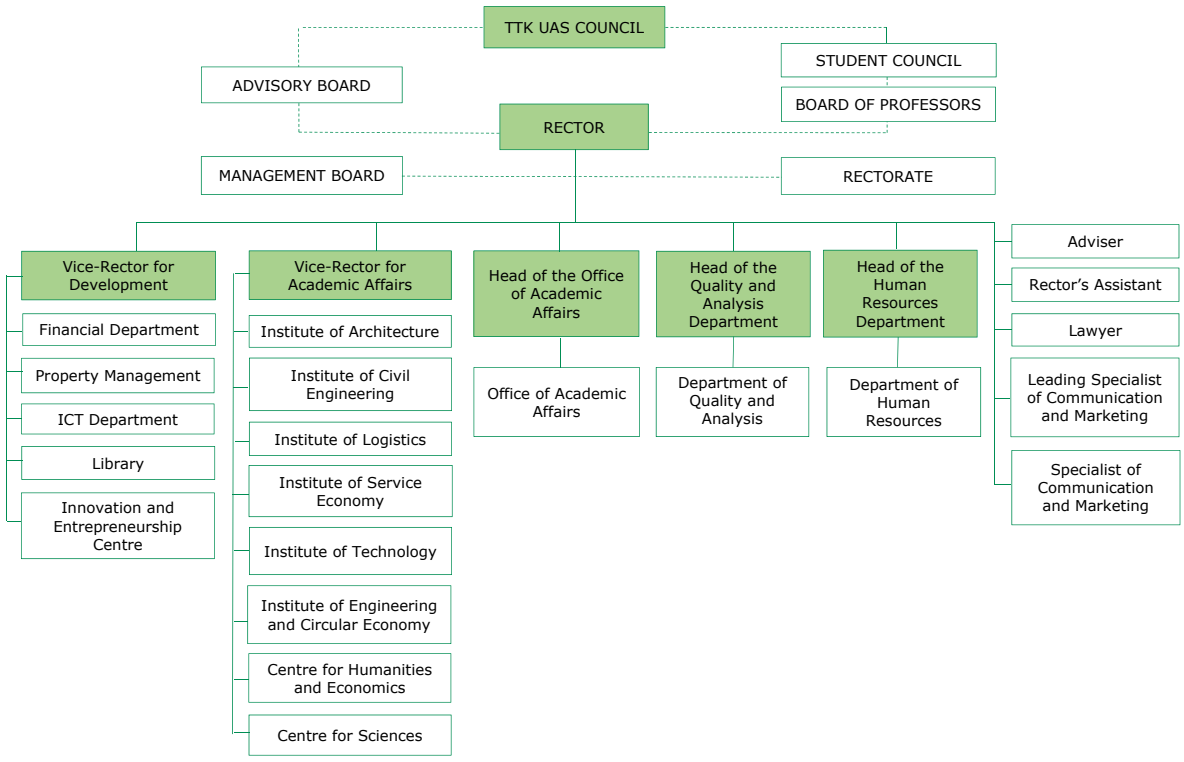

Figure 1. TTK UAS' organisational structure

The management decisions taken at TTK UAS' Council, Rectorate, Management Board, Advisory Board and Curriculum Council meetings are recorded in minutes and published in the Estonian Schools Information System (EKIS).

Stakeholders external to the university are included in the management of the university through advisory and decision-making bodies and the collection of feedback on the institutes and university level. Meetings between the Student Council and the Rectorate are organized when needed 3 to 4 times a year. Lecturers, as the implementers of the main activity, are involved in the strategic planning process and the university's advisory and decision-making bodies. Employers and alumni are involved in final theses defence committees, the work of Curriculum Councils and the Advisory Board. In addition to involvement in advisory and decision-making bodies, employers can provide feedback as participants in the company practical training process. Representatives of professional and occupational associations are involved in the work of the university's Advisory Board and Curriculum Councils.

1.3. AGGREGATED DATA ON STUDENTS

TTK UAS admits students and conducts studies in curricula of higher education level 1 (EQF Level 6). Admission planning is based on labour demand forecasts (OSKA reports), proposals of TTK UAS' Advisory Board, optimal use of the university's resources (staff and learning infrastructure) and higher education and economic policy guidelines. Admission of students takes place in the study admission information system SAIS. Admission conditions and procedure are established by TTK UAS' Council. Applicants to TTK UAS must have secondary or vocational secondary education or corresponding qualification from a foreign country. As a rule, the ranking is formed on the basis of the average mark on the school leaving certificate, points received in fulfilling the admission conditions and points awarded for completing courses supporting student's competence.

The general numbers characterising TTK UAS' student body are presented in Table 1. During the period under observation, academic years 2016/17 to 2020/21, the share of Estonian students has decreased by 5.3% (47 793 in 2016 and 45 259 in 2020), the student body of TTK UAS has increased by 34.3%, which is related to the merger with LVRKK. If the merger is left aside, then our students' basic indicators have remained rather stable.

In the 2020/21 academic year, students were admitted to 19 curricula, including four curricula (Fashion Engineering, Information Management and Information Systems Organization, Production and Production Management, Transport and Traffic Management) with admission to different majors or specialisations.

4120 admission applications were submitted for the planned 810 student places (see Chapter 3.8). As at November 10th, 2020, 778 first-year students were studying at TTK UAS. The number of students per curriculum is indicated in Table 2.

Table 1. General figures of the student body

	2016/17	2017/18	2018/19	2019/20	2020/21
Number of students	2183	2234	2175	3062	2932
Share of Estonian student body, %	4.6	4.8	4.7	6.8	6.5
Admission	592	651	602	847	778
Number of graduates	301	326	296	510	560*
Share of drop-outs, %**	23.0	15.4	15.9	14.6	13.7

**Forecast.*
*** Share of drop-outs across years.*

The large share of drop-outs at the beginning of the period under observation was related to the impacts of the higher education reform implemented in the academic year 2013/14. Many students, who had begun studies in student places for tuition, dropped out after the implementation of the higher education reform and started seeking learning opportunities without tuition fees.

Post higher education reform, TTK UAS' primary objective is to maintain a relevant number of graduates, i.e. a reasonable ratio of student input and output. In order to reduce the drop-out rate, measures have been implemented, like increasing the efficiency of student counselling, tutoring and mentoring, restructuring the Office of Academic Affairs, creating the position of Specialist of Academic Affairs, providing guidance to lecturers and referral in issues related to organisation of studies, analysis and adjustment of admission numbers, monitoring study performance, developing existing curricula and creating new ones, enriching studies by developing laboratories and implementing information technology in studies and other activities. In the academic year 2020/21, the share of drop-outs at TTK UAS had fallen to 13.7%, the corresponding indicator in Estonian higher education is 13.5%.

Table 2. Number of admitted students per curriculum

Academic year	Number of curricula	Number of admitted students	Number of students per curriculum
2015/16	13	635	48
2016/17	13	592	45
2017/18	15	651	43
2018/19	15	602	40
2019/20	19	847	44
2020/21	19	778	40

Until TTK UAS' merger with LVRKK, admission was organised for the curricula in the study areas of technology, production and civil engineering and services. From the academic year 2019/20, curricula in the study fields of business, administration and law, and social work were added.

Considering the limited volume of this report, the basic indicators of business, administration and law and social work curricula have not been analysed in the context of the former higher education institution, moreover, the institutional accreditation of the former LVRKK took place in 2018.

The number of students across curricula is provided in Table 3. During the period under observation, the competition has been sufficient in all curricula to open a study group. The blanks in the table show that the curriculum was not implemented (had not been opened yet or admission no longer took place).

Table 3. Number of students across curricula

Curricula	2016/17	2017/18	2018/19	2019/20	2020/21
Study area of technology, production and civil engineering in total	*1870*	*1926*	*1844*	*1817*	*1749*
Applied Architecture	139	145	131	129	125
Building Construction	340	342	321	285	277
Facilities Management	–	28	36	47	56
Construction Geodesy	20	30	25	38	46
Road Construction	205	203	197	186	187
Environmental Technology and Management	76	81	83	88	80
Production and Production Management	60	110	153	218	223
Resource Management in the Field of Clothing and Textiles	158	163	149	106	67
Fashion Engineering	131	109	98	125	138
Automotive Engineering	300	291	254	234	205
Industrial Technology and Marketing	89	85	69	50	33
Electrical Engineering	125	124	128	114	105
Mechanical Engineering	227	215	200	176	167
Robotics Engineering	–	–	–	21	40
Study area of services in total	*313*	*308*	*331*	*352*	*374*
Transport and Traffic Management	–	–	35	58	80
Transport and Logistics	268	271	271	282	285
Railway Engineering	44	37	25	12	9
*Study area of business, administration and law in total***	*515*	*533*	*508*	*666*	*589*
Assistant Manager	91*	108*	113*	66	44
Commercial Economics	136*	132*	115*	124	70
Accounting	222*	224*	223*	216	195

Curricula	2016/17	2017/18	2018/19	2019/20	2020/21
Management of Business Information Systems	66*	69*	57*	41	24
Purchasing and Procurement Management	–	–	–	–	23
Information Management and Information Systems Organization	–	–	–	39	68
Business Administration	192*	187*	231*	180	165
*Study area of health and welfare in total***				*227*	*220*
Social Work	244*	228*	231*	227	220
Total number of TTK UAS' students	**2183**	**2234**	**2175**	**3062**	**2932**

**Reflects LVRKK numbers before merging with TTK UAS.*
***Until 2019, the curricula of business, administration and law and health and welfare study areas were under governance of LVRKK.*

In relation to the merger of TTK UAS and LVRKK, at the order of the MER, the university's is tasked with reducing the number of curricula and students in business, administration and law study area and to improve the regional accessibility of engineering curricula. Considering the aforementioned and the changes on the labour market, the admission at the Institute of Service Economy is for the curricula of Business Administration, Accounting, Social Work and Information Management and Information Systems Organization. During the 2020/21 academic year, the Production and Production Management curriculum was launched in Mõdriku. Admission of students to different curricula is provided in Table 4.

Table 4. Admission of students across curricula

Curricula	2016	2017	2018	2019	2020
Applied Architecture	32	31	31	28	35
Building Construction	90	74	65	59	66
Facilities Management	–	28	21	21	20
Construction Geodesy	0	13	13	24	16
Road Construction	49	62	62	56	54
Environmental Technology and Management	22	25	30	20	24
Production and Production Management	60	62	53	73	57
Resource Management in the Field of Clothing and Textiles	40	42	35	–	–
Fashion Engineering	32	26	29	59	54
Automotive Engineering	80	78	54	48	46
Industrial Technology and Marketing	20	28	24	–	–
Electrical Engineering	38	33	29	26	24
Mechanical Engineering	50	60	51	41	44
Robotics Engineering	–	–	–	21	25
Transport and Traffic Management	–	–	35	35	38
Transport and Logistics	73	78	70	70	66
Railway Engineering	6	11	–	–	–
Purchasing and Procurement Management	–	–	–	–	23
Assistant Manager	45*	41*	39*	–	–
Commercial Economics	46*	50*	38*	39	–
Accounting	88*	79*	77*	71	53
Management of Business Information Systems	22*	25*	23*	–	–
Information Management and Information Systems Organization	–	–	–	39	36
Business Administration	73*	49*	49*	50	37
Social Work	81*	66*	74*	67	60
Admission numbers in total	**592**	**651**	**602**	**847**	**778**

**Reflects LVRKK admission before merging with TTK UAS.*

TTK UAS evaluates the sustainability of its curricula also on the basis of the number of graduates. If the number of graduates (and admitted students) falls, the root causes of the tendency are analysed. If there is a demand for graduates of a curriculum in the labour market, but the curriculum is not popular enough, nearby curricula are merged and more narrow study outcomes are achieved through a curriculum minor speciality (e.g. the Railway Engineering curriculum was closed, and the relevant study outcomes are in the Transportation and Traffic Management curriculum). In other cases, the curriculum is closed. Considering cost efficiency principles it is inevitable in the study process, but we prefer to make decision on the basis of a complex approach. Number of graduates across curricula are provided in Table 5.

Table 5. Number of graduates across curricula

Curricula	2016/17	2017/18	2018/19	2019/20	2020/21**
Applied Architecture	17	36	19	22	26
Building Construction	20	46	49	43	42
Facilities Management	–	–	–	–	8
Construction Geodesy	4	8	6	–	6
Road Construction	38	25	29	24	29
Environmental Technology and Management	16	20	7	18	13
Production and Production Management	–	–	–	29	44
Resource Management in the Field of Clothing and Textiles	27	29	27	23	24
Fashion Engineering	25	22	17	13	15
Automotive Engineering	39	40	37	46	49
Industrial Technology and Marketing	19	14	10	14	12
Electrical Engineering	13	18	22	21	24
Mechanical Engineering	24	23	26	24	24
Robotics Engineering	–	–	–	–	-
Transport and Traffic Management	–	–	–	–	-
Transport and Logistics	48	39	39	44	47
Railway Engineering	11	6	8	–	8
Purchasing and Procurement Management	–	–	–	–	-
Assistant Manager	19*	16*	21*	17	21
Commercial Economics	24*	32*	30*	28	26
Accounting	55*	50*	53*	58	46
Management of Business Information Systems	7*	13*	9*	7	7
Information Management and Information Systems Organization	–	–	–	–	–
Business Administration	35*	25*	28*	35	22
Social Work	49*	58*	49*	44	67
Number of graduates in total	**301**	**326**	**296**	**510**	**560**

**Reflects number of LVRKK graduates before merging with TTK UAS.*
***Forecast.*

Earlier, we mentioned TTK UAS' high drop-out rate, the reasons for this process and the implemented measures. As a result of implementing a number of measures, we have reached a reasonable level (15%) in 2020. Unfortunately, the more general approach to the drop-out problem is out of the operational scope of the university. The regulations on rights and obligations of the university and the students are in need of review. The target group of 30+ students makes up ca 30% of the student body. Many students in this target group work and study at the same time, and the employer's interests usually dominate. Thereby, the period of studies is extended and in part-time studies, they will have to start paying for their credits. Often, this results in dropping out.

Age distribution of TTK UAS' students as at 2020 is indicated in Figure 2.

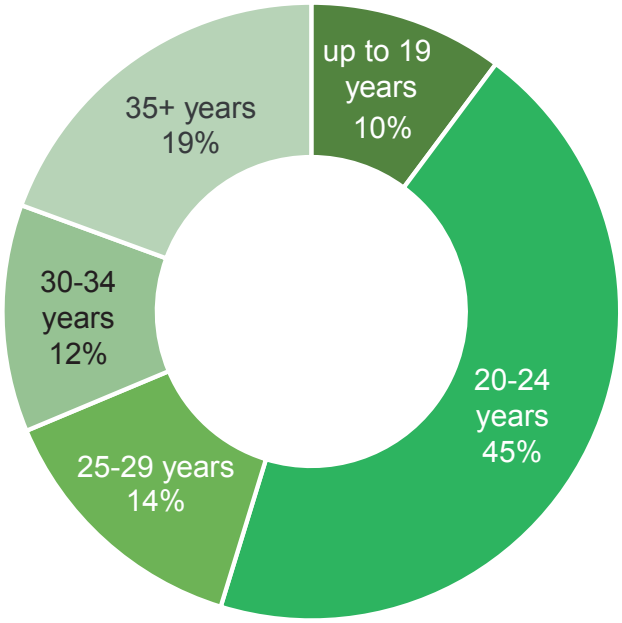

Figure 2. Age distribution of TTK UAS' students in 2020, %

The contemporary student body is heterogenous (some students do not aim to finish all studies, but wish to acquire selective study outcomes, because they already have a higher education diploma from previous studies etc). The share of drop-outs across study is provided in Table 6.

Table 6. Share of drop-outs across study areas, %

Study area	2016	2017	2018	2019	2020**
Technology, production and civil engineering	15.7	16.3	14.9	17.2	16.5
Service	23.3	13.4	13.7	13.0	13.0
Business, administration and law*	-	-	-	17.1	13.7
Health and welfare*	-	-	-	12.1	15.8
TTK UAS' average	**23.0**	**15.4**	**15.9**	**14.6**	**13.7**

**Curricula of these study areas were under the governance of LVRKK until 2019.*
***Preliminary data.*

1.4. AGGREGATED DATA ON EMPLOYEES

Staff composition

There are 226 employees at the university in 2020. In addition, 93 visiting lecturers have been involved. Larger changes to the composition of employees took place on 01.09.2019, when TTK UAS merged with LVRKK. The consolidated data on the university's academic employees and support staff over the past five years are provided in Table 7.

In the period 2016-2020, the average age of employees has remained between 47.5 to 50.3 years and the general staff turnover has been between 7.1-10.2%, which ensures stability and renewal of staff.

Competition for free jobs in 2016-2020 has remained in the range of 4.3-22.5. The number of applicants has been higher in years when more support staff has been recruited.

Table 7. Staff figures

Indicator	2016	2017	2018	2019*	2020
Number of academic staff	**117**	**115**	**112**	**131**	**126**
In addition, number of visiting lecturers	69	69	71	100	93
Professors (and associate professors)	6	8	8	10	13
Number of lecturers with doctoral degree	13	14	14	14	15
Average age of academic staff	47.14	47.83	48.21	48.85	49.49
Gender distribution of academic staff:					
Share of women, %	46.15	46.96	47.32	45.04	45.24
Share of men, %	53.85	53.04	52.68	54.96	54.76
Number of support staff	**76**	**75**	**78**	**102**	**100**
Average age of support staff	49.05	47.75	49.13	52.35	51.52
Age distribution of support staff:					
Share of women, %	65.79	62.67	62.82	69.61	70.0
Share of men, %	34.21	37.33	37.18	30.39	30,0
Support staff per academic staff in FTEs	0.63	0.66	0.65	0.71	0.73
Total number of employees	**262**	**259**	**261**	**333**	**319**
Staff ratios					
Total number of filled positions in FTEs	171.7	172.9	165.5	200.6	198.3
Positions of academic staff in FTEs	99.7	103.8	99.3	117.5	108.4
General staff turnover rate, %	8.8	10.2	7.5	7.1	9.3
Average competition per position	22.5	10.3	6.1	7.4	4.3
Employee trainings, seminars, conferences					
Training volume (in academic hours) per employee per year	28.2	23.3	20.1	33.3	39.8

**Data after merger of TTK UAS with LVRKK.*

1.5. OVERVIEW OF INSTITUTIONAL ACCREDITATION SELF-EVALUATION PROCESS

A steering group composed of – chairman - Rector Enno Lend; members- Vice Rector for Academic Affairs Martti Kiisa and Leading Specialist of Academic Affairs Anne Rooste – was formed to conduct the institutional accreditation self-evaluation. The steering group was tasked with coordinating the compilation of the institutional accreditation self-evaluation report based on guidelines of the Estonian Quality Agency for Higher and Vocational Education (EKKA).

In order to determine TTK UAS' current situation and evaluate the achievement of the Strategic Plan 2016-2020 objectives, the university management's (Rector's Office, heads of structural units, students and representatives of academic staff) development seminar took place on 09.06.2020, during which a TTK UAS' SWOT-analysis was carried out. The follow-up seminar took place on 26.11.2020 with the objective of mapping the current position of the university once again and compiling the development areas of the Strategic Plan 2021-2025. The compilation process of institutional accreditation self-evaluation report was concerted in the course of these seminars. The more detailed compilation of the report chapters took place in working groups.

The self-evauation period lasted from September 2020 until June 2021. Preparations began in September, the staff and students were informed and the areas of responsibility for compiling the report were assigned. The self-evaluation report compilation working groups were formed and the schedule was approved with the Rector's decree on 02.10.2020. Members of management, curriculum coordinators, lecturers, sectoral specialists and students participated in the institutional accreditation seminar which took place in October. According to the schedule, writing the self-evaluation report chapters, compilation of curriculum reports and their annexes and writing the report took place from October to December. Working group meetings, discussions and interim reviews were organised during this process. The self-evaluation report was introduced to TTK UAS' staff, students and stakeholders in the spring semester of 2021.

Compilation of the report relied on EKKA's recommended reporting guidelines. The chapters are structured so that the descriptive part is followed by a brief summary of strengths and necessary development and improvement activities. Formulation of the named activities is based on TTK UAS' weaknesses (internal factors) and threats (external factors). Several of the development and improvement activities named in the report are included in the 2021 Action Plan.

2. OVERVIEW OF IMPLEMENTATION OF PROPOSALS FROM THE PREVIOUS INSTITUTIONAL ACCREDITATION

Proposal 1: The university must better highlight the connections between planning documents. It is also necessary to better connect the objectives arising from the Strategic Plan, the activity support contract and the annual action plan so that these could be clearly traced through all the documents. This important information must be made available to all stakeholders.

Explanation: Currently, TTK UAS' activity planning documents are as follows.

- The university's Strategic Plan, five-year period. Responsible: TTK UAS' Council.
- Action Plan, per calendar year. Responsible: Rector.
- Budget, made up of activity support (determined by MER), the university's own income and project resources. Responsible: Rector.
- Academic structural units' action plan lays down the activities of the the structural unit, which consider the priorities of the university as a whole. Responsible: head of structural unit.
- Annual Report includes an evaluation to execution of the university's Action Plan, the Annual Financial Report (income and cost items) and specification of the following year's Action Plan priorities. Responsible: TTK UAS' Council.
- Structural unit annual report, which provides an evaluation to fulfilment of the structural unit's action plan and outlines the following period's development topics. Responsible: head of structural unit.

The university's strategic management processes, also interaction with the MER and other stakeholders are presented on Figure 3. The aforementioned planning documents are available on the TTK UAS' homepage. Also, relevant activities and results are introduced at the information meetings at the beginning and end of the academic year. In addition to the aforementioned, academic units' meetings take place, which cover the topics and development directions under their responsibility. Planning the management decisions "bottom up and top down" takes place at Management Board and Rectorate meetings. According to TTK UAS' Statutes, regulations, codes of procedure etc. are established with a decision by TTK UAS' Council.

Proposal 2: The university must investigate why the sabbatical period is used very rarely.

Explanation: The sabbatical period has mostly been used by lecturers in doctoral studies. The lecturer initiates the sabbatical period application. The sabbatical period being used rarely can be explained by the fact that it is difficult to find a professional substitute to the lecturer on sabbatical period (studies, research, development and creative work, projects) for one semester. The requests of all lecturers who have applied for a sabbatical period during the period under observation have been taken into account. During the reporting period, there were four of them.

As using the sabbatical period has not been attractive, we have developed alternative options to support lecturers (see Chapter 3.6.2):

1) The workload of lecturers in degree studies is reduced without changing the remuneration.
2) At the request of the employee, time is allotted for self- development, e.g. planning time free of studies in the timetable over the course of a few months with the same remuneration.

Proposal 3: The university must implement appropriate staff development measures to ensure lecturers' academic and personal development in all age groups.

Activities:

- Input information gained during evaluations (appraisals, internal evaluation, accreditation, feedback surveys etc.) is considered in employees' training and development, remuneration, planning for progeny and career planning (horizontal and vertical).
- In employee development, employees' professional and personal development is considered in addition to achiev-

ing the university's strategic objectives.
- We deal with the development of lecturers' (digital) pedagogical and subject-related competencies and focus on supporting those who are lagging (support persons, trainings, guidelines).
- In cooperation with the manager, the employee's personal development need is ascertained, and the more time-consuming trainings (including degree studies) are agreed during the performance interview and planned in the lecturer's workload every year.
- The university's didactics research group is involved in developing lecturers' teaching competencies (finding out the training need, colleague to colleague seminars, internal trainings, guidance materials).
- Each new employee is assigned an onboarding support person. There is also an e-learning support person in every academic unit.
- Evaluating academic activities proceeds from the requirements set for a specific position, the noteworthy is highlighted and the employee's development need is outlined and recommendations are made on university level for improvement activities.

Proposal 4: The university must continue to monitor the drop-out rate and analyse the reasons in order to find opportunities to reduce the drop-out rate.

Activities: The university has continually dealt with reducing drop-out events. By use of qualitative research methods, the reasons for dropping out which can be managed by the university have been ascertained. An efficient system of tutors and mentors has been launched, institutes have appointed group supervisors, the positions of academic affairs specialists have been created and the student admission rates have been analysed and adjusted. The admission threshold across curricula has also been reviewed. In summary, the focus has been on fostering the right decision during admission (choice of curriculum) and improving the support for students and counselling during studies.

In the time period 2016-2019, the share of drop-outs (share of students who dropped out compared to total number of students) has continued to decrease. The drop-out rates' timeline from 2016 is 23.0%, 15.4%, 15.9% and 14.6% in 2019 (haridussilm.ee). In 2020, the drop-out rate was 13.7%.

Proposal 5: The university must continue to deal with eliminating the obstacles to foreign mobility in case of both lecturers and students, so that international mobility opportunities would be used more widely. It is also necessary to look at other possibilities to increase employees' internationalisation, e.g. invite more foreign lecturers to the university or to appoint professors with a solid international profile.

Activities: The Ministry of Education and Research has made a higher education political decision that it is not important to promote foreign language curricula at professional higher education institutions and the corresponding performance indicator will no longer be used. Due to this, the focus is primarily on Erasmus+ mobilities, including contributing towards promotion of blended and virtual mobility opportunities. Additional means have been found to fund study trips abroad in order to provide international experience also to those students, who due to certain obstacles, cannot go abroad for a longer period of time. The network of partner universities has been extended to provide students from different curricula a better choice to gain foreign experience. In addition, English-language modules are offered in our curricula.

To adopt a more diverse approach in terms of employee internationalization, an emphasis has been made to encourage participation in international projects and cooperation networks. At the beginning of 2021, TTK UAS has 35 active projects.

With the help of ASTRA and Erasmus+ projects, foreign lecturers have been engaged for shorter- and longer-term work at TTK UAS.

Proposal 6: The university must regularly review its objectives and priorities in research and development to ensure these correspond to the university's resources and possibilities. The research and development goals must be defined more clearly, applied research and development activities' priorities should be outlined in concrete terms and firmly adhered in the action plan.

Activities: A number of substantial and structural changes have taken place in the research and development area during the reporting period: in 2016, the research, development and creative work development directions were compiled and the areas which required additional investments to renew the laboratories were defined. In 2017, the Technology Transfer Centre was reorganised into the Entrepreneurship Centre with the aim of solving companies' practical problems by applying the university's lecturers' scientific potential and involvement of students. In order to define the research, development and creative work objectives and priorities more clearly, formation of research groups began in 2017. Planning the activities of the research groups is integrated with the Board of Professors and the activities are coordinated by the head of the Board of Professors.

In 2017, we joined the entrepreneurship environment platform ADAPTER, which brings together Estonian higher education institutions and research institutions. In the following years, we participated in and helped to organise a number of seminars and conferences directed at companies.

New study laboratories with emphasis on digital and virtual component have been developed, which increase and diversify the university's R&D&I capacity in the future, e.g. robotics laboratory, electrical technology laboratory, logistics simulation laboratory etc.

Proposal 7: It is recommended that the university continue with spin-off company developments.

Activities: During the period 2015-2017, there has been one spin-off company at the university – PROKeraamik OÜ (cooperation agreement No 4-13/3), and its main activity was developing construction material from a textile-based composite. Negotiations are underway to initiate a new spin-off to develop a set of screwdrivers; currently, we are resolving intellectual protection issues with the Estonian Patent Office.

One of the reasons for the scarcity of spin-off companies is the specificity of the technology sector, which in case of an applied spin-off companies, based on existing examples, is production-based. First and foremost, a starting company needs production area from the university and less mentoring and support for processes.

The university considers it very important to integrate entrepreneurship studies in degree studies: most curricula include at least 6 credits worth of entrepreneurship subjects. There are many project-based subjects and opportunities to gain practical experience. The students participating in the FormulaStudent project are highly appreciated on the labour market and several of them have started their own companies, and as a rule, continue to deal with self-driving cars, developing machine vision and other areas (e.g. Tuul electrical scooters was established by the Formula Student' team leader).

In several cases, TTK UAS has been a considerable help to start-ups, and allowed use of its (laboratory) facilities. The most recent project has been developing a concrete printer and TTK UAS has contributed with the facilities necessary to build a prototype and the know-how of the lecturers and students.

Proposal 8: In the framework of renovation plans, the university must improve access to study buildings to people with mobility difficulties.

Activities: In carrying out the university's infrastructure renovations, ensuring access to people with mobility difficulties has been taken into account. In 2016, lifts were installed in the main building and in 2017, a lift with disabled access was installed in the main building lobby during reconstruction. During the renovations in the laboratory building's third floor in 2018-2020, a lift connecting all floors was installed between the main building and the laboratory building.

It is important to ensure access to people with special needs and convenient usage of facilities: safety stickers, low sills, disabled toilets. The new study building-dormitory planned in Mõdriku will improve access of people with mobility difficulties compared to the current situation.

3. SELF-EVALUATION ACROSS STANDARDS

3.1. STRATEGIC MANAGEMENT

TTK UAS' objectives and development aims are provided in the Strategic Plan for five years. In this report, we will cover the main development directions of the TTK UAS' Strategic Plan for 2016-2020 and for 2021-2025.

The Strategic Plan 2016-2020 was approved at the TTK UAS' Council session on 17.02.2016 and coordinated at the MER on 09.02.2016. The central goal of development in this period was raising TTK UAS' competitiveness and increasing the university's operational efficiency by implementing the principles of Lean Higher Education (a set of principles and methods to provide lifelong learning and applied research services with optimal resource spending, maximising the value awarded to the stakeholders. The lean approach is based on reducing overspending within the organisation, continued improvement and valuing people in the organisation).

Implementation of the developments and corresponding activities in the Strategic Plan are described in the annual action plan. The action plans are compiled across the university and academic structural units.

During the period of the Strategic Plan 2016-2020, the most important objectives and achievements (see Table 8) were the following:

- Raising the university's strategic capacity and efficiency of using resources according to the objectives set in the project "TTK Lean".
- Decreasing TTK UAS' organisational structure hierarchy, i.e. shorter management chains and clearer areas of responsibility. The two-level management structure (faculties and chairs) was reorganised into single-level academic structural units (institutes and centres).
- The competence of teaching economy and entrepreneurship subjects was consolidated to the Centre of Humanities and Economics. Earlier, this competence was fragmented between several structural units.
- In order to improve student administration and study counselling, the work of the Office of Academic Affairs was reorganised, student databases' administration and quality monitoring take place in the Quality and Analysis Department, management of curricula and the study process takes place in the Office of Academic Affairs (both formal and non-formal learning).
- For better administration of R&D&I-related activities (preparation, conclusion and administration of contracts etc.), the Innovation and Entrepreneurship Centre was formed and the relevant division of roles of the institutes and the centre was agreed.
- For more targeted management of R&D&I-related activities, research groups were formed (may be pan-institute), which are based on the competence of research group members.
- In 2019, the former LVRKK was merged with TTK UAS and the TTK Institute of Service Economy was established in Mõdriku.

Table 8. Strategic Plan 2016-2020 objectives and fulfilment

Objective	Result
Share of TTK UAS graduates of higher education first level graduates at least 5% and at least 10% of professional higher education graduates.	9.6%* (6.0%); 22.3%* (13.9%)
At least 600 students a year are admitted, number of graduates by 2020 at least 340.	Admission 778* (569); Graduates 510* (320)
Drop-out rate 17% by year 2020.	14.6%
Rate of employment and continuation of studies 95%.	97%
Share of turnover earned from economic activity out of activity support 11% by 2020, at least 2 operating spin-off companies.	12% (2019); 9% (2020)
Share of visiting lecturers of academic staff in FTEs 10–20%.	10.3%
Number of students per lecturer position at least 20.	27.7 (see Ch 3.6.1)

**reflects TTK UAS' and LVRKK's consolidated data. Data in brackets refers to figures without LVRKK.*

TTK UAS' strategic management operational model is presented in Figure 3. In addition to the Estonian context, we take into account EU higher education development trends by participating in the EURASHE and UAS4Europe cooperation networks. Monitoring labour market expectations and development trends takes place by participating in curriculum sectoral cooperation bodies and working groups (Employers' Confederation, Association of Estonian Engineers, Estonian Association of Architects, Estonian Qualifications Authority, professional councils).

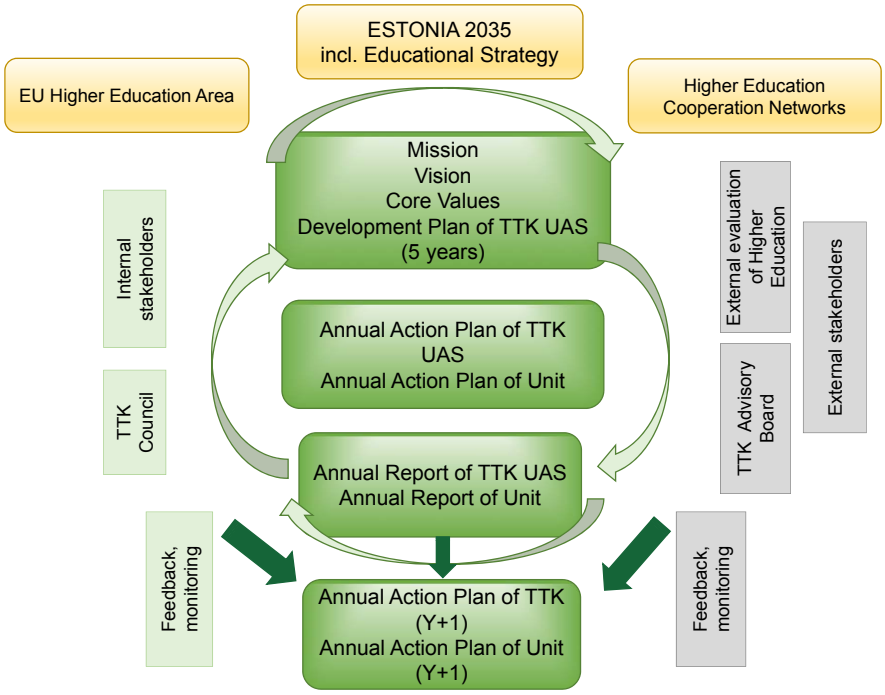

Figure 3. Operational model of TTK UAS' strategic management processes

According to Figure 3, TTK UAS analyses the need for change management from internal and external environment aspects and plans change management measures and timeline. In development of main activities, managers on all levels pay attention to relevant communication and promotion of an organisational culture that supports learning, working and welfare.

The Strategic Plan is a five-year strategy document, which primarily defines what we aspire towards and which restrictions we need to consider in our activities. The university's Strategic Plan is coordinated with the MER and the Advisory Board. The Strategic Plan is established with a decision by TTK UAS' Council.

TTK UAS' Annual Action Plan takes into account the Strategic Plan and other national guidelines. The Action Plan discussions take place at the meetings of the Rectorate and the Management Board and is coordinated in TTK UAS' Council. Action Plan defines the university's main objectives and activities across sectors (general management, studies, research and development and serving society). In addition to describing activities, the Action Plan also describes objectives, deadlines for activities and the responsible people and involved executors.

The interim analysis of fulfilment of the Action Plan takes place at the spring development seminar at the end of the academic year. Summaries are drawn at the end of the year/beginning of the next year. Annual Report is compiled, which is introduced to TTK UAS' Advisory Board. Then it is approved by TTK UAS' Council along with the financial statement and submitted to the MER.

The measurable and assessable performance indicators, which in essence, are the institutes' and centres' activity indicators, are part of the Action Plan. These are the basis for the university as a whole and each structural unit separately to assess the organisation's targeted activity (self-evaluation and benchmarking). The institutes' and centres' Annual Action Plans proceed from the general objectives of the university's Action Plan and focus on the structural unit's activities.

In summary, the approach described above helps reduce:

- vision barrier – in developing TTK UAS, we want to discover and analyse several development scenarios;
- resource barrier – development ideas can vary, but implementation requires motivated staff and financial resources;
- management barrier – change management, planning and implementing activities is efficient if an equal amount of attention is paid to management and leadership.

Strengths

- TTK UAS has a dedicated, competent, sustainable and optimal composition of employees, which ensures the university achieves its objectives.
- Renewal of curricula (opening/closing) considering the merger of higher education institutions and expectations of the labour market.
- Integration of LVRKK's studies and employees and creating common values.
- Consistent development of the study process, methodology, digital infrastructure, learning materials and concept of learning made it possible to successfully conduct blended learning in 2020.
- A reasonable balance between R&D&I and studies, which considers the current activity support model and supports the employees' motivation. TTK's academic staff's research capacity has increased.
- Reconstruction of the TTK UAS study environment and establishment of the new generation laboratories *(Industry 4.0, Logistics' simulation lab, Textile minifactory etc.).*

TTK's main development areas in 2021-2025: (see Strategic Plan)

- An innovative organisation and dedicated people.

TTK UAS' organisational structures are balanced and innovative, targeted at performance and cost efficiency. The university's management quality is expressed in creating synergy between the TTK UAS' Council, Rectorate, structural units and Student Council. Work and study environment supports the employees' mental and physical well-being.

- Facilitation of conducting degree studies and lifelong learning.

TTK UAS' graduates have knowledge, skills, values and attitudes valued on the labour market and that empower the graduates' development in professional and private life and support the success of the Republic of Estonia.

- Contemporary learning concept.

The institution's goal is to apply contemporary learning concepts. This means that in addition to professional knowledge, we pay attention to developing creativity, cooperation and social skills and entrepreneurship and management competencies and service to society in our areas of responsibility. We promote self-reliant and flexible lifelong learning, considering the diversity of people's learning paths and structural changes in economy. We develop lifelong learning pathways that take into account the learner's profile.

- Promotion of R&D&I.

With R&D&I, we help to advance technology- and knowledge-intensive companies and the development of higher added-value products and services. We support the development of a smart economy and introduction of sustainable technologies through applied research and innovation. We create need-based scientific cohesion between the university and companies, improve the operational capacity of TTK UAS' applied research and development activities.

- An infrastructure and ICT which support competitiveness.

By developing our infrastructure and ICT, we support the competitiveness of TTK UAS' main activities, implement best practice to improve the study and work environment. We support implementation of contemporary study methods, including blended and flexible learning. In financial management, the objective is a value-based approach, including transparent and economical use of resources, in budgeting, we apply full costing and plan resources in balance across categories of expense.

- Service to society and communication.

The university is a collaborative partner to the community's target groups (learners, alumni, private and public sector etc.), we plan activities to promote the welfare and development of external target groups. We support communication with target groups and informing the general public.

In managing TTK UAS' main and support activities, we proceed from the principle of balanced development of areas (studies, research and development (R&D), financial and Human Recources (HR) management, infrastructure etc.) and we value a systemic, informative and participatory management style (see Figure 4). Managers are expected to be leaders, have expert knowledge, involve lecturers and students, and to behave and act according to agreements.

The list of activities and KPIs (key performance indicator), by which TTK UAS intends to achieve the aforementioned development directions, are provided in the Strategic Plan 2021-2025.

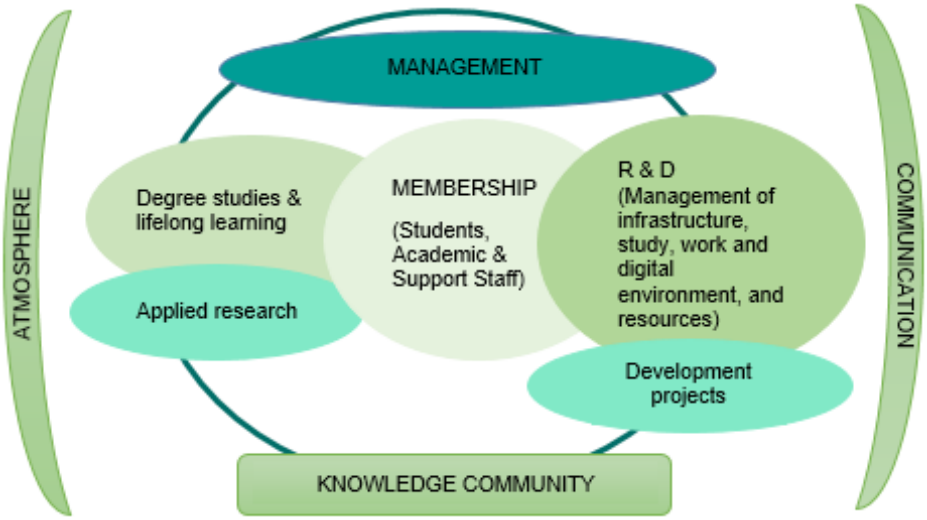

Figure 4. TTK UAS' management areas

3.2. RESOURCES

Resource management includes HR management and systemic approach and goal-oriented management of finances and resources.

Resource management proceeds from the tasks, obligations and rights provided in the university's and structural units' Statutes and other legal acts. The main legal acts regulating the area are as follows:

- Remuneration Procedure;
- Rules of Work Organisation;
- Conditions and Regulations for Creating and Filling Academic Staff Positions;
- Procurement Procedure;
- Occupational Health and Safety Procedure;
- Operational model of the Finance Department;
- Procedure on compilation of the financing plan and basis for budget use;
- FitekIN Accounting Centre's invoice approval policies and confirmation of roles.

3.2.1. Staff management and development

The long-term strategic goals of staff management are described in the university's Strategic Plan and the necessary activities to achieve the goals are planned in Annual Action Plans.

Staff development

Recruitment, retention and development of academic staff is described in greater detail in Chapter 3.6. the general principles of organising staff trainings and business trips is described in the university's Rules of Work Organisation. Every year, structural units are allocated financial means in the budget for trainings and business trips, but free of charge opportunities to develop staff and foreign funding are also used extensively. In 2016, the cost of trainings and business trips was 148 248 euros (including 28% from project finances) in total, in 2019 year, 197 258 euros (including 56% from project funding). In addition to trainings, employees enhance their knowledge and skills by visiting Estonian and foreign companies, participating in national and international projects and teaching at foreign higher education institutions.

Among other things, compilation of the training calendar relies on the membership's feedback surveys and improvement requirements highlighted during assessments (including evaluation). An employee's personal training plan is agreed with the head of the structural unit during a performance interview; a lecturer's more substantial trainings are registered in the academic year's workload agreement (see Chapter 3.6).

Employees' satisfaction with development opportunities was rather high on the basis of the 2020 satisfaction survey, the claim "Work offers me opportunities for self-development" was given an average rating of 4.3 on a scale of 5. In comparison of the past three years, this indicator is on a slight incline (4.0 in 2018; 4.1 in 2019).

Recruitment

The university's vacant positions are generally filled by way of public competition. Fulfilment of academic positions is regulated by the Conditions and Procedure of Filling Academic Positions; a separate guideline has been compiled to recruit support staff.

Competitions for vacant positions are organised transparently, environments and methods are chosen according to the profile of the position. In filling vacant positions, the suitability of existing employees is always considered to allow a vertical or horizontal career for employees. Academic staff can move between positions within the university through evaluation (see Chapter 3.6) or work as the head of an academic structural unit on a fixed-term contract. In 2019, the academic staff career model was established (see Chapter 3.6).

During recruitment, providing a positive experience for participants in the competition is considered important. Among other things, the applicants are informed of the progress of the competition and the applicants who make the final round receive personal feedback. All vacant positions are usually filled, the competition per position over the last three years has been in the range of 4.3-7.4.

When a new employee begins work, he or she is introduced to all the documents governing the university's work and a support person is assigned to facilitate onboarding. An up-to-date guideline "New Employee Memorandum" has been compiled for employees and the "New Employee Onboarding Programme" for managers, which describes an employee's onboarding activities over the first three months. It has become customary to organise a meeting with new employees and members of the Rectorate once a year.

Remuneration

Remuneration principles are provided in the university's Remuneration Procedure. The goal in determining remuneration levels is to keep the employees' remuneration competitive compared to the average in the region and sector (see Table 9). To ensure this, we participate in the nationwide salary survey and use the acquired data to determine and adjust remuneration. In general terms, the remuneration is competitive compared to the average in the region and the education sector, but it is more complicated to maintain the level for speciality experts. Employees' satisfaction with their remuneration (see Table 10) is inquired during the annual satisfaction survey. Based on the results of the 2019 survey, we can deduce that managers and support staff consider their remuneration more in correspondence with their contribution (correspondingly 4.5 and 4.0 on a scale of 5). The corresponding indicator for academic staff is 3.6.

Table 9. Average gross salary (monthly) in euros

	2016	2017	2018	2019*	2020
TTK UAS	1832	1847	1892	1935	1903
Tallinn	1299	1383	1478	1545	1637
Estonia	1146	1221	1310	1407	1448
Lääne-Viru County	942	976	1021	1098	1181

(source: Statistics Estonia)
**Data after LVRKK merged with TTK UAS.*

There are also benefits in addition to remuneration, e.g. employees can take five health days a year and a longer main holiday than prescribed by law.

Table 10. Satisfaction with remuneration, ratio of contribution and salary

	2018	2019	2020
My salary corresponds to my contribution	3.7	3.5	4.0
I am satisfied with recognition of employees	3.7	3.4	3.9
I am satisfied with the benefits offered by TTK UAS	4.1	4.1	4.3
I like the work atmosphere at TTK UAS	3.9	3.7	4.2

Satisfaction indicators' trend is generally positive. In 2019, there was a slight downturn, which may be related to the merger of the two organisations.

3.2.2. Financial management and accounting

Organisation of financial management and and record-keeping procedures are within the responsibility of the university. The State Shared Service Centre organises the accounting and is responsible for its correctness. The university's financial management strategic plan is defined as a part of the Strategic Plan, it is supported by an income-expense forecast for four years and the university's legal acts.

In recent years, the state and university have contributed to digitalisation of processes and smart workflow: the financial information system SAP and SAP BO, sales software Erply, Government Employee Self-Service Portal RTIP (business trips, trainings, asset management etc) have been adopted. Due to developments, accounting has become faster and less labour-intensive.

Formulation and management of budget

Distribution of the university's financial resources proceeds from the university's Strategic Plan objectives and the tasks planned in the Action Plan. Budget planning and financial reporting are based on the Procedure of Financial Plan Compilation and Use of Budgetary Resources. All income/expense units are involved in planning, the budget is coordinated with TTK US Council. TTK UAS' budget includes allocation of income and expense on the level of the university and structural units. Financial reporting is submitted to heads of units at least once a month. When the activity-based cost accounting information system KAIS, planned for 2021, is implemented, cost units will be able to monitor the reports of financial reporting on a current basis.

TTK UAS' budget and state funding

TTK UAS' total budget was between 8.9–10.2 million euros during the reporting period: budget includes state funding (on average, 82% of the total budget), own income (on average, 7%) and project and programme support (on average, 11%). The state funding covers expenses related to degree studies, implementation of applied research takes place on the basis of the principle "you order, you pay". To a small degree, TTK UAS' R&D costs are funded from state funding (see Figure 5).

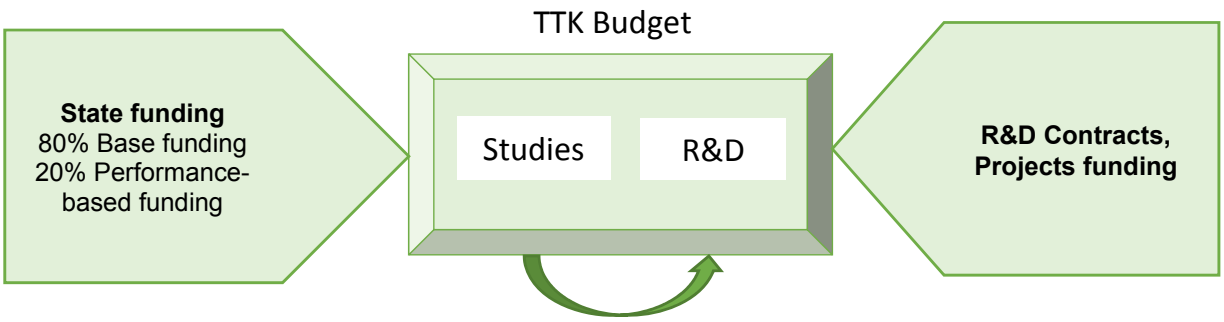

Figure 5. Financial sources of TTK's budget

Sensible allocation of financial sources and financial volumes ensure stability of the university's budget. TTK UAS' budget compilation stages are:

- Compilation of TTK UAS' draft budget proposal;
- Coordination with structural units;
- Coordination in TTK UAS' Council;
- Approval with Rector's decree.

In addition to planning their own budget, academic units (institutes, centres) are responsible for staff costs, direct costs of studies, business and training costs and use of own funds. The university's paid services' overhead levy is 10% to cover indirect costs.

Allocation of the budget on the basis of financial resources and across points of cost (see Table 11). The university's budget has been managed sustainably during the reporting period, the budget outturn has been positive every year, on average 4% of the state funding means.

Table 11. Cost budget according to financial resource and point of cost, in euros

	2016	2017	2018	2019	2020
Financial resource					
State funding	7 841 998	7 385 361	6 955 618*	8 368 375	8 305 529
Own income	490 467	659 445	634 699	733 090	848 790
Supports and projects	556 977	1 015 743	1 546 878	1 128 633	917 692
Most important points of cost					
Labour cost	5 286 070	5 226 232	5 359 544	5 690 385	6 319 002
Management cost	2 130 808	1 850 325	2 452 996	2 495 228	1 921 290**
Investments	1 029 443	1 515 296	866 214*	1 580 703	1 397 962

**Transfer of activity support investments to 2019 to finance reconstruction.*
***Change in calculation of value-added tax in state educational institutions.*

The largest part of the budget is labour costs. The labour costs paid from state funding means is between 67-70% of the state funding budget (without supports and allowances). The reporting period volume of investments has been large, investments have been made in infrastructure (learning and work environment and study laboratories) development.

TTK UAS' own income

Earning own income by providing specific knowledge services is supported by the Centre of Innovation and Entrepreneurship, provision of in-service training courses is coordinated by the Office of Academic Affairs. Academic staff's motivation in conducting applied researches and in-service training cources as well as different innovative services is supported by a motivation system, i.e. additional remuneration is paid for these activities.

Distribution of own income across sources of income is indicated in Table 12. The emergency situation due to Covid-19 pandemic considerably decreased the volume of applied research in 2020, but has not influenced carrying out in-service training courses, which the university was able to successfully provide in distance learning format. The overview of applied research is in Chapter 3.11.

Table 12. Distribution of own income across services, in euros

	2016	2017	2018	2019*	2020*
Paid study services	194 399	165 229	162 824	198 111	218 211
In-service training courses	238 957	204 921	282 874	366 302	336 002
Applied research	198 193	236 989	455 522	337 670	197 435
Other income	22 618	53 378	64 201	103 744	82 460

**Data post-merger of TTK with LVRKK.*

Project management

The university has been very successful in implementing projects with foreign funding (see Ch 3.5). The financial volume of projects has increased from ca 560 000 euros (in 2016) to ca 1.1 million euros (in 2019). The university continues to participate in projects as a leading or involved partner to create new knowledge and innovation. In 2020, 30 project applications were submitted, and 18 of them were satisfied (some applications are still being processed). At the beginning of 2021, there are 35 active projects at the university.

The project volume is one of the key performance indicators "Projects volume in EUR" that the university monitors across the institution.

Infrastructure

One of TTK UAS' strengths is modern and constantly developing infrastructure. The net floor area of TTK UAS' property in use is 23 255 m^2 and the surface area per student is 7.9 m^2.

The development and administration of information and communication technology (hereinafter ICT) is based on the

university's Strategic Plan, Action Plans and MER and its governance area minimum requirements for ITC infrastucture and basic services. ICT costs make up 4-5% of the university's state funding budget.

During the reporting period, the university regularly renewed its ICT tools. In the scope of modernizing ICT, primarily cloud services have been expanded: the university's digital infrastructure relies on Google Edu Apps, Microsoft 365 services, including Azure. Speciality software service agreements have been concluded to make sure students can use the software free of charge. With the merger of higher education institutions, the institution's study information systems and MS Active Directory-based authentication infrastructures were successfully merged and remote work channels were created. Starting from 2020, the focus has been on supporting flexi- and blended learning.

In development of laboratories, the focus has been on development of digital solutions and simulations. Regarding larger laboratories, the robotics laboratory has been developed, the minifactory laboratory in textile, logistics simulation laboratory and the installation of other laboratories has been regularly renewed. Every year, the university has renewed at least three study laboratory installations, and every year invested in establishment of one new laboratory.

The university's objective is to invest 7-12% of the state funding budget each year to ensure sustainable development. The keywords for the next period's ICT developments are integration of ICT-systems and improvement of user experience.

In 2020, the university employees' average satisfaction with the university's IT solutions and comprehensibility of information systems was 4.2 (on a scale of 5). The same indicator among students was 2.9 (compared to 4.1 in 2019), see Ch 3.10.6.

Property

The university buildings and laboratories have been consistently developed during the reporting period. In total , 6.41 million euros have been invested during the reporting period, including 4.32 million euros in developing buildings, ca 0.86 million euros have been invested in development of laboratories from the resources of project ASTRA. The reconstruction of the main building (lobby, lifts, centre of I floor, including Student Council) was based on a new architectural concept, issues related to accessibility have been resolved (lifts, disability WCs). We consider cost efficient administration and use of buildings important: central building automatics has been installed (management of heating, ventilation and cooling), a solar energy station has been built.

By renewing the concept of services, we have given up buildings which are not essential for the university's main areas of activity. In 2020, the university conducted a successful architectural idea competition to design a new student home/ study building in Mõdriku.

Employee satisfaction with work and rest facilities is good, satisfaction has grown over the years (3.7 in 2018 and 4.3 in 2020). The shortage of rest areas has been highlighted as a problem, so the university built new rest areas in 2020.

Work environment

The university's integral work environment is made up of the physical and mental environment. Large contributions have been made in recent years to improve the university's work environment, including creating ergonomic workstations, building the ventilation system, building rooms jointly used by staff and students and establishing an indoor health track.

In 2019, the Ministry of Social Affairs awarded the university with the Family Friendly Employer Silver Label. The focus of the programme is on employee welfare, including creating a good work environment, striking a balance between work and family life, provision of flexible solutions, health promotion, offering joint activities to the staff, boosting the feelings of togetherness and dedication, inclusion of employees and more efficient internal communication.

From 2019, the university belongs to a network of health promoting employers, which organises joint events and campaigns. Participation facilitates shaping health promoting thinking.

The university values employees' mental and physical health and free time. TTK UAS compensates employees' costs on promotion of mental and physical health (ca 35 000 euros a year) and the staff is offered athletic activities and joint events on location.

To increase involvement, people temporarily away from the university are included in the institution's activities and former employees are not forgotten either.

Employee-elected working environment representatives deal with shaping the work environment on employee level and also with occupational health and safety on the organisational level. Professional external experts are involved to assess the work environment, and their recommendations have been taken into account in (re)shaping the work environment.

3.2.3. Internal and external communication

TTK UAS' external communication strategic goals are marketing of curricula and in-service trainings, cooperation with companies and other promotional activities. The most important internal and external communication directions and specific activities are reflected in the university's Strategic Plan and the institutes' action plans and work plans.

Internal communication

The communication target groups are the university's employees and students. Information to students is shared in the study information system (SIS), on the homepage and social media to make sure information reaches students quickly. In 2020, the institutes' Facebook pages were created, where information is shared to students and study opportunities are introduced also to external target groups. Posts are regularly made on Instagram, which is a popular channel according to student feedback. TTK UAS' own podcast and intranet GuavaHR are under development. The video studio completed in 2020 makes it possible to produce and broadcast quality video and audio content.

Topics covered at meetings and adopted decisions are forwarded to employees. Heads of units regularly inform employees of management decisions, events, more important projects and work plans. TTK UAS' internal communication channels are provided in Table 13.

Table 13. Internal communication channels

Internal communication channels	Stakeholder	Regularity
Rectorate's meeting	Employees	1 x a week
Management Board meeting	Employees	2 x a month
Employees' information letter	Employees	1 x a week
Intranet (GuavaHR)	Employees	Constant
Google's shared calendars and other collaboration tools	Employees	Constant
Meetings, also through MS Teams, Google Meet and Zoom	Employees	Constant, according to need
Digital screens and display stands	Students, employees, visitors	Constant
University-wide information day	Employees	At least 2 x a year
Academic year opening and closing meetings	Employees, students	2 x a year
Meetings of institutes, centres	Employees	1x a month
Estonian schools' administration information system EKIS	Employees	Constant
Study information system (SIS)	Students	Constant
Homepage, social media (Facebook, institutes' Facebooks, Instagram)	Students, employees, visitors	Constant
Communication with institute, homepage, e-mail	Foreign visiting lecturers and students	According to need

External communication

External communication is directed to future learners, cooperation partners, alumni and labour market aiming for recognition among external target groups and to have a voice in education and the labour market. The more important news about the university's activities and other information is also published on TTK UAS' homepage in English. The main channels of external communication are the webpage and social media channels (Facebook, Instagram, YouTube, LinkedIn). Temporary campaign pages are also used to carry out admission campaigns and advertise events. TTK UAS' communication principles are introduced to new employees. Sectoral spokespeople are regularly given the floor in national media to create the expert reputation for the university and to introduce success stories. The university actively organises conferences, fora and seminars for cooperation partners and entrepreneurs to share know-how and bring together sectoral experts (see Chapter 3.12).

Strengths

- Targeted and committed employees, who carry the organisational culture and ethics.
- Functioning financial management, which supports achieving the objectives of the Strategic Plan.
- Quality and evolving infrastructure, constant contribution to modernisation of laboratories befitting contemporary professional higher education.
- The employer provides employees the possibility to use contemporary ICT tools.
- Targeted communication, inclusion of students in distributing information and use of social media.

Improvement and development activities

- The goal is to allocate 72-74% of the state funding budget to remuneration and staff development. Larger infrastructure investments are made with additional funding and project resources if possible.
- Consistent development of the study and work environment: reconstruction of TTK UAS' main building based on a renewed architectural concept and building a student home/study building in Mõdriku.
- Due to expansion of the university and abundance of information, information management requires a more systemic approach compared to before. The existence or deficit of necessary information must be better perceived, considering different target groups' specificities in absorbing information and updating information channels.
- Launching an information exchange environment for employees to improve internal communication and information flow.
- Information management requires a more systemic approach. The perception of a subject's acquired level of information and objective existence/deficit of information must be differentiated.
- Compilation of the student newsletter and launching the podcast, renewal of webpage.

3.3. QUALITY CULTURE

The staff's common understanding of quality and the quality assurance system are essential in shaping a quality culture. TTK UAS has defined its quality assurance principles in the Quality Management Handbook and we proceed from stakeholder expectations, harmonized objectives on different management levels of the university, principle of continuous improvement and analyses-based decisions in our activities. TTK UAS' quality management system is built on a process-focused approach and the main processes are learning, teaching, research, development and creative work and service to society. The quality management system follows the principles of the Deming Cycle, which composes four activities: Plan, Do, Check, Act (see Figure 6).

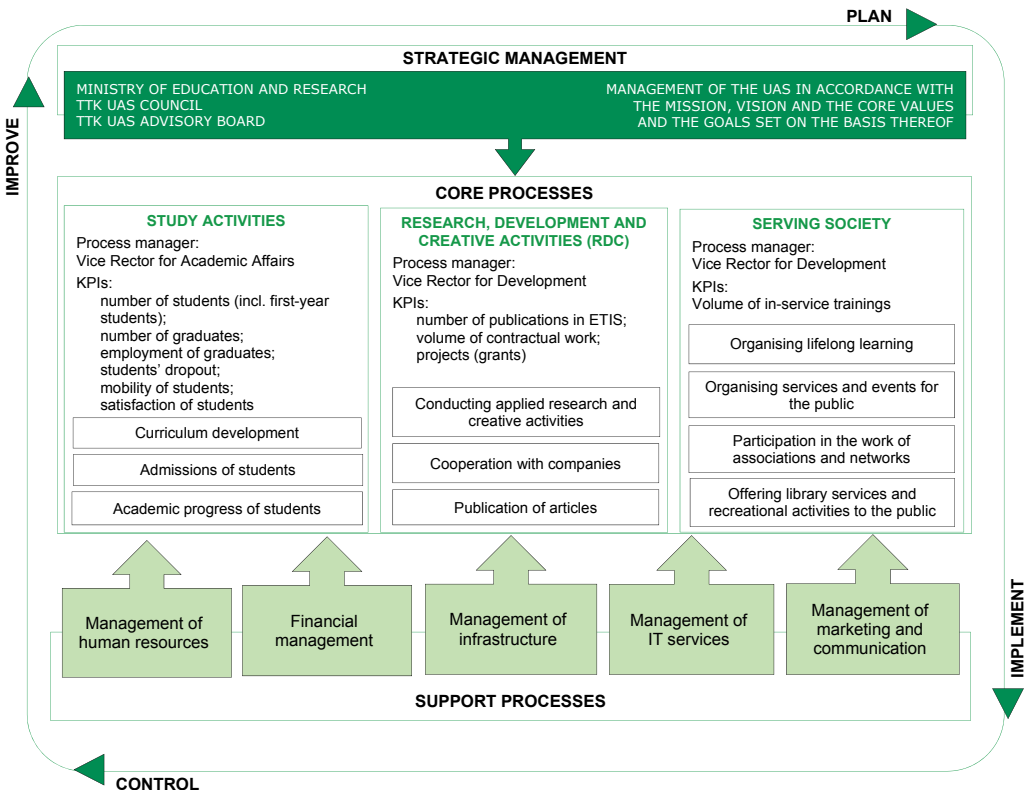

Figure 6. Process map of TTK UAS

Internal assessment as a part of quality culture supports TTK UAS' development and helps shape a learning organisation. TTK UAS' systemic and regular analysis of studies is seen as internal assessment, as a result of which the studies' strengths and development needs are presented and continuous development activities are planned. The internal assessment activities are as follows:

1) Stakeholders' feedback surveys (see Table 14).

Table 14. Stakeholder groups' feedback surveys

Stakeholder	Survey	Objective	Time	Implementation of outcomes
Students	Organisation of admission and onboarding survey	Organisation of admission, improvement of onboarding of admitted students and reduction of drop-out rate.	October, annually	Admission and Study Analysis Specialist: improvement of admission process. Institutes: supporting freshmen with coping
	Organisation of studies and study environment survey	Correspondence of organisation of studies and study environment to students' expectations. Reduction of drop-out rate and ensuring quality of studies.	March, annually	Vice Rector of Academic Affairs: improving the organisation of studies. Heads of institutes and centres: improvement of arrangement of studies and study environment. Administration: improvement of study environment.
	Subject monitoring	Improvement of study quality.	Autumn and spring semester	Lecturers: improvement of subject courses. Heads of institutes, centres: evaluation of lecturers' work, curriculum development. Evaluation committee at evaluation of lecturers.
Staff	Organisation of work and work environment survey	Employee satisfaction with working conditions, organisation of work and improvement of management system and work environment.	March, annually	Heads of institutes, centres: development of management processes. Sectoral managers: improving work of structural units.
In-service training participants	In-service trainings' feedback survey	Improvement of organisation and quality of in-service trainings.	At the end of in-service training course (continuous)	Head of Office of Academic Affairs: more targeted organisation of training courses, In-service training course executors: improvement of courses' study quality.
Alumni	Alumni feedback survey	Alumni employment analysis and curriculum development.	November, annually	Heads of institutes: mapping alumni employment, collecting contacts and curriculum development.

In addition to regular feedback surveys, thematic satisfaction surveys are organised based on need. Every year, the Student Council organises a students' feedback seminar to discuss the results of the surveys. In October 2020, the Student Council, in cooperation with the Quality and Analysis Department, participated in the organisation of a feedback seminar for higher education institutions. The seminar was led by the student quality network under EKKA and the topic of the seminar was "Orientation in a labyrinth of feedback".

2) Internal assessment of curricula (see Chapter 3.7). The objective of 2020 action plans was conducting regular internal assessment of curricula in addition to the work of curriculum councils. The pilot project was assessment of the Mechanical Engineering, Fashion Industry and Building Construction curricula. The results of the pilot project helped better prepare for compilation of further curricula self-evaluations and provided experience in preparing for future curricula analyses.
3) The need for thematic internal assessment proceeds from the results of analyses and feedback survey outcomes. Thematic internal assessments complement regular feedback surveys, for example:

a. In order to reduce drop-out rate, a freshmen drop-out analyses took place in 2018 and 2020 and changes were made to the Study Regulations based on the conclusions, etc.
b. In 2019, the practical training process assessment took place in the Institute of Technology. The institute conducted self-evaluation and then, SA Innove experts visited TTK UAS and talked to stakeholders (curriculum coordinators, management of the institute, students, employers) and as a result of the process, outlined the strengths of the Institute of Technology and made recommendations for improvements, which mostly had to do with making enhancements to normative documents.
c. Educational Technologists regularly analyse online support in curricula and the annual analysis shows to what extent a change has taken place in subjects regarding digital tools and methods. Every year, TTK UAS' lecturers also submit their online courses to the Education and Youth Board's online courses' quality label competition, most courses have received a quality label from the competition.
d. In spring 2020, the university had to transition to remote studies due to the Covid-19 pandemic, after which the aspects related to launching remote studies were analysed. Mostly, there were problems with completing practical training and as a result, it was decided to offer alternative tasks to students to complete practical training. In the student study environment survey in autumn semester of the 2020/21 academic year, opinions were expressed also on the topic of forced remote learning. The majority were satisfied with the organisation of remote studies and the proposals were mostly about the need to harmonize study environments and issues regarding information exchange.

4) The process of compiling the annual report is also related to continuous self-analysis and planning activities for the following year based on the results of the analysis (see Chapter 3.1). Management development seminars take place regularly in June and December. The university has defined the key performance indicators and their fulfilment is analysed on an annual basis:
a. indicators related to studies (student admission numbers, number of graduates, drop-out rate and results of mobility);
b. research, development and creative work indicators (number of publications etc.);
c. service to society indicators (in-service training and financial results).

Institutes and centres make a summary of the activities of the previous year and at management meeting, an assessment is given to the outcomes and then, the activities for the next period are planned.

The outcomes of internal assessment, feedback from stakeholders and key performance indicators are analysed on the level of working groups, meetings (Rector's Office meetings, management meetings etc) and at management seminars, which take place twice a year. This ensures that we proceed from the principles of the Deming Cycle and make continuous improvements in the organisation.

Strengths
- Clearly defined processes and their development.
- Tradition of continuous feedback surveys.

Improvement and development activities
- Systemic internal assessments, including improving the consistency and monitoring the development activities that follow analyses.

3.4. ACADEMIC ETHICS

The university has defined the academic ethics principles in the document "Ethical Principles for TTK UAS' Employees and Students", which covers all TTK UAS' employees' and students' moral presuppositions and guidelines. Ethical principles are a tool for TTK UAS employees' self-evaluation, which helps individuals make moral choices. The aim of the Principles is to support the organisational culture and the sense of belonging.

Academic ethics is regulated additionally by the following documents:
- Principles of Academic Ethics;
- Procedure for Processing Students' Academic Practice Violations and Indecent Behaviour;
- Study Regulations;
- Procedure for the Evaluation of Ordinary Academic Staff;
- Rules of Work Organisation.

In addition, TTK UAS' employees proceed from the good practice of professional and learning activities. The university has a system to spread ethical principles, including legal documents containing principles of academic ethics, among TTK UAS' employees and behavioural guidance in case the principles are ignored.

Proceeding from TTK UAS' work organisation rules:

1) Every employee knows and follows the legal provisions regulating the work of TTK UAS, including legal provisions that set forth ethical principles. In addition, the general values formed at TTK UAS and the principles of good faith are followed;
2) Employees have access to valid legal documents and they are informed of the adoption of such documents through the TTK UAS' document administration system (EKIS) and/or by e-mail in the employee mailing list.

References to legal documents have been consolidated on the homepage to simplify access to TTK UAS' valid legal documents.

During the introductory guidance to new employees, the ethical principles of TTK UAS' employees are introduced to the employee among other things. The employee confirms having read the documents in the EKIS system.

A system has been developed at the university for informing students and keeping them in the information field:

- in the first year of studies, there are subjects in the curriculum, which deal with learning in a higher education institution, cooperation and academic ethics (including plagiarism and cheating) "Communication, Cooperation and Critical Thinking" and "Academic Self-Guidance" – the curriculum coordinator, lecturer are responsible;
- at the beginning of the academic year, there are introductory lectures to first-year students at the institutes also covering academic ethics principles, including introduction of the university's corresponding legal documents, explanations of referencing techniques and other rules of ethics related to organisation of studies – the curriculum coordinator, lecturer are responsible;
- the rules for compiling written work are summarised in the Guideline on Compilation of Written Work (available on homepage) – lecturer is responsible;
- the process of compiling the final thesis is supervised and monitored in curricula – thesis supervisors are responsible;
- TTK UAS' Student Council participates in the creation of TTK UAS' legislation (including the work of the Council) and shares information with the student body. TTK UAS' students can access the university's legal documents on TTK UAS' webpage and Student Council's Facebook page.

In order to receive explanations regarding implementation of academic ethics principles or cases of violations, students have the right to turn to staff members at their own institute or to the support structure employee, tutors and members of the Student Council, who are involved in student counselling. The confidentiality of the student's personal data is ensured.

System for processing complaints and violations of academic practice

TTK UAS has a functioning system for processing complaints. If a university employee violates ethical principles, including violations against academic ethics principles, then what is provided in the ethical principles of TTK UAS' employees applies, which includes the procedure for resolving disputes and differences of opinion. If possible, the differences of opinion between the university's parties will be resolved between themselves and confidentially.

Cases not directly decreed in the document on conflicts and ethical principles will be resolved by a committee appointed by the Vice Rector for Academic Affairs, if necessary.

In case of violations during exams or if other violations are uncovered, the lecturer has the right to forward an overview of the case to the director of the institute. At the same time, the lecturer will notify the student of initiation of proceedings and makes a proposal to submit a letter of explanation.

The director of the institute will resolve minor violations. In more complicated cases, the director of the institute will make a proposal to the Vice Rector of Academic Affairs to convene a committee to process indecent behaviour, if it is necessary for the case or if the student submits a corresponding reasoned request. The committee consists of at least three members, including a representative of the student body.

The student has the possibility to explain his or her actions and defend himself or herself in front of the indecent behaviour processing committee. If the committee identifies a violation, then based on the severity of the deed and existence of prior violations, the committee submits a proposal to the Director to give the student an oral or written reprimand or to the Rector to exmatriculate the student.

Exmatriculation of students in case of a serious violation of academic ethics principles is also covered in TTK UAS' Study Regulations.

TTK UAS respects the ethical core values and the activity principles of science, supports students and lecturers in understanding ethical problems and in responding to them. First and foremost, the university presumes support from the head of every academic structural unit and curriculum coordinators. All leading employees and the lawyer give explanations regarding implementation of ethical principles in the areas of activity they manage.

At the end of each semester, the students can assess academic employees' compliance with ethical principles through

subject monitoring and other feedback. The feedback results are taken into consideration during career development interviews with academic staff.

Lecturers and students do not tolerate plagiarism, including breach of copyright and cheating, and when it is revealed, they respond immediately. Special attention is paid to excluding academic plagiarism in submission of final theses and performance of final exams. According to the Study Regulations, the thesis supervisor has the obligation to monitor whether academic practice is adhered to.

In case a severe breach of academic ethics requirements is uncovered post-factum, TTK UAS has the right to annul the positive mark received for final thesis defence or performance in the final exam and to cancel the diploma. Such a regrettable case took place in 2015. The plagiarism identification programme Urkund is interfaced with the study environment Moodle, where academic staff and students can check written work. It is mandatory to check all final theses. In 2017, 2394 were checked in Urkund, 4385 in 2018, 5159 in 2019 and 4886 student papers in 2020.

Most of the non-conformities in referencing in students' written work are resolved within institutes in cooperation with lecturers.

During the 2019/20 academic year, it became possible for lecturers to forward notifications regarding students' breach of academic practice to the SIS. The aim of the anti-plagiarism system is to, first and foremost, identify the cases when a student has repeatedly violated an academic ethics requirement in different subjects. A students potential written complaints in relation to ethical problems in studies are registered in the EKIS system.

Strengths

- Transparency and objectivity of processing the lecturers' and students' complaints (including cases of discrimination) and challenges, fair treatment of all parties is guaranteed.
- Application of the plagiarism identification system in checking all final theses.

Improvement and development activities

- Implementing a new registration system for new cases of violation of academic ethics, which would allow a better overview in identifying repetitive misdeeds.
- Making new academic staff aware of the content of academic ethics violations and the means to respond by exchange of experience.

3.5. INTERNATIONALISATION

The main priorities of internationalisation at TTK UAS are established in TTK UAS' Strategic Plan and in the document "Development directions for internationalisation at TTK UAS for 2021-2025". To measure achievement of TTK UAS' strategic objectives, eleven key performance indicators have been defined, four of which are directly related to the internationalisation process: students' outgoing mobility, students' incoming mobility, volume of studies conducted in a foreign language and the total number incoming foreign visiting lecturers and trainers conducting studies.

3.5.1. Participation in the work of international organisations

TTK UAS participates in the work of EURASHE, a network uniting European professional higher education institutions, through the Rector's Adviser, who is a representative of the Estonian Rectors' Conference of Universities of Applied Sciences in this organisation and also a member of the EURASHE working group Applied Research and Regional Development. This has provided TTK UAS insight into what takes place in European professional higher education and helped to stay up-to-date on general tendencies in transnational cooperation in this area. In April 2018, the annual EURASHE conference took place in Tallinn with TTK UAS leading its organisation. TTK UAS also cooperates with the UAS4EUROPE, a network of universities of applied science in Europe.

International speciality information and experience is brought to TTK UAS also by employees who participate in the work of international professional organisations and networks (e.g. European Radon Association, European Rail Research Network of Excellence EURNEX, Society of Textile and Clothing Universities of Applied Sciences Netfas, European Technology Platform for the Future of Textiles and Clothing, ICOMOS organisation dedicated to the conservation of the world's monuments and sites, Baltic Architects Unions Association BAUA, ENAS, European Accounting Association EAA).

3.5.2. Internationalisation of students

The cornerstone of organising international mobilities at TTK UAS is the Erasmus+ programme, which helps raise TTK UAS' international visibility and strengthen partnerships. TTK UAS successfully completed the last call for proposals of the Erasmus higher education charter and was granted the right to continue participation in the Erasmus+ programme

during the 2021-2027 programme period. For smoother and safer transition to Erasmus Without Paper (EWP), TTK UAS adopted in the beginning of 2021 SoleMove for digital management international mobilities and partnerships.

To ensure mobility within the Erasmus+ programme, TTK UAS has concluded 91 cooperation agreements, 87 within the Erasmus programme countries and four within the Erasmus+ ICM. The partnerships of TTK UAS are built on mutual interest, an understanding of the partner institutions, matching specialty areas and similar study programmes. Contracts with cooperation partners are concluded with the aim of offering TTK UAS' students a larger choice to acquire international experience, while securing the achievement of the defined study outcomes. As a rather broad network of partners has already been developed over the years, TTK UAS is planning next to focus on deepening the existing relations and raising cooperation quality in light of new blended and digital opportunities.

Table 15. Student mobility

	2016	2017	2018	2019	2020*
Incoming mobility (Erasmus+)	43	51	44	51	59
Outgoing mobility (Erasmus+ and short-term mobilities)	95	112	179	164	82

**In 2020 mobility numbers were greatly affected by the global Covid-19 pandemic.*

The number of students embarking on studies and practical training abroad has increased over the years. TTK UAS has achieved its objective to involve at least 2% of the student body in Erasmus mobilities (see Table 15). The most popular Erasmus partner universities among students are Augsburg UAS and Albstadt-Sigmaringen University in Germany, Brno University of Technology in the Czech Republic, Saxion UAS in the Netherlands, Frederick University in Cyprus, Instituto Superior de Engenharia do Porto in Portugal and Lisbon Accounting and Business School in Portugal. Due to the practical orientation of TTK UAS' studies, the number of students doing studies or practical training abroad is about equal in the framework of the Erasmus+ programme.

Information about the study abroad possibilities of and the experience of previous participants is disseminated through TTK UAS mailing lists, homepage, social media channels, information hours and special events. The possibility to acquire international experience has been separately outlined in the curricula descriptions targeted at applicants to TTK UAS. Erasmus mobilities are specifically promoted among the first-year students in spring semester and to third-year students during the autumn semester, because the structure of several curricula accommodates studies abroad better during spring semester of the third study year. In recent years, communication among distance learning students has been intensified to raise awareness regarding possibilities of doing practical training abroad, since practical training is better suited to the profile of these students. Students' study organisation and study environment surveys show that satisfaction with availability of information regarding study and practical training possibilities is rather high.

In order to maintain and boost the continuous growth trend of mobilities, TTK UAS offers students individual counselling in addition to continuous provision of information and seeks solutions to raise students' general motivation to gain international experience. TTK UAS has strived to determine the potential obstacles to mobility and work on solutions to eliminate them. For example, mobile students receive additional travel support (e.g. 200 students received travel support in 2016–2020 for Erasmus mobilities) in order to alleviate financial obstacles. Reasons related to personal life like family and work obligations are often outlined as one of the impediments to longer-term mobility abroad. The percentage is higher among distance learning students, who make up more than half of TTK UAS' student body. To tackle this problem, short-term foreign mobilities are organized.

Short-term international mobilities are organised in the scope of a subject or are included as a separate subject in the curriculum (e.g. observation practice in Applied Architecture curriculum). Short-term mobilities can be also study trips organised to partner universities or companies abroad to provide international experience. Students are involved in international intensive study weeks (including intensive projects and courses), international workshops and seminars. Students participate in international competitions and student projects (e.g. the international product development competition Formula Student directed at students of technological sciences, Estonia's first project to build a solar vehicle "Solaride", participation in European vocational skills championships EuroSkills 2018 etc). Lately possibilities for gaining international study experience virtually have been explored and encouraged.

TTK UAS hosts foreign students primarly in the framework of the Erasmus student exchange. The total number of incoming students has gradually reached equilibrium with outgoing mobility and it has grown over the years, which can be considered a sign of TTK UAS' good reputation among partner universities. The number of exchange students' countries of origin has increased. The largest number of students arrive from partner universities in Lithuania, Spain, Czech Republic, France Germany and Turkey. All documents and environments related to study activities (SIS Tahvel, online study environment Moodle, TTK UAS' homepage) are also available in English and all necessary information related to studies and student life is forwarded to the foreign visiting students promptly.

TTK UAS' institutes offer a module of English taught courses (in 2019/20 the total volume was 303 ECTS). The aim is to organize studies in these subjects together with local students to enable the integration of foreign visiting students into TTK UAS student life. A good example is study of foreign languages, which has been warmly welcomed by foreign visiting students, who appreciate the possibility to develop their speciality-related English terminology together with TTK UAS students. Study contacts with foreign visiting students play an important role in the internationalisation of local students and improve their knowledge of intercultural communication.

To offer even broader study and integration possibilities to incoming students, TTK UAS has concluded a cooperation agreement with Tallinn Healthcare College and Academy of Security Sciences to co-organise orientation events for Erasmus students.

Tutors, who are local students, have been included in the reception and adaption process of visiting foreign students, who help the latter get accustomed to the university's daily life. TTK UAS aims to create a friendly atmosphere for incoming students and they are welcome to participate in all undertakings and activities directed at the student body. TTK UAS' Student Council is also involved in organising integration events. TTK UAS collaborates with Erasmus Student Network's (ESN) Tallinn section.

3.5.3. Internationalisation of staff

International engement is one of the key points of the staff's professional development and enhancement of speciality skills. It is strategically important to involve both academic and support structure employees in international cooperation and to facilitate their participation in assignments abroad (see Table 16). For example, ASTRA finances have been directed at facilitating academic staff's participation with presentations at international conferences. International cooperation is recognised during evaluation of academic staff.

Great efforts have been made in recent years to increase the participation in international projects. Staff participation in international projects and the work of international networks is related to modernizing curricula and subjects, and improving the study process. A good example of cross-border cooperation in sharing knowledge and developing study programmes is the Robotics Engineering curriculum opened in 2019. The new curriculum was developed in the framework of the Erasmus+ project Integrated Smart Education in Robotics (INSMER, 2016-2019), where TTK UAS participated in as a partner.

The total number of international projects at TTK UAS has grown significantly: from 13 projects in 2016 to 35 projects in the beginning of 2021. This has considerably increased TTK UAS' capacity and awareness of how to execute a quality project and achieve an outcome. In 2020, TTK UAS fulfilled the tasks of coordinator in six Erasmus+ strategic partnership projects (EngiMath, VirTEC, DIGILOG, VirSTEM, DIGSCM 4.0, DIGI).

TTK UAS has had the opportunity to share its knowledge and expertise on the implementation of the Estonian qualifications system, the recognition of prior learning and working experience, digital management, and partnership with employers and industry to the national delegations of Eastern Partnership countries like Belarus, Azerbaijan and Ukraine. Currently, TTK UAS is a partner in two Erasmus+ projects aiming to better the educational systems and enhancing the role of professional higher education sector in society in Eastern European countries (i.e, Quarsu that deals with the development of Ukrainian recognition system. KazDual aimed at the adaptation of a dual system in Kazakhstan improving the employability of graduates and strengthening the cooperation with the private sector).

In addition, TTK UAS also participates in several Interreg, Nordplus and EEA and Norway Grants higher education cooperation projects. The staff's motivation to participate in projects has increased considerably over the years, which is illustrated by the growing tendency to initiate projects independently and submit applications. Project work is supported by more funding opportunities (during the period under observation, the costs from project funds have increased 100%). Cooperation projects have brought TTK new foreign partners to develop mobility.

Table 16. Foreign mobilites of TTK UAS' employees

	2016	2017	2018	2019	2020*
Foreign mobilities of academic staff	101	145	143	201	24
Foreign mobilities of support staff	49	33	32	38	6
Total	**150**	**178**	**175**	**239**	**30**

**Source RTIP. In 2020 results were heavily affected by the global Covid-19 pandemic.*

In addition to the university's own funds, foreign assignments are funded from project finances and Erasmus mobility funding. Academic staff's foreign cooperation and foreign assignments are especially appreciated as these provide international teaching and/or research experience, which can be transmitted to students through studies and thereby,

raise the quality of studies. Between 2016 and 2020, 65 teaching mobilites took place in the framework of the Erasmus+ programme. The Erasmus mobilities have also helped raise the international cooperation competence and professional development of support staff.

In 2016 and 2017, an in-service training course "Teaching in English" was organised to promote internationalisation, which is directed at TTK UAS' lecturers and employees as a supportive measure in developing subjects in English and to promote international activities.

3.5.4. Foreign visiting lecturers, experts and trainers

Inclusion of foreign visiting lecturers and trainers in the university's teaching process raises the quality of studies and research, helps create an international study environment, fosters internationalisation at home and helps with better understanding of foreign cultural spaces and work cultures. From 2016, the finances of the strategic capacity and resource usage efficiency-raising project "TTK Lean" within the ASTRA programme made it possible to focus on longer-term inclusion of the foreign visiting lecturers the study process at TTK UAS. In the framework of ASTRA, 23 foreign visiting lecturers were engaged in TTK UAS studies (see Table 17). TTK UAS has developed good and regular cooperation with several foreign lectors. Foreign lectors and experts are involved in the Erasmus+ programme and in project work, also other cooperation possibilities have also been sought.

Table 17. Foreign visiting lecturers and trainers conducting studies over the years

	2016	2017	2018	2019	2020*
Other programmes	30	18	33	17	4
ASTRA	3	6	10	15	3
Total	**33**	**24**	**43**	**32**	**7**

**2020 results were heavily affected by the global Covid-19 pandemic.*

Internationalisation at home is also supported by events and speciality trainings taking place at the university, which involve foreign experts and speakers. From 2013, five international weeks have been organised with the aim of introducing learning and teaching possibilities, and to find new cooperation possibilities in mobility and project and development activities. Other major events worth highlighting are for example the Vision Seminar (takes place on an annual basis in cooperation with TTK UAS' institutes and focuses on topical issues in society) or the Logistics Seminar (top event of the sector organized by the third year logistics students for 21 year already).

Strengths

- A network of long-time partners ensuring stability in mobility and project cooperation.
- Curriculum development based on international cooperation (new methods have been adopted).
- Students have the possibility to participate in short-term foreign mobility with additional financial support from TTK UAS.
- International cooperation capacity has grown in relation to projects, TTK UAS is a considerable and more attractive partner in new project initiatives.

Improvement and development activities

- Tighter communication and cooperation between institutes and partner universities to ensure better information in order to engage more students in foreign mobility.
- Finding financial resources for foreign lectors' participation in the TTK UAS' study process after the end of "TTK Lean".
- Finding opportunities for internationalisation at home in light of new digital possibilities, including favouring virtual mobility.

3.6. LECTURERS

Recruitment of academic staff, organisation of work and evaluation are provided in the following documents:

- Rules of Work Organisation;
- Conditions and Regulations for Creating and Filling Academic Staff Positions;
- Academic Staff Positions, their Qualification Requirements and Employment Duties;
- Procedure for the Evaluation of Ordinary Academic Staff;
- Ethical principles of TTK's employees.

3.6.1. Sustainability

One of the main objectives of HR management is to make sure that studies are conducted by lecturers with professional competence, who support the learner's development and value continuous self-development. The age composition of academic staff over the years is provided in Figure 7.

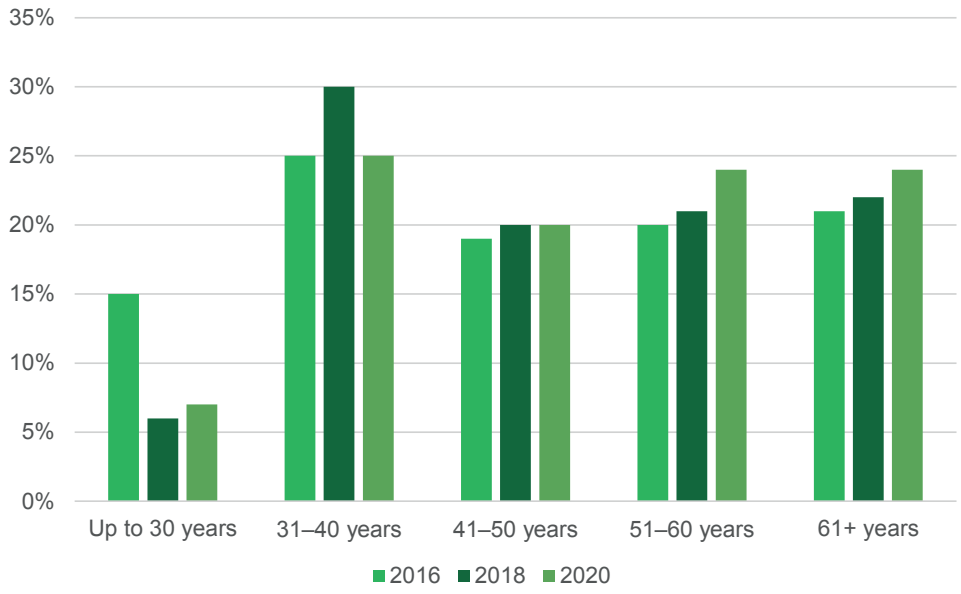

Figure 7. Age distribution of academic staff

The share of academic staff up to the age of 30 has decreased among academic staff in the past five years, because the university prefers to recruit employees with professional work experience in addition to a master's or doctoral degree.

The ratio of students and academic staff has grown in the past two years (see Table 18). The reason is merging with LVRKK in 2019, where the corresponding indicator at the point of merger was 42.

Table 18. Number of students per academic employee in FTEs

	2016	2017	2018	2019	2020
Number of students per academic employee in FTEs	22.4	21.5	21.9	26.1	27.7

As at 2020, there are 15 academic employees with a doctoral degree at the university and 19 among the staff in total. The longer-term objective is to recruit and train at least one lecturer with a doctoral degree per each curriculum. In 2020, eight lecturers are in doctoral studies. The distribution of academic staff's qualifications across the years 2016–2020 is provided in Table 19.

Table 19. Distribution of academic employees' qualifications

Qualification	2016	2017	2018	2019	2020
Doctoral degree or equalised qualification	13	14	14	14	15
Qualification between master's and doctoral degree	14	13	13	14	14
Master's degree or equalised qualification	81	80	79	97	88
Higher education/ professional higher education	9	8	6	6	9
Total	**117**	**115**	**112**	**131**	**126**

3.6.2. Career model

In 2019, the university created a career model for academic staff (see Figure 8) and described the qualifications' requirements for academic positions, the tasks and performance indicators in the regulation "Academic Staff Positions, their Qualification Requirements and Employment Duties". Moving on the academic staff career ladder takes place through evaluation or participation in a competition. It is also possible to have a horizontal career within a position by variation of tasks and/or retraining.

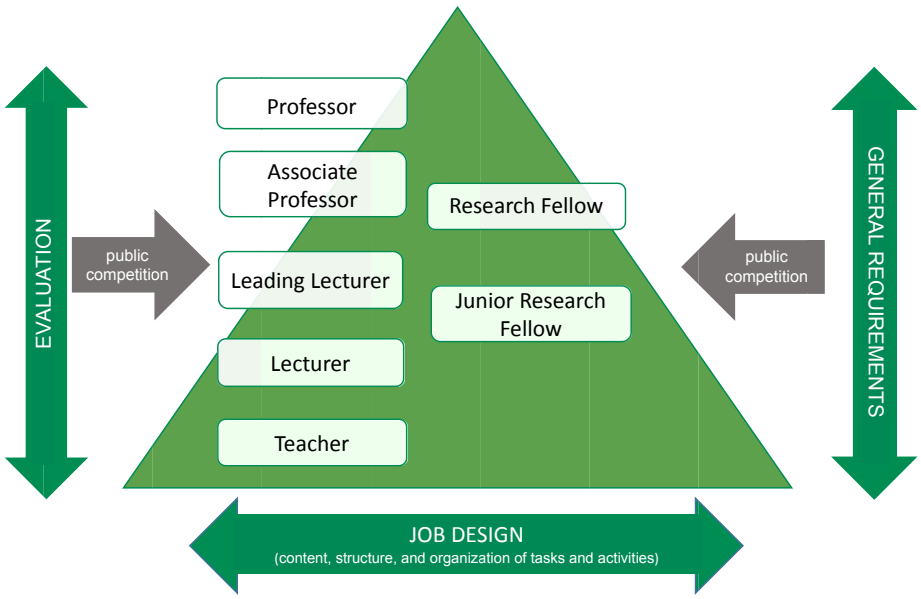

Figure 8. Academic staff career model

The model for considering a lecturer's workload agreement allows flexibility between different types of work in planning workload (studies, research etc). In planning the annual workload agreement, time for self-development is also considered and about 10% of the work time is left for fulfilment of unforeseeable tasks.

Ordinary academic staff can use the sabbatical period (or shorter period) for creative work or enhancement of professional skills once every five years. Mostly, it has been used for the doctoral thesis in the final stage of doctoral studies. Lower teaching workload is allowed for novice lecturers and students in degree studies for the duration of their study period.

3.6.3. Recruitment and selection

The recruitment and selection of academic staff has been described in the Conditions and Regulations for Creating and Filling Academic Staff Positions. The Regulation provides that the position of ordinary academic employee is generally filled by way of public competition. The competition indicators for the academic positions are provided in Table 20. The competition is higher for general and core subjects' teaching positions. The speciality lecturers' competitions are smaller as the university makes targeted searches and offers.

Table 20. Competition for elected academic staff positions

	2016	2017	2018	2019	2020
Number of positions filled by competition	10	3	4	1	3
Competition per position	2.1	2.3	2	5	1.5

Labour turnover indicators (see Table 21) have remained stable and at a rate that ensures the university's sustainability.

Table 21. Staff turnover

	2016	2017	2018	2019	2020
General staff turnover*, %	8.8	10.2	7.5	7.1	9.3
Turnover of academic staff, %	7.1	7.9	6.3	5.3	8.1

**Staff turnover = all employees who have left during selected time period/average number of employees * 100.*

In addition to ordinary academic staff, there are also visiting lecturers at the university, who work on the basis of a 1-3 year contract. They are recognised experts in their field and a direct contact with the labour market, and make up 10% of full-time equivalent academic staff in 2020 (see Table 22).

Table 22. Share of visiting lecturers out of academic staff

	2016	2018	2020
Share of visiting lecturers, %	7.5	9.8	10.1

To support internationalisation, the university invites foreign trainers to conduct studies. More active recruitment of foreign visiting lecturers began in 2017 with support from the project "TTK Lean" (see Chapter 3.5).

3.6.4. Employee development

The objective in planning trainings is to support employees in adapting to changes. We also proceed from employees' feedback surveys and necessary improvements identified during evaluations.

At the end of each subject, students are asked for feedback, which is the basis for improving the content and format of subjects, assessment of lecturers' work and curriculum development.

Academic structural units are allocated budgetary resources for employee development and each employee's personal training plan is planned in coordination with the head of the structural unit. More substantial trainings are entered in the lecturer's workload agreement and a longer-term development plan is agreed with the employee during evaluation. The presumption is that an academic employee participates in speciality trainings at least 16h a year and at least 8h in pedagogical trainings (see evaluation below). In 2020, the volume of pedagogical trainings grew mostly due to the need to adapt to the altered circumstances. Therefore, the university organised two thorough online study environment Moodle trainings for lecturers. Table 23 shows the average training volume of an academic staff member in academic hours (1 academic hour = 45 minutes).

During the first academic year, a novice lecturer is referred to a substantial 156-hour institution of higher education didactics' training and is assigned a support person to facilitate settling in.

In 2020, the institution of higher education didactics' research group started working at the university in addition to speciality research groups, focusing on identifying lecturers' training needs, development of pedagogical skills through trainings, colleague to colleague seminars and compilation of guidelines. The interactive training calendar with materials is available on the homepage. The group's longer-term objective is participation in cooperation networks and broader sectoral awareness-raising. The Education Technologist provides education technology-related guidance and there is an online studies' support person at each structural unit.

Table 23. Average training volume of an academic staff member (in academic hours)

	2016	2018	2020
Volume of speciality trainings per academic employee per year	14	13	14
Volume of pedagogical trainings per academic employee per year	24	18	34

One part of lecturers' self-development is active participation in international and national projects, conferences and visiting cooperation partners in Estonia and abroad, also see Chapter 3.5.

3.6.5. Research, development and creative work

Research, development and creative work make up one part of an academic staff member's (except teacher) tasks, see Chapter 3.11.

In 2017, research groups were established at the university with focus areas related to the university's study areas, supporting execution of main activities and the activities must be long-term and sustainable. In 2020, nine research groups operate at the university (see Ch 3.11).

To highlight research, development and creative work, the university recognises outstanding contractual and student work every year. The university publishes research results of students and staff in its annual publication series "Toimetised".

3.6.6. Assessment, evaluation

Every ordinary academic staff member is subject to evaluation at least once every five years, during which the employee compiles a self-assessment activity report: studies, research, development and creative work, service to society, administrative work and self-development, and in each section, the employee's manager adds their assessment.

The committee makes an evaluation decision on the basis of the report, career development interview with the manager, student feedback and interview with the employee. The committee recognises each employee's achievements and makes recommendations for the future. Therefore, evaluation is one of the tools to guide employees' development.

In addition to evaluation, the head of the structural unit checks the previous academic year's activities (including student feedback) together with the employee every spring in the course of making plans for the next academic year.

Up to three of the best lecturers of the university are selected every year (TTK UAS' Lecturer of the Year Election Statute). The selection is based on student feedback, applied teaching methodology, teaching and learning development activities and contribution to promotion of professional higher education in their area. In addition to public recognition, the title comes with a monetary award.

Strengths

- Optimal and sustainable composition of lecturers.
- Strong composition of visiting lecturers representing the labour market.

Improvement and development activities

- Revision of the process and principles of planning lecturers' workload.
- Each curriculum's objective is to recruit at least one lecturer with a doctoral degree.
- Increasing student participation in subject monitoring to receive input to HR development activities.

3.7. CURRICULUM

TTK UAS' degree studies' structure, composition, opening, changing and closing conditions and procedure and quality assurance principles are provided in the Curriculum Statute.

TTK UAS has teaching rights in five study programme groups:

1) architecture and construction,
2) social services,
3) engineering, production and technology,
4) transportation services,
5) business and administration.

In all study programme groups, TTK UAS' curricula have passed study programme group quality assessment and TTK UAS has been awarded teaching rights for an unlimited period of time.

In the 2020/21 academic year, 27 TTK UAS' curricula have been registered in the Estonian Education Information System (EHIS), 19 of them have admission, eight will close in the coming years. The curricula and a selection of the most important indicators (number of students, admission, graduates and drop-outs) are provided in Chapter 1, tables 1-6.

3.7.1. Structure of curriculum

The curriculum is the base document of studies, which determines the objectives of study, including expected study outcomes, nominal duration and volume of studies, conditions of beginning studies, list and volume of subjects, brief descriptions and options and conditions, specialisation possibilities and conditions of completing studies. The curriculum prescribes specialisation in one or several specialities (one or several majors and/or minors).

The nominal duration of professional higher education studies at TTK is 3-4 years, study volume is 180-240 ECTS credits. The curricula are in conformity with level 6 general requirements of the Estonian Qualifications Framework.

Curricula are structured as modules. The parts of the curriculum are general studies (10% of curriculum, but not less than 21 ECTS credits), main and speciality studies, electives (no less than 10% of the curriculum volume), practical training (no less than 15% of the curriculum volume) and final thesis or final exam (9-12 ECTS credits). Interdisciplinary project- and problem-learning are developed in the curricula.

The basic document of subjects is the course programme, where the volume of the subject, the general objective, study outcomes and content of studies, description and checking of independent work, assessment criteria and study materials are provided.

The curriculum deepens the student's education knowledge, provides the basic knowledge and skills of the area and the necessary knowledge, skills and attitudes necessary for starting work, independent work and master's studies. Upon completion of the curriculum, the student will acquire the knowledge, skills and attitudes to start working in a specific professional area.

The studies described in the curriculum take place as:

- Face-to-face teaching – a lecture, seminar, practical training, lab work etc. to achieve study outcomes, which takes place in the study environment, including blended, work-based or online learning;
- Supervised practical training – a study format organised in the work environment to apply the acquired knowledge and skills to achieve study outcomes under supervision of a supervisor;
- Independent work – independent acquisition of knowledge and skills necessary to achieve study outcomes based on the tasks provided by an academic employee.

The calculated volume of one credit is 26 h of the learner's work to acquire the study outcomes of the subject. Generally, 40% of the learner's work volume in day studies is face-to-face learning, in distance learning, the volume of face-to-face learning is at least a third of the volume of face-to-face learning in daytime studies. To determine the volume of face-to-face learning in distance learning, the number of study gathering days is considered based on the law.

The curriculum helps fulfil TTK UAS' mission and achievement of objectives and considers the needs of the labour market and target group. The curriculum's objectives and study outcomes are equal and comparable to the higher education level study outcomes described in the Higher Education Standard Annex 1, correspond to the national and international legal acts' requirements and directions regulating the professional area and consider the provisions of the professional standard.

3.7.2. Curriculum development

In assuring curriculum quality, the university proceeds from the Higher Education Act, - Standard, other national and university's legal acts and the university's Strategic Plan. The quality of the studies is assesses regularly through internal and external evaluations. Systemic and regular analysis of studies is considered as internal evaluation, the result of which is identification of the strengths and development needs of studies and continuous development activity is planned (see Chapter 3.3). TTK's management evaluates the quality of curricula based on their efficiency on the basis of curricula performance indicators (see Chapter 1). The Office of Academic Affairs assesses curriculum development and conformity of the process to TTK UAS' regulations on organisation of studies.

The main objectives in curriculum development are correspondence of the curriculum study outcomes to society's expectations and developments and professional standard requirements, graduates' high level of employment and/or continuation of studies and interest of degree studies' student candidates in the curriculum. Curriculum development takes into account feedback and recommendations from external evaluations. Feedback from the labour market is received through TTK UAS' Advisory Board, curriculum councils and members of final thesis defence committees and from professional associations. Students are involved in curriculum development process directly (e.g. curriculum councils, TTK UAS' Council) and indirectly (through annual subject monitoring). Every year, an alumni feedback survey is conducted, which among other things, includes proposals on curriculum development. TTK UAS also takes into account the analyses compiled in the framework of the Estonian Qualification Authority's OSKA programme in curriculum development.

In recent years, the new and revised curricula opened at TTK UAS are the following:

1) Production and Production Management (2016);
2) Facilities Maintenance (2017);
3) Transport and Traffic Management (2017);
4) Robotics Engineering (2019);
5) Information Management and Information Systems Organization (2019);
6) Purchasing and Procurement Management (2020);
7) Automotive Engineering (2020);
8) Transport and Logistics (2020).

The prerequisite of opening a curriculum is the university's sufficient academic and material resources and societal need for graduates of the corresponding curriculum. In opening new potential curricula, the university relies on proposals from professional associations, TTK UAS's Advisory Board members or partner companies, which serves as the avenue to consider needs of the labour market. Input also comes from curriculum councils, final theses' defence committee members and OSKA programme reports. Development of a curriculum is decided by the Vice Rector of Academic Affairs on the basis of an application from the director of the institute. The director of the institute administering the curriculum forms a working group to develop the curriculum, which is tasked with compiling the curriculum and preparing its launch. The curriculum is approved by TTK UAS' Council, then the Office of Academic Affairs submits the curriculum materials to the MER's Curriculum Registration Committee.

Closing a curriculum is decided by TTK UAS' Council at the proposal of the Vice Rector of Academic Affairs, having listened to the position of the director of the institute administering the curriculum. Closing a curriculum is preceded by closing admission. Teaching according to the curriculum finishes after the curriculum's nominal period has passed from the last admission. The Vice Rector of Academic Affairs can make a proposal to the institute to close admission if:

1) a curriculum study group has not been opened in the last three years;
2) less than 25% of admitted students graduate in the nominal period;
3) the curriculum does not support fulfilment of TTK UAS' mission and achievement of objectives.

3.7.3. Curriculum administration

A curriculum is administered by the institute of the corresponding area. The Office of Academic Affairs administers curricula across the university, performs supervision and advises. The curriculum coordinator is responsible for the curriculum development and the efficiency of the curriculum process and curriculum development is advised by the Curriculum Council, which assesses the functionality of the curriculum and makes proposals to the curriculum coordinator to improve delivery of studies. Members of the Curriculum Council are appointed by the director of the institute for up to five years. The Curriculum Council includes the curriculum coordinator, at least two curriculum speciality lecturers, at least two external members from professional associations or representatives of employers and at least one student representative. Work of the Curriculum Council is managed by the curriculum coordinator. Curriculum amendment proposals are submitted to TTK UAS' Council for approval by the director of the institute administering the curriculum on the basis of an application from the curriculum coordinator.

Strengths

- Active connection to the labour market and extensive inclusion of external stakeholders in the curriculum development process (curriculum councils, final theses' defence committees, Advisory Board etc).
- Flexible system for curriculum improvement and development.
- Paying attention to development of cross-sectoral competencies in curricula.

Improvement and development activities

- Consistent updating of curricula based on the changing needs of learners and labour market.
- Optimisation of the duration of studies based on labour market needs.
- Ensuring the sustainability of the electives' system.
- Supporting Lääne-Viru County's regional development through education in technology sector.

3.8. LEARNING AND TEACHING

The main documents regulating learning and teaching:

- TTK UAS' Admission Conditions and Procedure;
- TTK UAS' Study Regulations;
- Conditions and Procedure of Partial Compensation of Study Costs.

3.8.1. Admission to university

Admission of students to TTK UAS' curricula takes place on the basis of an Admission Procedure approved in TTK UAS' Council. Admission is organised by an Admission Committee approved with a decree from the Rector of TTK UAS. All persons with upper secondary education or corresponding foreign country qualification have an equal right to apply to TTK UAS. Information about learning possibilities at TTK UAS and the admission conditions and procedure are published on university's homepage.

Proceeding from the objective of ensuring quality studies, necessary resources for organisation of studies, MER's decree on allocation of activity support and TTK UAS' Strategic Plan, TTK UAS determines the maximum number of admitted students. In the 2020/21 academic year, the corresponding indicator was 810.

In the 2020/21 academic year, over 4000 admission applications were submitted and close to 800 students enrolled, of whom 72 already had previously acquired higher education (in 19 cases also a master's degree). 91% of admitted students had acquired upper secondary education with an average mark over 4.0 and 11% also with a medal or honours. The study places in all curricula are filled. More detailed general data on admitted students across the years are presented in Table 4, Ch 1.

Application is in competition groups formed on the basis of curricula and the student candidate can submit up to two applications. Admission takes place on the basis of a ranking list and is threshold-based on the basis of the average mark of the leaving certificate proving graduation from upper secondary school or secondary vocational education and the additional points received for fulfilment of admission conditions.

A student candidate can perform a TTK UAS' academic test, which awards up to one additional point. When applying for the Applied Architecture curriculum, the candidate must complete a drawing and composition test. When applying for the Automotive Engineering curriculum, the candidate must perform an admission test. To improve availability of education, TTK UAS organises preparatory courses for the student candidates, whose upper secondary leaving certificate's average does not meet the required threshold. In several curricula, additional points are awarded for speciality work experience to motivate people already working in the sector to continue their studies. In some curricula, up to 20% of the student places are allocated to graduates of vocational schools to further motivate them to continue studies.

Generally, studying at TTK UAS is free of charge for students studying full-time. Compensation of study costs i.e. tuition for scope of curriculum can be demanded in cases regulated by law and according to the law-based TTK UAS' Procedure of Partial Compensation of Study Costs.

3.8.2. Organisation of studies

Conducting studies is based on curricula corresponding to the Higher Education Standard. The curricula have been approved in TTK UAS' Council and entered in EHIS *(Estonian Education Information System)* and published in SIS. The time calculation unit of studies is an academic year, which consists of two semesters. Studies in TTK UAS' professional higher education curricula are based on a course system type-curriculum.

There is full-time, part-time and external study at TTK UAS' institutes. Full- and part-time studies take place in daytime and distance learning formats. In full-time studies, the student completes cumulatively at least 75% of the volume of studies to be completed according to the curriculum by the end of the academic year, 50-75% in part-time studies. Full-time studies are free of charge, if the student has not already used up the legislation-awarded possibilities. Completion of curriculum in the volume prescribed by study load is assessed as at the end date of the semester. From the second year of studies, a student is transferred from full-time to part-time studies or vice versa based on completion of curriculum. The study load (save final theses, final exam or completion of practical training) of learners in external studies (for a fee) is lower than that of students in part-time studies. This is a convenient option for those who wish to acquire higher education at a pace suitable to them.

In professional higher education, the theoretical subjects determined by the chosen speciality's curriculum are acquired, prescribed practical trainings are completed and final theses is defended or a final exam is performed.

10% if the Estonian-language curriculum study process may be in English. Studies are in English predominantly in the subjects foreign visiting students participate in.

Different forms of study and the time of holidays is determined with a schedule of studies. The schedule indicates, by date, the beginning and end of the academic year and each semester, the timeline of practical trainings and assessment sessions; in case of distance learning, the times of study gatherings.

Institutes and centres conduct studies on the basis of a timetable, which is available through the SIS.

The Higher Education Standard provides that at least 15% of professional higher education curriculum is supervised practical training. The aim of the practical training is acquisition of practical skills and proficiency during professional work in a real work environment. The volume and timeline of practical trainings is determined with the curriculum. Practical training is organised by the institute and the director of the institute determines the academic staff (practical training supervisors) who are involved. Finding practical training places is the students' obligation, but the internship supervisor is an adviser, who recommends practical training places if necessary, and explains and specifies the requirements to an internship place and area of activity and requirements of the curriculum's study outcomes. The practical training procedure is specified with the practical training guideline composed at the institute, which is published on TTK's homepage.

Studying and doing internships abroad is promoted to increase international competitiveness (see Chapter 3.5). Mutual studies are recognised. Foreign visiting lecturers and specialists are also involved in tuition, and it is possible for TTK UAS' students to also partake in the international experience through foreign visiting students participating in studies.

3.8.3. Study process, which supports the student

The subjects that support first-year students becoming familiar with studies in a higher education institution and their curriculum are "Introduction to Speciality", "Academic Self-Management", also "Communication, Cooperation and Critical Thinking". In addition to introducing the subject, attention is paid to developing the students' time management skills, which facilitates the development of a self-managing student. Speciality subjects begin in curricula as soon as possible so that students' would have a better understanding and connection with the speciality they are acquiring.

In professional higher education, active study methods with a learner-centred approach are in focus: reversed classroom, problem- and project-based study with support of companies, laboratory work and group work. Lecturers must participate in a didactics training at least once during the evaluation period. There is a so-called colleague to colleague system at the university, whereby the lecturers regularly introduce methodology and technical aids to colleagues. In 2020, a TTK UAS' didactics research group was established to improve studies aimed primarily at supporting the development of TTK UAS' lecturers through trainings.

Independent work is described in the course programme and explained at length in the online study environment next to the corresponding subject. The study process is supported by online studies through which supervision, checking and feedbacking of independent work also takes place. In the 2017/18 academic year, the share of speciality subjects with online support was 69% at TTK UAS, then in the 2018/19 academic year, it was 73% and 75% in 2019/20. All general subjects are covered with online courses. As at the end of 2020, the number of active users of TTK UAS' Moodle was approximately 2400; Harno in Moodle, which is used by the Institute of Service Economy, the same indicator was close to 850. Online support and the possibility to plan your own time of studying is especially important for distance learning students, who make up slightly more than 50% of TTK UAS' learners.

The total number of graduates has remained around 300 and has remained rather stable, but in connection with the merger of TTK UAS and LVRKK, over 200 graduates were added in 2020 (Table 5, Chapter 1). Topics of final theses are predominantly based on companies' research problems. The topics of final theses are often related to the student's place of internship or employment and therefore, both the university's and company's representatives are involved in supervision. Generally, the main supervisor of the final thesis is a TTK UAS' lecturer. If a student chooses an external supervisor as their main supervisor, then TTK UAS will assign an additional lecturer as a co-supervisor. Compilation of the final thesis is preceded by a separate subject "Final thesis seminar", during which students are guaranteed additional support for transfer to graduation process. Students can also complete their final thesis on topics related to execution of TTK UAS' contractual research. In recent years, TTK UAS has implemented the possibility to defend final theses twice a year (main defence and so-called additional defence during the following semester), to reduce academic debts and/or avoid exmatriculation of students. The university has also started conducting a feedback survey of supervision and defence of final theses and organisation of final exam to identify potential bottlenecks and eliminate them. See Chapter 3.9 regarding defence of final thesis and performance of final exam.

More talented students can participate in the work of research groups and have their contribution considered as fulfilment of curriculum (including final thesis), also participate in intrainstitutional, national and international competitions. In addition to compulsory subjects, the curriculum includes electives (e.g. "Methodology of Applied Research"), which help students to prepare for continuing their studies on master's level. The rate of graduates continuing studies has remained steadily around 15%.

Study process feedback
Students contribute to improving the quality of studies through regular feedback to the study process and organisation (see Chapter 3.3), and by participating in curriculum councils and in other TTK UAS' decision-making bodies.

First-year students' onboarding survey
The first-year students' admission organisation and onboarding survey takes place in the autumn semester of the first year. The objective of the survey is to improve the onboarding and reduce the drop-out rate. Students are questioned about issues related to studies, adjusting to the university environment, availability of information, online studies, information systems and other issues.

Learning sciences is difficult according to studies-related feedback (primarily for learners, who have acquired upper secondary education years earlier). Balancing work and private life with full-time studies is also problematic. TTK UAS' statistics over the last five years shows that, on average, 68% of all students work, 96% of distance learners.

Organisation of studies and study environment survey
An organisation of studies and study environment survey directed at all students is conducted annually, and the most important results are presented in Table 24. Statements related to organisation of studies are rated on a scale of 5, whereby 5 – completely satisfied, 4 – satisfied, 3 – rather satisfied, 2 – rather dissatisfied and 1 – not satisfied at all. In 2020, the forced transition to distance learning affected several aspects of student satisfaction. In addition, the biggest concern for students was availability of study information due to the transition to the new SIS Tahvel, as the technical preparedness of the system did not correspond to students' needs at the time.

Table 24. Student feedback to organisation of studies

Statement	Average assessment				
	2016	2017	2018	2019	2020
There is enough information	3.3	3.9	3.8	4.1	3.4
The structure of the curriculum is logical	3.0	3.6	3.6	3.6	–
The study load is divided equally across the semester	3.0	3.5	3.3	3.4	2.9

Subject monitoring
More detailed feedback on subject level comes through subject monitoring, which is applied to all subjects and conducted every semester. Subject monitoring composes three parts: the student's assessment to themselves as learners; assessment to the subject (subject's connectedness with the curriculum, study materials and assessment criteria for subject) and assessment to lecturer (conducting study process, lecturer's attitude to students, study methods and feedback received from lecturer). Also in case of this feedback format, both measurable assessment criteria and open-ended comments and proposals are used. In general, students are satisfied with the study process and the average assessment to lecturers has been between 4.4-4.6 (see Table 25) in the last three years.

Table 25. Student feedback to subjects and lecturers

Statement	Average assessment						
	2017 autumn	2018 spring	2018 autumn	2019 spring	2019 autumn	2020 spring	2020 autumn
Assessment criteria were clear	4.4	4.5	4.4	4.5	4.5	4.6	4.3
Lecturer's attitude to students was supportive	4.5	4.6	4.6	4.5	4.6	4.6	4.5
Teaching methods supported acquisition of the subject	4.4	4.4	4.4	4.4	4.6	4.6	4.4
Feedback from lecturer was sufficient	4.3	4.4	4.4	4.4	4.5	4.5	4.3
TTK UAS' average assessment of lecturers	44.	4.5	4.5	4.4	4.6	4.6	4.4

Feedback from employers

Feedback is requested from employers through their representation in TTK UAS' Advisory Board, defence committees and curriculum councils, but also through supervision of practical training. Feedback from employers is also mediated by professional associations and professional qualifications committees. Employers are satisfied with the large share of practical training in the curricula and students' general preparation. They would like to see more narrow specialisations within curricula. TTK UAS still believes that specialisation should take place within companies and through in-service trainings, as narrower specialisations would not be cost efficient with regard to learning resources and would demand quite a lot of studies in smaller study groups.

Alumni survey

The annual alumni employment surveys show that planning student places has met labour market needs and the alumni employment rate has been high (see Table 26). Positive engagement of alumni has remained over 95% for many years. On average, 90% of alumni respond to the feedback survey. TTK UAS receives many concrete proposals regarding how to develop the study process from the surveys (this information is collected on the basis of curricula), which is also taken into account as much as possible. First and foremost, TTK UAS' alumni appreciate the practically inclined education and flexible studies in distance learning. The recommendation regarding the main area of improvement is to teach even more computer software.

Table 26. Alumni employment rate

	2016	2017	2018	2019	2020
Positive engagement of alumni* (%)	97	96	98	97	94
Alumni employment** (%)	90	88	88	90	–
Alumni continuing studies*** (%)	19	17	14	18	31

**Working and/or studying, including service in Defence Forces, on parental leave etc.*
***Alumni employment includes everyone working in addition to studies.*
****Alumni who only study, also those who work in addition to studies.*

Based on the report of the 2016-2018 survey of alumni of Estonian higher education institutions completed in 2020, it is possible to provide an overview of satisfaction with studies in comparison to the average indicators in Estonia (the survey applied a 4-point scale). The results show that TTK UAS is on the average indicator level among Estonian higher education institutions or slightly above it (see Table 27).

Table 27. Alumni assessment to satisfaction factors (graduates from 2016-2018)

Higher education institution	Average assessment				
	I am satisfied with the choice of university	I am satisfied with the lecturers and level of instruction	I am satisfied with my current work	I feel competitive on the labour market	In general, I am satisfied with the higher education I acquired
TTK University of Applied Sciences	3.5	3.1	3.4	3.4	3.4
Average in higher education institutions with over 100 respondents	3.5	3.0	3.4	3.3	3.4

Strengths

- Feedback from students, alumni and lecturers related to thorough study process.
- Application of contemporary teaching methods and tools in studies.
- High employment level of alumni.

Improvement and development activities

- Developing a systemic internal series of lectures supporting lecturers to share best practice from colleague to colleague.
- Introducing a group supervisor system to facilitate more efficient preventative identification of students in difficulties (first and foremost, in the first year of studies).
- Developing the foundation of a flexible individual learning path for students.
- Adjustment of admission conditions to reduce drop-out of students with low motivation.

3.9. ASSESSMENT OF STUDENTS

The foundations of assessing the study results and checking knowledge of TTK UAS students is regulated in the following documents:

- TTK UAS' Study Regulations;
- Conditions and Procedure of Recognition of Prior Learning and Work Experience and Transfer of Study Outcomes;
- Rules of Procedure for Violations of Academic Practice and Indecent Behaviour.

3.9.1. Basics of Assessment

Assessments of theoretical and practical studies performed by students and acquired knowledge takes place at pass and fail or grade assessments, exams or defences. Assessment of study outcomes is based on differentiating or non-differentiating assessment, which is determined with the curriculum and described in the course programme. A subject is considered completed after receiving a positive outcome in assessment of study outcomes. Positive outcomes are 5, 4, 3, 2, 1 and "pass" and a negative outcome is the mark 0 and "non-pass/fail". The assessment system is in compliance with the Minister of Education and Research's Regulation from October 27, 2009, number 71 "Common assessment system at level of higher education, with conditions of issuing diploma (cum laude)" (describes the study outcomes' assessment, assessment methods and criteria and assessment scales).

By registering for a subject, the student takes on the obligation to complete the subject during the semester it takes place, by passing the final assessment of study outcomes. An academic employee determines the assessment basis, organisation and share in final assessment of the current results of studies (tests, laboratory work, papers etc) in the subject's course programme, which is introduced to the students at the beginning of the subject course. The student's current results are registered by the academic staff member teaching the subject.

A student is allowed for assessment if she or he has fulfilled the conditions set forth in the course programme that grant the right to allow someone for assessment. In assessment of practical work, formative assessment is preferred. Didactical trainings support the development of the assessment competencies of the lecturer compiling the course programme. The trainings must be completed at least once during the evaluation period.

The Office of Academic Affairs determines when the exams will take place during the semester in cooperation with academic structural units and keeping to the set dates is mandatory for students. Exams must be passed by the end of the assessment period. The academic staff member teaching the subject sets out the guidelines for completing the exam. If a student receives a negative mark for an exam or assessment or the required performance is missing, the student can complete up to two re-examinations or assessments – the first, during the same semester as taking the subject, and the second, during the following semester at the latest. The value of credits does not depend on the mark. A student has the right to improve on the mark 1 (sufficient) by repeating the performance once in up to three subjects.

Students receive regular and constructive feedback, both orally and in written form. Principles of feed-forward are applied. Students are given instructions about the current situation and what he or she can do going forward, which learning strategies should be applied and what to pay attention to in order to improve his or her performance. Seeing development in mistakes is emphasized, as it facilitates the development of self-regulation skills. Feedbacking is targeted i.e. related to the study objectives provided in the course programme. Thereby, the students are aware of success criteria.

To challenge a decision related to the organisation of studies, including appealing a mark, the student shall turn to the person who made the decision and will challenge the decision orally or in writing. If the person who made the decision will not change their decision, then the student can submit an appeal to the director of the institute. The director will compose a committee to review the appeal and make a decision. To challenge the decision of the director of the institute, the student can submit an application in the name of the Rector. The Rector will compose a committee consisting of at least five people to review the application, and the committee shall include two representatives of the student body. The deadlines are provided in the Study Regulations. Approximately 15–20 study performances are appealed in an academic year, generally, these are resolved within institutes.

3.9.2. Defence of final thesis or performance of final exam

Defence of final thesis takes place in front of a defence committee and a final exam is received by an exam committee. Both the defence and exam committees' composition (4-6 members) is approved with the Rector's decree. At least 50% of the composition of the final thesis defence committee and final exam committee is made up of visiting members representing stakeholders.

In reasoned cases, students have the right to apply for a closed defence of their final thesis.

At TTK UAS, students' written work is checked with the plagiarism identification system Urkund. Students are taught

how to use the system during the first academic year. A final thesis cannot be defended unless it passes the plagiarism identification check first.

If a student does not agree with the mark they receive at the final thesis defence or final exam, he or she has the right to submit a written appeal to the director of the institute. The latter will convene a committee with new members to review the appeal with his order. Minutes of the committee's meeting will be taken and the decision can be appealed by submitting an appeal to the Rector. The deadlines are provided in the Study Regulations. 2-4 final thesis or final exam marks have been appealed in an academic year.

All final theses are archived electronically in TTK UAS' repository and on paper in the library. The procedure is regulated by the final theses' publication procedure. Final theses are publicly available, except when the student has applied for restrictions to be implemented. All final theses are formalised on the basis of the Guidelines on Formalising Written Work, which is available to everyone on TTK UAS' homepage.

3.9.3. Recognition of prior learning and work experience

Recognition of Prior Learning and Work Experience (RPL) in execution of the curriculum is regulated by the students' Conditions and Procedure of Recognition of Prior Learning and Work Experience, which is available on TTK's homepage. The objective of RPL is to value life-long learning and ensure equal opportunities to assess and recognise an individual's knowledge and skills. RPL is applied in execution of curriculum in degree studies and in-service training. In execution of curriculum, prior studies completed at TTK UAS or elsewhere may be recognised if the study outcomes are appropriate and the subjects and curriculum modules and work experience correspond to the level of an applied university before beginning studies in TTK UAS degree studies' study place or participating in in-service training. Prior studies are verified with a corresponding diploma, certificate or other document verifying education. What is acquired through work experience, is verified by description of completed work, work experience and what has been learnt as a result, with a professional certificate and other documents. RPL is not used for final thesis defence and/or performance of final exam. For assessment of RPL, the Rector will convene an RPL Committee with his decree, appointing the chair of the committee and the curricula the RPL Committee will cover. Members of the committee must include the curriculum coordinator and the other committee members will be appointed by the director of the institute. Information about RPL committees is published on TTK UAS' homepage.

In execution of curriculum, RPL can provide for:

1) Prior performance in the framework of nationally recognised studies;
2) Learning outcomes of in-service training;
3) Learning outcomes from work experience

A detailed overview of credits applied for and recognised in the framework of RPL is provided in Table 28. We can say that TTK UAS is relatively flexible in processing RPL, as study outcomes and content of subjects (practical training) is primarily assessed and the focus is not on the title of the subject (which can vary considerably in throughout institutions). An RPL Advisor has been appointed for every curriculum, who advises students personally during preparation of the application.

Table 28. RPL statistics

	2017	2018	2019	2020
Number of credits applied for in the framework of RPL	4767	6165	4590	2980
Number of credits recognised in the framework of RPL	4120	5563	4041	2135
RPL efficiency, %	86.4	90.2	88.0	71.6

Strengths

- Clear assessment criteria, which are described in the course programme.
- Regular collection of feedback from students about the study process (including assessment), which is considered in planning and implementing improvement activities.
- A clearly defined procedure for resolution of appeals.
- Involvement of external stakeholders in assessment of final theses.
- A flexible and functioning system for processing RPL.

Improvement and development activities

- Development of visiting lecturers' didactic skills in order to harmonize the understanding of the assessment system.
- More intense referral of visiting lecturers to didactics' trainings.
- Compilation of a short guideline to students on compiling appeals so that the appeals would immediately reach the correct processor and the procedure would be more easily accessible to students.

3.10. LEARNING SUPPORT SYSTEMS

3.10.1. Student counselling

Students are provided:

- academic,
- career,
- social and psychological counselling.

Both academic and support structure employees are engaged in counselling and the corresponding information is available on TTK UAS' homepage under the section "Counselling." Student satisfaction with counselling is surveyed every year (see Figure 9).

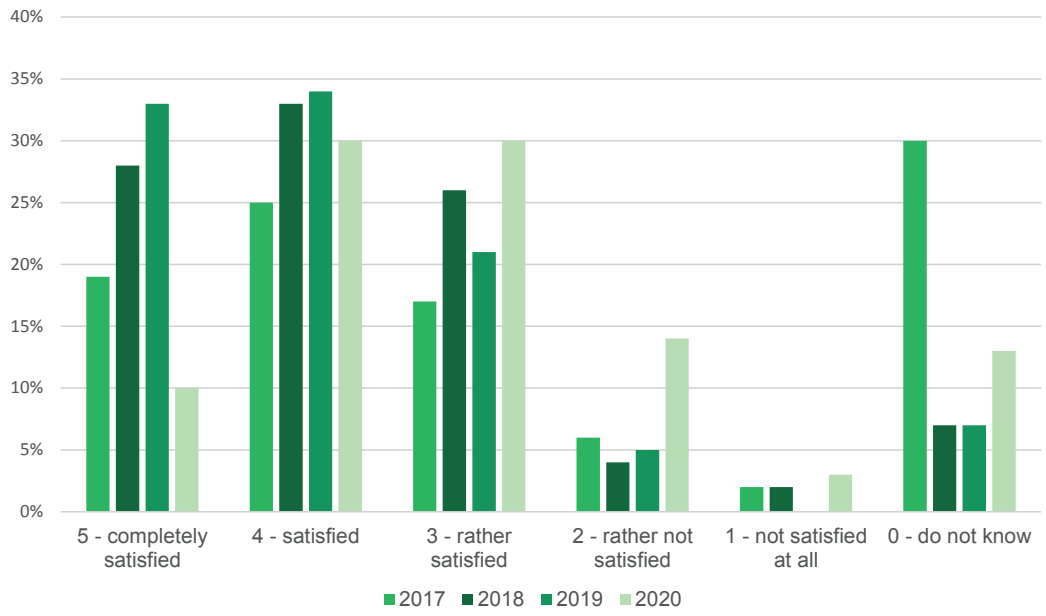

Figure 9. Student satisfaction with counselling

The objective of academic and career counselling is for students to complete their studies successfully and start working in their speciality. The first counsellor at every institute is the Assistant who refers the student on, if necessary. There are designated counsellors at the institutes (curriculum coordinators and/or group supervisors), whose primary task is to explain matters related to completing the curriculum and to guide students to make the right choices proceeding from the curriculum. Tutors (more senior students) help freshmen with studies and other issues. Their work is coordinated by the Student Council.

In addition, students can get advice and assistance from support structural units (primarily the Quality and Analysis Department, Office of Academic Affairs, lawyer). The academic affairs specialists deal with study counselling and the Admission Specialist with academic and social counselling for newly admitted students.

In the scope of subjects, lecturers counsel students and they have extracurricular consultation hours for this purpose. A practical training supervisor has been assigned for each practical training, who acts as an advisor and if necessary, recommends internship places and explains and specifies the requirements to internship places and the area of activity.

The Erasmus coordinator counsels students regarding international study opportunities, mobility programmes and completing internships. The Erasmus coordinator is also a counsellor for the foreign visiting students. Orientation and integration events are organised for foreign visiting students and a support system has been created for them in the form of tutors.

Every curriculum has its own RPL adviser – assessor, who supports students in formalising their applications to have prior studies and work experience recognised in current studies. The recognition of prior learning and work experience is described in greater detail in Chapter 3.9.

Students can also use the psychological counselling service. Psychological counsellors are TTK UAS' lecturers, who have been trained to support students in promotion of mental health. In more serious cases, the student in distress is referred to a professional. During 2018-2020, there were 150-160 counselling sessions per year and about 20-30 stu-

dents who received counselling per year. In addition, students can receive consultation and counselling from TTK UAS' lawyer. On average, students turn to the lawyer with legal questions (conclusion of contracts, explaining legal acts etc) five times a month.

The institutes organise information hours for students to pass on necessary information. At least once every academic year, the curriculum coordinators explain the next period's goals to study groups and the organisation of the learning process. At least once per academic year, the Quality and Analysis Department in cooperation with the Student Council organises an information day to course representatives. Information days are organised to freshmen introducing issues related to studying at TTK UAS (from regulations to technical support), structure of curricula, organisation of studies and internships etc. The information necessary for students is available on information carriers and environments (the most important information is on TTK UAS' homepage under the section "For student"). The student handbook is published, which serves as support material for freshmen, summing up the learning process.

3.10.2. Using technical and educational technology tools in studies

An information systems' user account is created for TTK UAS' students to be able to use all IT-services provided at the university. The online SIS Tahvel administers the study process and its information. Tahvel contains everyday information for students and lecturers, e.g. timetables, curricula, syllabi, registering for subjects, tools to analyse progress in studies, module to conduct surveys etc. Students can also look at their own study results, completion rate of curriculum, average mark and study debts, all notifications to students are also forwarded through Tahvel. Admission of new students takes place on the basis of the national information system SAIS. The study materials published by TTK UAS and the defended final theses are retained in TTK UAS' repository.

Printing, copying and scanning takes place in the online environments Print in City. It is possible to print directly to the library from all computers and other printers connected to the service in other parts of the building. Only public Wi-Fi is available at the university, where students can use personal smart devices. University computers can be used in the e-centre and library, also in computer classrooms when they are free.

According to the Strategic Plan, e-learning is one of the priorities of the learning process. TTK UAS' educational technologist instructs and assists lecturers in compiling e-materials and if necessary, also advises students. At academic structural units, e-learning support persons advise colleagues and more advanced lecturers also share their experience. Freeware Moodle online environment is used to conduct e-learning. The share of subjects with e-courses out of all TTK UAS' speciality subjects has continued to grow; in the 2020/2021 academic year, it was 75%. All general subjects are covered with e-courses.

TTK UAS has two libraries to support its study process (in Tallinn and Mõdriku) with all required possibilities to work. TTK UAS' library is built on the basis of the hybrid library concept and one of the priorities is increasing the availability of online resources (e.g. ProQuest Ebook Central Academic Complete Collection, Emerald Engineering eJournals Collection, ScienceDirect database etc). Access is also granted to all Estonian standards. The overview of the library's databases and other information sources is described on the homepage. The publications in the library are visible in the online catalogues ESTER and RIKSWEB. There is inter-library lending in Estonia and publications can be ordered from foreign libraries through the Estonian National Library. The information search training is mandatory for freshmen and forms a part of studies. The library has an active blog about new books and is active on social media.

Classrooms are equipped with the audio-visual technology necessary to conduct studies and one of the priorities of the coming years is equipping the classrooms with touchscreens. TTK UAS' computers are equipped with state-of-the-art professional software, select computers have virtual access also outside the university through VPN. The university has prepared to conduct online hybrid studies raising the capacity of hardware, software and digital pedagogy. Equipping study laboratories with contemporary hardware and software is a continuous process. In developing laboratories, the focus is on digital solutions and simulations. As to larger laboratories, the robotics lab has been developed, the minifactory lab in textile, the simulation lab for logistics, the virtual reality lab and others.

3.10.3. Education allowances and scholarships

The scholarships allocated to students:

- Performance scholarship,
- Speciality scholarship,
- Need-based allowance,
- Need-based special allowance,
- TTK UAS' active student scholarship,
- Scholarships of TTK UAS' cooperation partners and companies.

In addition, TTK UAS' cooperation partners have issued a number of speciality scholarships.

The objective of the performance scholarship is to support and recognise TTK UAS students who achieve excellent study outcomes and fully execute the curriculum. The size of the scholarship is 100 euros a month, it is allocated twice during an academic year for five months of study. A student can apply for the performance scholarship from the second semester of the academic year of matriculation.

The speciality scholarship is aimed at motivating students to study full-time in priority areas for the state. The MER has made the corresponding choice in conjunction with the Development Fund. At TTK UAS, speciality scholarship is paid to students of Building Construction curriculum in the amount of 160 euros a month up until 2023.

Students from disadvantaged families can apply for need-based education allowance from the state. This can be applied for by a student whose family's income per family member is below the upper limit established by the Tax and Customs Board (523 euros in 2020), and the student must study full-time. In addition, students can apply for need-based special allowance through TTK UAS. This allowance can be applied for by a student studying full-time and who for economic reasons, has not received need-based allowance during the corresponding semester.

TTK UAS' active student of the year scholarship was established to recognise TTK UAS' students who have stood out with important accomplishments for TTK UAS in studies, research, development and creative work, sports and service to society. The scholarship is allocated through a competition.

Companies serving as TTK UAS' cooperation partners also support students by allocating scholarships to TTK UAS' students with certain contractual conditions (Toyota Baltic AS, ABB AS, Schenker AS, AS Laomaailm etc). In addition, there are a number of national scholarships which TTK UAS' students can also apply for (Estonian Concrete Association, the state real estate company Riigi Kinnisvara AS and others).

3.10.4. Supporting students' individual development

Based on personal preferences, students can shape their curriculum within the scope of electives. Electives are a part of the curriculum aimed at acquisition of knowledge and skills on the basis of subjects of the curriculum freely chosen by the student. Curricula also include the kind of electives (e.g. "Applied Research Methodology"), which help students prepare for studies at master's level. Students have the option to change the curriculum within the university.

More talented students can participate in research groups and acquire the required study outcomes, also participate in university, national and international competitions. One of the students' research, development and creative work outcomes is the annual student science festival, where one representative or team from each institute participates and presents their research in front of an audience and a jury. Many students actively participate in international projects (HiTimber Sustainable High-Rise Buildings Designed and Constructed in Timber and others), see Chapter 3.5. Students participate in national inter-university development projects, the best-known project is Formula Student. Students of the Institute of Service Economy participate in the national accounting competition and the international online competition Global Management Challenge. TTK UAS' students have won prizes in:

- The international steel bridge model competition Brico 2017;
- Environmental Investment Centre's energy and resource sustainability competition Negavatt 2016-2017;
- AutoCAD 3D-modelling competition CADrina;
- Garage48 (Future of Wood, Nordic Tower and others) hackathons 2018-2019;
- EuroSkills 2019 and youth fashion competition MoeP.A.R.K.;
- Tallsinki-Monte-Carlo electric vehicles' marathon 2018;
- Robobattle 2020.

TTK UAS' students have won higher education Best Intern title 2016 and 2020 in the Estonian Employers' Confederation competition "Praktik Cum Laude". For two consecutive years, the Estonian Engineers' Union has given the title Technology Student of the Year to a student from the Institute of Technology (2018) and Institute of Engineering (2019).

Development of students' social competencies is also supported through the Student Council (the highest representative and decision-making body of the students studying at the university). The objective of the Student Council is to create a good and supportive learning environment and to enrich student life. The student corporation Ericius operates at TTK UAS, uniting students, lecturers and alumni Institute of Civil Engineering. There are several long-running hobby groups at TTK UAS (e.g. dance group Savijalakesed, chamber choir, sports teams).

Students have the right to take academic leave according to the procedure established by the university's Council. Students can take academic leave once per level of higher education (generally up to once a year). In addition, students can apply for academic leave for health reasons up to two years, up to one year in case of service in the Defence Forces of the Republic of Estonia and in connection to childcare up until the child turns 3 years old.

Lecturers' attitude toward the students has been supportive, because in the period 2017-2020, the students' corresponding survey results have been between 4.5-4.6 (see Chapter 3.8).

3.10.5. Effectiveness of study activities

As a result of implementing several measures, the drop-out rate of TTK UAS' students in recent years has been on a moderate decline. In 2016, the rate was 23.0% and 14.5% in 2020. The highest drop-out rate is during the first academic year (close to half of all drop-out events). In 2018, 30% dropped out in the first year of studies, 27% in 2019 and 29% in 2020. The reasons are not related to learning progress and capability, because freshmen have had quite a high average mark at admission (in 2020, 47% of freshmen's average mark on the leaving certificate of their previous education level was above 4.5 at the time of admission). The main reason indicated for dropping out among exmatriculated freshmen has been "at own accord – unsuitable speciality" (across different years, one third to a half). Therefore, TTK UAS has paid special attention to introducing specialities and supporting an informed choice of curriculum. Drop-out of students is monitored and improvements in this area are ongoing, e.g. the university has enhanced admission rules, increased efficiency of analyses methods, students with study debts are dealt with personally on institute level, the reasons for students dropping out are monitored, e-support for subjects is developed, counselling services geared toward students are enhanced, flow of information is improved etc. In order to analyse students' study results more efficiently and improve study counselling, the positions of academic affairs specialists have been created.

The consideration of academic progress takes place at the end of the first academic year and then, after each exam session as at September 15 and February 01. At the end of 2020, 95% of students studied with full-time study load (see Table 29).

Table 29. Aggregate figures of students' academic progress

	2016	2017	2018	2019	2020
Share of students studying with full study load (%)	93	94	93	95	95
Share of students studying with part-time study load (%)	7	6	7	5	5
Share of students fulfilling the curriculum 100% (%)	54	41	43	36	45
Share of students fulfilling the curriculum 90-99% (%)	16	16	16	14	15
Average duration of study in 3-year curricula	–	–	–	–	3,1
Average duration of study in 4-year curricula	4.2	4.3	4.2	4.2	4.3

3.10.6. Organisation of feedback for students

Regular satisfaction surveys are organised for students (also see Chapters 3.3 and 3.8). The more important satisfaction indicators related to support systems are provided in Table 30.

Table 30. Student satisfaction with support services

Statement	Average assessment			
	2017	2018	2019	2020
Counselling of students (study-, psychological- and career-) is sufficient	3.8	3.9	4.0	3.4
There is sufficient information	3.9	3.8	4.1	3.2
Conditions in classrooms (lighting, temperature, ventilation etc)	3.7	3.9	3.7	3.3
Library services	4.2	4.3	4.6	4.4
Information systems and IT-solutions	4.0	4.1	4.1	2.9*
Student life and atmosphere	4.1	3.9	4.0	3.9

**Decline in satisfaction with information systems and IT-solutions in 2020 is related to implementation of the new SIS (Tahvel). Inaccuracies in transferring study results in transfer of data to the new SIS and non-working functionalities led to dissatisfaction among students.*

Strengths

- Good technical level of classrooms and laboratories.
- Strong network of information technology services.
- Supportive attitude of lecturers toward students.

Improvement and development activities

- Supplementary preparation of lecturers to conduct remote learning.
- Enhancement of laboratories with digital solutions and simulations.
- Raising the efficiency of the system of providing students personal counselling and monitoring study results.
- In cooperation with the developers of the study information system Tahvel, improving the system's functionality and ease of use.

3.11. RESEARCH, DEVELOPMENT AND/OR OTHER CREATIVE ACTIVITY

3.11.1. Objectives of research development and creative work

The main objective of TTK UAS' R&D&I is raising the competitiveness and innovation capability of regional institutions and promoting sustainable interaction with the labour market, so-called external expedience. The internal expedience has to do with modernisation of learning-teaching and diverse implementation and development of the university's material and human resource. We contribute to promotion of research, development and creative work through the UASiMAP project in the EURASHE network.

First and foremost, TTK UAS contributes to supporting the technology and innovativeness of SMEs and other demand-based research for other institutions, supporting the development of a smart economy and implementation of sustainable technologies through applied research and innovation. TTK UAS' knowledge transfer is directed at implementing the outcome of research groups' work in the business environment. The focus is primarily on:

- Conducting applied research and raising companies' awareness of research and development and growing demand;
- Improving enterprises' competitiveness, researching smart specialisation and implementation of green technologies;
- Experimental testing and development of products and services;
- Conducting feasibility research.

Research, development and creative work development areas are described in TTK UAS' Strategic Plan and annual activities are planned in the Action Plans of TTK UAS and its structural units. TTK UAS'strategic development areas proceed from the Estonian Research and Development, Innovation and Entrepreneurship Development Plan 2021-2035 and activities comply with the Organisation of Research and Development Act.

Important motivators to conduct research, development and creative work are:

- raising lecturers' professional competence, which ensures studies directed at quality labour market needs;
- improving students' problem-based learning skills through research;
- tight cooperation with companies ensures sustainability of the university's studies, receiving valuable input from the labour market through applied research to develop curricula.

The effectiveness of research, development and creative work and achievement of goals is analysed and assessed on the basis of the annual reports structural units and research groups, and the economic performance of structural units. On lecturer-level, calculation and reporting take place on the basis of the workload agreement (once a year) and during regular evaluation (generally, every five years).

3.11.2. Organisation of research, development and creative work

The activity of TTK UAS' applied research areas and research groups is coordinated by the Board of Professors at the leadership of the Vice Rector of Academic Affairs on the strategic level.

In 2017, research groups were established at the university, which include lecturers, employees and students. As a rule, the group is led by a professor, associate professor or a lecturer finishing doctoral studies. The group's focus area has to be related to the university's area of study, support its main activities, and the activity must be long-term and sustainable. The groups compile each year an action plan and an activity report for the past year. One of the main activities is applying new knowledge acquired in research to studies. Special attention is paid to inclusion of students.

As at the beginning of 2021, nine research groups have been composed in the following areas:

- Applied Research on Coatings and Materials. Determining and testing the mechanical and physical properties of materials (plastic, metal alloy, composite) and researching materials' recovery technologies and heat treatment options.
- Assessments and Applied Research on Buildings. The activity involves road and applied geodesy applied research and evaluation of the condition of building structures.
- Development of BIM-applications. Applied research relies on virtual reality lab technology, which enables special imaging of buildings and structures.
- Digital supply chain. Applied research in the area of supply chain digitalisation, optimisation, management of company logistics' system, planning logistics and transport.
- Engineering in Fashion Industry. Applied research based on the needs of textile and clothing manufacturing companies, e.g. testing abrasion resistance, water repellence, breathability and other properties, also, researching digital printing technologies in textile materials/products.
- Implementation of robotic systems' models. Researching innovative technical solutions related to Industry 4.0 and developing application methods.
- Innovative solutions in mechanical engineering. Developing solutions related to digitalisation of industry and implementation applied research.
- Research on Sustainable Water Treatment. The research group runs applied research in sustainable circular economy and environmental topics.
- Research Group of Didactics in Higher Education. This is a university-wide research group, which supports TTK's lecturers in introducing and developing contemporary and innovative teaching methods.

The Innovation and Entrepreneurship Centre supports research, development and creative work as a support structural unit, which serves as the link between companies and the institutes. The Centre supports the university's research and development activities providing applied research to companies and the public sector and counselling on innovation and development issues. The Centre makes sure the documentation of contractual work is correct and archived. The Centre also supervises timely and legitimate execution of paid service provision agreements and related transactions.

As a professional higher education institution, TTK UAS does not receive earmarked funding for implementing research, development and creative work, which means that there are no researchers engaged only in science at the university. If necessary, TTK UAS has concluded fixed-term employment contracts with researchers in the scope of a longer-term applied research project. Participation of academic staff in research, development and creative work is described in job descriptions and registered in the workload agreement. Activities related to the research activity are registered in the workload agreement, like preparation, publication of results, professional development etc. In implementation of commissioned applied research, additional contracts are concluded with lecturers, which are financed according to the budget of the contractual work. Lack of targeted financing is the greatest hindrance to the sustainability of research, development and creative work in professional higher education institutions.

TTK UAS has established rules, which cover all procedures related to execution of contractual work – division of activities and responsibilities between parties, budgeting, quotes, conclusion of contracts with partners, conclusion of employment contract with employee, delivery and reception of work, issuance of invoices etc. Several document templates have been developed (e.g. contract, budget, act etc.) to simplify the work of those involved in the process. TTK UAS' guidelines and rules to conduct research, development and creative work are the following:

- Research, Development and Innovation Planning and Implementation Rules;
- Procedure and basis of conclusion, execution of paid services' contracts related to core activity and contract price determination;
- Project Processing Rules;
- Procedure on Use of TTK UAS' Laboratories;
- Procedure on Handling Intellectual Property Created at TTK UAS;
- Approval of TTK UAS' research groups;
- Rules of Procedure of TTK UAS' Board of Professors.

TTK UAS mainly introduces the services provided to companies on its homepage and through thematic seminars or conferences (e.g. Vision Seminar, Entrepreneurship Week, Concrete Day, Road Day etc.), where sectoral expertise, developments and applied research results are shared and among other things, contacts are established with new enterprises. In conducting research, development and creative work, ties have been established with public institutions (e.g. Road Administration, State Forest Management Centre, state real estate company Riigi Kinnisvara AS, Rescue Board, Estonian Defence Forces, City of Tallinn etc) and companies, whose needs drive applied research and contractual work. By participating in the work of professional associations and sectoral clusters, the university receives feedback regarding societal needs and expectations, and it is an avenue to introduce the research, development and creative work opportunities offered at TTK. In 2017, the university joined the business environment platform ADAPTER, which brings companies together with Estonian higher education institutions and research institutions. TTK UAS has participated in several seminars and conferences directed at companies through this channel (the most recent higher education institutions' cooperation festival "Healthy Cities" was organised by TTK UAS).

The financial means necessary for development of research, development and creative work
Research, development and creative work expenses are partially covered from the state budget (activity support). Most expenses are covered by companies' orders (see Chapter 3.2).

Contractual work in research, development and creative work earns TTK UAS own income, which is used to cover research, development and creative work costs and to develop areas of activity. In provision of paid research, development and creative services, the university's overhead fee of 10% and the size of the institute's development share is decided by the director of the institute (generally, at least 5%). The use of the rest of the financial means is provided in the research project budget.

Research, development and creative work is also funded through participation in national and international programmes, if the objectives and content of the project are directed at development of research, development and creative work or infrastructure. See about participation in international projects in Chapter 3.2 and 3.5. Most investments through this avenue have been into laboratories. The measures Enterprise Estonia offers to companies have been a great help to TTK UAS, which have increased companies' interest in implementing innovative solutions with the university's help.

Infrastructure and support systems
TTK UAS considers it important that the infrastructure is used both for conducting studies and applied research. First and foremost, this means that labs are multi-functional and there is optimal use of resources. The efficiency of using the infrastructure is measured through analysing the usage rate of laboratories and classrooms and infrastructure costs. The laboratory resource is used approximately 40-50% to carry out the practicums prescribed in the curriculum. To the remaining part, laboratories are used to provide knowledge services and to execute development projects. TTK UAS has continuously developed its laboratories. During the reporting period, a total of 2 million euros have been invested in renewing the laboratory equipment.

TTK UAS actively supports entrepreneurship, which develops on account of research, development and creative work. In several cases, TTK UAS has been a considerable help to start-ups (including students), by making its (lab)facilities available. The most recent example is development of the 3D concrete printer in the Institute of Civil Engineering.

In 2018, the I stage of laboratory accreditation was launched. During this stage, the processes were mapped and a laboratories' quality manual was put together. As non-standard tests are primarily carried out at the laboratories, then test-based accreditation of laboratories is not a priority. The interest of companies using TTK UAS' labs is mostly to do with product development.

In 2020, TTK UAS started a project aimed at developing and implementing a system of development grants to raise the effectiveness of TTK UAS' applied research motivation system.

TTK UAS provides the possibility to publish research results at least once a year in TTK UAS' publication "Toimetised" (on average, one publication a year is published for lecturers and one for students). In addition, publishing is supported in other publications and the accompanying costs are covered (carrying out tests, translating texts and editing etc).

Every year, the best research is recognised to motivate academic employees and students. The best work is introduced as presentations at TTK UAS' science festival and the authors are rewarded.

Documentation of contractual work (contracts, budgets, instruments of delivery and receipt etc) are administered and stored in the Estonian schools' administration information system EKIS. TTK UAS' ordinary lecturers' research, development and creative work (CVs, publications, projects etc) are in the Estonian Research Information System ETIS.

3.11.3. Effectiveness

During 2016-2020, the financial volume of applied research was in the range of ca 150 000-450 000 euros a year (see Table 31), making up 1.5-5% of TTK UAS' total budget. The turnover of research, development and creative work fluctuates greatly and depends on the general welfare of economy and the number of large-scale applied research projects. Many small and medium sized companies in TTK UAS' target group have postponed investments into developments due to the Covid-19 pandemic in 2020 and are waiting for the situation to stabilize and this has considerably decreased the volume of applied research.

Table 31. Aggregate figures on applied research and projects

Indicator	2016	2017	2018	2019	2020
Volume of applied research (€)*	198 193	236 989	455 522	337 670	197 435

Indicator	2016	2017	2018	2019	2020
Number of contracts concluded with companies (pieces)	104	134	153	120	94
Volume of projects with foreign funding related to research, development and creative work (€)	31 029	318 133	771 315	219 077	261 083

**Accrual-based accounting (the period of performing the work may differ from the invoice period).*

In five years, TTK UAS has managed to double the total number of publications, by mainly contributing to popular science articles (Tables 32 and 33). On average, the total number of scientific publications (classifiers 1.1, 1.2 and 3.1) has been 10 in recent years. The university as a whole definitely has room for development regarding scientific publications. But it is important to consider that one of the most important priorities of TTK UAS in the context of research, development and creative work as a professional higher education institution is carrying out client-based applied research. In introducing the research results, the focus is on publishing scientific publications, which is mostly framed by limited time resource and the interests of the applied research client.

Table 32. Publications published by lecturers by classifier

ETIS classifier	2016	2017	2018	2019	2020
1.1–1.3	6	1	5	13	6
2.1–2.5	4	2	5	3	1
3.1–3.5	7	10	11	14	24
4.1–4.2	0	0	0	0	0
5.1–5.1	1	1	0	2	0
6.1–6.9	9	13	22	6	23
Total:	**27**	**27**	**43**	**38**	**54**

Table 33. Ratio of publications published by lecturers per person (in FTEs)

Indicator	2016	2017	2018	2019	2020
Number of scientific publications per member of academic staff	0.04	0.05	0.08	0.14	0.10
Number of scientific publications per employee with research obligation	0.45	0.35	0.59	1.16	0.99
Number of all publications per academic staff member	0.27	0.26	0.43	0.32	0.50

On average, TTK UAS' lecturers participate in 15 competitions related to creative work in a year (mostly in architecture), and in about half the cases, they achieve prizes. There are about 10 public displays of lecturers' creative work in a year and the most widespread format is exhibitions.

Strengths

- A functioning and flexible support system has been developed as well as a supportive laboratory infrastructure for conducting applied research.
- Although TTK UAS does not receive targeted financing for research, development and creative work as a professional higher education institution, financial resources are budgeted and ensured to lecturers for self-development and raising research capacity.

Improvement and development activities

- A development grant system will be developed and implemented to raise the effectiveness of TTK UAS' applied research motivation system.
- In order to develop students' entrepreneurship competencies and entrepreneurial spirit and innovation, motivating conditions will be created to participate in applied research, including introduction of an innovative and entrepreneurial student scholarship.
- The laboratory accreditation process will continue.

3.12. SERVICE TO SOCIETY

3.12.1. Promotion of core activities and contribution to social development

TTK UAS contributes to society by helping promote informal and non-formal study and entrepreneurship and create opportunities for technical innovation with its employees and infrastructure.

The aim of promoting core activities is attracting speciality-aware and motivated students to degree studies, to introduce the in-service training courses and services provided to companies. Participation in promotional and outreach activities is provided in the job descriptions of academic staff.

To promote curricula, an Open Doors Day is organised once a year and advertising campaigns in mass media twice a year, and the results are analysed annually. Direct marketing is used to invite upper secondary school pupils to TTK UAS. The university organises mini-lectures and laboratory tours for them. On average, ca 500 upper secondary school and vocational school pupils visit TTK UAS every year. For several consecutive years, an Engineering Career Day introducing curricula has taken place aimed at introducing job opportunities at companies in addition to curricula. An outstanding undertaking promoting technical education is TTK UAS' and TalTech's joint project Formula Student.

At fairs, open doors days and other events, learning and career opportunities as a whole are introduced to participants. Company representatives introduce future jobs to raise awareness on the value and necessity of technological specialities in society. TTK UAS also involves its alumni and students at open doors days and other events promoting specialities and introduces the university's curricula through these success stories.

3.12.2. Staff and students' activities directed at society

TTK UAS contributes to society through a number of different activities. For example, every year a Vision Seminar and other events are organised, where hot topics in society are discussed and solutions on idea level are sought and created. Applied research executed for companies help them achieve innovation and development goals and students participating in internships research engineering solutions in final theses and create prototypes. Students' science festival has turned out to be very successful, the hackathon format is tested actively. The main emphasis for both events is on cooperation with companies who also participate in the work of the jury and support students as mentors. Upper secondary school pupils are invited to these events as audience members. In 2015-2018, TTK UAS' Institute of Civil Engineering series of events "Hundred steps in engineering" dealt with promotion of engineering education. In the course of the series, workshops introducing the engineering profession were organised across Estonia. From 2017, the culmination of the events has been an engineering career day for upper secondary and vocational school seniors organised by TTK UAS. The aim of these activities is to direct pupils to make an informed choice for technical education. The university participates in education fairs and events promoting fields of technology. In addition, content marketing articles are written for more specific publications directed at those wishing to continue studies and entrepreneurs, e.g. Edasiõppija teatmik (Handbook for continuing with studies), Inseneeria (Engineering) etc. TTK UAS uses social media very actively. Events organised by the university directed at the general public are provided in Table 34.

Table 34. Main activities in national promotion

Activities	Examples
Seminars, cooperation festivals, fora (at least 100 participants)	• Vision seminars – event for entrepreneurs, universities and wider public (Industry 5.0 (2018); Circular economy vision seminar (2019). • Annual logistics seminars. • Annual cooperation network Adapter cooperation festival, 2020 "Healthy cities", main organiser was TTK UAS. • Traffic design forum. • Concrete Day – annual conference directed at the construction sector. • Science festival – annual TTK UAS' best applied research competition for students and academic staff. • International social work seminar choosing Lääne-Viru County's best social worker.

Activities	Examples
Hackathons, other competitions	• Developing a solution to a development problem in cooperation with companies. • Brico – steel bridges' construction competition in cooperation with TalTech. • Development of a concrete printer in cooperation with TalTech and company. • Robotex – technology fair to promote robotics. • Roborekka – national robotics and mechanical engineering workshop. • Formula Student – product development competition in cooperation with TalTech students. • National accounting competition, where the best accounting final theses participate • International online competition Global Management Challenge, where Business Management students participate
Events introducing TTK UAS and promotion of technology sector	• Annual Open Doors Day organised for future students. • Series of events "100 steps in engineering" 2015-2018, promotion of engineering education from kindergarten to upper secondary school children, 100 events in total. • Engineering Career Day – competition for building the Goldberg machine and speciality fair organised for companies.
Lectures directed at the general public	• Silver Academy – series of lectures for 65+ in Lääne-Viru County once a month. • TTK UAS' open lectures (2-4 a year).
Charitable events	• Christmas Morning – event in format of a Christmas fair to collect funds for members of society with coping difficulties. • Reflector Tree – safety week to promote reflectors in cooperation with the Police and Border Guard Board and Transportation Board.
Nation-wide sports competitions for students	• Ylisport series of events (Ylipall, students' winter and summer games), basketball competitions etc.
Exhibitions	• Final theses and best course work of architecture students and art exhibitions of TTK UAS' lecturers. • Exhibitions of Fashion Industry students.

A folk-dance group and chamber choir operate at TTK UAS, which students, employees and alumni participate in and which has received several recognitions. TTK UAS organises exhibitions of well-known artists and the work of TTK UAS' architecture students in the entrance hall of the Tallinn study building, which is open to all visitors. The sports club operating under the leadership of the Student Council trains and competes in several fields and is active at Estonian students' sports competitions year-round (see Table 34). TTK UAS' sports halls and exercising facilities are also open to society. In addition, TTK UAS offers the possibility to use its main hall, conference hall, laboratories and other facilities for organising a diverse range of hobbies and undertakings. For example, international Rubik's Cube championships have been taking place at TTK UAS from 2015. In 2019, we supported the organisation of the summer school course Women in Science (WiSci) STEAM Camp for Girls.

In 2018, the study laboratory Industry 4.0 was completed and received the recognition of an innovation project supporting the development of science and technology at the 2020 European Regions and Cities Week. TTK UAS' lecturers have created online courses directed at the public (e.g. interactive "Development of a virtual study environment in technical higher education", "Mathematics II", "Mathematics III", "EngiMath", "Data and Word Processing").

3.12.3. Promotion of core activities in media

At TTK UAS, employees receive support for communication activities from the marketing and communications specialists and the main spokespeople have emerged. Employees who have stood out in the media more often promoting their area are recognised in internal channels and main events. Communication results are measured with a media audit and external communication is organised on the basis of conclusions. Primarily, coverage of the university's topics in channels which have influence in society are monitored to better plan communication. The university has had good cooperation with Estonian Public Broadcasting (speaking in television and radio programmes). Learning opportunities are introduced on our homepage and in social media and in the content marketing sections of national print media publications. The objective of TTK UAS' social media channels is to reach target groups, the number of followers has seen a stable increase, reaching close to 5000 users. Figure 10 shows university's representation across types of media.

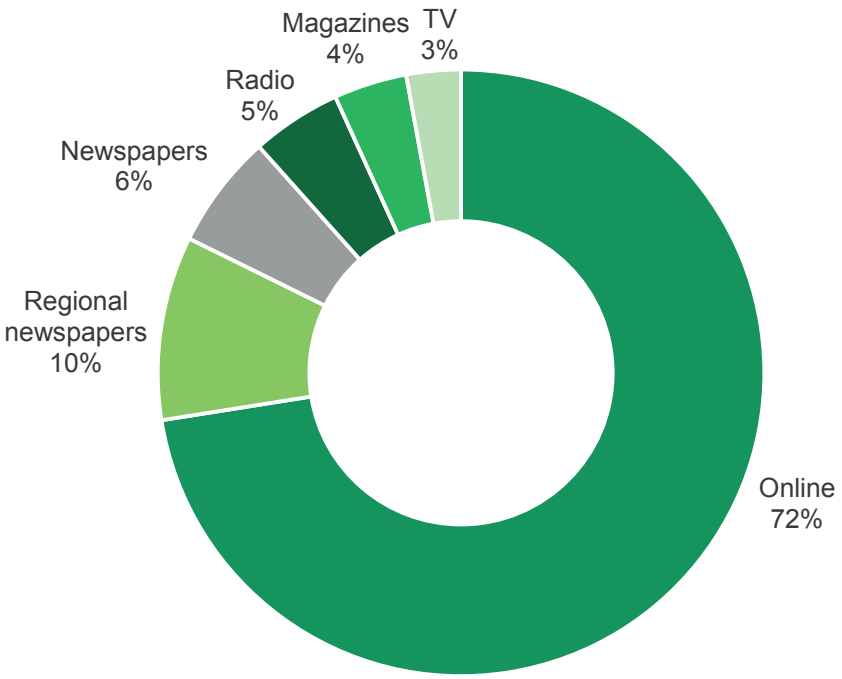

Figure 10. Representation by media type

Lecturers' work in applied research and study area is also promoted in TTK UAS' blog and homepage, which is meant for a wide audience. There has been stable coverage of blog posts in media channels. Due to the Covid-19 pandemic, TTK UAS' conferences and Open Doors Day has been transferred to the online environment.

3.12.4. Participation in professional associations

Cooperation with stakeholders makes it possible to bring experience from the labour market and business into the university and to share know-how in the area of teaching, lifelong learning, research and counselling. TTK UAS initiates public discussions in society on topical issues, by speaking in the media, participating in conferences and other public debates. TTK UAS' staff participates actively in professional associations (see Table 35).

Table 35. Participation in professional associations

Institute of Civil Engineering	Occupational Qualification Council of Architecture, Geomatics, Construction and Real estate; Estonian Concrete Association; Estonian Asphalt Pavement Association; Estonian Association of Construction Entrepreneur; Estonian Association of Civil Engineers' Professional Qualifications Committee; Estonian Association of Surveyors' Professional Qualifications Committee i.e. Geomatics' Professional Qualifications Committee; Estonian Geotechnical Society; Estonian Association of Engineers; Estonian Society of Communal Economy; Estonian Society of Heating and Ventilation Engineers' Energy Efficiency Professional Qualifications Committee; Estonian Association of Civil Engineers' Council; Education Professional Council; International Geosynthetics Society's Finnish Chapter; Estonian Real Estate Maintenance Union's Professional Qualifications Committee; Estonian Real Estate Maintenance Union; OSKA Expert Assembly; Road Engineering Professional Qualifications Committee.
Institute of Architecture	Estonian Qualifications Authority; Architecture Professional Qualifications Committee; Union of Estonian Architects; representative of Union of Estonian Architects in BAUA/UIA; Alternate member of the Chamber of Architecture, Council of Estonian Artists' Association; Advisory Board of Estonian Association of Interior Architects; Estonian Painters Association; Association of Estonian Printmakers; Estonian Artists' Association; ICOMOS Estonian National Committee; Estonian Sustainable Development Committee.

Institute of Technology and Circular Economy	Estonian Qualifications Authority; Council of Estonian Clothing and Textile Association; Education and Youth Board; Estonian Defence Industry Association; Estonian Clothing and Textile Association's Professional Qualifications Committee; Labour Market Monitoring and Future Skills Forecasting System OSKA Water and Waste Economy and Environment; TalTech's Construction and Architecture Doctoral Studies' Curriculum Council; Estonian Water Works Association's water treatment competence working group; Board of Estonian Water Centre MTÜ; Member of Estonian Theriological Society; Estonian Naturalists' Society; Member of TalTech's Engineering Pedagogics' Curriculum Council; Labour Market Monitoring and Future Skills Forecasting System OSKA clothing and textile industry area; Member of Estonian Qualifications Authority "Technology, Production and Processing Professional Qualifications Committee"; Estonian Electronics Industries Association.
Institute of Service Economy	Advisory Board of Association of Estonian Accountants; The Estonian Association of Teachers of English; Estonian Assistants' Society; Estonian Traders Association; Estonian Association of Social Work; Estonian Association of Adult Educators Andras; Estonian Union of Foreign Language Teachers; Association of Estonian Language Teachers; Juhan Kunder Society; Commerce Vocational Examination Centre's Professional Qualifications Committee; Assembly of Chairmen of Professional Councils; Lääne-Virumaa Union of Education Leaders; Accountants' Professional Qualifications Committee; International Association of Teachers of English as a Foreign Language; Association of Teachers of Finnish; Social Welfare Professional Qualifications Committee; Business Service and other Business Professional Qualifications Committee, Society of Teachers of Economics.
Centre for Humanities and Economics	Federation of Business and Professional Women – BPW; Estonian Group Analytic Society; Estonian Society of Creative Art Therapies; Estonian Motivational Interviewing and Training Association; Estonian Statistical Society; Estonian Association of Translators and Interpreters; Entrepreneurship Education Society; European Federation for Psychoanalytic Psychotherapy; Estonian Society of Economics' Teachers; Motivational Interviewing Network of Trainers; participation in the work of higher education institutions' psychological counselling network.
Centre for Sciences	Estonian Graphic Designers Association; Estonian Artists' Association.
Institute of Technology	Members of the Board of the Estonian Automobile Engineers' Association; Member of the Board of the Estonian Association of Mechanical Engineers; Estonian Association of Electrical Enterprises'' work in developing the professional standard of electrical wind turbine technology; member of the general assembly of the Federation of Estonian Engineering Industry; participating in the vocational examination committee's work in cooperation with the Federation of Estonian Engineering Industry and conducting vocational examinations in vocational education institutions; member of the Profession Attribution Committee; Mechanical Engineer Profession Attribution Committee; Member of the Board of the Association of Mechanical Engineers; member of the Professional Qualifications Committee for Technology, Production and Processing.
Institute of Logistics	Estonian Supply Chain Association (ProLog); professional qualifications committee; Road Administration traffic specialists; Railway Engineers' Professional Qualifications Committee; working group on qualifications standards of railway professions; Transport and Logistics Professional Qualifications Committee; Traffic Committee of Government of the Republic of Estonia.

3.12.5. TTK UAS' in-service training and lifelong learning

TTK UAS promotes and provides lifelong leaning in all of the university's study areas. Training activities proceed from the Adult Education Act and Lifelong Learning Strategy, organisation of trainings is regulated by the document "Forms of In-service Training, Procedure of Conducting In-service Training and Quality Assurance".

Training curricula are developed at the institutes and centres based on labour market needs and considering future skills. The university's academic staff knows the labour market well – there is close cooperation with companies on several levels (organisation of students' practical training, research and development, etc). Cooperation on trainings takes place with professional associations and the Qualifications Authority; a good example is cooperation with the Estonian Association of Construction Entrepreneurs, Federation of Estonian Engineering Industry, Estonian Plastics Association and Association of Estonian International Road Carriers. The Estonian Unemployment Fund is a long-term cooperation partner.

In-service training courses are carried out by TTK UAS' academic structural units, the organisation is coordinated by the Office of Academic Affairs' training specialists. The trainings take place in Tallinn and Rakvere. Commissioned trainings can also take place at a location determined by the client. In service training courses are conducted as public trainings for a fee, commissioned trainings, where the curriculum is compiled according to the client's wishes, as state-commissioned education in the framework of the ESF programme "Promotion of Adult Education and Widening Opportunities for Learning" and as procurements of the Estonian Unemployment Insurance Fund. The in-service training courses target group is made up of individuals, employees of enterprises and the university's alumni. The number of participants in in-service courses between 2016-2020 is indicated in Table 36.

In 2019, TTK joined the pan-institutional platform Juhan created to manage in-service training courses, which has made work more efficient and provides an overview of in-service training within TTK UAS and more broadly, of what other training organisers provide. The training calendar is available on TTK UAS' webpage.

Table 36. Number of participants in in-service training courses

In-service training courses across areas of study/fields of study	Trainings					Graduates				
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
Technology, production and construction area	33	32	42	38	25	652	422	672	654	528
Service area, transport services field of study	8	15	14	36	20	162	245	216	383	248
Business, administration and law area, business and administration field of study*	-	-	-	9	16	-	-	-	86	141
Health and welfare area, welfare field of study*	-	-	-	3	3	-	-	-	33	32
In total	**41**	**47**	**56**	**86**	**64**	**814**	**667**	**888**	**1156**	**949**

**Study areas were under governance of LVRKK until 2019.*

Strengths

- Close connection to the labour market and good network of contacts.
- Developed strong event formats directed at the general public, which TTK continues to develop.
- Establishment of the Service Economy Institute in Lääne-Viru County makes it possible to develop technology education and lifelong learning regionally and to contribute to development of the socio- economic areas.

Improvement and development activities

- Inclusion of alumni in the university's activities, developing electronic channels, organising experience events and roundtables and increasing their share in lifelong learning.
- Creation of a more efficient cooperation platform to better use the potential of the network of professional associations.
- Creation of an online version of the in-service courses that are created.

TTK University of Applied Sciences Tallinna Tehnikakõrgkool

www.tktk.ee