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Eesti Maaülikool
Estonian University of Life Sciences

Estonian University of Life Sciences
Eesti Maaülikool

Self-Assessment Report
Submitted for the Estonian Quality Agency for Higher and Vocational Education (EKKA)

2019

Message from the Rector

Eesti Maaülikool (Estonian University of Life Sciences, EMÜ) is pleased to present the Self-Assessment Report to the Estonian Quality Agency for Higher and Vocational Education (EKKA). Improvement has been our objective in the management and operation of our organisation, also gaining and applying better experience via quality management projects. We have volunteered to participate in external assessments. Here are our past experiences of evaluating the University as an institution.

In 2011 EMÜ accepted the offer by EKKA to pilot the institutional accreditation prior to applying it to all institutions of higher education.
In 2005–2008 EMÜ was a partner in the ESF project "Quality Assurance in Universities".
In 2009 we were the only public university in Estonia to analyse the institutional capabilities of our organisation by the modified EFQM model in the framework ESF Primus project "Quality Management in Higher Education Institutions".
In 2017 EMÜ participated in the project "Evaluation of Economic Impact of EMÜ" by BiGGAR Economics, International evaluator. The aim of the study was to quantify the contribution that the University makes to the Estonian economy.

This self-review maps the current situation and compares it to the previous one. We aim at providing confidence that our organisation is developing, also the conviction that we are able to maintain and improve our quality.

The University is in the wake of major changes. In particular, this is a change in the university management system. University leadership at the top is turned into two-tier system. Such a fundamental change will come into force on the basis of the Law of EMÜ adopted by the Parliament.
The highest decision-making body of the University is the Council which shall be responsible for the long-term development of the University. Some members shall be appointed by the minister responsible for the area, by involving public into the nomination of candidates. The majority of the members of the Council shall be persons who are not employees of the University.

Self-assessment was carried out by teams formed for it; the intermediate and final reports were reviewed by the self-review management group. The self-assessment report was discussed at the meeting of the EMÜ Board and EMÜ Council.
The quality criteria by EKKA were the basis for the self-assessment. The document is structured according to the assessment criteria (standards); the supporting material has been given in the text. The assessment focuses on the core processes – learning and teaching; research, development and creative activities (RDC), and service to society – as well as on strategic management of the organisation and resource management. The learning and teaching process is examined in more detail under five standards.
The self-assessment period was from March 2018 to the end of December 2018.

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Mait Klaassen
Rector

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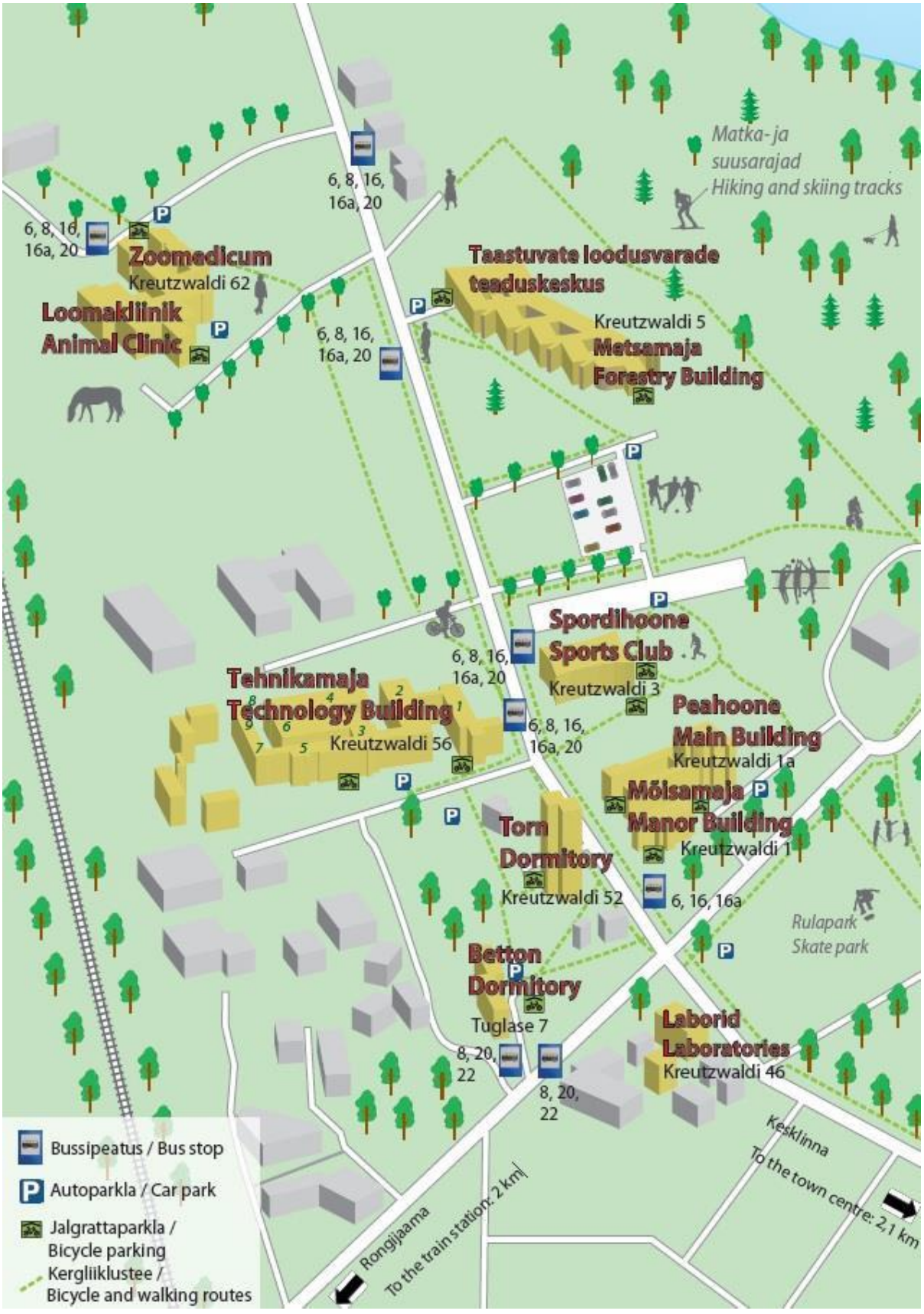
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Rongijaama
To the train station: 2 km
Kesklinna
To the town centre: 2,1 km

Glossary of terms

ASTRA – European Regional Development Fund, EMÜ ASTRA Project „Value-chain based bio-economy“
AÜ – Open University
BA – Bachelor of Arts
BOVA University Network – forestry, veterinary and agricultural sciences universities of the Baltic countries, founded in 1996. Members: Estonian University of Life Sciences, Latvia University of Life Sciences and Technologies, Aleksandras Stulginskis University, Lithuanian University of Health Sciences
BEENOVA – NOVA sub-network
DAA – Department of Academic Affairs of EMÜ
ECTS – European Credit Transfer System
IFLA Europe – European Federation for Landscape Architecture
EMOR – Estonian market research and consulting company TNS EMOR
EMÜ – Eesti Maaülikool, Estonian University of Life Sciences
ERA-NET – Networking the European Research Area
EHEA – European Higher Education Area
ETIS – Estonian Research Information System
EURAXESS – Researchers in Motion homepage, Job Portals
FORPEC – MSc Curriculum in Forest Policy and Economics
HEI – Higher Education Institution
ICA – Association for European Life Science Universities
ICT – Information Communication Technologies
INTERREG – European Interregional Cooperation Program
MI – Institute of Forestry and Rural Engineering of EMÜ
NORDPLUS – Nordic Council of Ministers' program for lifelong learning
NOVA University Network – Forestry, Veterinary and Agricultural Universities of Nordic Countries
PhD – Doctor of Philosophy
PK – Institute of Agricultural and Environmental Sciences of EMÜ
RDC – Research, development and/or other creative activity
R&D – Research and development
RPL – Recognition of Prior Learning (*in Estonian* VÕTA)
SILVA – European Forest Science Academic Network
TI – Institute of Technology of EMÜ
TLÜ – Tallinn University
TS – Tartu Technical College of EMÜ
TalTech – Tallinn University of Technology
VL – Institute of Veterinary Medicine and Animal Sciences of EMÜ
ÕIS – Study Information System

Self-review team

Self-Review Management Group	**Rector Mait Klaassen** **Vice-Rector for Academic Affairs Endla Reintam** **Vice-Rector for Research Ülle Jaakma** **Lea Michelson, Academic Secretary** **Ursula Erik, Lecturer of Language Centre, language editor** **Ülle Sihver, Head of Language Centre**
TEAMS BASED ON EVALUATION STANDARDS	
Strategic management	**Rector Mait Klaassen** **Vice-Rector for Academic Affairs Endla Reintam** **Vice-Rector for Research Ülle Jaakma** **Lea Michelson, Academic Secretary**
Resources	**Kaire Klaus, Head of Department of Finances** **Toivo Ilves, Director of Estates** **Mare Maruste, Personnel Manager** **Kerli Liiv, Chief Specialist of Personnel Dept** **Rainer Banhard, Head of Dept of ICT** **Tiina Tohvre, Head of Library**
Academic Studies	**Vice-Rector for Academic Affairs Endla Reintam** **Ina Järve, Head of Dept of Academic Affairs** **Eda Tursk, Chief Specialist of International Relations** **Lilian Ariva, Chief Specialist of Doctoral Studies** **Eda Aitsen, Chief Specialist of Organisation of Studies (admission)** **Anett Nurm, Head of Student Union**
Support processes for academic study	**Katrin Kreegimäe, Chief Specialist of Career Service** **Arma Vahtra, Psychologist** **Ülar Allas, Education Technologist** **Vaike Reisner, Chief Specialist of Organisation of Studies** **Anett Nurm, Head of Student Union**
Research, Development and Creative Activities	**Vice-Rector for Research Ülle Jaakma** **Andi Pärn, Head of Dept of RDC** **Katri Ling, Senior Research Fellow, Chief Specialist of Dept of RDC**
Service to society	**Risto Mets, Acting Manager of Marketing and Communications Dept** **Liisi Veske, Acting Manager of Open University** **Andi Pärn, Head of Dept of RDC**
Study programmes	**Priit Põllumäe (Forestry, BSc)** **Evelin Loit (Production and Marketing of Agricultural Products, MSc)** **Simon Bell, Toomas Muru (Landscape Architecture, MSc English)**

1. Introduction / General part

Estonian University of Life Sciences is registered as a public legal person in the state register of state and local government agencies, 26.02.2003, registry code 74001086, acting according to the Constitution of the Republic of Estonia, the Universities Act, the Statutes and other legislative acts. Estonian University of Life Sciences is the only university in Estonia whose priorities in academic and research activities provide the sustainable development of natural resources necessary for the existence of Man as well as the preservation of heritage and habitat. Research forms a basis for teaching at all levels of higher education.
The abbreviation for Estonian University of Life Sciences is EMÜ. The official name (in Estonian) of Estonian University of Life Sciences, Eesti Maaülikool, and the abbreviation EMÜ is also used in foreign languages as the original name. Estonian University of Life Sciences on the logo is the name of the university in English.

According to QS World University Rankings by Subject (2018), EMÜ is one of **top 100 universities** in the world in the field of agriculture and forestry, ranked 51 to 100. EMÜ also belongs to the **top 1% most cited research facilities** in the world, with Ülo Niinemets, our plant physiology professor, being the most cited Estonian researcher altogether.

1.1 History

The first educational establishment in Estonia providing higher education with a full agricultural curriculum – in veterinary medicine – was the Tartu Veterinary School, founded in 1848 and reorganised as Tartu Veterinary Institute in 1873. In 1919 the Veterinary Institute was united with Tartu University and re-named as the Faculty of Veterinary Medicine. In the same year the Department of Agriculture was established in Tartu University. In 1920 it was divided into the Faculty of Forestry and Agronomy. The latter comprised both plant production and animal husbandry. In 1946 a separate Faculty of Forestry was established.
In 1951 the three above mentioned faculties were the basis for establishing the Estonian Agricultural Academy, which was re-named as Estonian Agricultural University.
In 2005 Estonian Agricultural University (Estonian University of Life Sciences today) implemented a restructuring program. 01.01.2005 new academic structural units – five institutes – were established instead of a classical organisational model of a university with faculties. An institute is a structural unit, acting as a research and development institution aiming at fostering science and academic practice, also providing the necessary study, research and development services to the society.

Estonian University of Life Sciences as of 27.11.2005 reflects the new direction of the university – to organise research and provide education not only in the traditional agricultural sciences, but also in life sciences, and gene and bio-technology and environmental sciences. The initiative to change the name was spearheaded by the university newspaper "*Maaülikool*", which is today the redesigned magazine "Maaülikool". The new name brought along the new logo and visual identity.

The activities to meet the targets and objectives up to 2020 are described in the Development Plan 2016-2025.

1.2 Organisational structure of EMÜ

In order to support fulfilling the objectives and coherent operation of the main processes of EMÜ, the responsibilities have been defined and described on all levels of management, maintenance and support structures.
The highest decision-making body is the EMÜ Council, comprised of 30 members. The members are the Rector, Vice-Rectors, Academic Secretary, elected representatives of the academic structural units and students, two persons outside the university staff who are appointed by the Rector. The work of the Council is regulated by the Council's Rules of Procedure.

The Advisory Board, appointed by the Government of Estonia, is the highest advisory body linking EMÜ and the society, which makes suggestions to the Minister of Education and Research, and the EMÜ Council, concerning issues on EMÜ development.

The Board of EMÜ is a body of operational management formed by the Rector. The Board takes decisions and works out the opinions for passing legislative acts and on the issues in the agenda of the Council. The Board members are the Rector, Vice-Rectors, Head of Department of Finances, the Director of Estates, Directors of Institutes, Director of Tartu Technical College, Chairperson of the Student Union.

The EMÜ Rectorate includes the Rector, Vice-Rector for Research, Vice-Rector for Academic Affairs, Director of Estates, Head of Department of Finances.

The duties and authority, regulations of the structural units and their staff on mutual responsibilities have been determined in the procedure descriptions.

The objective and tasks of EMÜ, the structure, management procedures, the basic principles of the organisation of studies, the basic rights and obligations of the staff and students, the procedure for using the property, the basis of financing and the systems to guarantee reporting and inspection are provided in the Statutes of EMÜ.

The academic structure of EMÜ comprises five institutes – Institute of Agricultural and Environmental Sciences, Institute of Veterinary Medicine and Animal Sciences, Institute of Forestry and Rural Engineering, Institute of Technology, Institute of Economics and Social Sciences. There is one college, Tartu Technical College, and two centres: Language Centre and Centre for Science Studies Karl Ernst von Baer House (studies of research history). The three interdisciplinary units in EMÜ are: Centre of Bioeconomy, Centre of Renewable Energy and Nature collections. The interdisciplinary units bring together under the common “umbrella” research and development activities and/or academic activities of several structural units. They have no regular staff.

EMÜ core activities are assisted by the support structure, i.e. administrative and financial services, library, units that organise studies, research and development (Fig. 1.1).

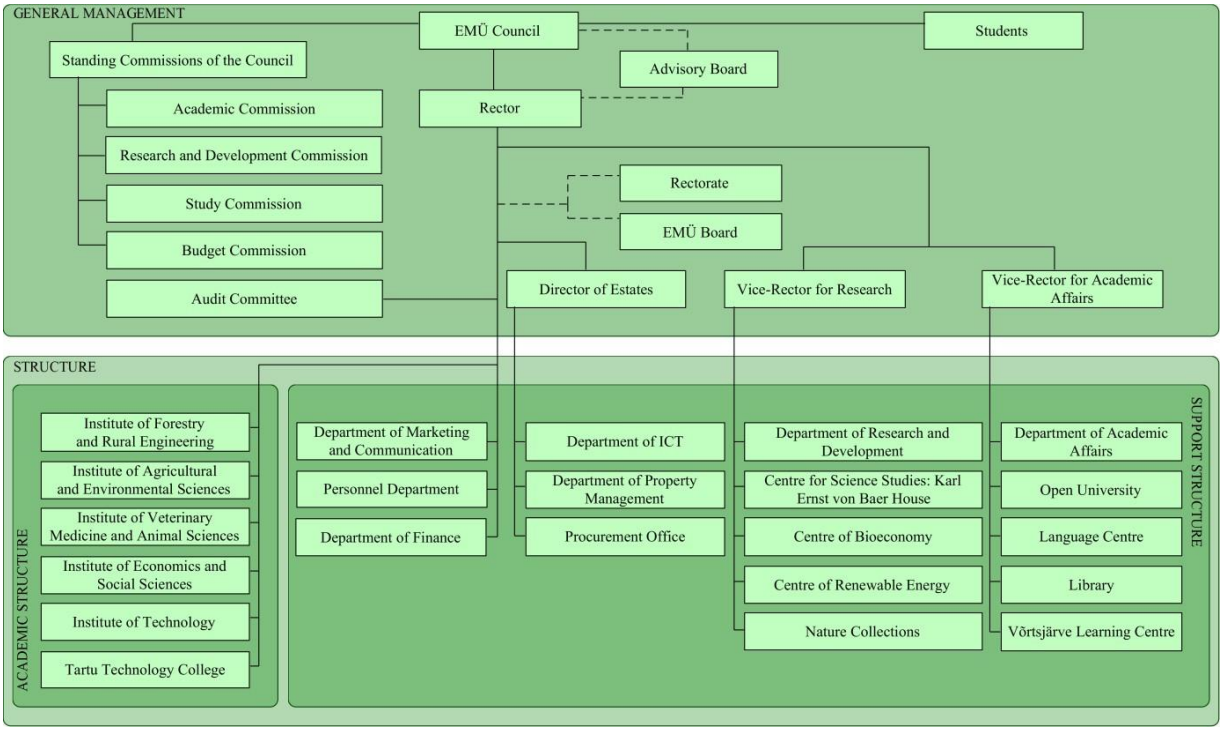

FIG. 1.1 EMÜ MANAGEMENT STRUCTURE

EMÜ is one of the six public universities and one of the four biggest public universities in Estonia.

The following (Tables 1.1 and 1.2) are data that characterize the distribution of students among different indicators (total number, admissions, withdrawals, graduates) by study programme group, levels of study, in five-year trend) and about academic and support staff by main units as a 5-year trend (total number of staff, share of academic staff with PhD, share of international (visiting) teaching staff and distribution by gender).

TABLE 1.1 AGGREGATED DATA FOR STUDENTS

Study programme group	Number of students (date 10.11 for each year)					Admission (date 11.11–10.10 for each year)					Withdrawals (date 01.10–30.09 for each year)					Graduates (date 01.10–30.09 for each year)				
	13/14	14/15	15/16	16/17	17/18	13/14	14/15	15/16	16/17	17/18	13/14	14/15	15/16	16/17	17/18	13/14	14/15	15/16	16/17	17/18
BA, professional higher education and integrated study																				
Agriculture, forestry, fisheries	654	567	504	415	364	180	158	151	132	98	175	146	157	103	76	90	89	84	66	69
Veterinary	317	326	325	338	328	54	60	62	62	65	13	20	13	22	18	40	43	40	56	43
Life sciences	498	453	381	332	315	147	126	118	116	98	110	120	88	58	78	85	82	94	65	61
Engineering, manufacturing and technology	635	541	508	415	399	186	128	135	131	130	151	103	159	92	122	81	85	74	73	53
Architecture and building	513	450	407	338	277	104	77	77	51	48	83	77	90	63	65	64	54	45	50	43
Business and administration	526	441	391	351	316	132	92	92	96	95	132	93	86	85	70	56	60	74	64	58
Total	**3143**	**2778**	**2516**	**2189**	**1999**	**803**	**641**	**635**	**588**	**534**	**664**	**559**	**593**	**423**	**429**	**416**	**413**	**411**	**374**	**327**
MA																				
Agriculture, forestry, fisheries	227	193	186	168	154	75	49	79	66	58	29	31	41	23	28	57	58	48	55	38
Life sciences	178	202	185	196	186	80	72	65	69	55	28	28	30	30	24	26	56	35	38	39
Engineering, manufacturing and technology	176	177	155	146	133	73	62	50	65	51	30	28	33	32	28	35	49	41	36	40
Architecture and building	105	97	111	89	69	26	39	37	22	22	23	10	20	9	7	29	16	25	35	24
Business and administration	237	254	250	250	244	80	75	72	75	68	47	45	48	56	43	24	40	38	29	38
Total	**923**	**923**	**887**	**849**	**786**	**334**	**297**	**303**	**297**	**254**	**157**	**142**	**172**	**150**	**130**	**171**	**219**	**187**	**193**	**179**
PhD																				
Agriculture, forestry, fisheries	104	104	104	97	90	11	15	11	15	14	8	9	15	12	8	10	4	8	12	5
Veterinary	32	33	31	32	35	8	4	5	4	3	2	5	1	1	3	2	3	3	1	2
Life sciences	58	56	57	60	62	6	7	8	6	8	4	4	6	4	8	8	4	1	5	3
Engineering, manufacturing and technology	34	33	32	31	34	7	5	5	7	5	4	4	5		7	1	2	5		2
Total	**228**	**226**	**224**	**220**	**221**	**32**	**31**	**29**	**32**	**30**	**18**	**22**	**27**	**17**	**26**	**21**	**13**	**17**	**18**	**12**
Subtotal	**4294**	**3927**	**3627**	**3258**	**3006**	**1169**	**969**	**967**	**917**	**818**	**839**	**723**	**792**	**590**	**585**	**608**	**645**	**615**	**585**	**518**

TABLE 1.2 AGGREGATED DATA FOR ACADEMIC AND SUPPORT STAFF BY MAIN UNITS AS A 5-YEAR TREND

Estonian University of Life Sciences	**31.12.2013**	**31.12.2014**	**31.12.2015**	**31.12.2016**	**31.12.2017**
Total number of staff	**976**	**952**	**904**	**883**	**916**
Total number of academic staff	460	456	435	425	449
(women/men)	209/251	213/243	217/218	208/217	225/224
Number of academic staff with PhD	246	245	236	221	223
Average age of academic staff	47	46	46	46	46
Number of international academic staff	24	24	28	28	30
Number of support staff	516	496	469	458	467

2. Main changes arising from the recommendations of the previous institutional accreditation

2.1 Marketing in its widest sense

Recommendations of the previous Institutional Accreditation:

- *Marketing needs to be improved and become pro-active.*
- *Media communication needs to be planned and monitored.*
- *Public-oriented activities should be undertaken together with collecting, assessing and communicating feedback from these events.*
- *EMÜ's English internet pages need to be improved to have specific focus on wider internationalisation.*

EMÜ marketing activities are based on the marketing strategy. Work is divided into domestic and foreign activities. Marketing and communication department cooperates with EMÜ structural units and Student Council, serving their needs.

To introduce EMÜ activities and learning opportunities, direct contact with young people is established. EMÜ takes part in more than 40 educational events and fairs in Estonia; the experience is analyzed and effect on potential students assessed. Comparison to other universities, how they represent themselves and what we have to improve is relevant as well.

The goal is to be active where young people are – in social media. EMÜ organizes social media games and advertises events organized by university through these platforms. Marketing and communication department also works together with other universities. The promotional day "Study in Tartu!", with activities in Tallinn, is organized in cooperation with other Tartu HEIs to keep in touch with young people in the capital.

We introduce study opportunities in schools and host school groups in EMÜ to promote university activities and opportunities.

External marketing places more emphasis on e-marketing in portals (Masterstudies, Studyportals, StudyLink) and social media. We also visit marketing events abroad – fairs, presentations and workshops from teaching staff. In foreign marketing, we consult Study Estonia and other Estonian universities, and exchange experiences.

We communicate with foreign students who come here to study, and encourage them to be our ambassadors in their home country to introduce EMÜ and Estonia.

Marketing and communication department uses indirect marketing through communication channels to achieve wider media coverage of EMÜ activities. In addition to research, we try to get into the media in our main areas through interviews, opinion stories and popular science or entertaining content. Estonian media channels are monitored continuously by our department. Topics are offered according to the specificity of the channel or journalists.

The most important news are translated into English and published on the EMÜ website, at the Research in Estonia news section and at EurekAlert scientific news portal. Marketing and communication department is serving prompt response to queries; also social media queries.

We put emphasis on marketing our less popular specialties, emphasizing their necessity in society and the labour market. The department is responsible for continuous development of printed materials for both domestic and international market. Student posts and stories in social media, blogs, vlogs are applied to information activities.

The department publishes a university magazine "Maaülikool" and sends to important target audiences: media editorials, libraries, public authorities and other universities. We help structural units in producing the necessary publications and promotional materials.

In order to improve the internationalisation of studies, major changes were made concerning both the personnel and processes in 2014. A new team for international affairs was introduced to DAA (Department of Academic Affairs), consisting of 2.5 positions. As of 2018, the international team consists of 3 full position specialists: one working on EU student mobility, one with non-EU exchange and full degree international students and one with project applications and reports, bilateral agreements and staff mobility. They are supported by two more colleagues, working on international student admission (incl. PhD students) and coordination of international doctoral students. To work with international degree and exchange students' applications, EMÜ is using a new online application management tool (Dream Apply).

EMÜ homepage has been improved: all relevant information is provided about full degree studies, exchange studies, courses offered in English, admission requirements, etc. Information about staff mobility options is provided in Intranet. The international office has introduced a calendar to help students and staff to plan their international activities: fixed deadlines for applications of mobility funding, information sessions and other promotion activities, an orientation week for incoming foreign students at the beginning of semester.
In regards to welcoming foreign researchers and teaching staff, there are two specialists in charge of processes related to settling down and starting to work in Estonia, respectively in the Personnel Department and in the Department of Research and Development.

EMÜ offers foreign visiting researchers and lecturers information and assistance in meeting official requirements (visas, residence permits, employment contracts, etc.). In cooperation with the Estonian ENIC-NARIC (Academic Recognition Information) centre, the education level of visiting lecturers is assessed on the basis of documents officially issued abroad. EMÜ provides English language training to support structure employees who advise the teaching staff. Initial guidance is provided to foreigners by the Personnel Department, which deals with employment contracts. An information brochure was produced in Estonian and English in 2017, which contains key contact details and information about the way EMÜ is run. In 2017 EMÜ signed a cooperation agreement with Swedbank to open bank accounts for foreigners free of charge, simplifying arrangements related to paying their salaries.

A new EMÜ homepage was launched in 2016. A lot of effort was put into presentation of the English degree programmes and exchange modules for international students. We have also adjusted and edited the information which is presented on the homepage to our international degree students.
All described changes have been communicated to our international partners. EMÜ appreciates the existing partnerships and has strived toward tighter relations and regular communication with the partners.
EMÜ pays more attention to introducing the international community to Estonian traditions and involvement of foreign students and staff in everyday life. The International Club of EMÜ was established in 2011. Since 2016, weekly newsletter in English is sent to all students and staff members. All these activities have had a positive impact on internationalisation of studies as well as on overall visibility of EMÜ abroad.

2.2 More use of English across EMÜ programmes from bachelor level upwards

Recommendations of the previous Institutional Accreditation:

- *More use of English is needed across EMÜ's programmes from bachelor level upwards. This includes the teaching, the student learning, the writing, and the oral work.*
- *Estonia is member of the EU where English is the official business language. English is important for students to obtain a wide range of careers including jobs with international businesses both inside Estonia and externally.*
- *The Assessment Committee are concerned if the Estonian language only is to be adopted for EMÜ's bachelor programmes and also partly for master programmes as is suggested by a new law yet to be legally adopted. EMÜ graduates would then become less competitive in the careers/jobs market, particularly with international companies and international trade.*

EMÜ introduced two study programmes (curricula) taught in English in the academic year 2013/2014: Veterinary Medicine and Landscape Architecture (Master's level). In both cases, there is a parallel programme in Estonian, and international and Estonian students are taught together in a number of courses. Additionally, in 2014 we started to develop more courses and modules in English for exchange students. Many of those courses are based on existing courses in Estonian so that they can be taught for a mixed audience of international and Estonian students. The number of incoming international exchange students has grown over the past 4 years (see Fig. 3.5.2) which has changed the everyday learning environment for Estonian students as well. Over the years, EMÜ has hosted guest teachers from our partner universities (Fig. 3.5.4). This has created a more international classroom environment, offered diversified insight to different academic fields and increased the students' and teachers' communication confidence in English.

It is important to stress that today EMÜ is the only university in Estonia providing compulsory, subject-related English courses (ESP, English for Specific Purposes) in all first and second cycle curricula. EMÜ Language Centre offers six English language courses students can benefit from:

1) English for advanced students
2) English for Specific Purposes: Practical conference communication
3) Teaching Academic Subjects in English
4) English C1. Language structures. My GrammarLab learning platform (started in academic year 2014/2015)
5) English B1. Language structures. My GrammarLab Intermediate learning platform
6) English B2. Language structures. My GrammarLab Intermediate learning platform (started in academic year 2015/2016)

EMÜ also offers possibilities for academic and administrative staff to improve their English. Currently, two courses have been developed:

1) Communication and speaking in English, A1/A2
2) English. Level A1

In cooperation with the Personnel Department, the Language Centre is continuously assessing and monitoring the needs in terms of English courses for staff. A wider selection of courses for staff encourages to use English more often in their own work as well.

2.3 Effectiveness of the feedback systems

Recommendations of the previous Institutional Accreditation:

- *The effectiveness of the feedback systems is variable.*
- *Feedback from ÕIS is low at 20-15%.*
- *The Assessment Committee recommends a review of the feedback systems for overall coherence and effectiveness.*

EMÜ has implemented a number of measures to make the feedback from the study information system (ÕIS) more effective and relevant. A number of discussions on the questionnaire have taken place with both lecturers and students, but it appears that the main questionnaire-related problem is the fact that students will not get information about what the university does or plans to do with the feedback recieved. As regards lecturers, the problem is the lack of student response activity. EMÜ is primarily focused on solving these problems. To increase the number of respondents, the universityhas assigned students to respond to a feedback questionnaire for at least four subjects during a semester. The Student Union, in turn, has conducted various campaigns to increase feedback from students, for instance, an extensive student campaign was launched in 2015/16. The Department of Academic Affairs analyzes the feedback at the end of each semester and prepares a report of the results, which will be sent to the heads and directors of all structural units. The heads of structural units have an obligation to provide their feedback and submit an action plan according to the feedback presented in the report. The results of the feedback analysis, together with the activities and plans that have been made, are also sent to the Student Union every semester. The institutes discuss the results of feedback in curriculum commissions, councils and other meetings/seminars in the participation of a student representative. For example, the employment contract of two teachers was not extended due to student feedback. Extra specific feedback is asked from students before major changes in curricula, like in *Veterinary medicine, Production and marketing of agricultural products, Horticulture, Applied biology of aquatic and terrestrial ecosystems*. For example, the course *MS.0079 Marketing with fundamentals of agricultural marketing*, was included to the curricula of *Production and marketing of agricultural products* in 2016. In 2018 extensive changes in the curricula of forestry were launched.

The feedback questionnaire also enables the teacher to add comments on the feedback or learning process. A commentary can be given to students as well as to a direct work leader. A lot of lecturers use this opportunity.

Solving the problems related to asking for feedback on teaching and learning is a very complicated task, EMÜ is continuously working on its development and making it more constructive. In the autumn of 2019, it is planned to switch to a new study information system, and the feedback system along with the questionnaire will thereby also be reviewed. In this area, we cooperate with University of Tartu. According to the concept, new feedback should become more student-centered, in which the student evaluates subjects and the learning process through self-analysis.

2.4 Library staff provide guidance on literature searches

Recommendations of the previous Institutional Accreditation:

- *The Assessment Committee recommends that library staff provide guidance on literature searches to groups/classes of students, instead of individually, early in their studies and make attendance compulsory.*

The library conducts training courses on using the library and online resources: introductory lectures at

the beginning of the academic year and practical training for graduate students, doctoral students and academic staff during the academic year. Twice a year the library conducts an e-learning course *Introductory course: information seach and use of databases* (3 ECTS). Information on how to access databases is available on the library web page.

2.5 Management system

Recommendations of the previous Institutional Accreditation:

- *Although there is an effective management system in place at EMÜ, there is a very long list of management features including plans, strategies, sub-strategies, priorities, fields of activity, and a plethora of indices.*
- *Too many and used too often can dilute the effectiveness of management. Thus, the Assessment Committee recommends that regular checks and evaluations are made on these many management features (as has been undertaken in the past) and adjustments and refinements made where appropriate in order to provide a sharp management system and greater clarity.*

Instead of the two previous R&D strategies – Research and Development Strategy and the program "Knowledge-based Bio-economy" – one strategic document, R&D Strategy until 2025. Knowledge-Based Bioeconomy has been developed.
Every calendar year an Action Plan (*in Estonian*) is drawn up for each strategic field, which is, together with EMÜ **Budget**, submitted to the University Council for approval. Information on the attainment of the goals and objectives laid out in the **Development Plan** is collected and published in the Annual Report of the University. The implementation of the action plan is approved together with the annual report by the University Council.
In 2013, EMÜ ordered an analysis from the Central and Eastern European consultancy firm Civitta to assess the effectiveness of administrative and support structures' activities as well as their response to EMÜ's needs. As a result of this research, support services were mapped, the effectiveness was assessed using comparison tools, and suggestions for improvements were made. The results showed that the work of the support structure is good and there is no obvious waste of resources. To guarantee efficiency of structural units and alignment with the general aims of EMÜ, the activity of each unit should have their definite objectives. Suggestions were made to all departments to make their work more effective, which they have taken into account when organizing their work.

2.6 Improvement in the overall standard of research supervision

Recommendations of the previous Institutional Accreditation:

- *There should be an improvement in the overall standard of research supervision including the supervision of PhD students researching off-site.*
- *An analysis of staff workloads between teaching and research duties would be beneficial to attain an appropriate balance overall.*

Supervision quality is evaluated considering efficiency of doctoral studies (graduation within standard study period), feedback gathered from the yearly evaluation of PhD students and satisfaction surveys carried out among PhD students. In general, awareness among supervisors and PhD students about good supervising practices has increased due to more intensive international and domestic networking, courses and doctoral seminars arranged at EMÜ, between universities and inter-universities' doctoral

schools. Still, based on PhD students' feedback, there is space for improvement and complaints mostly concern lack of communication skills and time devoted to direct contacts with students.

The Academic Commission pays special attention to supervision quality, when deciding the distribution of new PhD positions. The Commission considers the number of PhD students under the supervision of the applicant, the status of their studies and the availability of research funding. Research of PhD students is highly related to the area of responsibility of each research group and supervisors are expected to justify the proposed research topic in the context of their research group.

A regular analysis of staff workloads of teaching and research duties is done: on an individual level during the development interview and attestation. Periodically, workloads are analysed on the institute or university level. The unequal teaching workload is a problem caused by the uneven financial resources or insufficiency of staff in some areas. In the EMÜ Development Plan for 2016–2025, we prioritise activities for optimisation of the workload of the academic staff and improvement of the quality of PhD supervision Development Plan 2016-2025.

2.7 Increasing the collaboration between EMÜ and other universities

Recommendations of the previous Institutional Accreditation:

- *With benefit both to EMÜ, to Tartu University, to the city, and to the Tallinn University of Technology, the Assessment Committee recommends continuing with and increasing the collaboration overall between students, between staff, between the infrastructures and between programmes/curricula. There is collaboration currently but the Assessment Committee believes that this should be enhanced.*
- *It might also be possible to establish Tartu as a scientific centre for Estonia, even the Baltic states, and maybe for wider regions too. More collaboration internationally would also be of benefit.*

In 2013 the collaboration contract between EMÜ and TÜ was signed in order to share responsibility and resources in the field of teaching environmental sciences. In collaboration of the two universities the shared module *Environmental management* (32 EAP) was created. According to the agreement EMÜ involves teachers and researchers from TÜ in the areas of environmental law, environmental technology and geology. TÜ involves teachers and researchers from EMÜ in the areas of waste management, hydrotechnics and environmental management. There is tight collaboration between EMÜ and TÜ teaching the students of the curriculum *Technotronics*. Collaboration contracts are with TalTech and Estonian Aviation Academy. In 2013 the joint Master's degree *curriculum Distributed Energy*, EMÜ and TalTech, was opened for admission. In 2017, in collaboration with TalTech, the Project Smart Industry Centre (SMARTIC) was started. EMÜ has started to strenghten cooperation with vocational schools. The curriculum *Wood Processing Technology* is taught in collaboration with Võru County Vocational Training Centre. Collaboration agreements with four vocational schools were signed in November, 2018. To strenghten the collaboration between Baltic countries the joint IBM Master's degree curriculum *Agri-Food Business Management* was developed and opened for addmission in 2018. In 2014–2017 EMÜ was involved in 43 international Horizon2020, COST, Interreg and ERASMUS+ projects. From these, 12 were ERASMUS+ strategic partnership and capacity building projects. EMÜ was a leading partner in 2 projects. In 2018 EMÜ was awarded the ERA Chair project in food technology.

2.8 A constant vigil is needed for plagiarism

Recommendations of the previous Institutional Accreditation:

- *A constant vigil is needed for plagiarism. It is too easy for students to use the internet and plagiarise other people's work/ideas. It is a world-wide problem in higher education particularly. Although there is no evidence of recent cases at EMÜ, checks must be maintained and the EMÜ policy, with penalties clearly provided, should become more widely known and embedded with all staff and students.*

EMÜ has clearly defined the meaning and concept of academic fraud and established the order and procedure for handling both academic fraud and suspicion of fraud. The procedure for contesting and processing the decisions concerning academic fraud and learning activities are regulated by Regulation of Studies and by Requirements and Procedure for the Awarding of Bachelor's and Master's Degrees and Diplomas of Professional Higher Education at EMÜ. To avoid academic fraud/plagiarism the programme KRATT is available to the students. In addition, students can download their manuscripts to the programme URKUND, where the results are available to the teaching staff. It is supervisor responsibility to check the student's work against plagiarism. The defence board has a right to cancel the defence board's decision about awarding the doctoral degree at any time, if the data presented prove to be forged or plagiarised. In case of rejection of awarding the academic degree or diploma due to academic fraud, the student has the right to apply for a repeat defence or resitting the final examination not earlier than a year after the decision was made. To avoid situations like that, predefences are organized and the rules are explained before defences or exams. To introduce EMÜ rules, an introductory course to the speciality and studies is included to the curricula. Feedback seminars to the teachers are organized after final defences and exams (curriculum or institute based).

3. Self-evaluation of the university across standards

3.1 Strategic management

EMÜ vision, mission and strategies

The basis for the strategic planning process of EMÜ (Fig. 3.1.1.) are the mission, vision and values of EMÜ. These will be revised before a new development plan is compiled; analysed and discussed with interest groups and modified if necessary. Feedback and suggestions from the interest groups is taken into consideration when working on the next development plan. The development plan is the basis for the next action plan, which gives guidelines for the academic year; also the budget for fulfilling the tasks is compiled and confirmed. Operation of EMÜ, fulfilling the goals and tasks is supported by permanent and temporary processes and policies that have been agreed upon, also procedures and directives regulating the activities. Implementation of the planned activities and achievement of expected results will be reviewed according to the prescribed procedures.

The present Development Plan of EMÜ determines the strategic areas, long-term goals and the main objectives until 2025. Specific goals, activities, indicators and target levels for strategic areas have been drawn up for until 2020. Further details can be seen in EMÜ Development Plan for 2016–2025.

Mission

The University creates and shares knowledge to the promotors of bioeconomy for the best of Nature

and Man.

Vision

The University is an internationally recognized research university in the field of bioeconomy.

Core values

The university applies the ethical principles and standards in all fields of activity. The core values are: reliability, academic freedom, openness, creativity, Estonian language and culture.

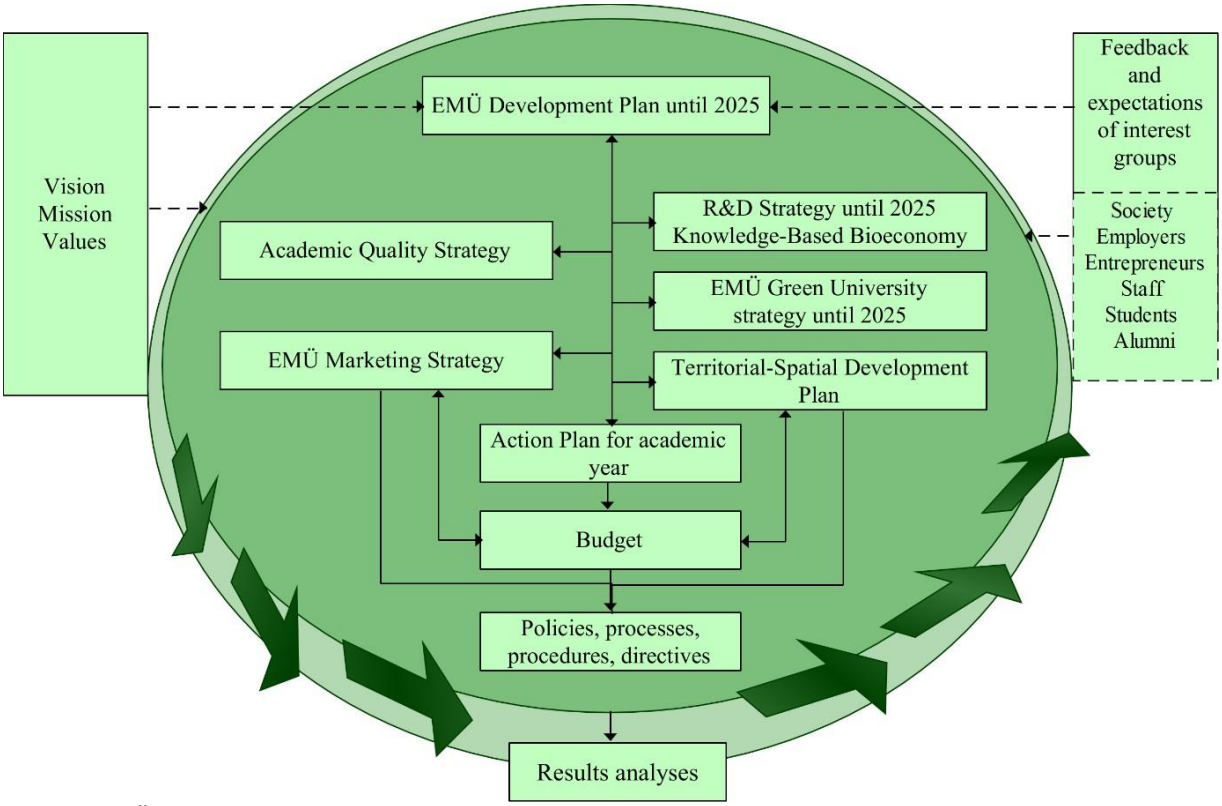

FIG. 3.1.1 EMÜ STRATEGIC PLANNING PROCESS

The leitmotif of the Development Plan for 2016–2025 is the EMÜ ambition to be an internationally recognized university in the field of bioeconomy. Internationally competitive R&D, which forms a basis for teaching at all levels of higher education, as well as activities promoting the development of the society in our areas of responsibility are the striving force of EMÜ. The success of EMÜ is granted by its unified, integrated and motivated community, supported by a well-functioning organization and good learning and working environment in the campus.

The Development Plan focuses on serving the society and increasing the competitiveness of EMÜ, enhancing research and development activities, raising the efficiency of teaching, building up and boosting the strength of EMÜ – integrated value chain approach in bioeconomy sectors (Fig. 3.1.2).

EMÜ is responsible for R&D in sustainable use of natural resources, rural life and rural economy related fields. EMÜ gains necessary competence to address different areas of bioeconomy in R&D activities

and in teaching with sufficient coherence and from the value chain perspective. An increase in the described competence will improve the academic quality and efficiency, increase the international visibility and prestige of EMÜ and facilitate applied research, product development and knowledge/new information transfer in cooperation with enterprises.

EMÜ promotes collaboration of the areas of academic responsibility concentrated in six focal areas - agriculture, environment, forestry, food and health, engineering and technology and rural economy, and brings considerable expertise in the academic structural units. Thus, when managing study and research funds, it is possible to better build upon the needs of the work group as a whole, reduce the negative impact of project-based approach, place the responsibility in R&D and the management of research-based teaching on the focal area leaders and academic staff, and consider them responsible for ensuring the status, competitiveness and consistency of the respective field. The involvement of researchers in teaching, as well as optimization of the teaching load of the academic staff, will pave the way for an increase in the volume of research, which will result in improved efficiency of post-graduate research and guarantee successors in research and teaching. Internationalization increases, the success rate in project application and implementation grows and the range of research services on offer will be expanded.

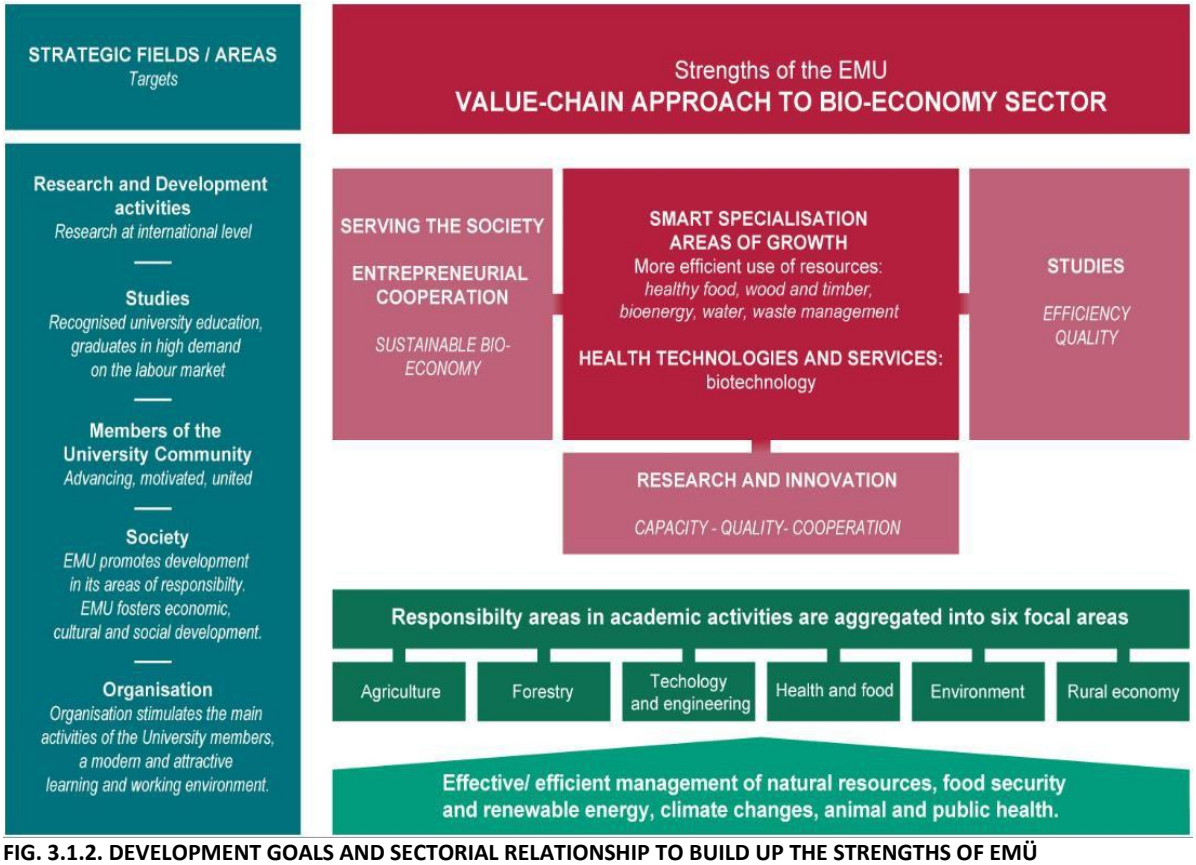

FIG. 3.1.2. DEVELOPMENT GOALS AND SECTORIAL RELATIONSHIP TO BUILD UP THE STRENGTHS OF EMÜ

Strategic areas and goals and objectives for 2025

EMÜ has defined long-term goals, and objectives necessary for achieving them in five strategic areas.

R&D

Target: Internationally recognized research.
Objective: EMÜ is listed in at least one internationally recognized university ranking table.

Teaching

Target: Highly rated university education, graduates in high demand on the labour market. Objective: The satisfaction rate of the students and alumni is at least as high as that of other Estonian universities.

Members of EMÜ community

Target: Advancing, motivated and united members of EMÜ community.
Objective: Motivated, competent students and staff, internationally recognized researchers and teaching staff.

Society

Target: EMÜ encourages development in its areas of responsibility. EMÜ supports economic, cultural and social development. Objective: EMÜ is the first and preferred choice for its partners in its areas of responsibility.

Organization

Target: The organization supports the main activities of the members of EMÜ – a modern and attractive learning and working environment. EMÜ has the optimum structure for attaining the set objectives.

Implementation of the Development Plan

EMÜ Development Plan is a document that serves as a basis for the development plans of the academic and other units of EMÜ, more detailed departmental strategies or action plans for a shorter period, or more specific fields in the Institutes. The Vice-Rector for Research coordinates the activities related with the execution of the Development Plan.

Specific development tasks are drawn up for each academic year. The development tasks are confirmed by the EMÜ Council, based on the responsibility of the units of academic and support structure, which guarantees the contribution of each unit to the achievement of goals set by EMÜ, also targeted operation. A performance overview of development tasks is presented to the EMÜ Council at the end of the academic year (Fig. 3.1.3).

EMÜ compiles and updates the following sub-strategies, according to the Development Plan:
R&D Strategy until 2025 Knowledge-Based Bioeconomy
Academic Quality Strategy
Territorial-spatial Development Plan *(in Estonian)*
Green University Strategy until 2025
Marketing Strategy

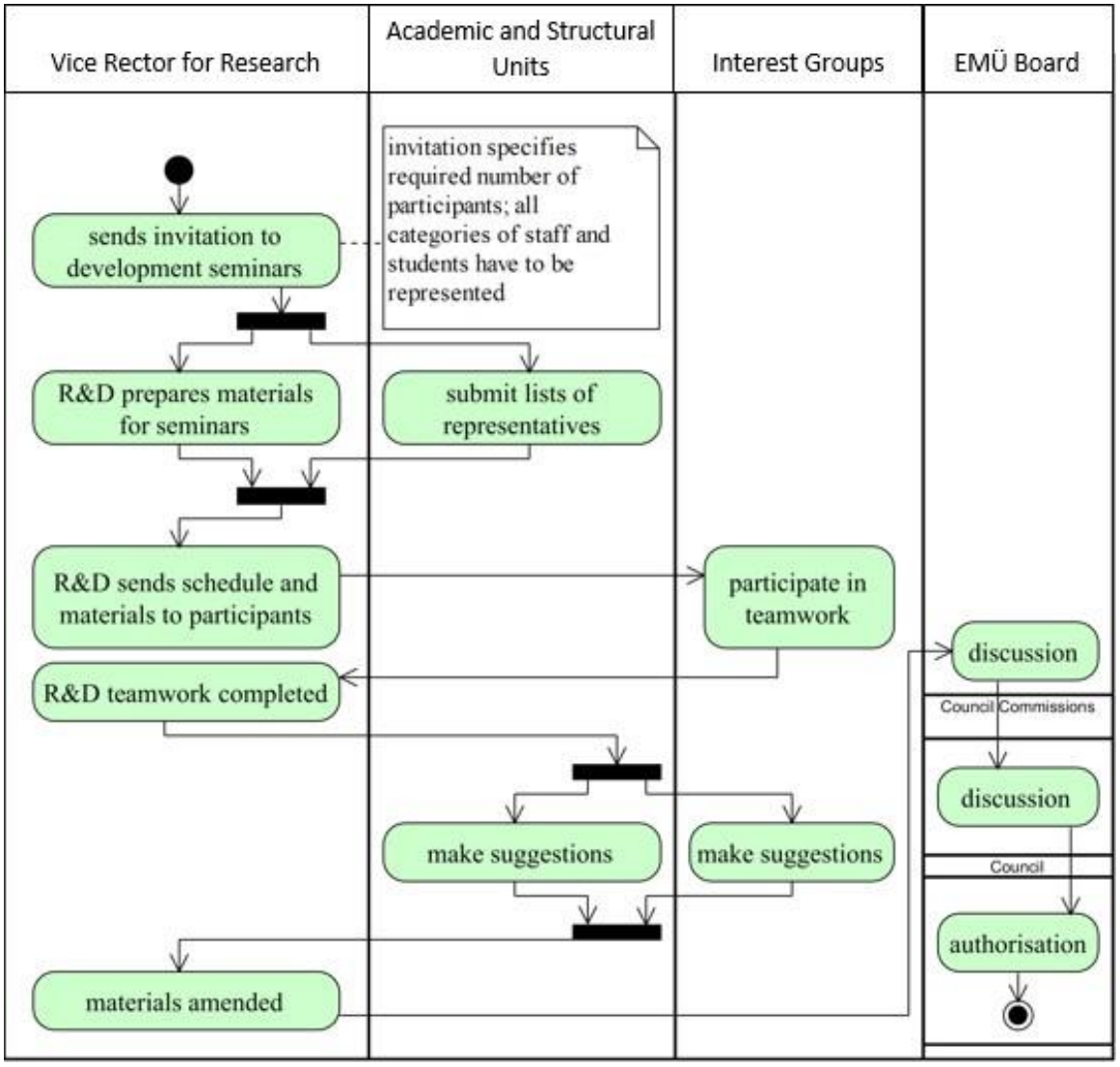

FIG. 3.1.3 PROCESS OF ACTION PLAN

Organizing EMÜ academic structure

EMÜ is responsible for the development of the Estonian bioeconomy in the fields of agriculture, environment, forestry, food and health, technology and rural economy. In order to successfully fulfill this responsibility in society, we realized the need to update our academic structure.

With the aim of better compliance of the structure with our responsibilities, chairs were established as work groups of academic responsibility fields, led by professors. The task of the chair is to carry out activities of the corresponding responsibility field and ensure sustainability through the complex research, innovation and education system.

Leaders of the established chairs are selected via international competition and their task is to develop a coherent set of research, innovation and training systems and to direct R&D in the field of responsibility, to ensure the quality and sustainability of teaching and research.

In terms of numbers, this means that although EMÜ academic core structure (institutes) from 2005 is not changed, the current 37 departments of the institutes and 8 units were concentrated into 22 chairs to

ensure the viability of the research teams and create a greater chance of bringing international researchers to Estonia.
The decision to establish new or modify an exisiting chair is made by the University Council, based on the proposal of the R&D Commission and the decision of the University Council on the approval of the corresponding academic responsibility field. The R&D Commission shall hear the position of the Institute Council before making the proposal to the University Council.
The head of the chair shall be elected by the University Council via an international competition.
The head of the chair organizes the work of the chair, directs the R&D of the academic responsibility field, is responsible for the level and development of the field in EMÜ, organizes academic studies of the field, ensures postgraduate education and academic continuity. Upon failure of the competition for the head of the chair, the Rector shall appoint the holder of chair ad interim on the proposal of the institute council. The holder of chair performs the duties of the head of the chair until the head of the chair is appointed to office.

One year after the establishment of the chairs a seminar *Strategic developments – new needs and opportunities in academic activities* was held on October 24–25, 2018.
The purpose of the seminar was to analyse the achievements and problems of the chairs and discuss their could further contribution to the strength of EMÜ, including:
1) the aggravation of cooperation between structural units;
2) coherent and value-chain management of the various sectors of the bioeconomy;
3) linking the various tasks of lecturers and researchers in the working group;
4) improving the quality and performance of R&D, and increasing the share of knowledge/new information transfer and financing.

Feedback process. Decision-making based on facts

The feedback system has been created to constantly improve the quality, content and management of EMÜ services. Feedback includes all the EMÜ interest groups (Table 3.1.1). The results of the feedback are compared with the planned objectives and the respective levels at reference public universities in Estonia. Relevant performance indicators are compared in the corresponding standards of the Self-Assessment Report. Feedback from interest groups is obtained via questionnaires. The results are disseminated in EMÜ internal network Intranet. For practical steps of organisation refer to Fig. 3.1.4. The results of the analyses are the basis for making decisions for improvement.

TABLE 3.1.1 EMÜ FEEDBACK MATRIX

Interest group	Title of feedback questionnaire	Aim of questionnaire	Time of questionnaire	Unit responsible
Students	Feedback to lecturer and subject	Improving teaching quality	Each semester	Department of Academic Affairs
	PhD student satisfaction survey	Improving teaching and supervision quality	Every 3 years	Department of Academic Affairs
	Feedback from international students	Improving teaching and service quality	Each semester	Department of Academic Affairs
	Graduate feedback	Developing curricula, improving teaching and supervision quality	Last semester	Department of Academic Affairs

	Feedback on withdrawals	Decrease withdrawals	During withdrawal process	Department of Academic Affairs
Alumni	Alumni study	Developing curricula, increasing effect of enrolment advertising	Every 3 years	Ministry of Education and Research
Employers / Labour Market	Survey of labour market changes and needs	Developing curricula	According to the preparation of sector reports (2016–2020)	Estonian Qualifications Authority
	Employer assessment to EMÜ trainees	Develop curricula and subjects	End of practical training	Institutes
Participants of lifelong learning courses	Feedback on course lecturers and courses	Develop course lecturers and courses. Identifying new training needs for future and developing new training courses. Enhance promotion of future courses.	End of course	Open University
Public (society)	EMÜ in media	To be aware of public opinion, attitudes about the university and its fields of activities and influence them	Every other year	Department of Marketing and Communication
	Public image		Each year	
Staff	Personnel satisfaction survey	Increasing staff satisfaction	Every 5 years	Personnel Department

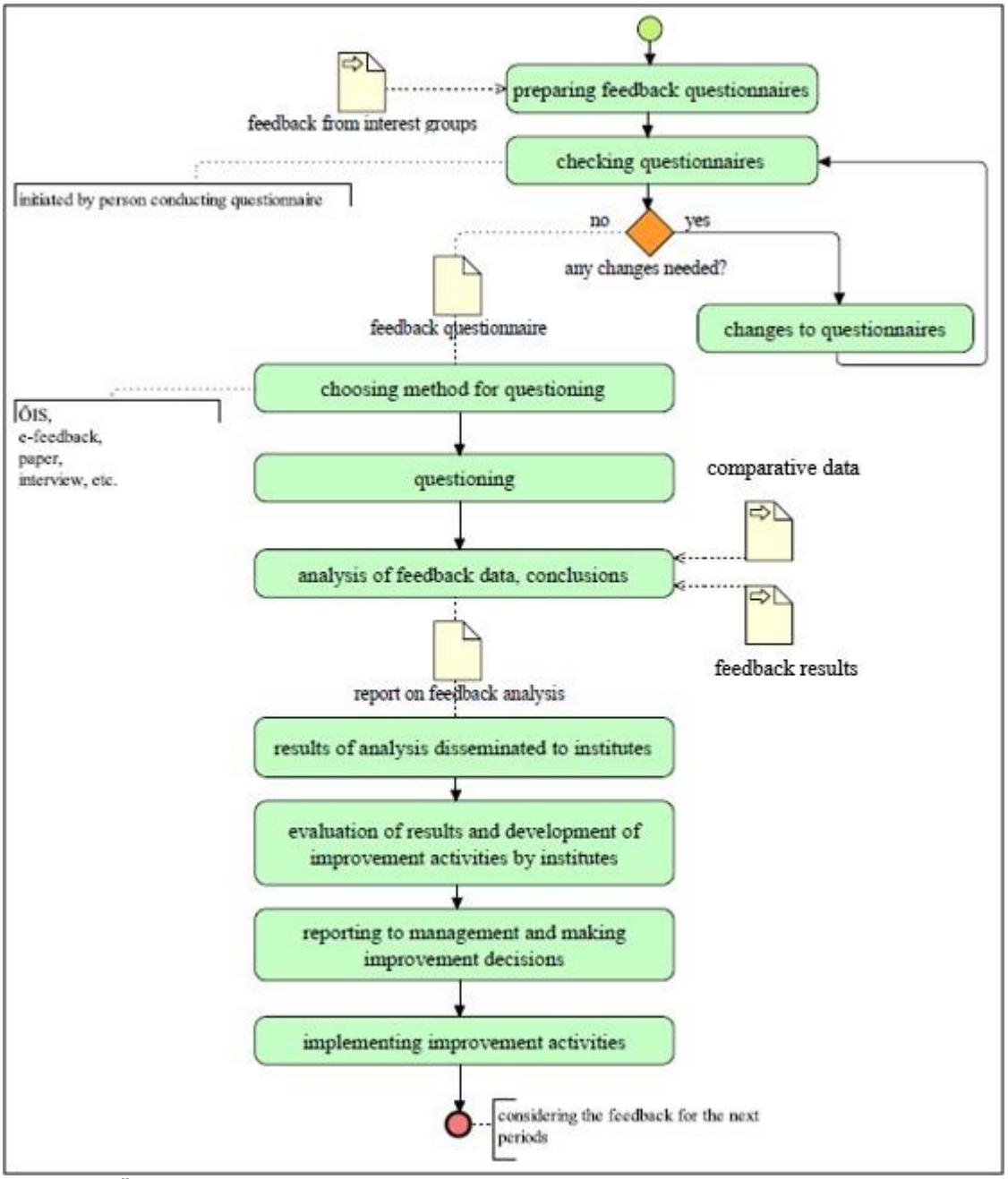

FIG. 3.1.4 EMÜ FEEDBACK PROCESS

Risk assessment

EMÜ regularly assesses risks, works out activities to manage risks, implements the activities and evaluates the effectiveness of the measures used. Risk management and working out development tasks support each other.

An Audit Committee is operating as a unit of EMÜ Council. They monitor and analyse the processing of financial information, the efficiency of risk management and internal audit; the process of conducting audit on annual accounts, independence of the audit institution. The Audit Committee has an advisory function to the Council.

EMÜ strategic management is supported by internal audit, which works according to the activity plan worked out by the EMÜ Council.

The following topics have been included:

Management

- implementing hedging activities and suggestions by internal audit with the aim of assessing which changes have been introduced in the budget process; which mitigating and hedging activities have been carried out. Multiple risks were highlighted as requiring activities by EMÜ: application/finance management (cost-based budgeting and financing study programmes), financial accounting between the institutes concerning conducted studies, organization of studies (analysis on the minimum size of a study group, content of obligatory generic subjects on agriculture, employers' needs concerning the curricula non-compliant with the requirements of labour market);
- willingness for changes in the organization of studies. The risks highlighted in 2016 included: subject competence of only one individual, which would disrupt consistency if the person leaves EMÜ, no competition for academic posts, not enough sufficiently qualified employees, ageing personnel, no sustainability guaranteed.
- distribution of responsibility on management levels. The risks highlighted in 2016 included: lack of resources, the amount of tasks exceeds the amount of resources.

Marketing

The aim was to assess the organisation and process of marketing. The following risks were highlighted:

- decrease of numbers of prospective students;
- image and reputation – the researchers are not visible as leaders of their field;
- no media covering for EMÜ events;
- insufficient staff;
- EMÜ English-taught curricula are not attractive and visible internationally.

Financial management

- cost-based curricula budgeting and financing.

Due to the Personal Data Protection Act that came into force in May 2018, EMÜ devoted much attention to conducting relevant training. The following risks were highlighted for 2016:

- the aging ICT facilities do not meet EMÜ growing expectations;
- low user awareness affects ICT security.

The further activities of the internal audit are to follow the implementation of assesment results and suggestions; no new topics will be included until the activities will have been assessed.

EMÜ has tight contacts with the alumni

The alumni participate in developing the curricula and study process. EMÜ organizes social networking events for both domestic and international alumni. During the celebration of EMÜ anniversary every five years the contribution by alumni is remarkable. A considerable proportion of the alumni are also employers to the graduates of EMÜ today and in the future. To ensure the graduates' success in the labour market, cooperation with interest groups is organised on a permanent basis.

EMÜ is a member of **Estonian Rectors' Conference**. In collaboration with other universities the Agreement of Quality Good Custom of Estonian Universities has been worked out and approved. Cooperation of universities is aimed at strenghtening the sustainability of Estonian culture and competitiveness of education, considering the expectations of the society. To implement the Agreement of Quality Good Custom, seminars are organised by the universities. The Rectors discuss the work, evaluate the positive steps and confirm the future activities plan.

The intention to change the management of EMÜ

Estonian Parliament *(Riigikogu*) is in the process of drafting the Estonian University of Life Sciences Act (*Eesti Maaülikooli seadus*). The most significant change in the draft law of EMÜ is revising the management structure of EMÜ. The new management model allows EMÜ to significantly involve in the management processes people from outside the academic community of EMÜ and strengthen communication with society. According to the draft law, the governing body of EMÜ is a Council, of which more than half of the members are nominated by non-university individuals outside the academic community. The Senate is an academic decision-making body that decides on EMÜ R&D issues. The Rector manages the day-to-day activities and represents EMÜ.

The new governance model will be fully operational from January 1, 2020.
The introduction of the Estonian University of Life Sciences Act is part of the modernization of the Higher Education Act.

Areas of good practice

- Seminars with a wide range of participants, initiated by the leaders, which have improved management of EMÜ and implementation of changes.
- Efficiency of development and activity plans is assessed periodically, the staff and students of EMÜ have been involved.
- The management applies doors-open policy and communication with coherent groups.
- The Rector participates in meetings of the Alumni Board, which ensures an opportunity for regular communication of EMÜ and alumni.
- EMÜ is represented in boards and commissions which influence rural life in Estonia and on international scale.
- EMÜ volunteers to participate in various quality assurance projects for universities and carries out self-evaluation, plans and implementation activities.

Areas that need improvement

- Initiation and implementation of developmental processes depends on a limited number of leading persons, which makes it one of the risk factors of sustainability.
- Creating a format to promote cooperation of institutes.

3.2 Resources

EMÜ employees

Recruitment of academic staff is organized according to the following normative documents: „Rules of competitions for the employment of regular teaching staff and research staff“, „Job descriptions of the teaching and research staff members“, in accordance with the EU legislation – the Universities Act, the Organisation of R&D Act and other legislation of the Republic of Estonia. Appointment to academic posts is regulated by „Procedure for the appointment of teaching and research staff of the Estonian University of Life Sciences“ and for visiting academic staff by „Appointment procedure and requirements for visiting academic staff“. A written assessment of the suitability of a candidate for an academic post shall be prepared.

Recruiting non-academic employees has no specific regulations, open competitions are held. Adverts for vacant posts are in the Intranet to promote internal application, University web page https://www.emu.ee/en/about-the-university/vacancies/ and the job portal CV Keskus (http://www.cvkeskus.ee/, in Estonian). Adverts for vacant leading posts are also published in national daily newspapers.

In 2012 the legal basis „Organisation of R&D Act“ was created to enable concluding employment contracts with junior research fellows for the nominal duration of doctoral studies. A doctoral student who studies within the state-commissioned education program shall sign a non-proclaimed fixed-term employment contract to work as a junior researcher (as specified above) with the university. The university actively uses the opportunity in order to promote young researchers join the university and start their academic career.

TABLE 3.2.1 NO OF APPOINTMENTS AS JUNIOR RESEARCH FELLOWS IN EMÜ

	2012	2013	2014	2015	2016	2017
No of junior researchers	0	12	28	27	44	58

Work arrangement

On October 1, 2015 a new regulation for remuneration entered into force. It provides the general organization of remuneration, the basis for the payment of bonuses and performance payments at EMÜ. The regulation is available to all employees in the Intranet.

The system for motivating employees is described in the work arrangement rules of EMÜ. The work rules are introduced to the new employee at the Personnel Department when starting work and the regulation is available to all employees in the Intranet.

EMÜ pays increasingly more attention to the mental and physical wellbeing of the employees; compensating 50% of the cost of glasses for staff who use screens or displays for work, but not more than 130 euros; and reimbursing, if funds are available, 190 euros for rehabilitation treatment costs per calendar year. Employee benefits include special prices for sports activities and massage in the EMÜ Sport Club. Each year, the initiative Green University launches a series of events promoting people to be more active physically, to walk and bike. In 2012 the Engineer’s Fitness Trail was opened at the House of Technology. The trail is 380 m long, runs on four floors, and has exercising spaces and

instructions for working out on the stands. You can even play noughts and crosses, chess or checkers there.

During the summer period of June 25 to August 20, the working hours can be reduced (end of workday at 3 p.m.); and at the end of the year (December 27–31), the employees can have days off, if such organization of working time is possible, and timely and correct execution of duties is ensured (source: work organization rules).

One way to recognise good work is letters of appreciation awarded to staff, and persons, institutions or organizations outside EMÜ. For staff, letters of appreciation are awarded for successful work when they have the 50, 60, 65, 70, 75 jubilees and birthdays, and/or after outstanding performance of tasks of high relevance and volume. Letters of appreciation are awarded for considerable contribution to the success of EMÜ activities, or good work for EMÜ for a long time by persons, institutions or organizations outside EMÜ.

Events

Events for EMÜ, also for institutes, departments, chairs, are organized (summer games, Christmas parties). The satisfaction survey of 2017 shows that 77.2% of employees are satisfied with the all-university events. An annual major event is the children's Christmas party in the main building, which is gaining popularity year after year.
EMÜ organizes *Aastapäeva Aktus*, the annual academic festive ceremony to recognize and thank the academic staff. The ceremony has a long tradition. With the aim of highlighting the role of the academic staff in representing EMÜ and the willingness to develop lifelong learning, an **Instructor's Award for Continuing Education** is announced. An **Innovative University Teacher Award** is announced for a staff member who has created an e-course that meets the quality requirements in the academic year preceding the application, and applies it in studies. In 2014 the award for **e-Instructor of the Year** was established to recognize the teacher who has created an e-course, a learning object or other digital study aids that meet the quality requirements in the academic year preceding the application, and applies it in studies. Since 2015 the EMÜ **Teacher of the Year** has been announced at the event. The aim of the contests is to highlight the quality and results of teaching, and to recognize the outstanding work of lecturers. Honorary doctorates and new doctorates are promoted, EMÜ Medals of Merit awarded, tributes paid to the laureates of the Science Awards.

Financial resources and infrastructure

In developing financial and investment policies, including working out the university budget, the following normative documents are relied upon: „Development plan of Estonian University of Life Sciences for 2016–2025“, also the annual activity plans to the Development Plan, the Territorial-Spatial Plan and development plans of the institutes. The principles for the preparation, adoption and implementation of the budget are set out in the Rules for Budget; the procurement of supplies, services and construction work is based on the Procurement Orders, the general basis for the use of the property is determined according to the Procedure of Possession, Use and Disposal of Properties.

Guidelines for drawing up the draft budget are provided by the Budget Commission of the University Council and the University Government, taking into account the development plan and other documents mentioned above and the conditions established by the Rector. The draft budget for the university is drawn up by the Department of Finance and submitted to the Budget Commission. The Rector presents

the draft consolidated budget approved by the Budget Commission to the University Council for approval.
The report on the implementation of the budget for the year is also approved by the University Council.

In accordance with the State Budget Act, EMÜ prepares a financial plan each year for the current financial year, the preceding financial year, and the following four financial years. Financial discipline according to the plan is monitored by the Ministry of Finance.

Annual Report of the Estonian University of Life Sciences is compiled according to the Estonian generally accepted accounting principles. The main requirements for Estonian Financial Reporting Standard are established in the Estonian Accounting Act, specified by the Public Sector Financial Accounting and Reporting Guidelines. Specifications and guidelines concerning university-based accounting are established by the Rector's directive Accounting Policies and Procedures of the Estonian University of Life Sciences. The annual report is audited by an internationally recognized audit firm. The annual report is approved by the University Council.

Internal control over financial instruments is carried out on several levels. Unit managers can monitor their unit and sub-unit budgets daily on the Intranet. The Department of Finance monitors the overall financial discipline and makes summaries on a monthly basis, by displaying the summary reports in the Intranet as well. The Audit Committee set up by the University Council monitors the targeted use of university resources annually.

In addition, an internal audit was conducted in 2016 on establishment and implementation of the university budget, and in 2017 on making purchases and preventing conflicts of interest with procurements below simple procurement limits to ensure that the management of the financial resources in EMÜ supports the cost-effective organization of EMÜ core business.

The EMÜ Budget consists of the main budget and the capital budget. The main budget consists of sub-budgets of structural units (institutes, institutions, support units, etc.). The Budget (general budget) revenues are revenues from academic study activities, from R&D, and from the sales of goods and services. The Budget costs are the costs of the structural units and support structure units, of university-wide projects and membership fees, reserve fund expenditures and provisions for capital budget. The revenue and expenditure of the general budget are, for the period under review, the following:

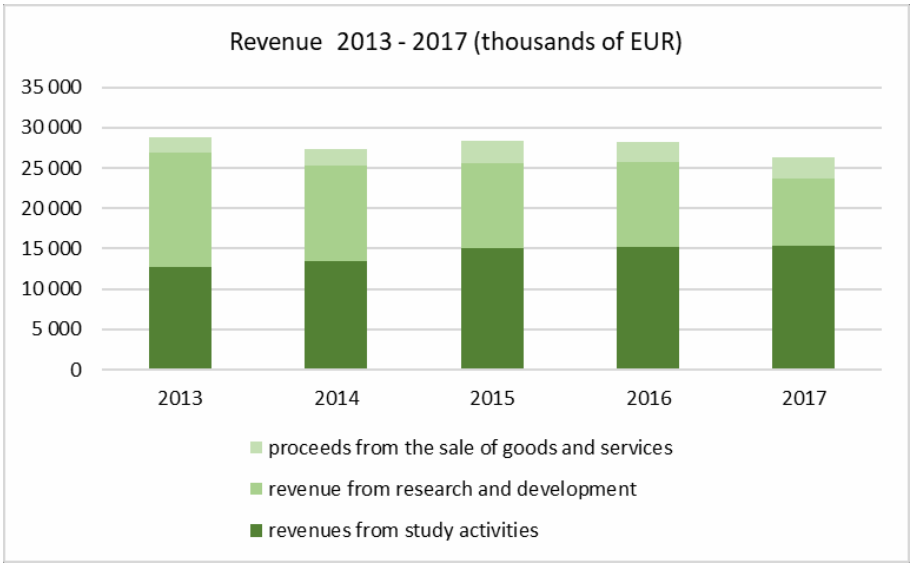

FIG. 3.2.1 REVENUE 2013–2017

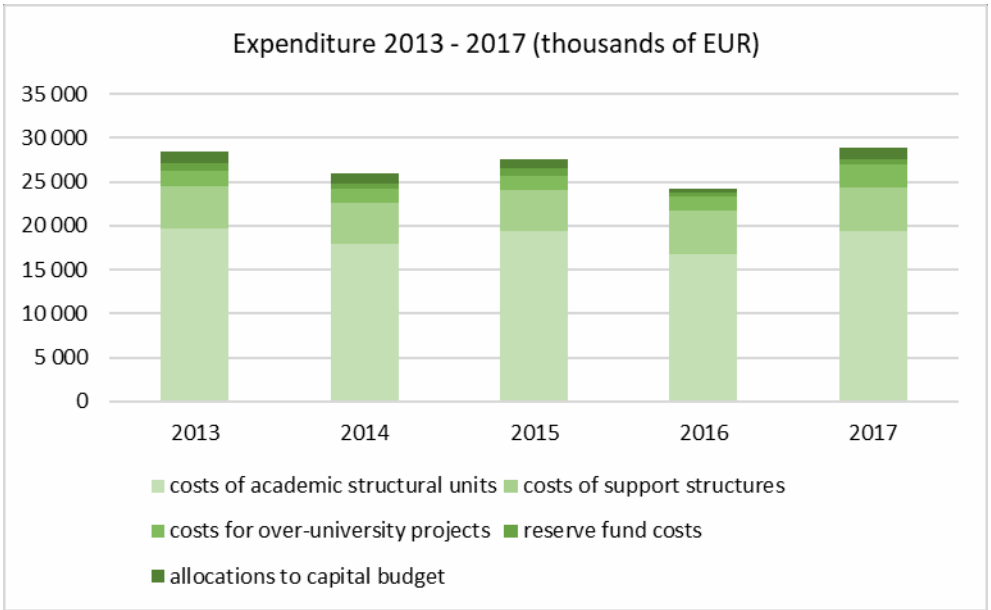

FIG. 3.2.2 EXPENDITURE 2013–2017

The capital budget includes the financing of teaching and research infrastructure, i.e. construction and renovation, and the special financing of loans. Administration and development of the infrastructure, therefore the draft capital budget and the implementation of the budget, are the responsibility of the Director of Estates. The basis for drawing up the capital budget is the Development Plan, applications by the institutes, based on the above mentioned normative documents.

Investments have supported EMÜ being concentratied into the campus – larger investments in buildings were in 2009–2013.

Capital budget improvements for buildings in 2013–2017:

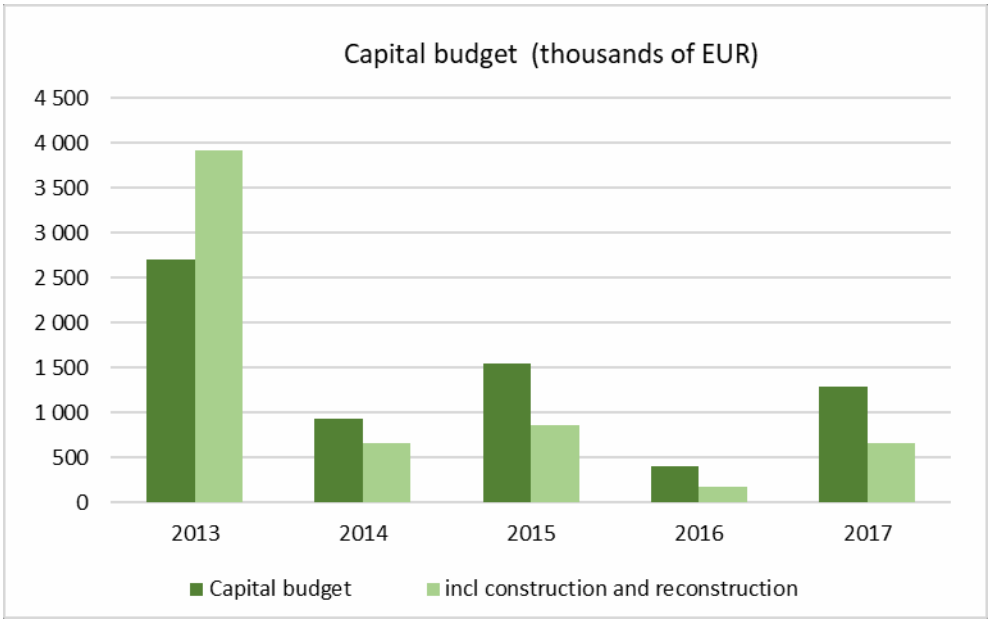

FIG. 3.2.3 CAPITAL BUDGET 2013–2017

Significant investments in building have given positive feedback in the staff satisfaction survey.

Information systems

To ensure the operation, backup and security of ICT systems, the relevant ICT internal rules: Information Technology Standards of EMÜ, Rules for the use of EMÜ computer networks and computers, Network equipment standard and Low power / computer network / telephone / surveillance cameras, are followed and complied with. The requirements of the European Data Protection Standard are followed. The development of new and existing ICT systems is based on expediency and cost-effectiveness.

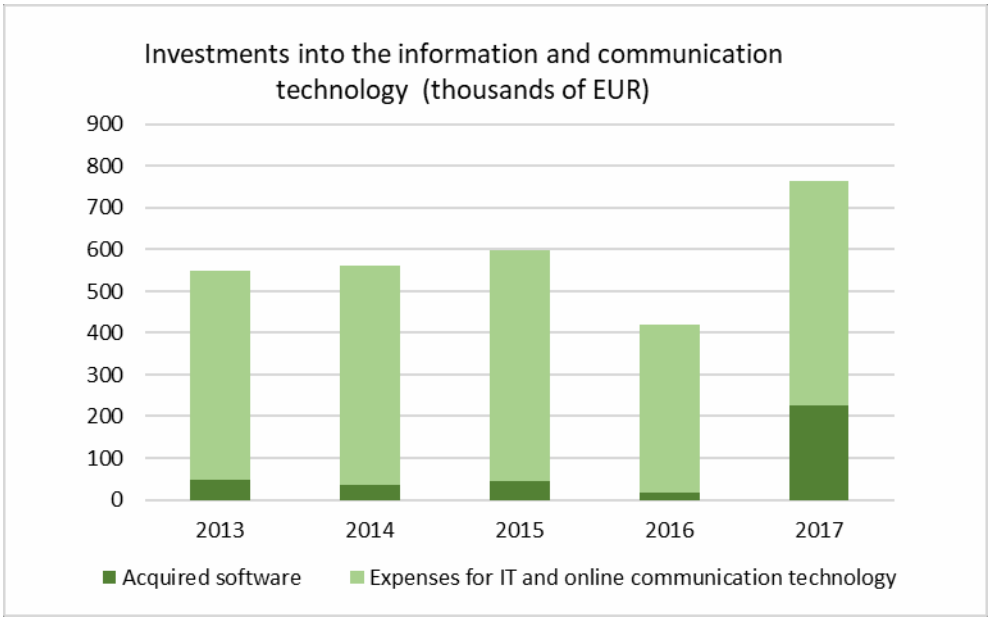

FIG. 3.2.4 INVESTMENTS INTO THE INFORMATION AND COMMUNICATION TECHNOLOGY 2013–2017

The main applications are the document management system (acquired in 2011), the study information system (ÕIS, purchased in 2005, a new one in 2019 if possible), the personnel and financial information system (acquired in 2017) and the account management system (purchased in 2013), which will be developed and integrated if necessary. Integration of these systems has greatly improved the flow of data and documents and supported paperless business administration at EMÜ.

Library

The library supplies EMÜ with the necessary information on teaching, R&D; maintains and makes available both paper and e-formats, and provides the public library and information service. The e-library is being developed and an innovative working and cultural environment is created.

The best possible access to information, electronic databases and e-publications is guaranteed. All materials are obtained according to the wishes of the academic units. The library uses the integrated library system Sierra / Millennium and its e-catalog ESTER, as well as the Estonian article database ISE (Index Scriptorum Estoniae). In the e-catalogue ESTER, 62.7% of the library items and all other books purchased in EMÜ structural units are catalogued. The digital archive EMU DSpace has been established for publications by the researchers and students, with more than 4000 items (https://dspace.emu.ee/). All the information concerning the library is available on the home page http://library.emu.ee/en/.

The library has 229,974 items (including 189,101 books and 5,035 research papers). The periodicals

subscribed to include 65 foreign language research journals and 79 newspapers / magazines in Estonian. For EMÜ employees and students, 19 e-journal and 2 e-book databases are available. The search, use and management of digital resources are facilitated by EBSCO Discovery and EBSCO Full text Finder. RefWorks, Zotero and Mendeley reference management software is available. EMÜ uses the plagiarism detection systems KRATT and URKUND.

There are 6548 users in the library. The library is visited 35 804 times a year and 26 355 items are borrowed. These indicators have decreased every year, as the number of students has also decreased.

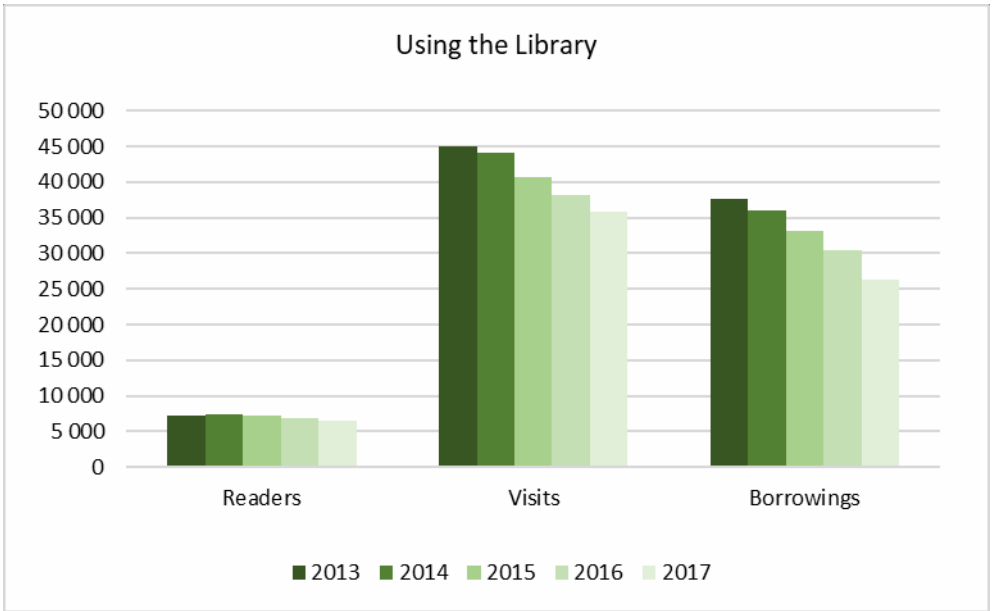

FIG. 3.2.5 USING THE LIBARY 2013–2017

To compensate, the usage of e-library is growing.

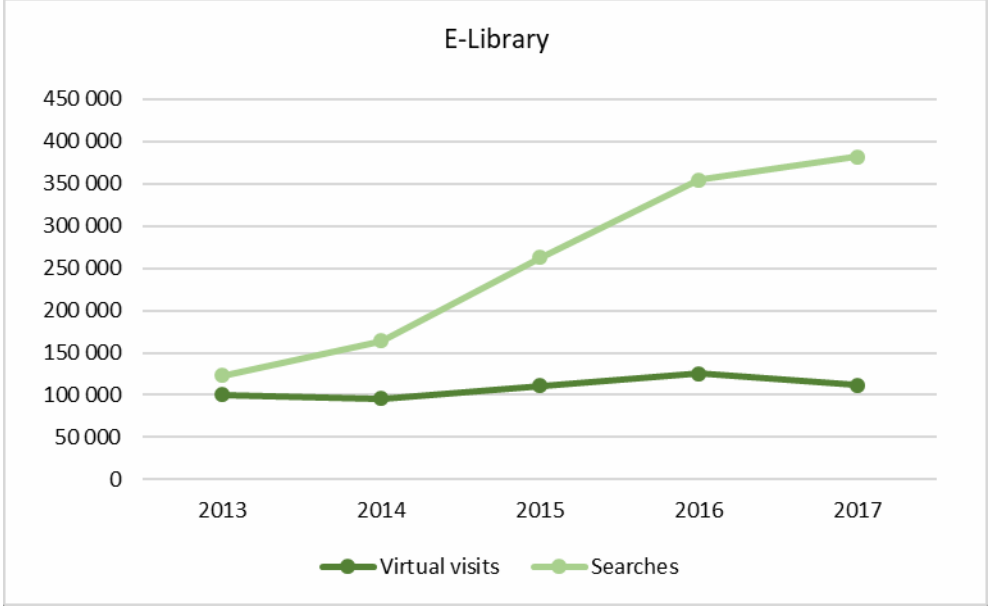

FIG. 3.2.6 USING THE E-LIBRARY 2013–2017

In addition to the study area, the library has rooms for group work and individual study. Computers and modern devices for printing (Print in City) are available. The opening hours of the library were extended for an hour on weekdays and it is open on Saturdays as well. The so-called night library is open until 23:00 during the winter study session.

The library supports EMÜ researchers in the field of open science, database archiving, DOI attribution and Data Management Plan.

The level and effectiveness of the library and information services are assessed on a regular basis and the results are considered for development. According to the users feedback library has extended opening hours, created advanced training systems, expanded learning and recreation areas, funds changed to theme-based. Also buttons for asking help has been integrated to the new webpage and payment options for services has been enlarged.

Marketing and communication

The marketing work of EMÜ is based on the marketing strategy that is in accordance with the Development Plan.
Department of Marketing and Communication in collaboration with the other academic and support units ensures that publicly offered information about the activities of EMÜ (including study programmes) and the findings of external evaluations is correct, up to date, easily accessible and understandable. Updating information is carried out in accordance with updates in legislation. Feedback to our website is taken into account for developing the website.

EMÜ has a functioning system for internal and external communication, relevant to the target audiences. The main target groups are the members of EMÜ, prospective students, alumni and the general public. According to the specifics of the information, either direct contacts, internal channels (mailing list, Intranet) or information via external channels (website, press releases, social media) are used to disseminate information. If necessary, paid advertising to the target audience in the relevant media will be used.

EMÜ members are informed of the decisions relevant to them in a timely manner. The legal acts and regulations can be found in the document management system. All relevant messages are delivered via Intranet. Necessary instructions and materials are found from the document management system or Intranet.

EMÜ has a system to popularise its core activities and academic career opportunities. Relevant information on key documents, news and vacant posts is published on EMÜ website. Job offers and news are published in social media as well. The news is delivered via press releases to the media. Popularization is organized all year round – from EMÜ news and opinion stories to school visits, education fairs and special events. Target groups are met in person and via electronic channels. EMÜ has been represented on more than forty education events and festivities a year all over Estonia. As for foreign countries, an important target market is Finland, where one or two education fairs are visited annually. In Russia and Georgia, EMÜ is represented at one relevant fair per year. Western and Eastern European education fairs are attended, if possible.

Events in schools, hosting school students and target groups at EMÜ campus are organized according to invitations and previous agreements.

Employee satisfaction

Employee wellbeing and feedback matters to EMÜ. An employee satisfaction survey is carried out every 5 years with the aim of improving both mental and physical working environment. The last survey

took place in 2017 and the results can be compared with the previous survey as the methodology was the same, therefore the factors influencing work satisfaction can be identified. The results were introduced to the management, which enables to use the information for planning activities. The reports are availiable for all employees in the Intranet.
General satisfaction of EMÜ staff **with their work** (including the content, organization, load and tempo) remains high – 83.6% of employees are satisfied or very satisfied with their work. Compared to the survey in 2011 a general decrease of 5% has taken place, which is not a statistically significant trend. EMÜ employees like their work – 92.6% of employees are satisfied with the content of their work. The tempo or pace of work got a higher rate of satisfaction (79.2%) than in the previous survey.

In the **working environment factor**, employees' satisfaction with the learning and teaching environment (auditoriums and classes, presentation facilities, etc.), their work space and tools, the general facilities (canteen, WC, rooms for briefings and meetings, for rest and relaxing, etc.), library, and management and support services were studied. EMÜ employee satisfaction with the work environment has increased significantly compared to 2011. Then 81.8% of employees were satisfied with their working environment; in 2017, the number of satisfied employees had considerably increased to 93.8%.

Satisfaction with management included assessment to the management on three levels - the university as a whole, the institute and the structural unit. In 2017, 76.6% of employees were satisfied with management, which is slightly less than in 2011, the 83.6%, but the difference is not statistically significant. In 2011 the highest rate went to the institute-level management (84.3%); in 2017, the employees were most satisfied with the management of their structural unit (76.3%). The least satisfied were the employees with the general management (67.4%), therefore, it is an area for improvement. The relationship with the direct leader is highly valued (as in the previous survey) – 88.1% of employees are satisfied with the direct supervisor or head of the unit. Management training and development programs have been planned and carried out to increase the quality of management.

Employee satisfaction with the information flow has remained at the same level, 79.7% in 2017. Equally satisfied are the employees with the information flow about their work, the inter-university information as well as the information flow via ICT solutions and systems. The academic staff is more satisfied (M = 4.54; 6-point scale) with the information flow than the support staff (M = 4.19).

Areas of good practice

- Young researchers have opportunities to start their doctoral studies to facilitate the start of a researcher career for research and collaboration within EMÜ.
- Stability of the basic budget revenue, i.e. EMÜ has various sources of financing, which is important for risk management.
- The budget is divided between institutes and units according to the objectives of the Development Plan, budget planning is a transparent process, financial risks are managed and budget implementation is monitored centrally, and each institute and unit has an overview of their costs and the resources to manage them.
- Infrastructure development has greatly increased employee satisfaction.
- In every building there are new recreation and study areas for students.
- The introduction of the new personnel financial information system has enabled the electronic transmission of data, and development of digital management. The system enables to submit data more effectively and reduce possible errors by human factor.

Areas that need improvement

- Due to decrease in student numbers, the internal division of operational funding and basic funding of research in the responsibility areas needs to be revised.
- Only project-based funding for research will not ensure a steady stream of financing for research infrastructure management.

3.3 Quality culture

Academic Quality Strategy (regulation by the University Council, 01.12.2005 No 10) is a document on the quality policy of EMÜ and the main activities for increasing the quality of studies in Estonian and international context of higher education. The document is the basis for ensuring quality on the general common basic values, expectations and good custom in EMÜ as a whole and in each sub-unit. The following indicators are used for monitoring fulfilment of the objectives of the strategy and development directions:

1) indicators of students' academic achievement and success;
2) indicators of students' academic mobility;
3) indicators of efficiency on admission of new students;
4) indicators of applying the RPL-system (recognises previous studies and work experience);
5) contemporary social infrastructure for students, incl. living conditions;
6) analysis and considering the opinions and suggestions by the personnel and students, also alumni, for developing curricula;
7) feedback from the employers; analysis and considering the information for developing curricula;
8) the funds and capacity of the library according to the needs for studies;
9) academic and research staff participation in teaching skills training;
10) results of students' feedback on teaching;
11) results of evaluating curriculum groups and institutional accreditation.

EMÜ has outlined the fields of activity as principal processes and support processes (Fig. 3.3.1). The principal processes are graduate and lifelong learning and RDC, which are assisted by support processes. The necessary resources and information for the processes have been guaranteed. The processes are monitored, evaluated and analysed, necessary activities are performed to get the expected results. Each process is assigned a leader – a person with authority who has to be acquainted with the process and is responsible for the strategic and practical progress. Requirements by current legal acts are taken into consideration. All the legal acts and contracts are confirmed by the lawyer of EMÜ.

The general rules and procedures governing and conducting study activities and R&D are approved by the EMÜ Council.

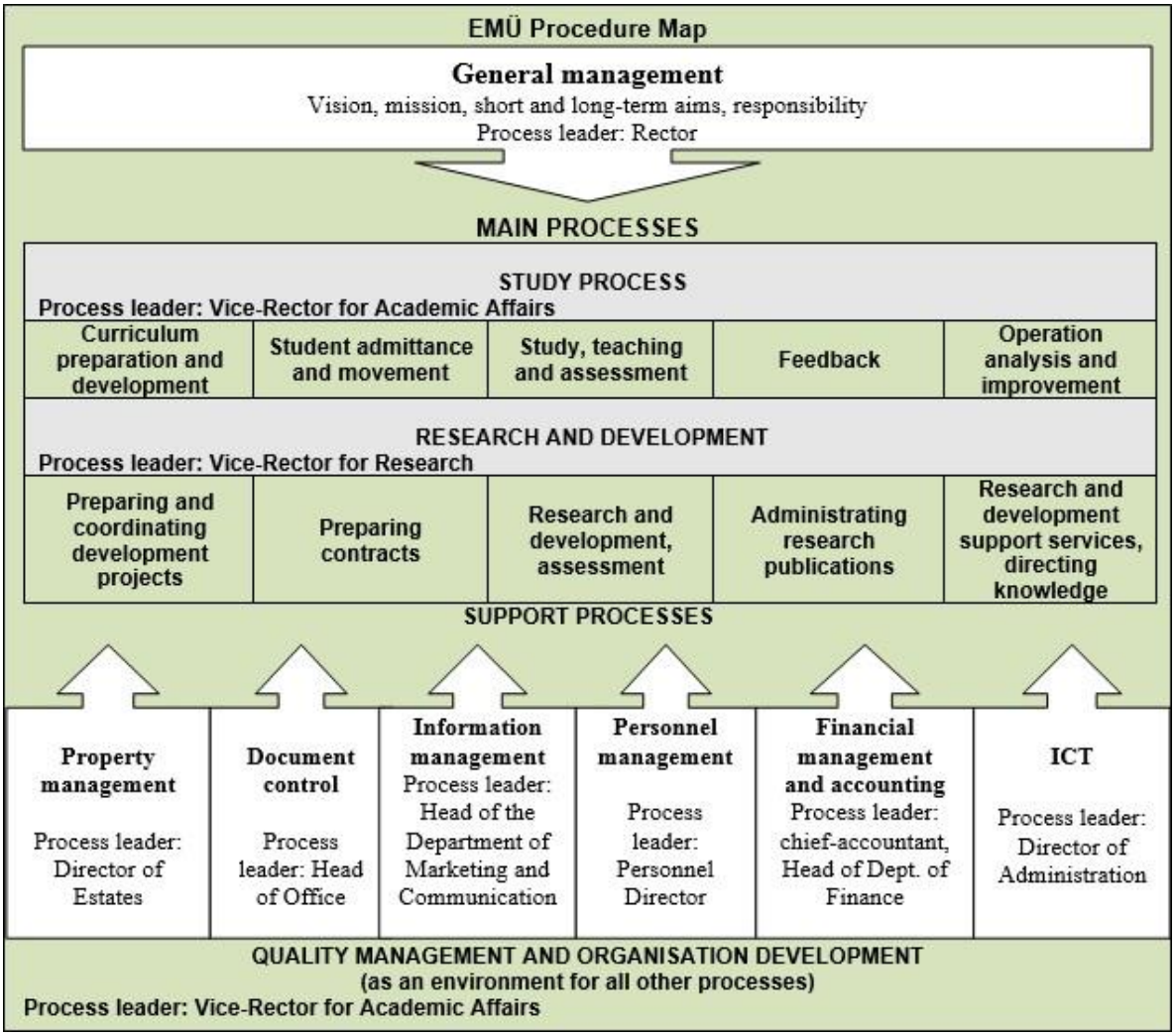

FIG. 3.3.1 EMÜ PROCESS-BASED MANAGEMENT SYSTEM

The main tasks of the academic staff, the qualification requirements as well as the bases for assessment and evaluation are specified in "Job descriptions of the teaching and research staff members at the Estonian University of Life Sciences" (please see also other regulations https://www.emu.ee/en/about-the-university/general-regulations-and-documents/).

Next to the scientific activities it is required high level and contemporary teaching in all levels. For beginners it is possible to get help from mentor teachers. In the beginning of the year the plan of trainings according to the teachers (as well students) feedback will be made. Training activities include professional and didactical courses. However, there is no fixed number or subject courses what is necessary to pass during the last period to be evaluated positively. Also there is no official regulation to guide any teacher to the courses if students feedback is negative. As the main indicator of academic staff is scientific work some teachers dont pay enough attention to the teaching quality.

Academic staff requirements and evaluation criteria will be examined during the process of establishment of university law and new higher education law.

The preconditions for opening the curricula and the conditions for their alteration as well as requirements on the structure, content and quality of a curriculum have been established by the University Council regulation "Statutes of Curriculum".

The quality, relevance and conformity of the curricula to the domestic and international development trends are ensured on several levels at the university (see figures about opening and developing curricula 3.3.2 and 3.3.3, respectively).

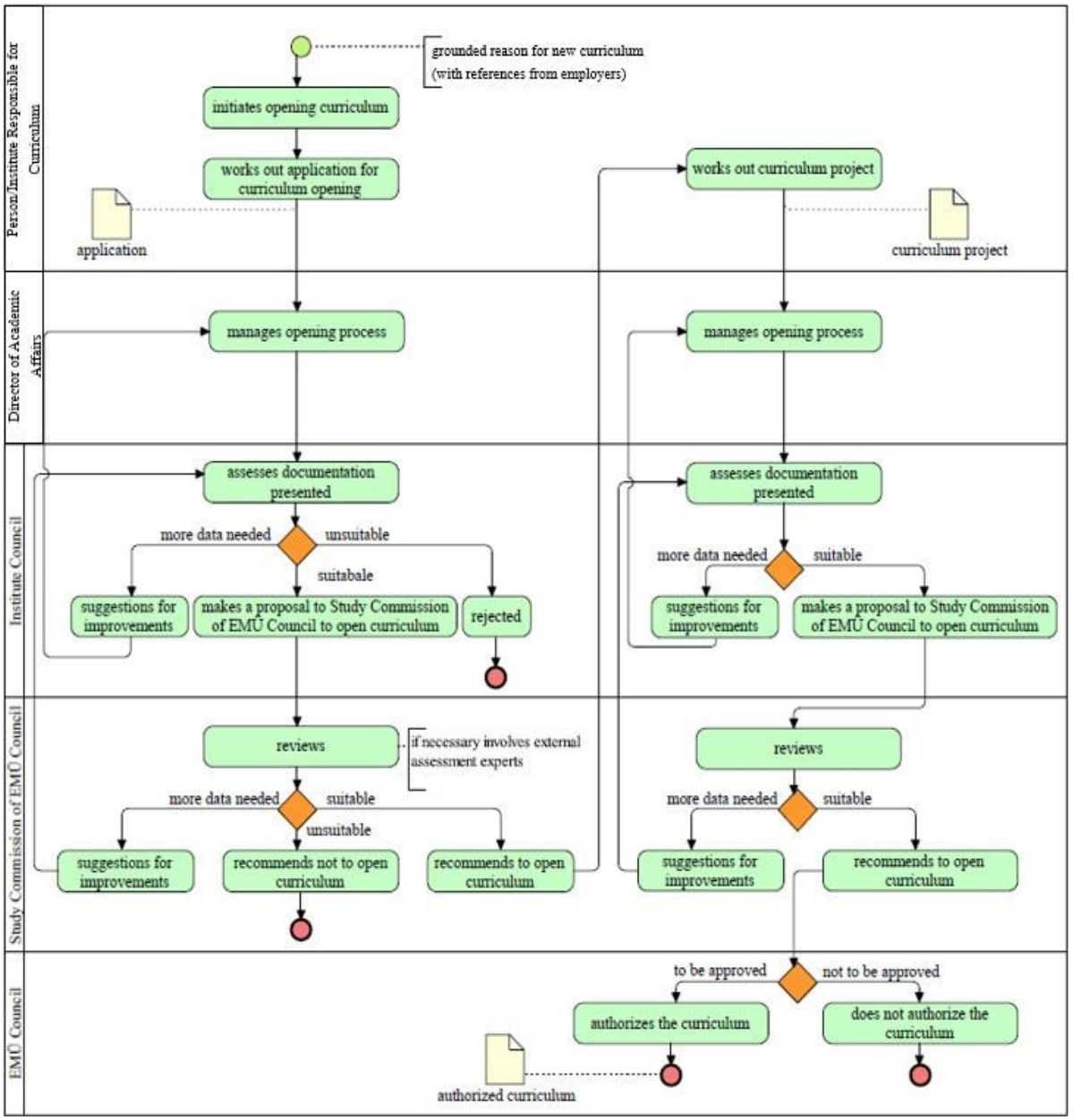

FIG. 3.3.2 CURRICULUM OPENING

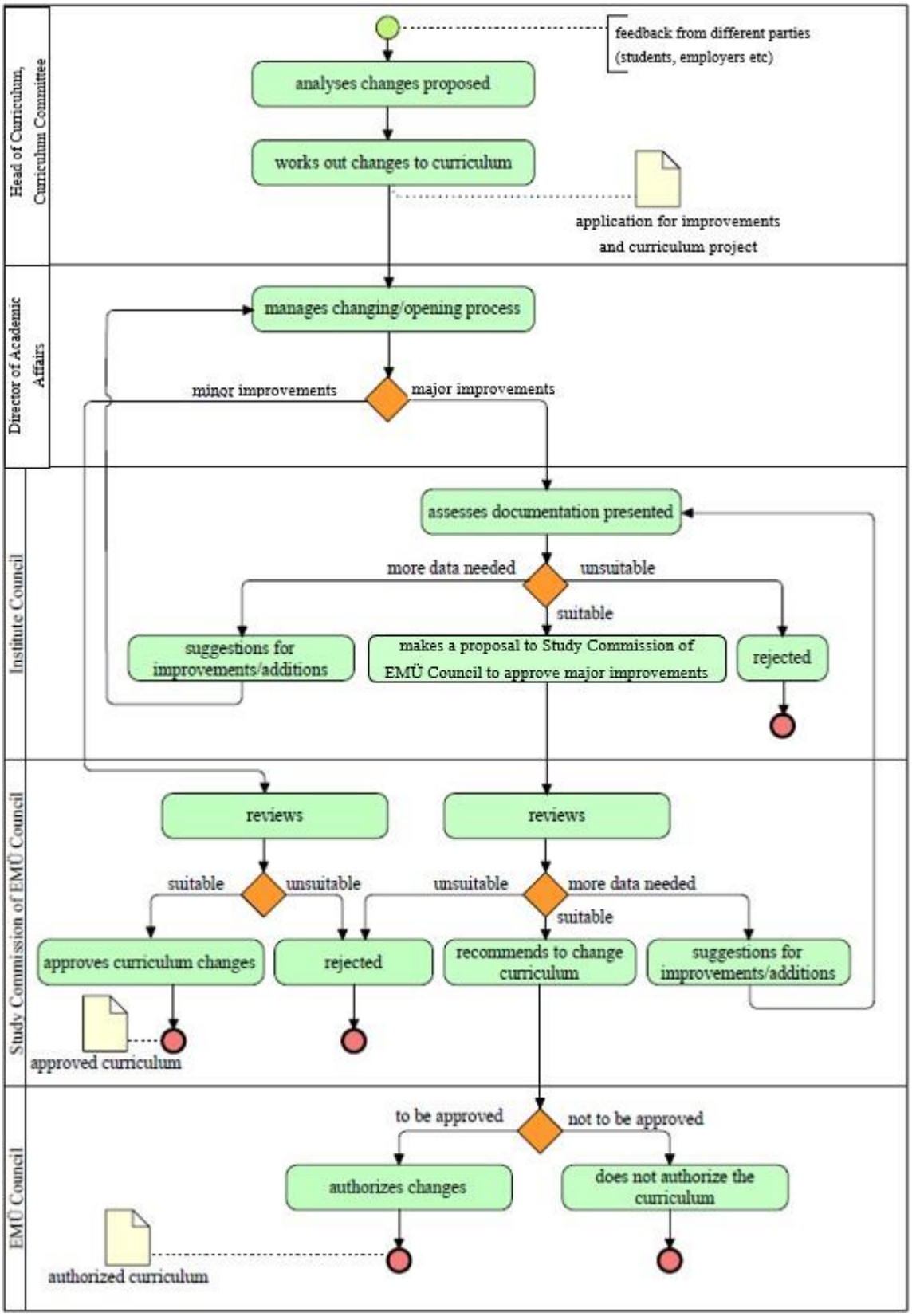

FIG. 3.3.3 CURRICULUM DEVELOPEMENT

In order to ensure the quality of the graduation theses, unified requirements for the final thesis have been developed (please see guidelines for doctoral theses HERE and for others HERE) and the terms and procedures for awarding diplomas are established (Requirements and procedure for the awarding of bachelor's and master's degrees and diplomas of professional higher education at the EMÜ and Conditions and procedure for awarding doctorates).

To assess the sustainability and developing an action plan for the development of EMÜ curricula, the working group on analysis and strategic development of curricula was formed. The results of the sustainability analysis of curricula were discussed at the Study Commission of the Council, presented at EMÜ directorate and in seminars. The results of the analysis, including an overview of the situation of the curricula and proposals for development, were submitted to the University Council for approval in 2016.

In 2015–2018, the quality assessment of curriculum groups (6) was carried out at EMÜ. The self-assessment of the curriculum group took place at the curriculum level. EMÜ prepared a self-analysis report for all curriculum groups, in which, in addition to the curricula, we analysed the curriculum group's internal developments, strengths and fields of improvement, and compared our curricula and study conduction with other similar curricula in foreign HEIs. The quality assessment of the curriculum groups was successful. According to the decision of the higher education evaluation board of the Estonian Quality Agency for Higher and Vocational Education (EKKA), the next quality assessment of 5 curriculum groups will take place in seven years. The quality assessment of one curriculum group (Engineering, manufacturing and technology) will take place in 2019.

EMÜ has started to reduce the number of curricula in the of environmental and biosciences curriculum group, mostly through combining and integrating, on the basis of proposals made by the curriculum analysis and strategic development working group and the committees of the curriculum groups' quality assessment.

EMÜ has started implementing the proposals collected by the internal audit *Sustainability of curricula in EMÜ* (curricula administered by the Institute of Agricultural and Environmental Sciences and the Institute of Forestry and Rural Engineering) in the academic year 2016/2017.

Areas of good practice

- The EMÜ has clearly defined the study quality in its quality strategy and set clear goals in the university development plan.
- There are definite rules and persons responsible for achievement of goals in the teaching activity, including management.
- The development of the curriculum in the university is managed at several levels and representatives of both students and employers/entrepreneurs are involved in different decision-making bodies.

Areas that need improvement

- The process of making changes in the curricula and study process should be faster to better comply with changes in the society.
- The system of professional development and mentoring of teachers, and replacement when necessary, according to the feedback, should be improved.

3.4 Academic ethics

Caring about its students and academic staff is one of the main core values of EMÜ. EMÜ follows the principles of equal treatment and academic ethics outlined in the Magna Charta of European Universities, Code of Ethics of the Estonian scientists framed by the Estonian Academy of Science and the Law of Authorship. EMÜ took active part in drawing the document Research Integrity. In spring 2018, EMÜ signed the Agreement for Estonian Code of Conduct for Research Integrity.

The University generalized its principles in research integrity as well as guidelines for cases of non-compliance with principles of academic ethics in the decree of the University Council „Principles of Academic Ethics in Estonian University of Life Sciences". Authorized employee in the issues of research integrity has been nominated for each institute.

EMÜ proceeds from the principle of equal treatment of students and employees in all its activities. To ensure equal treatment, various normative documents have been established: Job descriptions of the teaching and research staff members, Terms and procedure for the evaluation of the teaching staff and research staff members. Competitions for posts are public and are carried out in accordance with the rules (see https://www.emu.ee/en/about-the-university/vacancies/rules-of-competitions/).

Organisation of formal study is regulated by the Regulation of Studies, mandatory for all EMÜ members. All structural units follow the common requirements concerning mentoring of students, graduation thesis, formatting of thesis, defending of thesis, the final examination and RPL.

In order to ensure equal treatment of students, the manual with activities for the institute's academic affairs specialist has been developed and agreed centrally and specialists follow them in their work.
All students are equally entitled to receive study counselling, career and psychological counselling.

To avoid academic fraud/plagiarism the program KRATT is available to the students. In addition, the students can download their manuscripts to the programme URKUND where the results are available to the teaching staff.

EMÜ has rules of procedure for violations of agreed ethical principles and appointed persons responsible for processing. Administering complaints from EMÜ members is transparent and objective, ensuring fair treatment of all parties.

EMÜ has clearly defined the meaning and concept of academic fraud and established the order and procedure for handling both academic fraud and suspicion of fraud. The procedure for contesting and processing the decisions concerning academic fraud and learning activities as well as decisions concerning the payment of tuition fees, including deadlines for contesting and processing, are regulated by Regulation of Studies.

Contestation of the results of the final examination and the final thesis are regulated by the Regulations of the University Council: „Requirements and Procedure for the Awarding of Bachelor's and Master's Degrees and Diplomas of Professional Higher Education at the Estonian University of Life Sciences" p. 10–11 and „Conditions and Procedure for Awarding Doctorates" p. 79–81.

Cases of academic fraud in which the student has used prohibited tools and materials during examination, are generally solved at the lecturer-student level. Cases in which the student has submitted

someone else's written work under their own name or has used the written work of another person without proper academic referencing or has reproduced his/her earlier written work for which he/she has already received credits, are solved at the director of academic affairs' level.

The curricula comprises principles of academic ethics in several courses – *Philosophy of science*, *Research methodology*, and *Bases of science*. EMÜ organises seminars and workshops for its members to discuss the issues of academic ethics (incl. authorship, plagiarism, role of supervision, responsibility for data management, ethics of scientific trials, etc.). For students, there is always the opportunity to contact the lecturer, curriculum leader, academic affairs specialist, director of academic affairs, Student Union, psychologist and career specialist for advice.

Over the past five years, 15 written academic fraud cases have been reported to the director of academic affairs. Presenting another persons' written work under their own name usually takes place in the course work of the subject. If fraud is detected and if it is the first violation case, the student receives a letter of reprimand. In case of a second violation, the student is exmatriculated. However, a second act of academic fraud by a student has never occurred at EMÜ. In six cases a student has used parts of someone else's work or his/her own previously written work in a graduation thesis without proper academic referencing. Three cases were identified before the defence and three after the degree was granted. There were two cases in which the degree was revoked, two cases in which students were not permitted to defend their thesis, and two cases, in which academic fraud was not confirmed.

In recent years one case of plagiarism of a PhD dissertation was confirmed and the degree repealed, the court confirmed the decision. In addition, the Commission on Academic Affairs of the University Council, the higher body designated to handle issues of academic ethics, has considered three cases related to issues of authorship.

Students dispute mostly the decisions that are related to studies. During the last five years, 27 written complaints have reached the director of academic affairs, 20 of them objecting the defence of the graduation thesis or the results of the final exam. Some individual complaints are related to unequal treatment and teaching skills.

Areas of good practice

- Clear rules for principles of academic ethics are established.
- Cases of fraud are relatively rare, they are handled according to the rules.

Areas that need improvement

- Awareness on issues of academic ethics by teaching staff.
- Low level of acknowledgement of severity of some forms of academic fraud among students.

3.5 Internationalisation

Since 2014, after establishing the International Office within the DAA, more emphasis has been set on academic offer to international exchange students. Before 2014, there were only a few courses where the actual classroom work took place in English. Students are welcome to choose courses from all institutes to fulfill their learning goals as long as they have passed the necessary requirements. As students are required, by both their home university and EMÜ, to pass a certain number of ECTS (EMÜ

requires 15 ECTS per semester from incoming students but the requirement from home universities varies a lot), this flexible approach makes it achievable. EMÜ has encouraged the academic staff to teach more courses in English and has also provided financial support for developing new courses and modules.

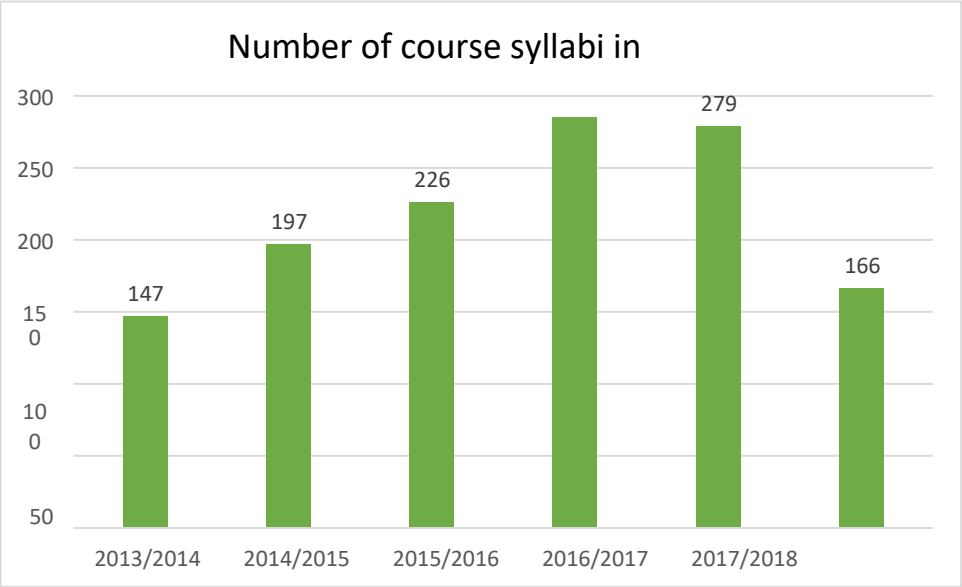

FIG. 3.5.1 NUMBER OF COURSE SYLLABI TAUGHT IN ENGLISH IN EACH ACADEMIC YEAR (ONLY AUTUMN SEMESTER FOR ACADEMIC YEAR 2018/2019

The EMÜ Development Fund (*Arengufond*) was established in 2014 and it aims at supporting visits of foreign lecturers and researchers, development of English curricula and modules, research and study visits abroad, RDA projects in cooperation with foreign universities, etc. Since 2016 EU structural fund ASTRA supports development of new curricula taught in English and visits of foreign teachers.
EMÜ is trying to promote the international community in its media platforms (social media, university magazine), in order to raise interest in Estonian students and lecturers and make them aware of the multinational environment on campus. In 2011, EMÜ established the International Club, which organises social events, excursions, visits and presentations about EMÜ and Estonia for the international community of the university.

Recognition of foreign credits is an important part the management of international student mobility. All outgoing exchange students are required to consult their departmental Erasmus coordinators or the head of the curriculum, regarding the content of courses abroad and transfer of credits to EMÜ. Students are expected to select the courses abroad, which help them to achieve the learning outcomes set in their curricula; total at least 15 ECTS, which can be recognised towards their degree. In addition to that, students can choose more courses which help them to learn country-specific aspects, languages and other competences. The tools for a clear recognition process are indicated in the "Regulation of Studies" (Paragraph IV.10,) and Terms and Procedure for Recognition of Prior Learning and Work Experience and Transferring of Study Results.

The number of Erasmus bilateral agreements is 253 for student and/or staff mobility with HEI in EHEA as of October 2018. In addition to that, EMÜ has signed cooperation agreements with 19 universities outside EHEA. EMÜ is actively participating in Erasmus+ Key Action 1 (KA107) credit mobility in order to expand partnerships outside the EU and offer more diverse mobility experiences. However, focus in the partnerships with non-EU universities is mainly on incoming student mobility. The number of incoming exchange students has been slightly increasing (see Fig. 3.5.2).

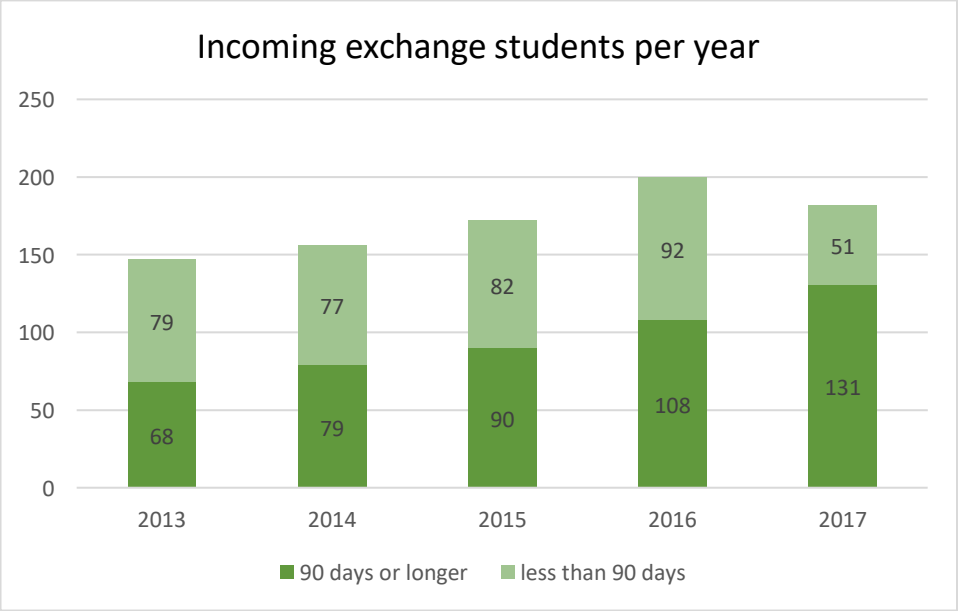

FIG. 3.5.2 NUMBER OF INCOMING INTERNATIONAL EXCHANGE STUDENTS 01.01.2013–31.12.2017

One of the duties of the International Office has been to introduce international partners, mobility programmes and funding options to encourage students to take part in studies abroad or go on a traineeship. There is one bigger, general information event every semester, supported by smaller sessions in each institute, also many specific programme-based information sessions organised. Often students who have participated in a mobility programme share their experiences. Freshmen get the information about international mobility already during their first semester at EMÜ, to be able to plan their semester/year abroad well in advance (figure out what courses they could participate in at the host university, start learning a new language, etc.). Fig. 3.5.3 illustrates the dynamics of outbound student mobility 2012–2017. It is important to consider the decreasing number of students at EMÜ (4294 students as of 10.11.2013, down to 3006 students, i.e. EMÜ increasingly faces difficulties in sending students abroad, as they are not willing to make a break in their career, or just cannot afford the financial backlash caused by their absence.

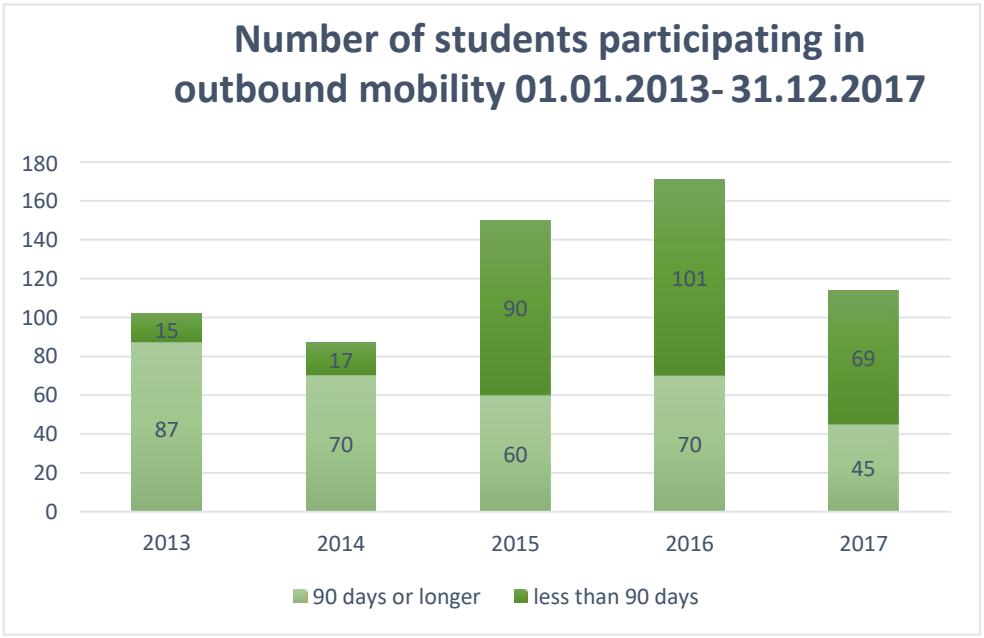

FIG. 3.5.3 NUMBER OF OUTGOING EXCHANGE STUDENTS

In recent years, the numbers of international lecturers have shown an upward trend: in 2012, there were 20 members of academic staff at EMÜ, and by 2017 the number had risen to 30. The number of supervisors and co-supervisors of doctoral students is 33 (as of November 2018). EMÜ has declared in its Development Plan 2016-2025 the objective to improve the competitiveness of its teaching staff and increase the number of foreign lecturers. Mobility programmes such as Erasmus+, Nordplus, BOVA network, DoRa (until 2014) or ASTRA (since 2016) provide means for organising international intensive courses and enable to invite foreign lecturers for shorter teaching visits (usually for one week).

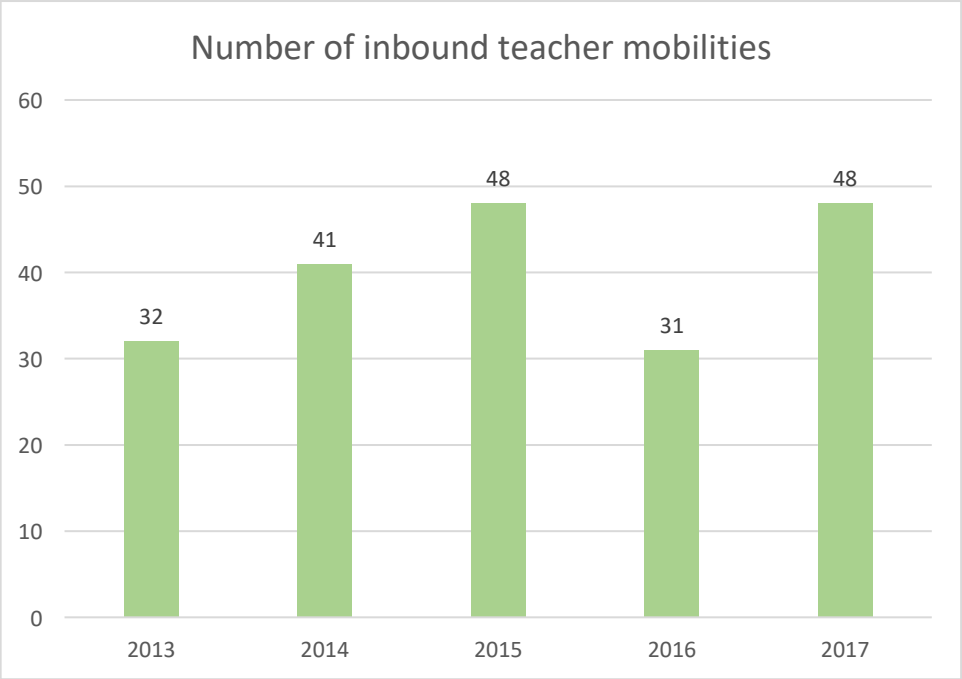

FIG. 3.5.4 NUMBER OF SHORT TERM INBOUND TEACHER MOBILITIES 2013–2017

EMÜ academic staff is very well connected with the global research community and participates actively in conferences and training abroad. In 2015–2017, most frequently in Finland, the Czech Republic, Sweden, Norway, Germany, the United Kingdom, Austria, Spain, Italy and Latvia. There are several reasons why the number of lecturers going abroad for teaching mobility is rather modest: workload at EMÜ appears to be the main obstacle, as well as private responsibilities. EMÜ encourages especially young teaching staff to develop their skills abroad. EMÜ has also made efforts to create networking and personal development events for its international partners by organising international staff training weeks in 2015, 2016 and 2018. These events have enabled EMÜ to introduce its teaching and research activities as well as support services to representatives from partner universities abroad.

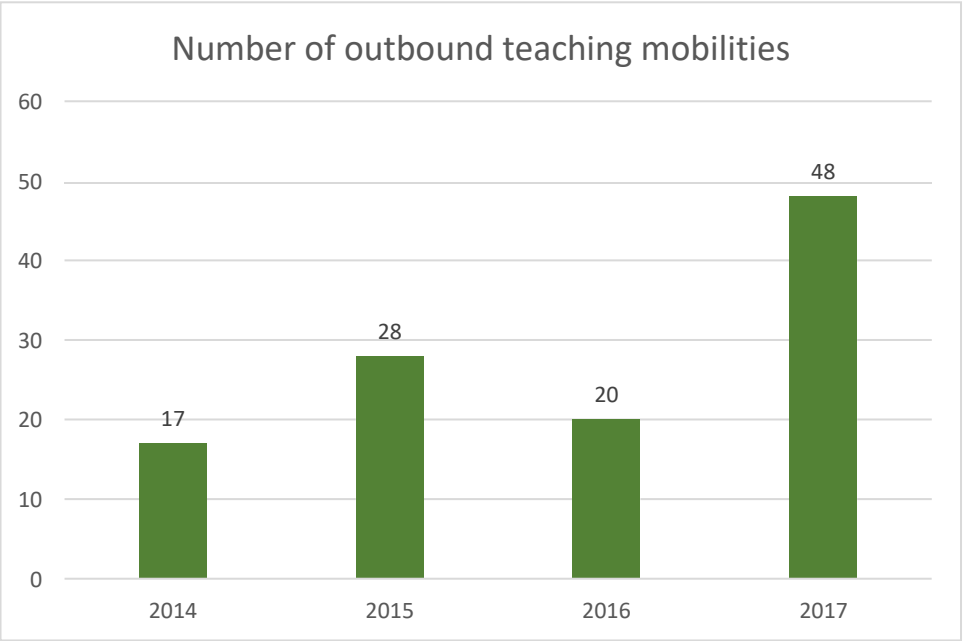

FIG. 3.5.5 NUMBER OF SHORT TERM OUTBOUND TEACHER MOBILITIES FROM 01.09.2014–31.12.2017

Internationalization is evaluated according to the following indicators:

- Teaching staff mobility (in-out): Fig. 3.5.4 and 3.5.5.
- Student mobility (in-out): Fig. 3.5.2 and 3.5.3.
- Number of English-taught study programmes by main units and levels of study:
    1) Veterinary Medicine (integrated Bachelor's and Master's level curriculum)
    2) Landscape Architecture (Master's level)
    3) To be opened in 2019: Agri-Food Business Management (Master's level)
        - All PhD programmes are conducted in Estonian and English:
    1) Engineering Sciences
    2) Forestry
    3) Environmental Sciences and Applied Biology
    4) Agricultural Sciences
    5) Veterinary Medicine and Food Science
- Full-time international degree students

The number of admitted full-time international degree students has been growing since the implementation of the full programmes in English. While the capacity of intake in Veterinary Medicine is fulfilled, the Landscape Architecture programmes are able to admit more students. In order to attract international degree students, university has organized marketing events abroad (participation in education fairs, newsletters, infosessions and workshops conducted by EMÜ professors) and has improved online-marketing through social media, online portals etc. EMÜ has also improved the quality of the admission procedure. Another important activity in terms of recruiting students is alumni-relations. University is determined to continue it's international marketing activities.

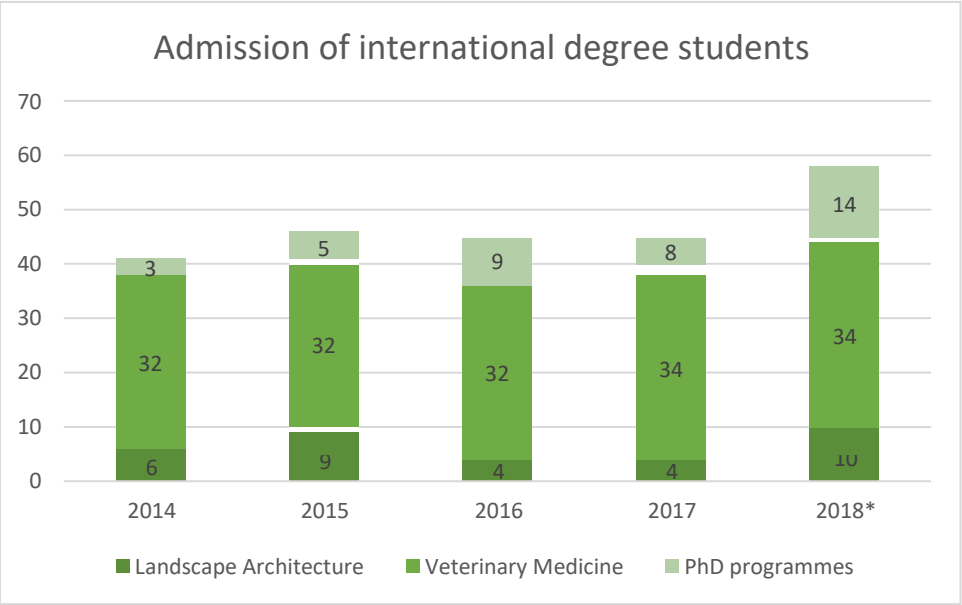

FIG. 3.5.6 ADMISSION OF INTERNATIONAL DEGREE STUDENTS 2014 – 2018 (AS OF NOVEMBER 1, 2018)

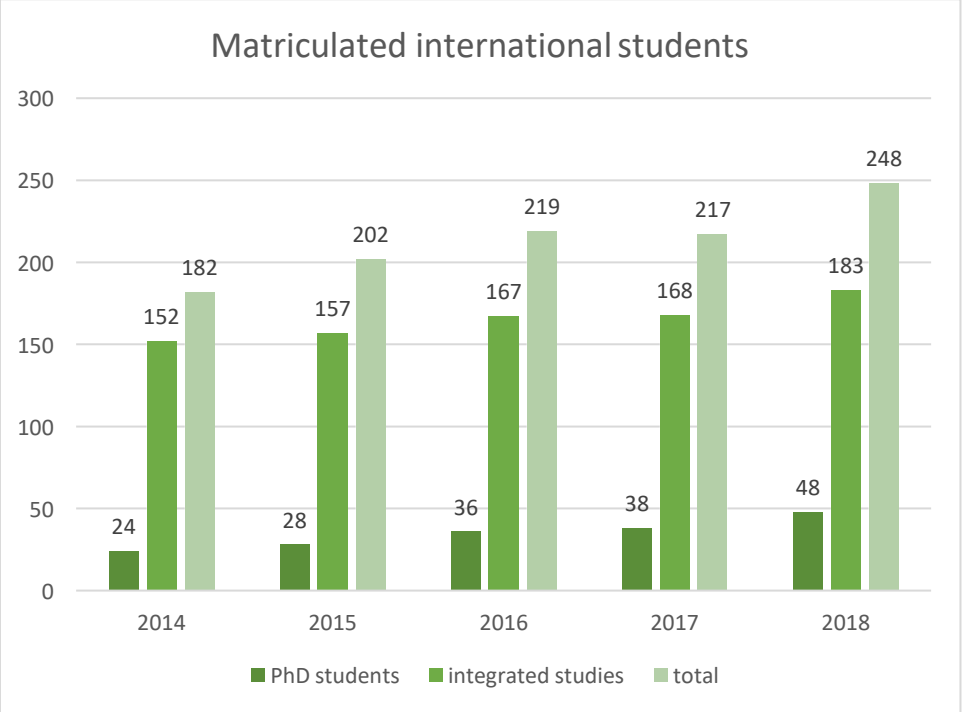

FIG. 3.5.7 NUMBER OF MATRICULATED INTERNATIONAL STUDENTS (AS OF NOVEMBER 10, EACH YEAR)

Areas of good practise:

- Support services for international students: administrative and academic councelling; „buddy“ system.
- Special feedback system for international students.
- Strong collaboration and teamwork of central and departmental international coordinators.
- Regular professional trainings on intercultural or foreign students related issues for staff in EMÜ and other institutions in Estonia (e.g. Archimedes Foundation).
- Participation in various networks and organisations related to internationalisation in Estonia and abroad.
- Cultural events for international students (International Club, student organisations).

Areas that need improvement:

- Mobility windows or other measures to boost student outbound mobility.
- Develop and launch at least 3 new curricula in English by the year 2025 (goal set in the EMÜ development plan.
- Find ways to integrate Estonian students more with international students in the learning process.
- Social integration of Estonian and international students.
- Improvement of English language skills of EMÜ administrative staff.
- Merging support services targeted at both domestic and international students and staff.

3.6 Teaching staff

Teaching is conducted by professionally competent teaching staff and researchers. The specific qualification requirements and the main tasks of academic staff are described by the regulation "Job descriptions of the teaching and research staff members at the Estonian University of Life Sciences".

The age structure of the academic staff is balanced, the average age is 46.

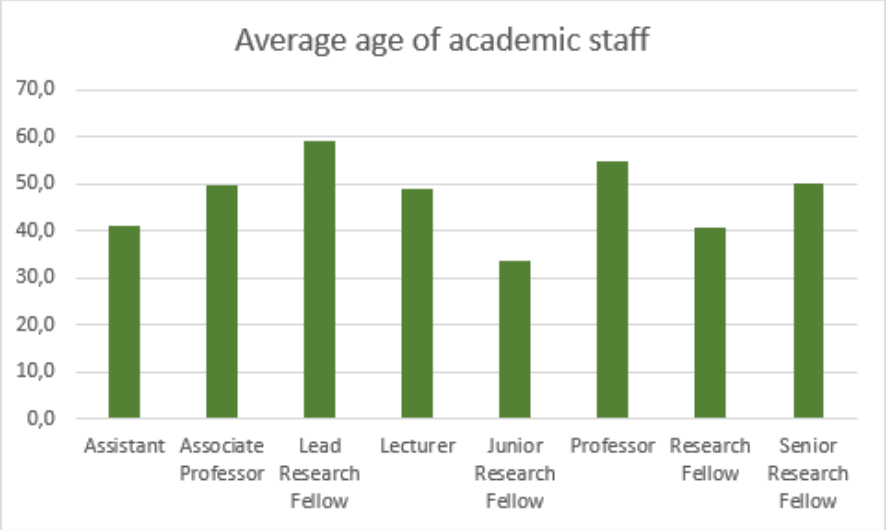

FIG. 3.6.1 AVERAGE AGE OF ACADEMIC STAFF

Teacher training is approached on an as-needed basis. Need for trainings is identified mainly through development interviews with lecturers, analysis of student feedback or through the surveys from personnel department. The number of academic staff at EMÜ enables us to take a personal approach to the their development needs. The need for training is assessed by the department and chair and organisation of training takes into account specific development needs and the willingness and ability of teaching staff (time-wise) participate. Financial resources are included in the department budgets of institutes every year for funding in-service training in accordance with the financing options available to EMÜ and the objectives set for the university, the specific nature and conditions of the activities of EMÜ and the training needs of teaching staff. Decisions regarding the training needs of a member of academic staff are made by their unit, the justified interest of the employee and the options open and resources available to EMÜ.

According to the satisfaction survey conducted in 2017, the overall level of satisfaction with professional development and career opportunities among teaching staff is 65.9%. The most satisfied

with these opportunities are professors and associate professors (74.1%), while the least satisfied are lecturers and assistants (68.5%).

Members of the teaching staff engage in the development of their professional and teaching skills, also their mentoring competences. They attend relevant courses in the University of Tartu and the University of Tallinn. In order to share best practices and learn from one another, a series of seminars *From lecturer to lecturer: Teaching Skills Development Seminars* was launched at EMÜ in the 2016 and 2017 autumn semesters. Topics covered in the training focused on learner-centered approach, student involvement, group work, support for student self-employment, assessment, giving and taking feedback, collegiate co-operation in teaching, learning from teaching colleagues. The trainers were educationalists from University of Tartu.

The responsibility of EMÜ internship supervisors is also to provide guidance and training for the enterprise's internship supervisor on the objectives and organization of the internship. With an aim of improving enterprise internship performance and ensure the achievement of internship goals, a training for institutes' internship supervisors was organized in 2017.

For implementation of innovative and digital teaching tools, lecturers are assisted by an educational technologist, who also organizes various seminars and workshops. Lecturers are being encouraged to use more interactive teaching methods, and EMÜ offers courses for developing the teaching skills and methods.

Doctoral students acquire knowledge and skills in teaching and instruction in the subject *Higher education didactics*. This is a compulsory subject in doctoral curricula. The theoretical part of the subject is followed by a practical part, in which the doctoral student teaches or supervises students in their field.

Teaching staff develop their English skills in teaching by attending the course *Teaching Academic Subjects in English* where, in addition to language proficiency, the focus is also on didactics of teaching in a foreign language.

Teaching staff participate in research including research projects, co-operate within EMÜ and other HEIs, research institutions and companies. Qualified visiting and foreign lecturers, as well practitioners from companies, participate in the teaching process. Students are involved in projects as well.

EMÜ employs scientists and other outstanding creative individuals or practitioners in their fields as visiting lecturers and has been entering into employment contracts with them since 2016. These contracts last for a minimum of one semester and a maximum of five years. Visiting lecturers have the same rights as members of EMÜ in terms of using the infrastructure in the interests of the teaching and research work conducted at EMÜ. The procedure is outlined in Appointment procedure and requirements for visiting academic staff members of Estoninan University of Life Sciences. Among institutions in other countries, the university works most closely with Finland (University of Helsinki), the Czech Republic (Czech University of Life Sciences), Sweden (Swedish University of Agricultural Sciences) and Norway (Norwegian University of Life Sciences). In the last three years our teaching staff have most frequently attended training courses and shared or gained experience in Finland, the Czech Republic, Sweden, Norway, Germany, the United Kingdom, Austria, Spain, Italy and Latvia.

Regular teaching staff members shall have the right, within five years, to one-term sabbatical leave with basic salary paid, to pursue professional self-development or other creative activities. The conditions and procedure for granting sabbatical leave is described in University Council regulation.
Employers working on the basis of an open-ended employment contract are attested at least once every five years. Attestation is designed to ensure that staff performance is in line with the requirements of their position, to support their development and career opportunities and to assess the fulfilment of other objectives agreed upon with the employer. The procedure is outlined in Terms and procedure for the evaluation of the teaching staff and the research staff members of Estonian University of Life Sciences and for conducting development discussions.

The aim of evaluation is:

1) To ensure the conformity of the performance of academic staff members to the requirements set to the positions;
2) To support the development and career needs of academic staff members;
3) To assess the performance of other goals agreed with the employer.

The assessment takes into account the assessment results given by students via ÕIS.

Recruiting academic staff

The power of decision for planning academic staff and posts lies with the institutes. The head of the institute is authorised to create an open position and announce a competion. As a rule, academic posts are with nonfixed terms and filled by open application procedure, with equal conditions for all applicants, according to the Rules of competitions of the employment of regular teaching staff and research staff.
The proposal for creating a position of a professor and recruitment for the position shall be made by the director of an institute to the University Council.
The proposal shall include the job description and information regarding the availability of funding. The director of the institute or the Rector shall also provide the reasons for establishing the position, and information about the availability of necessary funding in EMÜ budget. The elections on the position shall be announced by the Rector based on the decision of the University Council.
It is common in Estonia that there is low competion to academic positions and it is difficult to attract international interest. For a vacant professor's position there is often only one applicant, and the situation is similar for research staff. There are more applicants for the lecturers' positions.

When EMÜ applied a new structure, based on responsibility areas, international public contest for professors' positions as of 1.09.2017 was announced (https://euraxess.ec.europa.eu/). The professor is the head of the work team and head of the chair implementing activities of the responsibility area. EMÜ needed 21 professors, 9 persons applied and were qualified. The objective of finding competent staff outside EMÜ partly failed due to the small number and unqualified applicants.
Nevertheless, this year, 4 international candidates have submitted their applications to the open position - ERA Chair for Food (By-) Products Valorisation Technologies of EMÜ (VALORTECH). The project VALORTECH has received funding from the European Union Horizon 2020 research and innovation programme.

A broad-based debate is currently underway on how to build a university career path. The goal is to increase the confidence of the best employees in advancing their academic career, as the university is attractive and competitive in recruiting talents; the best employees are guaranteed job security.

Students' feedback

Students provide assessment to the work of lecturers through the feedback questionnaire in ÕIS. The assessment is based on the students' answers (I fully agree (grade 2), rather agree (1); rather disagree (-1); fully disagree (-2); so-so (0)) to questions concerning:

1) the attitude of the lecturer upon teaching, whether it is learning-supportive and open to students;
2) whether teaching is interesting, engaging and understandable;
3) the relevance of the study materials in terms of content, formatting and suitability;
4) whether feedback given to the students about the results of their work is sufficient.

The final assessment is formulated as an average score on the scale of -2 to +2.
Figure 3.6.2 shows the assessment of a lecturer's work over the last five academic years.

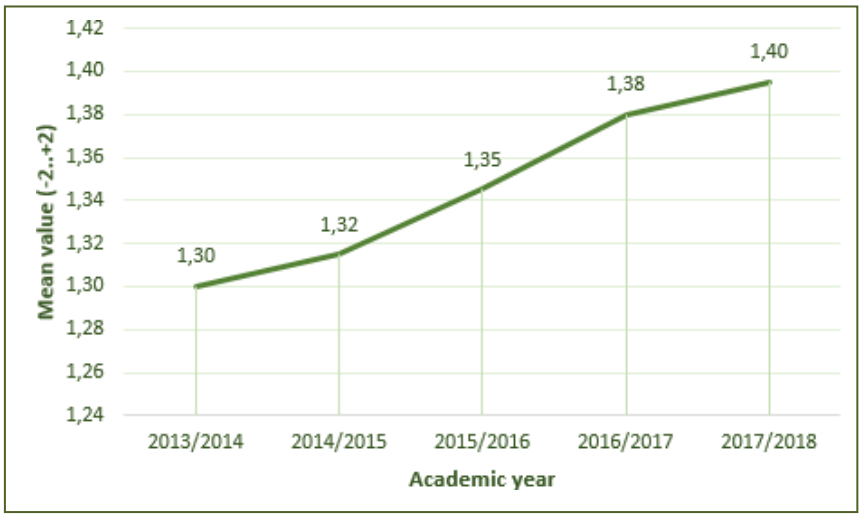

FIG. 3.6.2 STUDENTS' FEEDBACK ON TEACHING STAFF

EMÜ-wide trainings for lecturers to develop their teaching skills:
1) autumn semester of 2016, a training *session From lecturer to lecturer: Teaching Skills Development Seminars*; 27 participants.
2) autumn semester of 2017, the training session *From lecturer to lecturer: Teaching Skills Development Seminars*; 22 participants.
3) autumn semester of 2017, *Training for enterprise internship supervisors;* internship supervisors from all institutes attended.

Training related to e-learning:
1) November 2017, seminar *Tests and gradebook in Moodle;* 25 participants.
2) January 2018, seminar *Google Classroom;* 15 participants.
3) March 2018, seminar *MS Teams and Slack;* 10 participants.
4) April 2018, seminar *Tests, feedback and group work without Moodle;* 20 participants.

Areas of good practice

- Professionally competent and highly motivated teaching staff.
- Practitioners are involved in the study process.
- Clear qualification requirements for lecturers.

Areas that need improvement

- Developing the career model.
- Mobility of teaching staff.
- More effective use of existing opportunities for developing teaching skills.
- Balancing workload between teaching staff and researchers.

3.7 Study programme (curriculum)

EMÜ is the only HEI in Estonia offering science-based higher education in the fields of agriculture and forestry, animal science, veterinary medicine and food science. The curricula are interdisciplinary, which ensures better competence for graduates, and are directly related to ensuring the country's food security through practical output.
As the only university in Estonia, EMÜ implements the uniquely integrated value chain principle: the production of food commodities, food production technologies, product development, food hygiene and safety, marketing, the economic aspects of the value chain with the valuation of by-products, veterinary public health and environmental protection.

The development of existing and new curricula at EMÜ is a continuous process and takes place in accordance with the expectations of the labour market and changes in society, in cooperation with employers' representatives and professional associations, taking into account the results of field studies of the OSKA program monitoring and forecasting system (https://www.kutsekoda.ee/en/) as well as feedback from various external evaluations, supporting development of different general competencies and entrepreneurship.

The curricula are in accordance with the Universities Act and the Standard of Higher Education. The Statutes of Curriculum sets out the requirements for the structure, content and quality of the curriculum of EMÜ, as well as the procedures for opening, managing and closing the curriculum.

The development and opening curricula ensure that the study outcomes of bachelor's and professional higher education curricula are in accordance with the qualification framework level 6, and Master's study programs with the general requirements of level 7.

Since 2013, EMÜ issues the occupational qualification of Certified Civil Engineer in Buildings and Structures (level 7) to the graduates of *Rural building* (382), and of Certified Engineer in Hydrotechnical Engineering and Water Supply and Sewerage (level 7) for *Hydraulical Engineering and water pollution control* (383) according to the Estonian Qualifications Framework.

Since 2015, EMÜ issues the occupational qualification of Certified Engineer of Consumer Electrical Equipment (level 7) to the graduates of *Energy application engineering* (432); since 2016, Mecharonics Engineer (level 6) to the graduates of *Technotronics* (81050), and since 2017, Mechanical Engineer in Production Engineering to the graduates of the *Production engineering* (437).

The study load prescribed in the curriculum is calculated in ECTS: one credit point corresponds to 26 hours of student work. Student work includes contact lessons (incl. e-learning), practical training, independent work and assessment of learning outcomes. The amount of contact lessons makes up to 50% of the subject, but not less than 15%. The amount of independent work is greater in case of block mode

study. The forms of study and study load are detailed in the syllabus of the subject in the ÕIS. The distribution of the workload and the consistency of the work done is monitored through student feedback. Students compare the amount of independent work with reality and evaluate their use of time. The results vary, but students generally estimate the workload to be real. The discrepancy between workloads occurs in subjects that do not offer enough specific deadlines or are too flexible for deadlines. In such case, the independent work tends to accumulate and concentrate on a too short period of time.

The curricula have practical output, which is ensured by integrating theoretical and practical training – seminars, hands-on approach, laboratory work, internship, scientific or research training, in-company training, clinical practical training. In-company training is included in all curricula. Most of the in-company training is part of curricula of professional higher education, veterinary medicine and engineering. Bachelor's degree programs include in-company training of at least 5 ECTS. From the academic year 2019/2020, the scope of in-company training will grow even more in order to increase the share of practical output. To develop the entrepreneurial attitudes of students and the acquisition of the knowledge and skills, the University has started to integrate an entrepreneurship module into curricula. By the academic year of 2020/2021, all of the first study level curricula must include this module in volume of 8 ECTS.

The content and organization of internship support the learning outcomes. A number of steps have been taken to ensure more efficient and effective in-company training. Since the academic year 2016/2017, a compulsory placement agreement between University, a traineeship company and a student was introduced in order to increase responsibility of all parties for the quality of internship. As an appendix to the internship agreement, the trainee instructor is asked to complete a feedback questionnaire by assessing, *inter alia*, the student's prior knowledge and skills, attitude towards their work and ability to adapt to the work environment.

Development of the process of internship involves different parties in order to identify their needs. Since the autumn semester of 2016, meetings of business and EMÜ representatives have taken place. In 17.02.2017, in cooperation with the alumni committee, a collaboration meeting was held of the tutors of EMÜ internship and the Estonian Chamber of Agriculture and Commerce.

For the purpose of expanding the internship network and engaging practitioners in the study, EMÜ participated in the application submitted by the foundation INNOVE. The application (*Development of Co-operation between EMÜ and Internship Enterprises*) was successful, and EMÜ has planned collaboration meetings with companies, involving practitioners in the learning process, and training internship supervisors for the period from 01.09.2017 to 31.08.2019. To plan activities even more, EMÜ submitted a new project application in the autumn semester of 2018.

EMÜ also requested funding from the ASTRA project to raise the quality of studies to involve practitioners/companies in teaching and increase the proportion of problem-based learning.

The following methods are used to obtain direct feedback from employers and alumni: specialized round tables; participation of employers/alumni in the council and curricula commissions of institutes; meetings of EMÜ leadership (including representatives of the institutes) with managers of companies; meetings with alumni and alumni assembly; conducting surveys. The information is used for updating curricula, improving the organization of internships, creating new curricula, conducting various projects and studies.

Since the beginning of 2018, EMÜ has been refreshing collaboration with vocational schools of similar specialties, with the aim of improving the quality of education and the quality of graduates.

Areas of good practice

- A great proportion of practical training in curricula.
- Involving practitioners in the learning process.
- A very good network of practice companies.
- Teaching is closely related to research.
- The curriculum for Veterinary medicine is fully consistent with the Directive of the European Parliament and of the Council on the recognition of professional qualifications.

Areas that need improvement

- Increasing co-operation with vocational schools.
- Continuing to integrate entrepreneurship in curricula.

3.8 Learning and teaching

The admission requirements are approved by the University Council and ensure fair access to the corresponding level of higher education.
Admission is conducted by curriculum on the basis of the admission results of the public competition via the admission information system (SAIS), external student candidates via the DreamApply.

EMÜ has implemented various additional requirements to comprise socially active and motivated student body, such as supplementary admission tests, a motivation letter, additional points; or an advantage to certain curricula in a competition to applicants who have graduated upper secondary school with a gold or silver medal, a high average grade in vocational secondary education, recognition of sports results, etc. Graduates from *EMÜ Loodusteaduste kool*, a pre-university course for teaching different aspects of science and scientific research methods to the secondary school pupils, also receive additional admission points when applying to certain curricula.

EMÜ offers alternatives for admission to applicants who have not performed state exams or the so-called „broad“ mathematics examination, or have acquired secondary education in another language, for example, in Russian. In 2012, EMÜ examined all curricula in regards of study possibilities for students with special needs. The findings showed that leaving aside complete blindness, adjustments in study work can be made in almost all our curricula to enable access to university studies. Therefore, an individual councelling prior or during applying upon applicant’s requst is offered for applicants with special needs, in order to select the best possible study option. We also ask our applicants to indicate their interest (by ticking a box on admission application) for further information about additional support services in our university.

Admission requirements are reviewed and, if necessary, updated each academic year.

All Estonian universities, including EMÜ, are struggling with reducing numbers of admitted students. The number has been in a downward trend for the last five years (Fig. 3.8.1)

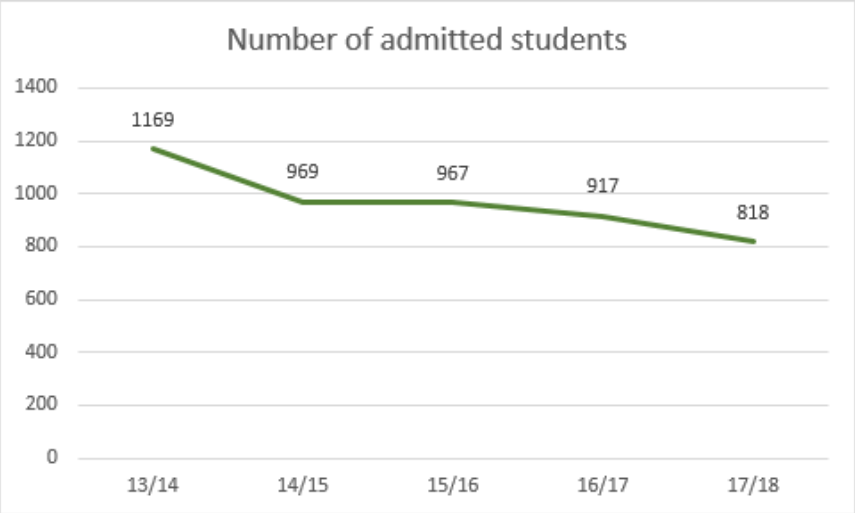

FIG 3.8.1 NUMBER OF ADMITTED STUDENTS (BACHELOR'S, MASTER'S AND INTEGRATED STUDIES

The main reason for declined numbers of admitted students is demographic situation in Estonia. During the passed 6 years, the number of secondary school graduates has decreased considerably (ca 6000 in 2017, but more that 10 000 a decade ago). Additionally, the popularity of agricultural field among the same age group has rather downward trend with very few positive highlights as veterinary medicine and food processing. As a responce, EMÜ has reduced the number of study places in the first cycle of university studies (Bachelor's, integrated studies and professional higher education studies) by 20% (890 in 2013 but 709 in 2017) although the number of curricula has remain the same.

The curricula of EMÜ have a practical output and are therefore attractive for students and employers. In the study, theoretical and practical training are integrated. In addition to lectures and seminars, a large proportion of practical training is included to subjects of specialty modules. Practical training and seminars are conducted in small groups, which improves students' communication and presentation skills and allows the lecturer to provide individual feedback to students. The theory lessons are supported by field practice – in nature/forest, in an enterprise, at the farm, in an animal clinic or elsewhere.

Teaching is interdisciplinary and closely related to research. Students are involved in research projects, including practical projects, providing them with topical graduation themes. Companies recognize and reward students for participating in projects and graduate papers with practical output. For example, in the frame of the Horizon2020 project iSQAPER one master and two bachelor theses are completed. Currently 2 students are preparing master theses and one student bachelor thesis. Most of the theses in the field of agricultural economy are completed according to the real data of companies.

It can be concluded from students feedback that involvement of researchers and doctoral students, entrepreneurs, alumni and practitioners in teaching has increased subjects' attractiveness and students' motivation. Students appreciate learning through the experience of practitioners. Involvement of guest lecturers in teaching has broadened students' knowledge and increased desire and interest in acquiring study and/or practical experience at a foreign HEI. In collaboration with enterprises, problem-based learning is increasingly implemented. For a positive example, curriculum *Rural Entrepreneurship and Financial Management* can be mentioned. There are several subjects offering collaboration with enterprises. For example, in *Logistics in Rural Economy*, the enterprise described how the ABC analysis is used to assamble warehous products. After that, students had to analyze how often the human factor

is mistaken for applying this method.

The diverse and modern methods and tools used in teaching, including digital tools, allow to take into consderation the student's individual abilities and needs. Teamwork and collaborative skills are supported through teamwork.

In order to facilitate students' independent work, the amount of contact lessons constitutes no more than 50% of the volume of the subject, but not less than 15%. Ensuring the efficiency of students' independent work requires efforts also from the lecturers, in order to motivate students to study consistently, to acquire knowledge/material designed for independent work and to complete the knowledge check in the subject (test, presentation, etc.) in time. There is a lot of help in implementing e-learning. Students' feedback reveals that e-learning support for subjects is very relevant.

EMÜ offers the opportunity to take part in a preparatory course for the national exam in mathematics for students of upper secondary school who want to improve their results. Students who do not have the result of the state examination, but wish to enter the curriculum of EMÜ can participate – in this case, a positive test at the end of the training is considered an admission test. The chemistry and/or mathematics preparatory courses are also for students need or wish to "follow up" to better cope with subjects. The lecturers, as much as possible, take into account the students' needs, including special needs, in terms of the learning process and organization of study. Students with special needs are advised by EMÜ psychologist, who is assisting in organization of the study process and acts as a contact person between the lecturer and the student.

In addition to specialty-related subjects, students have the opportunity to choose and study optional subjects from EMÜ or other HEIs, thereby realizing their personal interests and preferences. The module of elective subjects brings together various specialities.

Veterinary students can take their clinical practice at the Animal Clinics of the Nordic and European countries. Veterinary students from foreign universities can do their clinical practice at EMÜ.

Information about the learning process is available on ÕIS and on EMÜ website. All students are informed about EMÜ regulations, highlighting the key points. Schedules are completed early enough so that students can plan early.

Lecturers are increasingly using learning methods and tools that are modern, purposeful, effective and support the development of digital culture. Lecturers are assisted by university's educational technologist, who trains and introduces various methods as well as digital tools, monitors their e-courses on Moodle and provides advice. The proportion of e-learning in the learning process increases year-by-year. Currently there are more than 600 e-courses in Moodle, also there are many courses taught using other web-based means. Some courses in Moodle contain infrequently used activities that diversify teaching. ÕIS provides an opportunity for uploading study materials, although other Internet platforms, such as blogs, forums, Google Drive, Instagram or Facebook, are often used.

Collaboration with companies provides the opportunity to involve companies/entrepreneurs in conducting study/practical training and co-operate with introduction and use of state-of-the-art technology with the aim of improving the quality of teaching. Collaboration includes the corresponding vocational schools, for example, in the Woodworking Technology curriculum there is a one-semester course at the Võru County Vocational Training Center.

Through various projects, EMÜ has been able to acquire a variety of devices, such as digital boards. In 2017, EMÜ successfully applied funding for improving ICT competencies, which was used in the Institute of Veterinary Medicine and Animal Sciences for making study videos. EMÜ has focused on financing modernization of laboratories and laboratory equipment.

The implementation of modern teaching methods is supported by EMÜ education technologist who, in addition to individual assistance and counselling, organizes and conducts appropriate training and seminars. Several e-study information days and seminars have taken place – innovative study resources were introduced: the presentation program Prezi, web-based study tools Padlet, Google Classroom, EdPuzzle, LearningApps, Kahoot.

The use of innovative teaching tools and e-learning by the lecturer is taken into account in the election of the Lecturer of the Year. The best e-course awards will also be awarded at the national level. The course *Quality and safety of milk and milk products* was awarded the best national e-course in 2018 and set as an example. Students of EMÜ value the practicality of curricula and have become aware of the necessity and nature of the science-based curriculum. Students are motivated to study and graduate from the university in standard time of studies (on average, more than 70% of graduates; the highest rate in veterinary medicine, 84.5%). Almost 20% of students complete studies with nominal plus one year. The detailed graduation information by the level of study is shown in Fig. 3.8.2.

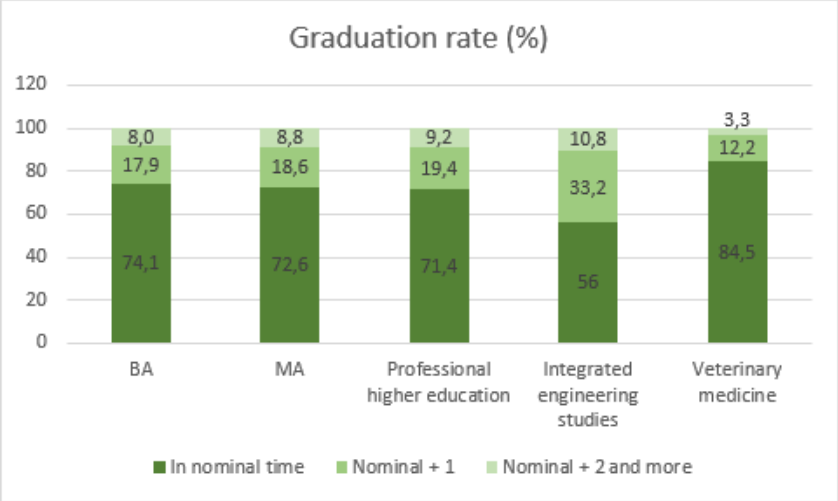

FIG. 3.8.2 GRADUATION RATE

One of the positive effects of higher education reform is the increase in the number of students that graduate within normal duration of studies. In the case of EMÜ, it is certainly also influenced by the fact that if the students do not finish their studies within normal time, the extra year will be charged with a fee. It is also worth highlighting the share of nominal + 1 year graduation, indicating that students still complete and do not interrupt their studies despite the priced additional year. Unfortunately, in the context of higher education reform, students cannot participate in studies during their academic leave and help themselves in their studies. The lack of such opportunity has a particular impact on civil engineering studies, where study periood is 5 years and it can be seen that an extra year is very necessary. EMÜ and other Estonian universities have stood up for the possibility of participating in studies during academic leave and hopefully this opportunity will be restored in the new Higher Education Act.

EMÜ appreciates the feedback received about the learning process and regularly conducts relevant surveys. Assessment of teaching and subject courses is carried out twice a year, at the end of each semester. EMÜ graduates evaluate the curriculum, including the quality of study activities, immediately before graduation. In addition to the feedback from ÕIS, more advanced lecturers are asking for feedback from students either right after the lecture, practical training or subject/course completion. Lecturers implementing e-learning ask course participants for feedback via the Moodle system. In addition, there are various sectoral surveys organized by the respective structural units as needed.
In addition to the feedback from graduates, the institutes receive feedback on their graduates from employers, business leaders, etc. with whom they collaborate and get together in joint meetings, discussions and training sessions. Entrepreneurs/employers participating in the Council of the Institute and in the curriculum commissions are good partners in the development of curricula, as well as in assessing the competence of graduates, including professional competence. The institutes take into account the feedback received from employers and partners. For example, the Bachelor's Degree Program in Forestry has recently undergone a process of innovation, taking into account the proposals of employers in developing curriculum and subjects. See in chapter 4.1.

EMÜ has well-functioning collaboration with the Student Union. Student representatives are involved in decision-making bodies.

Feedback results and improvement activities are discussed and analyzed in the Councils of the Institutes, in the meetings of Chairs and in the curriculum committees, where student representatives are also involved. Each semester, DAA composes an overview of feedback results, which, in addition to the structural units, is also forwarded to the Student Union. In addition to analyzing results and improving decisions, opportunities for further enhancing feedback and raising awareness of its relevance to students are also discussed. It is important that students, in addition to giving an opinion, also pass on their thoughts and suggestions. Because this is exactly what the lecturer feels most lacking in students' feedback.

First year PhD students and their supervisor must draw up an individual study plan covering the entire period of PhD studies. It has to be done within the two months following their enrolment. It will be reviewed and approved by the council of the student's home institute. Once the plan is approved, the PhD student should upload the plan as a PDF file to the e-ÕIS. All PhD students are assessed on their studies and research once every academic year by the specific committee of each curriculum.

Student satisfaction with subjects and teaching is assessed through the feedback from the ÕIS. Students evaluate the subjects in a 5-point system (5 (A excellent), 4 (B very good), 3 (C good), 2 (D satisfactory), 1 (E poor), 0 (F fail)) taking into account the substance and suitability of study materials, clearness and explanations about study organisation (learning outcomes, terms of completion, evaluation criteria, etc.), sufficient feedback to students about results of work given by lecturer, lecturer's attitude upon teaching, the mastery of teaching (sparked interest, clear presentation, engaging, etc.). Satisfaction with content of the subjects and teaching, included general subjects of doctoral studies, has risen year-by-year (Fig. 3.8.3). The average evaluation of doctoral study subjects in the five-year period is even 4.35.

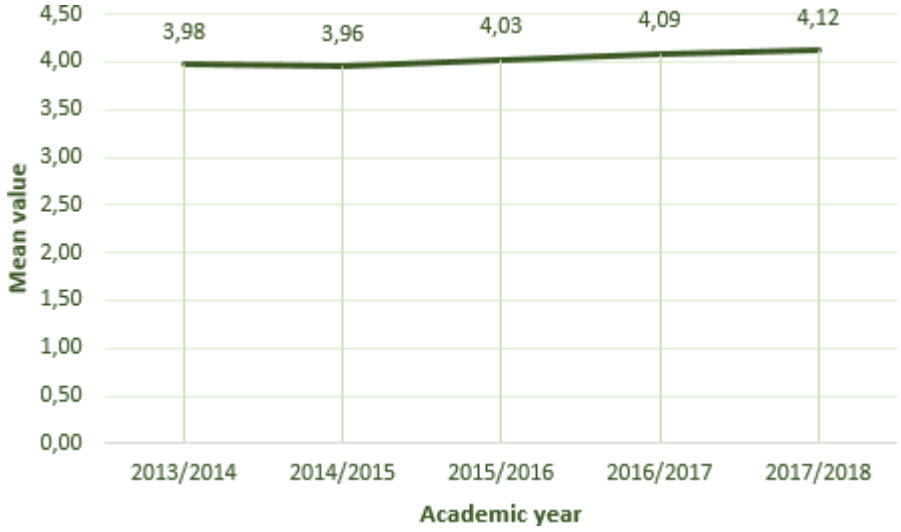

FIG. 3.8.3 STUDENTS SATISFACTION WITH SUBJECTS

The following methods are used to get feedback from alumni and employers: specialized round tables; involvement of alumni and employers in the work of defence commissions, final examination commissions, institutes' councils, curriculum commissions; meetings of the representatives of EMÜ and institutes' management with the managers and specialists of different companies, entrepreneurs; meetings with the members of Alumni Assembly, the Board of Alumni Assembly and Advisory Board members; conducting various questionnaires at the level of institutes and chairs.

The information received is used for updating curricula, improving internships organization, opening new curricula.

For many years, EMÜ alumni and employers have been involved in the process of developing and updating new curricula, which has ensured better satisfaction of students and alumni. EMÜ values the proposals and opinions given by alumni and employers regarding the quality of studies. Alumni and employers supervise and review the final thesis and research works of students, conduct practical training and internships – contributing to improving the quality of graduates.

The largest questionnaires in the last three years have been as follows:

- In 2017, the Institute of Forestry and Rural Engineering conducted a feedback questionnaire among alumni and employers in forestry. Feedback showed that alumni and employers are more satisfied with forest management than with forest industry. At present, improvement of the curricula is in process. Development of the curricula for Forestry is described in 4.1.

- In 2017, EMÜ participated on a survey of Estonian HEIs 2015-year graduates (including foreign graduates) conducted by the Ministry of Education and Research. The ministry carries out such surveys every three years to provide an overview of the background of graduates, post-graduation activities, coping in the labour market and satisfaction with studies, as well as feedback to HEIs on the quality of teaching.
  67.8% graduates of EMÜ often use knowledge and skills obtained during studies. In 2009 this figure was 57%. Graduates highly value the theoretical knowledge, practical and analytical skills acquired at EMÜ. As an improvement proposal for curricula, development of self-

expression, leadership and negotiation skills was brought out.
76.36% of graduates were satisfied with the level of teaching and teaching staff. Graduates of the field of agriculture and social sciences, business and law were most satisfied with teaching; the percent was over 80%.
93.75% of graduates of the field of social science, business and law feel competitive enough on the labour market; for all EMÜ graduates this result is 78%.

- In 2016, EMÜ with the Ministry of Education and Research conducted a study on *Entrepreneurship and Alumni Business Activities*. One of the goals was to gather information about the entrepreneurship of all EMÜ graduates and to receive input for development of the module in rural entrepreneurship.
  The feedback showed quite high satisfaction with professional knowledge obtained in EMÜ, with an average of 3.93 (on a scale 1 to 5): average 3.94 for curricula by Institute of Economics and Social Sciences; 3.85 for Institute of Forestry and Rural Engineering; 3.91 for Institute of Agricultural and Environmental Sciences; 4.01 for Institute of Technology; 3.99 for Institute of Veterinary Medicine and Animal Sciences.
  An average of 30% of respondents worked as entrepreneurs, of which 25.5% were self-employed (FIE in Estonian) or company executives. Despite the fact that, according to the survey, on average half of the respondents passed business-related subjects during their studies, respondents found that the share of business-related subjects should be higher in curricula. Knowledge of how to start and run a business is deemed particularly important. The results of the study have been an input to the development of the entrepreneurship module, which is also discussed in the previous chapter.

Areas of good practice

- EMÜ encourages graduates of vocational secondary education to continue their studies with us to acquire a Bachelor's Degree or a diploma of professional higher education.
- Smaller number of students in practical classes and seminars will ensure better contact and better learning outcomes.
- The environment of clinical study and the quality of education in veterinary medicine are one of the most advanced in Europe.
- Regular analysis of teaching feedback.

Areas that need improvement

- Improving teaching competence, updating teaching methods and tools.
- Getting more constructive feedback from students.
- Improve lecturers' knowledge of importance of students' feedback.

3.9 Assessment of students

Assessment is a part of the learning process, which assesses the level of knowledge and skills acquired by the student in accordance with the learning outcomes described in ÕIS.
The syllabus of the subject describes the requirements for the examinations (prerequisite subjects, participation in seminars, written work, etc.), the principles of formation of grades and the opportunities for eliminating underperformance. The syllabus is prepared and updated by the responsible lecturer by coordinating the criteria for the assessment of the syllabus and learning outcomes with other faculty

members. The syllabus is open to the public and available at EMÜ study information system starting on March 1, before the start of the new academic year. The lecturers present the syllabus to the students in the introductory lecture.

The learning process uses versatile and relevant learning and assessment methods that support, *inter alia*, the acquisition of general competences. Individual and group work, projects and studies are carried out. Quizzes, tests, essays, presentations, independent work, etc. are used as assessment methods. Assessment methods are chosen by the lecturer, based on the subject to best support the achievement of learning outcomes, including general competencies. The assessment procedure (incl. the examination and defence procedure, the time and form of the grade report) is transparent and ensures that students are treated fairly.

Involvement of several lecturers in teaching a subject facilitates the objectivity and reliability of assessment. Courses taught by 2 or more lecturers represent nearly 50% of EMÜ subjects. The assessment of the graduation theses involves an opponent and a defence committee consisting of three or more members, including persons from EMÜ and outside (from other institutions, universities and enterprises).

It is very important for students to get feedback on their work. Feedback given by lecturers has to be clear and relevant. It has to support students development. The lecturers also try to follow it. However, in some instances, e. g. large study groups, the feedback given to students is not detailed enough. In such cases the student always has the right to contact the lecturer for further feedback. In case of disagreement with the grade, the student has the right to challenge the decision/grade in accordance with the EMÜ procedure.

EMÜ supports the development of faculty members' assessment competencies by enabling them to participate in training with the support of various projects. A large extent of faculty members' training took place during the PRIMUS project. At the end of 2016, the ASTRA project was launched, with one of the sub-activities of increasing the professional competence of academic staff, including teaching and assessment training. As a part of the ASTRA project, training courses for developing teaching skills were held for lecturers in 2016 and 2017, focusing mainly on learning from the experience of fellow university teachers. Approximately 50 lecturers attended the training. The impact of training courses on teaching is assessed through student feedback.

The PhD student is transferred to the next year, if he/she has complied with the requirements set out for the study load according to the plan – all PhD students have to pass the evaluation once a year. Evaluation as provision of assessment by an evaluation committee on the progress of a doctoral student's studies and R&D activities according to their individual plan motivates the PhD student to complete the studies in time. The evaluation is held during an open meeting, attended by PhD students and their supervisors. The process of evaluation is regulated by Regulation of Studies confirmed by EMÜ Council.

EMÜ takes into account students' previous studies and work experience. The terms and procedure for RPL, recognition of prior learning and work experience and transferring of study results, is regulated by the Regulation of the University Council, the study results are assessed by the RPL Commission (Fig. 3.9.1.).

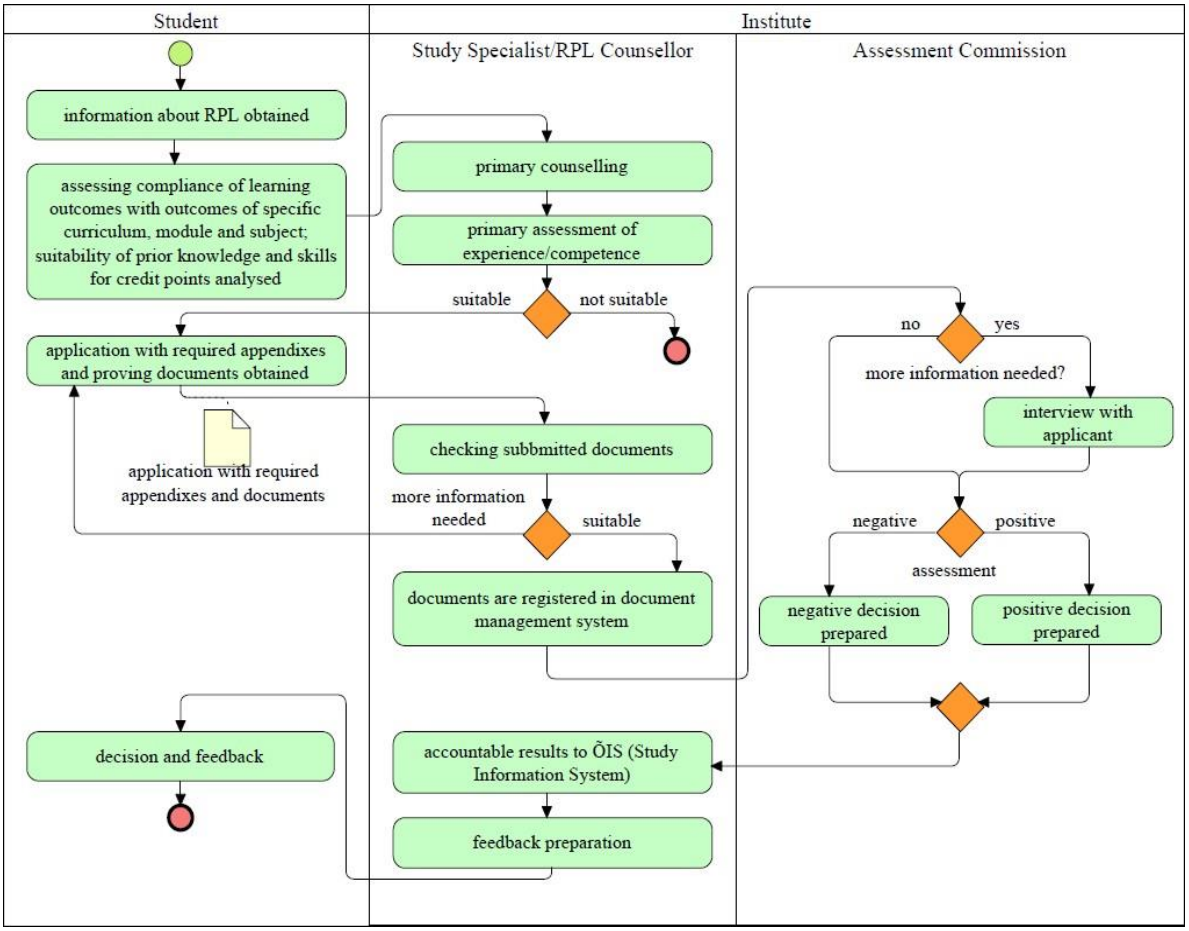

FIG. 3.9.1. RPL PROCESS

The commission may, if necessary, involve experts from or outside EMÜ in the Commission's work. EMÜ provides the applicant with the necessary information and access to advisory services. The RPL process is free of charge for the students. For the number of credit points applied for and awarded with RPL for 2013–2018 refer to Fig. 3.9.1.

TABLE 3.9.1 CREDIT POINTS APPLIED AND AWARDED BY ACCREDITATION OF PRIOR LEARNING AND WORK EXPERIENCE

Accreditation year	Applied ECTS	Awarded ECTS
2013	3988.7	3641.7
2014	4444.5	4247.6
2015	4252.7	174.1
2016	4834.5	4515.8
2017	3813.6	3716.6
2018*	2878.5	2807.5

*as of 01.11.2018

Student rights and obligations are based on national legislation and EMÜ regulations, which is available to students on EMÜ website. Students are informed about relevant legal acts when they are applying for admission. The most applicable rights and obligations are discussed in the introductory lectures and throughout the entire study period.

Areas of good practice

- EMÜ takes into account the students' prior learning and work experience.
- evaluation of doctoral students is transparent and impartial, supports the development of doctoral students to complete the studies in time

Areas that need improvement

- assessment criteria have to be more precise.
- feedback to students' work in large study groups
- co-operation with Student Union on explaining the study regulations to students.

3.10 Study support systems

EMÜ provides students with academic, career and psychological counselling. At the institutes, academic counselling is provided by the academic affairs specialist, director of academic affairs and head of the curriculum. In addition, students are advised by all the staff of the DAA. Career counselling to students is provided by an EMÜ career specialist, psychological counselling is provided by a psychologist.

The information on counselling services is available to students on EMÜ website and in ÕIS, as well as via various information channels (briefings, Student Union, DAA, student-oriented events). Students interested in studying abroad are advised by ERASMUS coordinators at the DAA as well as at the institutes. All counselling services for students are free of charge.

The purpose of counselling is to support students in their studies and to reduce dropout rates.
A support system has been developed for Estonian students – a senior student who has completed a 12-week counselling training, helps first-year students to get accustomed to university life, organizes familiarisation events, answers questions about studying and student life, and directs, if necessary, to the professional specialist.

Students' academic progress is monitored twice a year by the institute's academic affairs specialist, and, in case of problems, the student will be contacted also in the middle of the academic year.
According to the study regulations, study at EMÜ is conducted on the basis of a subject system, veterinary study on the basis of a course system and doctoral study program is based on an individual study plan. In the subject system, students pass the curriculum according to their own study plan, taking into account the requirements for prerequisite subjects.

During the preparation of individual study programs, students get aid from a sample study plan for each curriculum and are assisted by an academic affairs specialist of the institute; an EMÜ psychologist, and, if necessary, a faculty member, on the basis of their specific needs or educational abilities.

Career counselling at EMÜ is provided by a career specialist who primarily supports students in personal development and career planning, mediates career information, performs individual counselling and conducts or organizes thematic seminars and lectures involving guest lecturers.

EMÜ internship supervisor, i.e. the faculty member responsible for the internship subject, provides help during the vocation practice and in finding internship; confirms the internship company chosen by the student and the congruence of an individual internship program with the goals of the subject.

Finding an internship is a student's task and, if needed, EMÜ internship supervisor and career specialist may assist the student. When companies address EMÜ hoping to find specialists among our students, EMÜ mediates job offers to students, but there is no systematic mediation of job vacancies.

In case of psychological problems, the EMÜ psychologist can be consulted. The psychologist will advise students, including students with special needs, in coping with problems during their studies or in their personal lives. It is possible to use the service once and for long term. If necessary, the psychologist will refer the person further to specialists and, with the student's agreement, communicates the problems encountered in study to the corresponding staff member of the institute.

The career specialist and psychologist, in co-operation with the Student Union, organize topic seminars and various trainings with the aim of preventing problems and supporting students. Topic seminars are primarily related to time planning, increasing motivation and concentration, and development of learning skills. Student participation is very active (70-100 students at each seminar). Topic seminars help to raise awareness of the presence of the service.

EMÜ has a functioning system, five staff members of the DAA, for supporting and advising foreign students. In addition, each institute has an ERASMUS coordinator, who advises foreign students on study-related issues.

For integration into EMÜ membership and Estonian society, foreign (and visiting) students are assisted by buddies, i.e. (foreign) students, who communicate in English. In cooperation with the specialists of international relations in the DAA, they participate in organising the adoption week and various social and recreational events for foreign students, introducing Estonian culture, customs and places. If necessary, buddies will accompany foreign students during their visits to Estonian public authorities and introduce the city of Tartu. The Language Centre offers courses in Estonian language and culture.

EMÜ collects data and analyses the causes of study dropouts. All drop-out students are asked about the reasons for leaving, which are analysed by the institute and the DAA. In many cases, students do not want to reveal their reasons for leaving, but the main issue mentioned for early drop-out is the overly general learning at the beginning of studies, which the student does not associate with their future specialty. To solve this problem, introductory courses to the subject have been added to professional higher education curricula, Bachelor's curricula and integrated Bachelor's and Master's curricula, so that students can get a general idea of the subject field. As we know, the reasons for later discontinuation are economic or personal.

Based on the feedback from students and external evaluators, the disadvantage of our curricula is an insufficient interconnectivity and general fragmentation of subjects. To reduce this, EMÜ developed a new curricula structure as described in the Curriculum Statute approved on October 26, 2018 by the EMÜ Council, in which the subjects form sets (submodules), based on the learning outcomes of the corresponding module. The structure of the modules indicates, what goals the subject fulfils in the curriculum and the students see more clearly the interrelations between general subjects and specialty subjects. The structure of the curriculum described will be implemented from the new academic year.

In order to increase the efficiency of studies and graduations, EMÜ applies the so-called fines system: a full-time student in Estonian-taught curricula must pay a fine for each subsequent semester if they lose more than 8 ECTS from the cumulative amount of the previous semester.

EMÜ supports students' extra-curricular activities and participation in civil society initiatives. Institutes support students in organizing events and participating in various activities, where appropriate, financially and/or with other resources (rooms, equipment, etc.). For example, the Association of Tech Students' has received support for participation in the competition of pneumomobile vehicles in Hungary, the tutors have received support for conducting familiarisation events, most of the students (vocational) associations operate at EMÜ premises.

EMÜ has allocated a fixed amount in its budget (60,071 euros in 2018) to the Student Union, and has also supported organizing larger events.

EMÜ recognizes athletes with sports grants, annually a scholarship of 1,000 euros per student per year is awarded to two students. EMÜ covers the cost of dormitory expenses for two students with good athletic performance. Sports are also taken into account at the admission. In addition, EMÜ supports the EMÜ Sports Club by means of membership fee (€ 234,000) and offers *Physical education* as an optional subject.

EMÜ pays Tartu Student Club a membership fee of 65,000 euros a year to support dance, choral music and other activities.

EMÜ regularly collects feedback on students' satisfaction. Satisfaction with academic counselling is a part of the feedback questionnaire on the curriculum, completed by graduates immediately before graduation. Satisfaction with psychological and career counselling is asked about immediately after counselling.

The psychologist and the career specialist submit a report to the head of the DAA at the end of the spring semester. The report contains the following information: number of counselling sessions, content of counselling (main concerns) and feedback (suggestions, concerns). The report forms the basis for planning future activities (topic seminars) and improving the quality of the counselling service.

At least once a year, joint seminars on students' educational counselling and study process planning are carried out with the participation of institutes' academic affairs specialists, directors of study and the staff of the DAA.
The average duration of the study by levels is shown on Fig. 3.10.1 – calculated for 2013–2017, for all graduates. The average duration of study has been at the same level for all the 5 years. The longest study period is in doctoral study, and the shortest in master's level. In case of Rural Building, it should be noted that 2012 was the last admission in block mode study with the duration of 6 years, which affects the average.

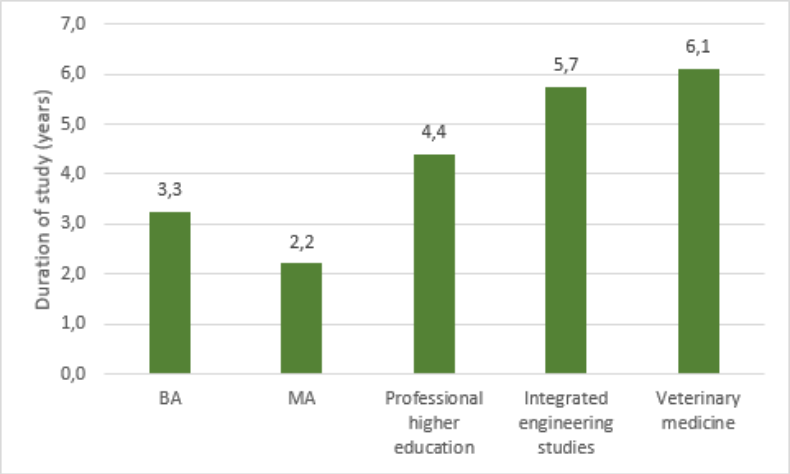

FIG. 3.10.1 THE AVERAGE DURATION OF STUDY BY LEVELS OF STUDY 2013–2017

Although EMÜ has undertaken a variety of activities to reduce student dropouts, it is still a serious problem, particularly in engineering specialities. High dropout rate in engineering is also a problem for other Estonian universities (see Fig. 3.10.2).

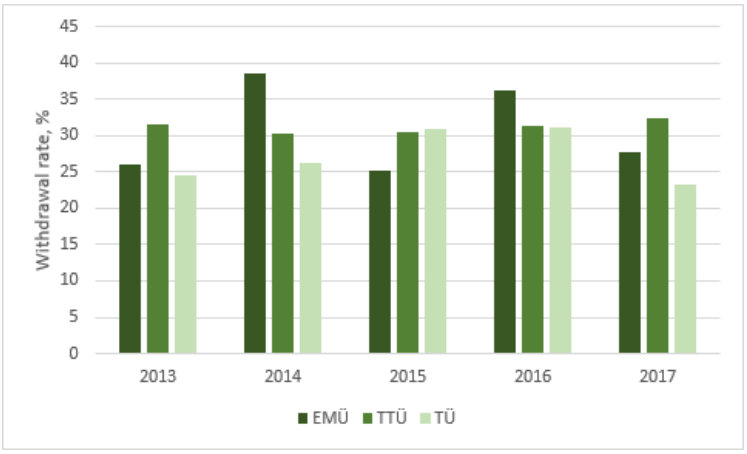

FIG. 3.10.2 WITHDRAWAL IN FIELD OF ENGINEERING

When dropout in engineering specialities is excluded, the rate of dropout in EMÜ is similar to that of other universities. Fig. 3.10.3 shows the proportion of student dropout in the largest universities of Estonia in the first year of study and also in relation to the entire study period.

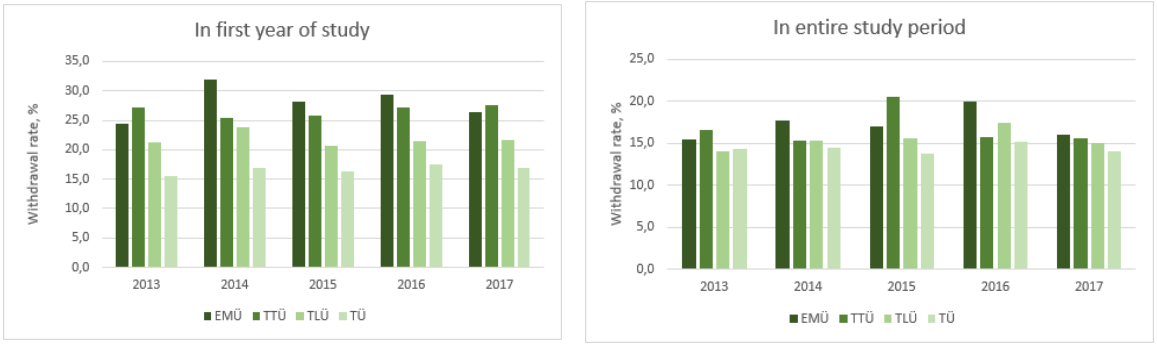

FIG. 3.10.3 WITHDRAWAL RATE IN FIRST YEAR OF STUDY AND ENTIRE STUDY PERIOD

Areas of good practice

- Effective student counselling system for local and foreign students.
- Effective institute-based internship organization.
- Students with special needs are guaranteed access to all study facilities.

Areas that need improvement

- Reducing withdrawal and dropout rates.

3.11 Research, development and other creative activities (RDC)

The RDC development plans and action plans are worked out with the staff, students and interest groups involved. The aim is that as big proportion of EMÜ students and staff as possible would be aware of the key processes and able to see the university as a whole, assess the development and be aware of the needs for future.

The strategic aims of RDC have been formulated in the Development Plan 2015–2025: 1. Target: Internationally recognized research.
Objective: EMÜ is listed in at least one internationally recognized university ranking list.
The RDC activities needed to achieve the objectives and implement the tasks of EMÜ development plan have been provided in the R&D Strategy until 2025. KNOWLEDGE-BASED BIOECONOMY, where multidisciplinarity and integration of different fields have been emphasised. The strategy lays down priorities and main fields in R&D that consider thematic differences and the mission of EMÜ – to create and share knowledge to the promotors of bioeconomy for the best of Nature and Man. The strategy also asserts general objectives and aims within specific fields of R&D, and lays down the indicators to monitor the fulfilment of strategic aims and the developmental tasks. The activities related to the implementation of the strategy are coordinated by the Vice-Rector for Research. The Strategy of Eesti Maaülikool, GREEN UNIVERSITY, an initiative involving all students and staff in EMÜ, supports the thrive to be the leader in promoting sustainable development and environmentally friendly solutions in EMÜ everyday life. EMÜ Nature collections support teaching and R&D. The collections are accessible to the researchers home and abroad.

To comply with the EMÜ mission and the objectives of RDC, to define clearly the responsibility of academic staff and the distribution of tasks, EMÜ Council has adopted the Responsibility Areas of Academic Activities and their Content by the decision of the University Council as of December 22, 2016.

The responsibility area of academic activity combines R&D and studies in the corresponding area. EMÜ takes the responsibility for its status, competitiveness and development in Estonia, or bears the co-responsibility with other universities (Fig. 3.11.1). The status, competitiveness and developement of each responsibility area of academic activity are the responsibility of the respective Institute.

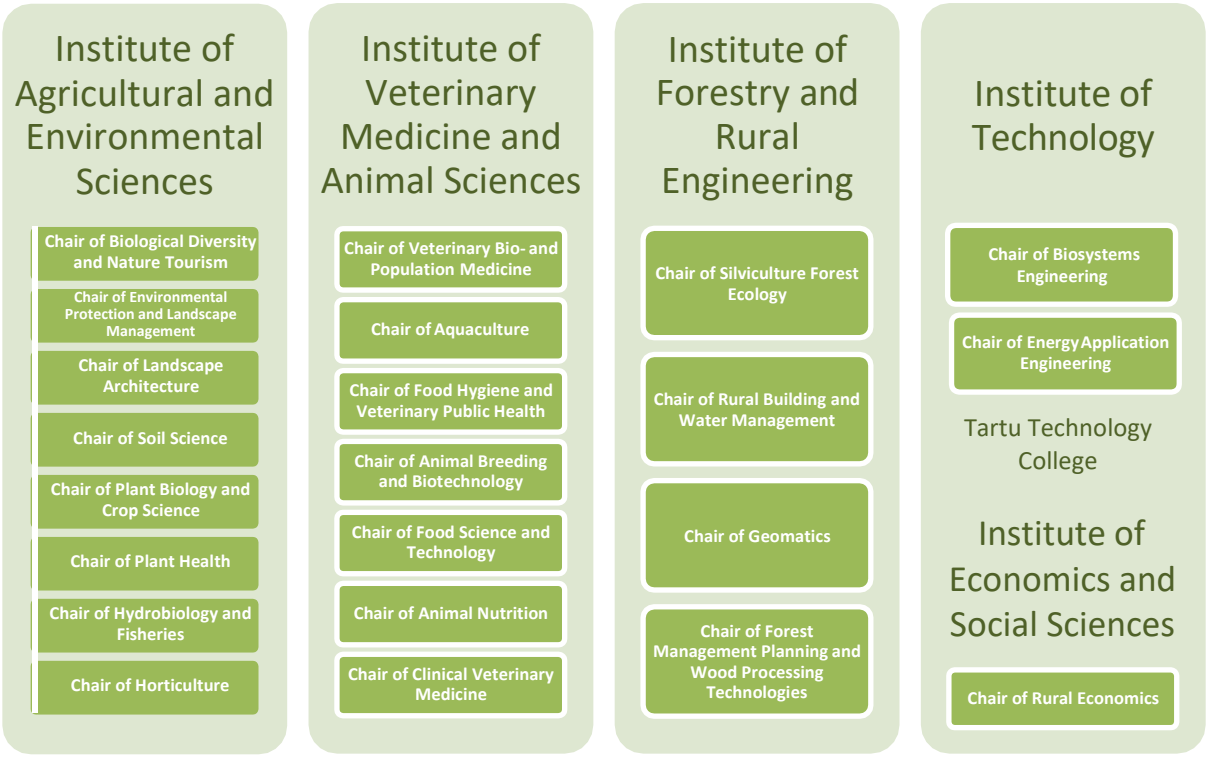

FIG. 3.11.1 RESPONSIBILITY AREAS (22) OF ACADEMIC ACTIVITY AND CORRESPONDING CHAIRS BY EMÜ INSTITUTES

One of the aims of the new Development Plan 2015–2025 was to remove defragmentation, establish an optimum academic structure, and align it with the responsibility areas of academic activity. Hence, to join the working teams, a novel leadership structure of Chairs led by professors in ordinary were established starting from Sept. 2017. Academic sustainability shall be guaranteed through improving the coherence and effectiveness of higher education, PhD studies and research work. In order to carry out activities of the responsibility areas and ensure their sustainability, the task of the chairs is to introduce students to the research by involving them in the R&D projects wherever possible. PhD students are usually employed as junior researchers and are involved in their supervisors' projects. In 2016 there were 46 and in 2018 already 73 junior researchers in EMÜ.

In order to create better conditions for multidisciplinary approach and integration between areas, the activities in EMÜ are grouped via six focal areas: agriculture, environment, forestry, technics and technology, rural economy, health and food (Fig. 3.11.2.).

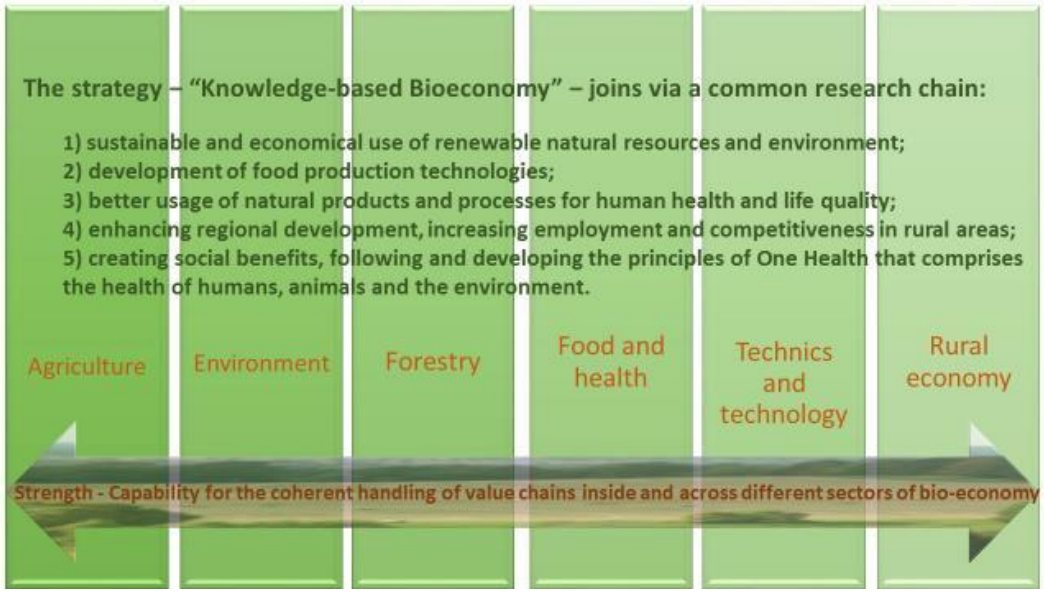

FIG. 3.11.2 FOCUS AREAS AND THEIR INTEGRATION INTO BIOECONOMY

Traditionally, one or two seminars per year are held to encourage collaboration between the focal areas. We involve as many members of EMÜ staff and students as possible, their opinions and suggestions are provided via group work, with the interest groups always involved. The solutions proposed and agreed upon in the focal area seminars are used for planning RDC activities and recorded in the annual action plans, or provide the basis for changing EMÜ regulations. Often, these seminars cover other relevant issues, especially those related to areas that need improvement, e.g research financing, career model, overhead policies, planning procurement of scientific instruments and coordination of their use.

The efficiency of RDC in EMÜ is compared with the other public universities in Estonia. Baseline financing data from the Ministry of Education and Research are used for comparison, where the indicators involve: a) 1.1 publications, monographs and their chapters, patents and plant varieties;
b) PhD defences; c) contracts with enterprises (Fig. 3.11.3, 3.11.4).

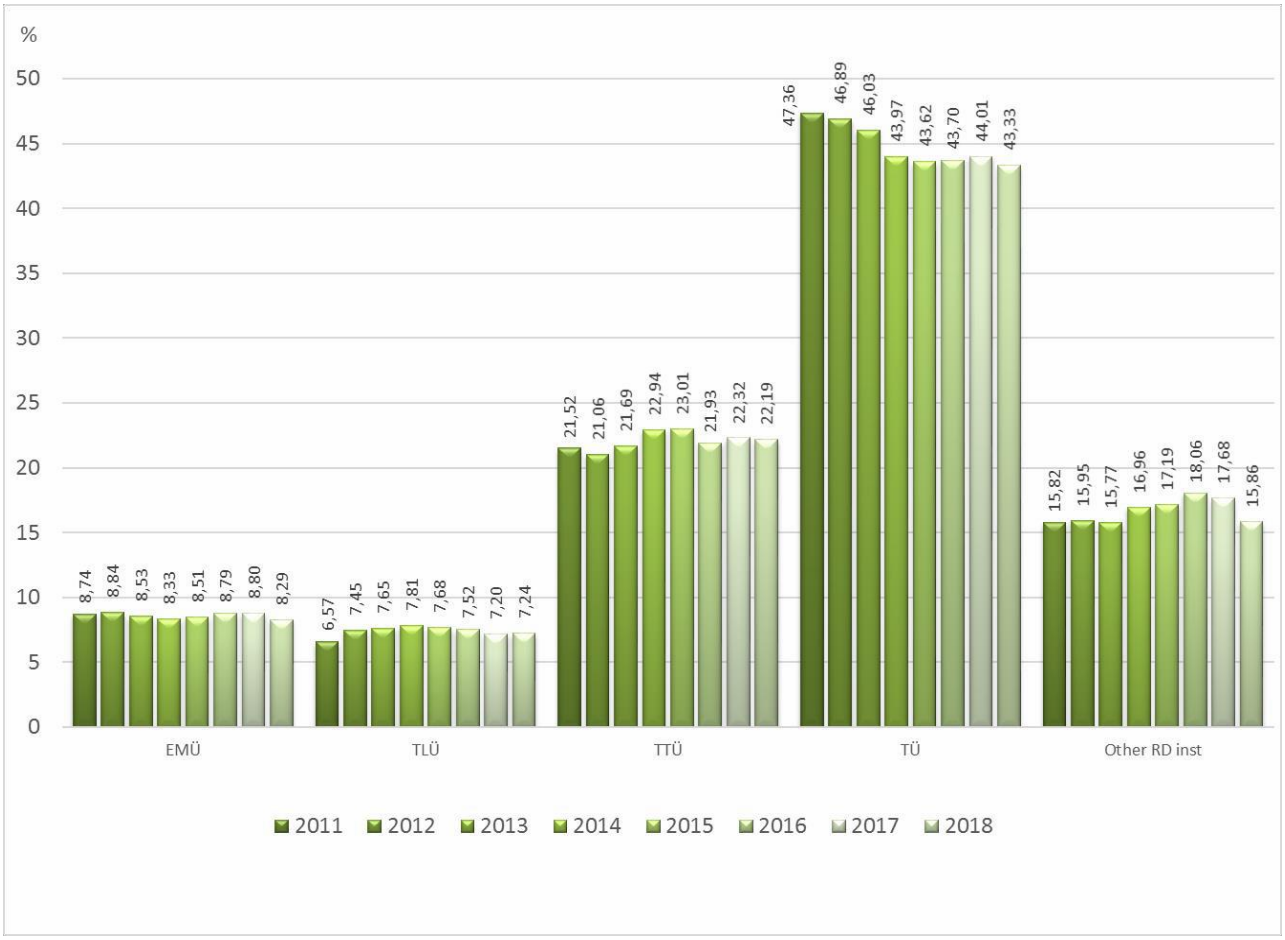

FIG. 3.11.3 BASELINE FINANCING DYNAMICS PROPORTION IN ESTIONIAN UNIVERSITIES, 2011–2018

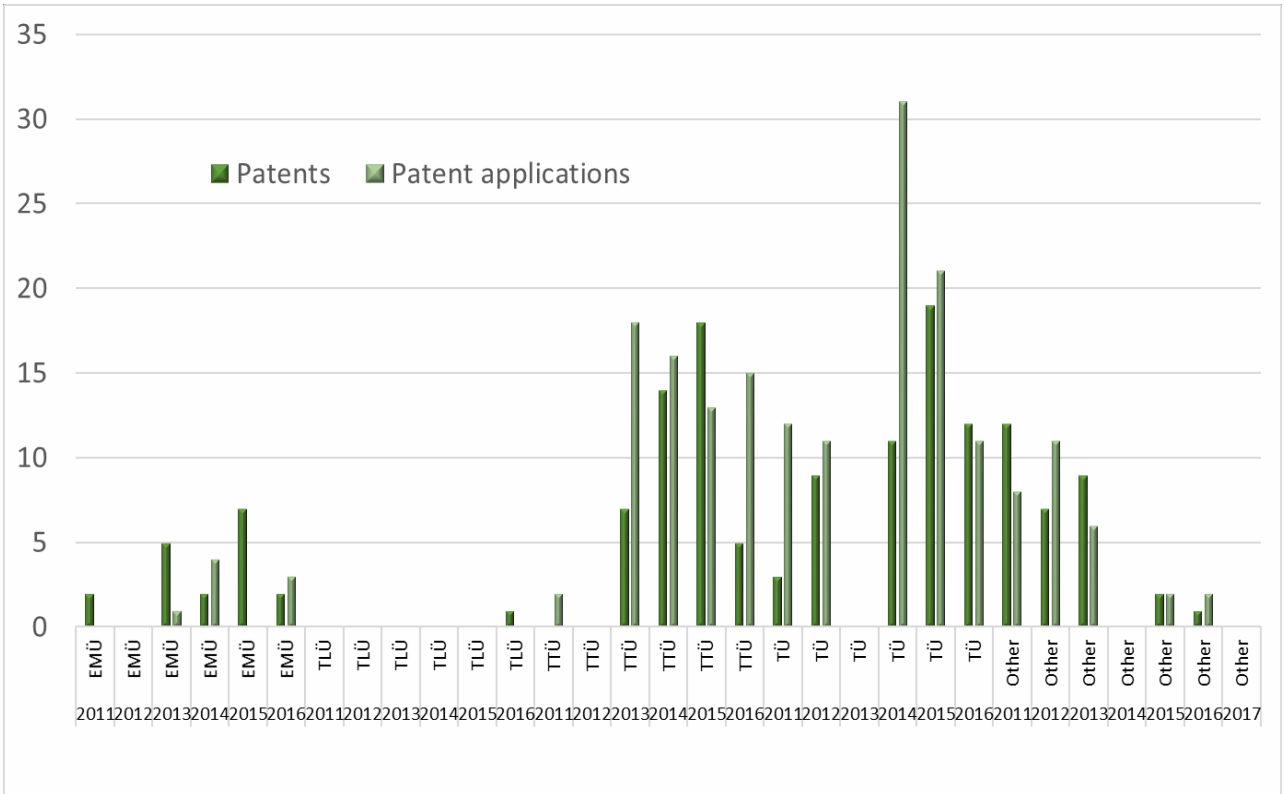

FIG. 3.11.4 ESTONIAN UNIVERSITIES COMPARED BY THE BASELINE FINANCING DATA, 2011–2017, PATENTS AND PATENT APPLICATIONS

EMÜ has a stable position among the main universities in Estonia.

The university follows the dynamics of its R&D funding and number of publications (Fig. 3.11.5 – 3.11.6.).

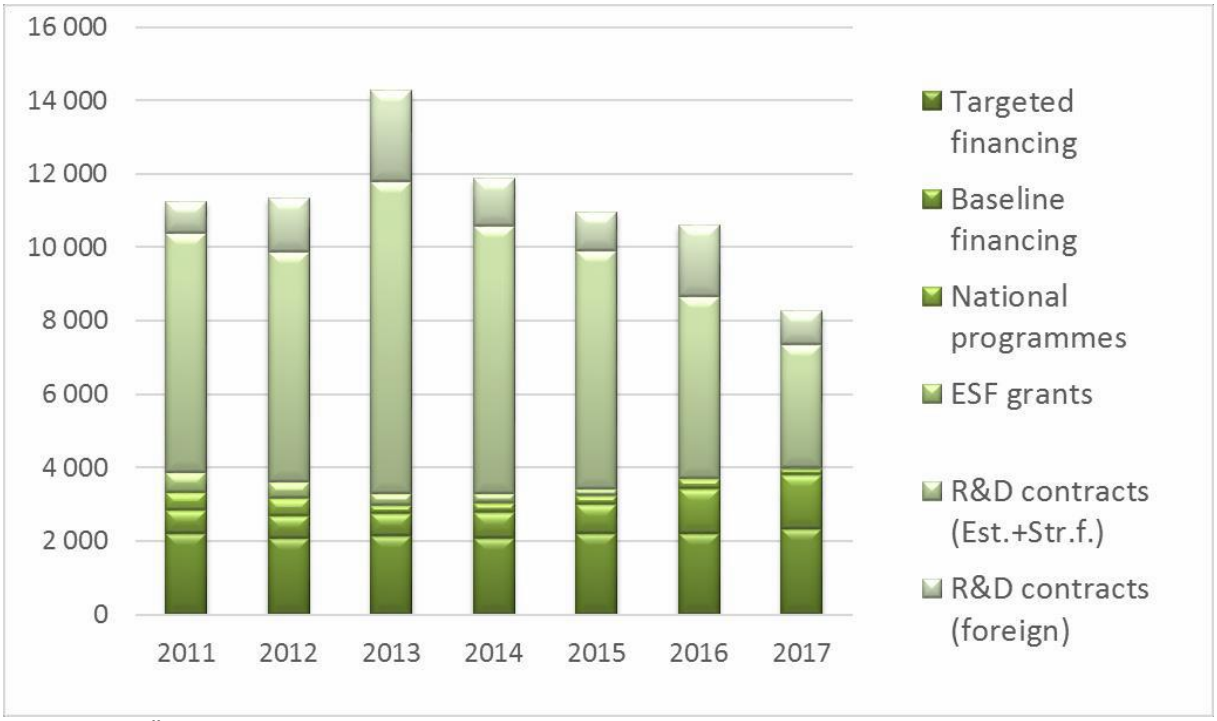

FIG. 3.11.5 EMÜ RDC INCOME (THOUSANDS OF EUR)

The periodical nature of finances from structural funds is the cause for the decline in overall RDC financing of the university during last years.

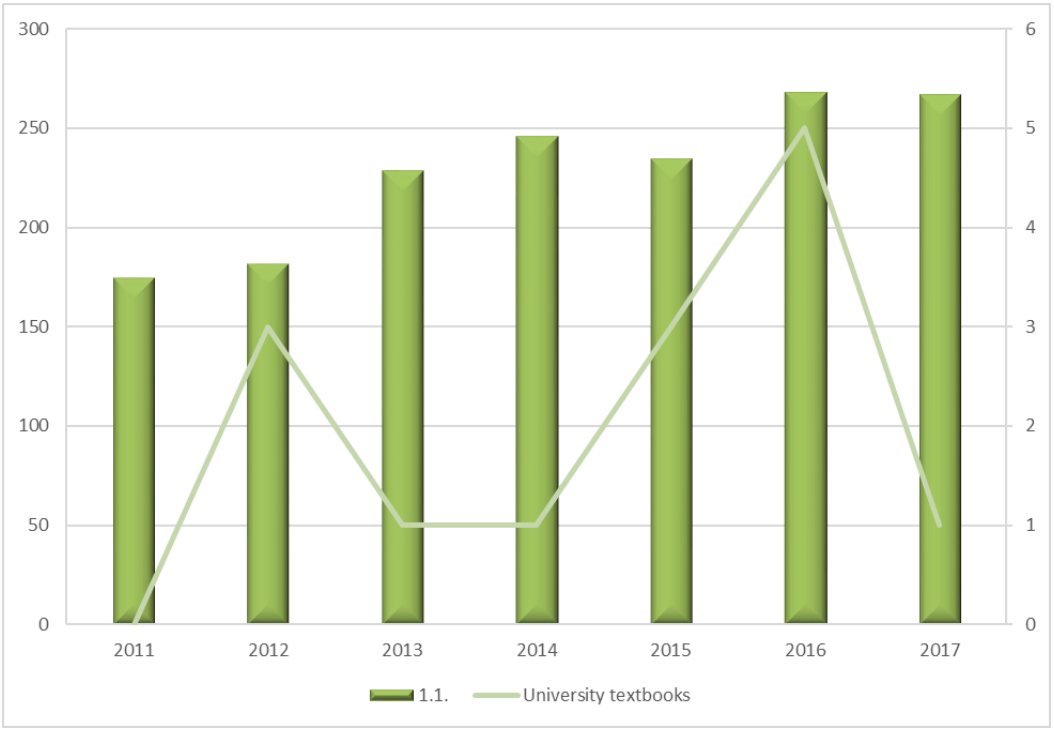

FIG. 3.11.6 DYNAMICS OF 1.1 PUBLICATIONS AND UNIVERSITY TEXTBOOKS OF EMÜ PERSONNEL

In 2017, the regular evaluation of R&D was carried out in Estonia. All three research fields of EMÜ presented for evaluation, i.e. Natural sciences, Engineering and technology and Agricultural and veterinary sciences, got the positive decision (Directive No. 1.1-2/17/213 by the Minister of Education and Research, Aug 22, 2017, *in Estonian*).

Implementation of EMÜ Development Plan and the annual activity plans (*in Estonian*), the relevance and efficiency of RDC activities are assessed and monitored using the indicators specified in the R&D Strategy until 2025. KNOWLEDGE-BASED BIOECONOMY.

These are (clause 4.5 of the strategy):
1) number of publications per individual academic employee (full-time equivalent, FTE) per year (WoS and Scopus, separately);
2) number of research and development contracts and projects, incl. EU projects;
3) total income, the share of research and development income;
4) total income, the share of research and development income per individual academic employee (FTE);
5) number of PhD theses defended;
6) number of PhD students per individual academic employee (FTE);
7) number of international conferences per institute for the previous five years

Fig. 3.11.7. – 3.11.9. illustrate the dynamics of some of these indicators by institutes in 2011–2017.

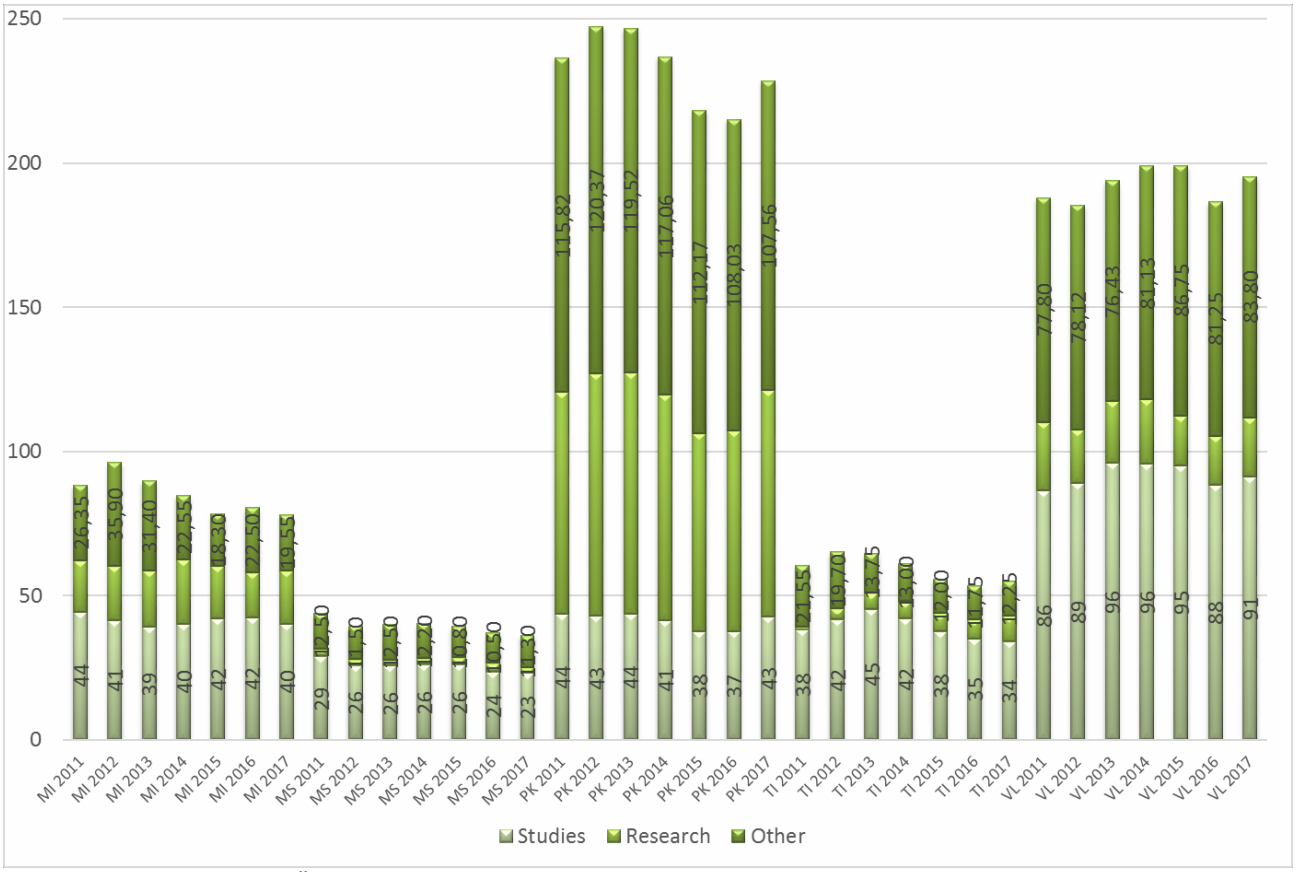

FIG. 3.11.7 DYNAMICS OF EMÜ PERSONNEL BY INSTITUTES

While analysing the differences of the institutes their specific features have to be kept in mind.

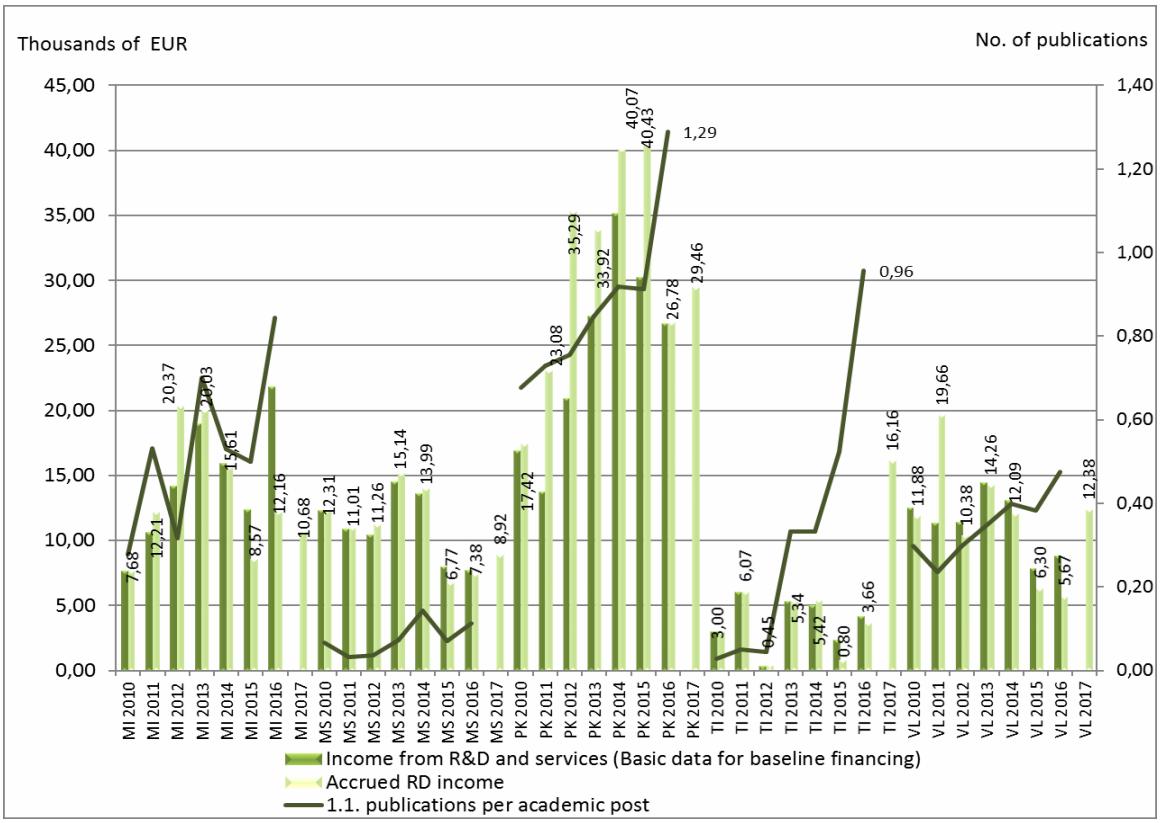

FIG. 3.11.8 NUMBER OF PUBLICATIONS AND INCOME PER ACADEMIC POST (IN FULL-TIME EQUIVALENTS) BASED ON DATA PRESENTED FOR BASELINE FINANCING

The number of high-level publications shows increase for the university as a whole (Fig. 3.11.6) as well as per academic post (FTE) in the institutes (Fig. 3.11.8.).

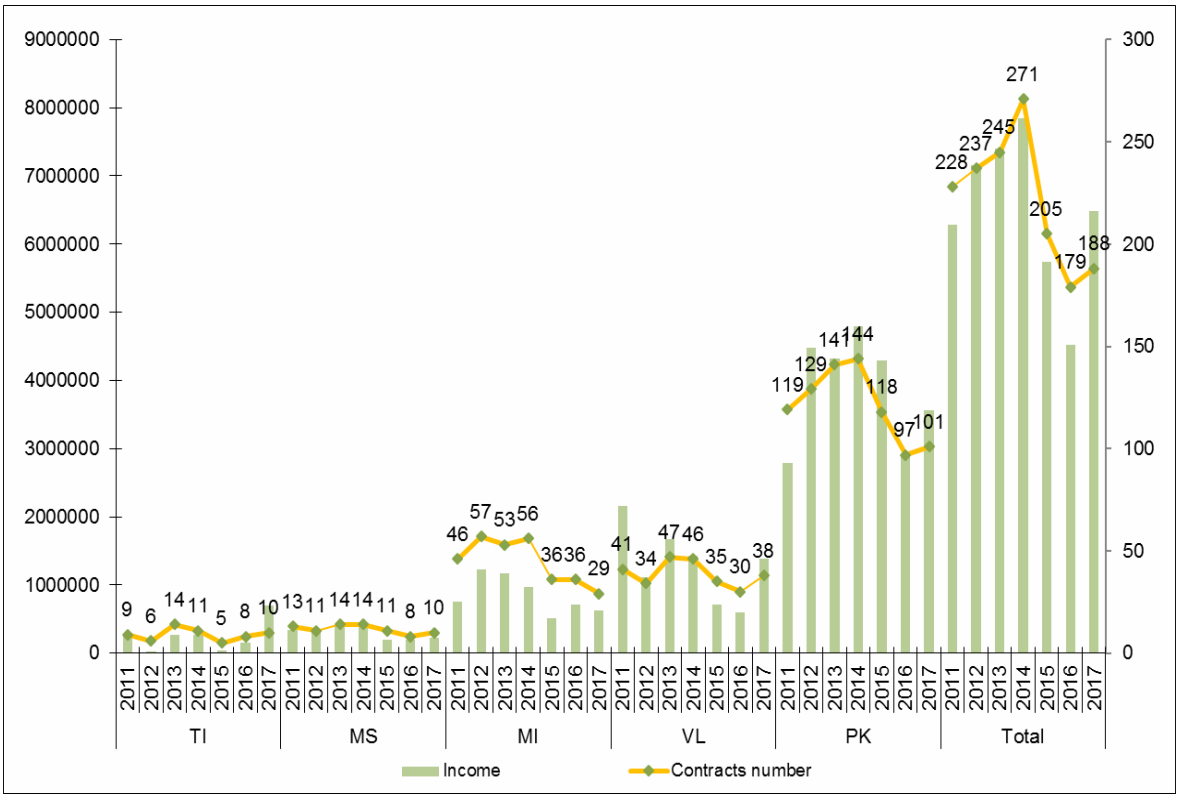

FIG. 3.11.9 R&D INCOME FROM R&D CONTRACTS AND THEIR NUMBER BY INSTITUTES IN 2011–2017

Starting from the implementation of the institution of Chairs, the performance indicators will be used to follow their level and development. To perform the first monitoring exercise, the data of the chairs' personnel were extrapolated to the years 2016 and 2017 (Fig.3.11.8.).

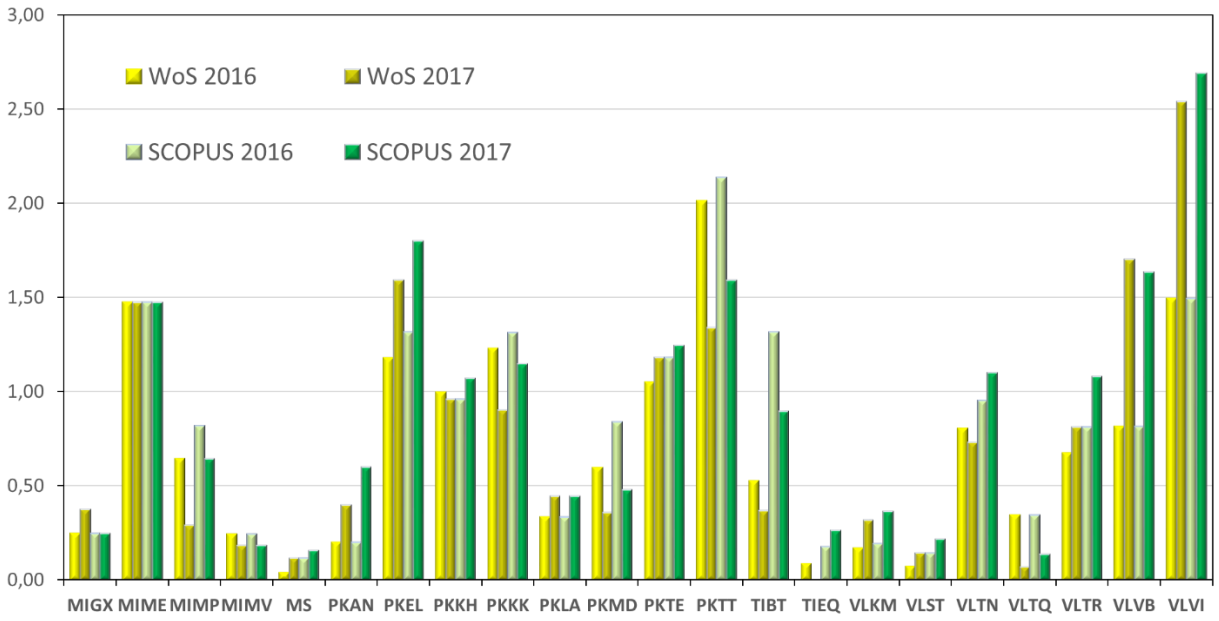

FIG. 3.11.10. NUMBER OF 1.1. PUBLICATIONS (SEPARATELY SCOPUS AND WOS) PER ACADEMIC POST (FTE) OF DIFFERENT CHAIRS' PERSONNELL IN 2016 AND 2017.

Since 2016 EMÜ has hosted the Centre of Excellence EcolChange**.** University of Tartu is the partner of the centre. For research in the Centre of Excellence during 7 years (from March 1, 2016 to March 1, 2023) 4 436 585.27 € is allocated, of which 4 214756 € (95%) is support of the European Regional Development Fund. In addition, EMÜ is a partner in two Centres of Excellence, namely "Zero energy and resource efficient buildings and districts" and "Emerging orders in quantum and nanomaterials". ERC Advanced Grant "Stress-Induced Plant Volatiles in Biosphere-Atmosphere System" led by Prof. Ülo Niinemets and Mobilitas top researcher grant (MOBTT24) also demonstrate the high level of the R&D at the university.

EMÜ has increased the research activities with international focus and collaboration. The university participates intensively in international collaborative projects and networks (COST Actions, CORE Organic ERA-Net, Functional biodiversity in Agriculture, A Long-Term Biodiversity, Ecosystem and Awareness Research Network; BEENOVA; Integrated control in oilseed crops; Education and Research in Biosystems Engineering in Europe; Wind Energy Claster; Nordic Association of Agricultural Scientists; Baltic Sea Universities network; Ecosystem Health & Sustainable Agriculture; Nordic Network of Agriculture and Food Ethics; Nordic Network in Social Evolution, NOVA and BOVA). Mobilitas top researcher grant (MOBTT24) and ERA Chair VALORTECH testify and at the same time enhance the international cooperation and visibility of the university.

EMÜ has an operating RDC support system, incl. counselling on intellectual property (*in Estonian*). The task of the R&D Department is to coordinate research and development, also innovation policies and procedures in compliance with the main field of activity of EMÜ, involving the staff and students; develop the support services and coordinate activities concerning institutional development.
EMÜ staff participates in the activities of professional and vocational associations and collective advisory and decision-making bodies.

To motivate the academic staff, interdisciplinary units in specific areas have been founded as support units of knowledge and technology transfer with the objective of increasing efficiency of innovation management and ensure the sustainability of professional support services.
The Centre of Bioeconomy. The centre supports the EMÜ goal to be an internationally recognized university in the field of bioeconomy (see Development Plan). It fosters application of ideas concerning bioeconomy, engaging entrepreneurs, scientists, environmental specialists and students.
Centre of Renewable Energy. The objective of the Centre is to initiate, coordinate and develop interdisciplinary R&D in the field of renewable energy.

To enhance cooperation within and outside EMÜ and promote value-chain based approach in the field of bioeconomy a Development Fund was established for the support of the best initiatives.

In addition to interdisciplinary units, EMÜ has the foundation Research Centre of Organic Farming. Its main focus is research and applied research in organic farming, promoting environmentally friendly ways of life and organic food, educating target groups and finding solutions for developing organic sector in cooperation with entrepreneurs. The centre awards grants to the authors of the best theses on organic farming, and junior researchers.

To enhance cooperation with enterprises, EMÜ takes active part in the platform ADAPTER – a network of Estonian universities, R&D organizations, providing a quick and reliable link between companies and organizations and R&D community.
The RDC infrastructure of EMÜ is being modernised (territorial-spatial development plan, *in Estonian*) and the database of the research equipment (*in Estonian*) has been created to support more effective use of the equipment.

Areas of good practice

- EMÜ has formed chairs to bind together research, studies and activities directed to the society and to align the academic structure with the responsibility areas of academic activity.
- As many members of staff and students as possible have been involved in developing RDC strategies. Various interest groups of EMÜ are involved in preparing voluminous and strategically important projects.
- Launching Development Fund to support cooperation in the field of bioeconomy.
- Interdisciplinary units and centres as well as platform ADAPTER support knowledge and technology transfer.
- Good cooperation in international networks, cooperation with professional associations and organisations.
- Steady increase in numbers of international peer-reviewed publications per academic person per year.

Areas that need improvement

- Minimising the influence of problems caused by dispersed funding.
- Developing the career model.

3.12 Service to society

Lifelong learning and other public educational activities

Implementing lifelong learning is guided by the objectives defined in the statutes of the Open University (AÜ), which is to provide continuing education on a higher education level in cooperation with the academic units (institutes) of EMÜ.
The AÜ aims to improve the learners' knowledge, skills and competencies according to the needs of the society and labour market.

The main tasks of the AÜ are:

- Creating and organizing opportunities for continuing education and lifelong learning and offering them to the public;
- Identifying the training needs of target groups;
- Cooperation with other universities, institutions, professional associations and enterprises.

In cooperation with institutes, continuing education and lifelong learning is offered in all EMÜ fields of competence.

The activities of continued education and lifelong learning are assessed once a year at the annual joint development seminar for all structural units of EMÜ; also the following year´s developmental tasks are defined. Lifelong learning is included in the activity and development plans of the institutes as well.

Documents regulating the field of lifelong learning are confirmed by the University Council. Learning programmes are registered in ÕIS. The programmes are adapted to fit a specific client´s needs and wishes if necessary. Certificates are issued according to the regulation of the University Council.

AÜ is also a partner in two long-term programs for transfer of knowledge, which together with many free training programs for the target group also provides various information materials that are on-line in public for free.

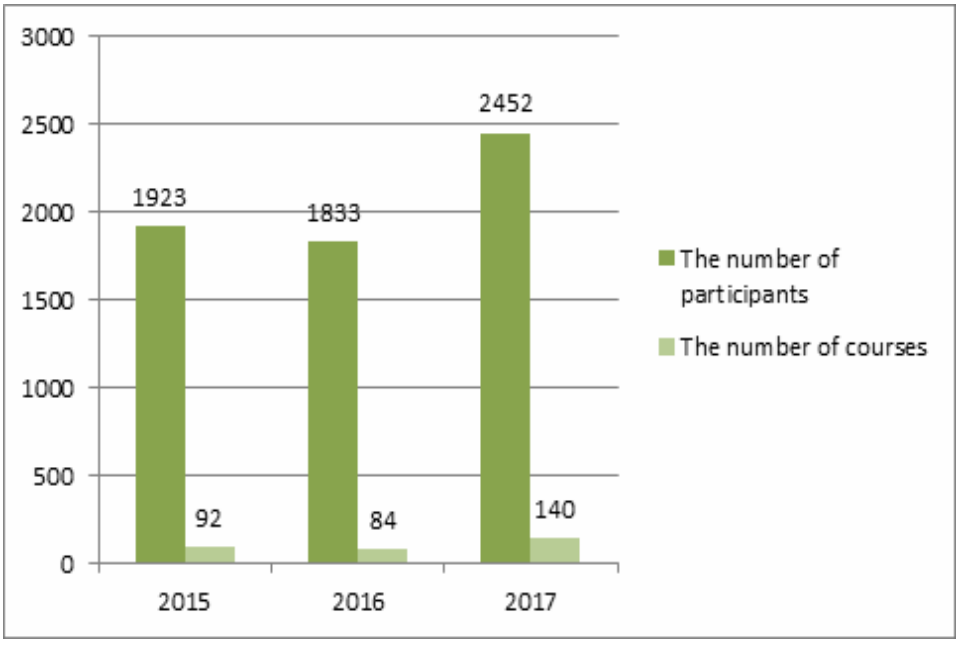

FIG. 3.12.1 THE NUMBER OF PARTICIPANTS AND THE NUMBER OF COURSES

Feedback is gathered via printed questionnaires which are stored at AÜ. Participants are asked to evaluate the lecturer and the overall organization of the course as well as given the opportunity to leave comments or wishes regarding the programme. The results from feedback are analysed and used in drawing up development plans, keeping current programmes up to date and developing new ones.

Since 2012 AÜ offers free learning opportunities such as lectures, workshops, etc. to the public. It is quite popular among families with both EMÜ employees and citizens of Tartu to visit *Pereülikool* (University for Families) courses once a month. The *Pereülikool* was nominated a children's and youth-friendly event in Tartu for 2012. The courses provide practical knowledge, there are programs for adults and children. EMÜ is the only university in Estonia offering this kind of courses to the whole family.

Sports Club

EMÜ Sports Hall is open to students, staff and the public. Hall hockey, basketball, volleyball, wrestling and soccer, also recreational sports like table tennis, gymnastics, etc. are in program.
The sports building is managed by the University Sports Club, *in Estonian*). Fairs, parties and concerts are also organized in the venue.

Cooperation with schools

Since 2006 EMÜ organises the school of natural sciences (*in Estonian*) to teach children how to observe nature. The main participants are students with interest in nature, mostly from Tartu and Tartu County. The work is carried out as field trips once a month, from September to May. Guidance is provided by the researchers of EMÜ, also some guests. Astronomical observations are organised in cooperation with Tartu Observatory.

Under the guidance of lecturers as well as doctoral and master's students of EMÜ, pupils have the opportunity to follow their interest in the field of natural science by doing creative work and research. Every year a range of research topics is offered, among which students can choose the most interesting one.

Opportunities for the public

EMÜ study facilities are open to the public on weekdays, research centers and laboratories on request. Some lecture halls and rooms can also be used by people or institutions outside EMÜ.
EMÜ has two dormitories (*in Estonian*), which, if rooms are available, can be used by students of other universities.
The research centers in Polli, Rõhu and Järvselja can be visited by the public. The Polli Competence Center works closely with fruit growers and producers of fruit and food products. Many fruit and berry field trips are organized in Rõhu research centre. In the area of the Järvselja Forest Research Centre, *(in Estonian*) one can walk and view the highest trees in Estonia. On request, you can take a nature tour with a guide.
EMÜ has one public museum: the Lake Museum at Lake Võrtsjärv. On request or during public events the Soil Museum in Metsamaja and the Animal Anatomical Museum in the Veterinary building can be visited.
For the very popular annual event Researchers' Night (*Teadlaste Öö*) EMÜ will open the doors of its study facilities and laboratories, and host visitors.

Science in Estonian language

For the 100th anniversary of the Republic of Estonia EMÜ decided to make a gift to the state. In the beginning of 2018, a section "EV100" was opened at EMÜ website, where articles from EMÜ scientists published in Estonian this year were collected. It was a contribution by EMÜ to the preservation and development of science in Estonian.

Development of webpage

In order to increase cooperation with companies, the section "Entrepreneurship" was opened on the University's website, where everyone can get acquainted with the services, training and business practices offered by EMÜ.

Green University initiative

From 2008, EMÜ aims at promoting an environmentally friendly way of life among employees and students. The Green University's goal is to help create healthy and attractive learning, work and recreation environment, taking into account the principles of reducing the ecological footprint. It also improves the image of EMÜ through increasing environmental awareness in society.

Cooperation with alumni

EMÜ has close ties with alumni through the Alumni Association. In November 2018, the Alumni Association had 310 members – professionals, businessmen and politicians. The Alumni Association grants scholarships to best students.

The staff of EMÜ participate in the work of professional associations as well as in other community councils and decision-making bodies as experts.

Virtual Tour

EMÜ can be viewed online without leaving home. The virtual tour will show the main study facilities and laboratories, and is still expanding.

Public Space

EMÜ is located in Tartu Tähtvere district, where the university maintains the campus. Public space can be used for walking, cycling and various sports (skiing, discgolf). EMÜ Green University initiative has developed the principles of sustainable management of EMÜ green areas, including reduced grass cutting, planting apple trees, designing recreational areas.

Feedback assessment

EMÜ particpates in annual surveys of Estonian universities in order to measure the effectiveness of their marketing activities. According to surveys about 70% of respondents think EMÜ image is good or very good, almost 15% responded it is excellent; EMÜ is considered trustworthy and reliable by 65% and

very trustworthy by 25% of the respondents.

Areas of good practice

- Continuing education is offered in all EMÜ fields of competence.
- Very good cooperation with elementary and secondary schools.
- TV program on veterinary doctors.
- introducing services for community via the cooperation platform ADAPTER.
- EMÜ has joined the Estonian Research Council initiative „How do you know?“ to promote facts and research based discussions in society.

Areas that need improvement

- Big part of the income of AÜ comes from public funding, we need to increase the proportion of the financial means of private sector.
- Promoting wider publicity for EMÜ as the university having the mission of bioeconomy.

4. Self-evaluation of study programmes

4.1 Forestry, BSc

Name of the study programme (i.e. curriculum), studies	Forestry, BSc Forestry, professional higher education
Structural unit responsible for conducting the study programme	Institute of Forestry and Rural Engineering (IFRE)
Principal compiler of the self-evaluation of the study programme, study programme manager/programme manager	Vaike Reisner, Director of Academic Affairs vaike.reisner@emu.ee Priit Põllumäe, Associate Professor, curriculum manager, priit.pollumae@emu.ee
A brief description of the process of self-evaluation of the study programme and the drafting of the report (time frame, who was involved, distribution of work, approval)	The self-evaluation report was compiled by Priit Põllumäe and Vaike Reisner during September-November 2018.

Planning and management of studies

EMÜ is the only university in Estonia to provide higher forestry education. The Statute of Curriculum of EMÜ[1] regulates the comprising, opening, administering, changing and closing procedure of a curriculum. The curriculum committee and the director of academic affairs of IFRE manage the process of developing the forestry BSc curriculum for EMÜ. Regarding the quality of the curricula, specific aims are set for the students' feedback and the qualification of the teaching staff (c.f. annexes). The feedback is constantly evaluated and discussed within the academic staff, curriculum committee and the administration. The curriculum committee consists of members representing the two forestry related chairs of IFRE, forestry students or recent graduates and employers' representatives. The latter are chosen according to the set-up of the forestry sector i.e. they include representatives from both public and private sectors. In addition to the internal measures of monitoring the quality, also external evaluations have provided input to the development of the curriculum.

Quite recently (since 2017) thorough changes in the curriculum were worked out. Prior to these changes an overall discussion among EMÜ representatives and other stakeholders (students, employer representatives) about the general set-up of higher forestry education in Estonia took place. Hence, it has been agreed within Curriculum committee for forestry that on the BSc level, there will be (as of Sept. 2019) one comprehensive curriculum, which would form the general basis for future development and specialisation of the graduates at the MSc level. The BSc curriculum needed updating because of the changing needs of the employers, the changing nature of the students, new advancing technologies (including ICT solutions) and novel research results produced by the staff. Employers' representatives have made a major contribution to ensure that the study outcomes of the curriculum meet the needs of the labour market and the expectations of the sector. Internal members of the committee have ensured that the study outcomes and structure of the curriculum would be in line with EMÜ standards (e.g. Statute of Curriculum) and the higher education standard[2].

The R&D has links to the curriculum development in several ways. First, specific EMÜ funded projects

aiming at curriculum development (Teder 2018[3]). Research focused R&D projects, as the results provide up-to-date knowledge. In addition, some students are involved in the R&D projects providing them opportunities to get their first experience in research.

TABLE 4.1.1 SELECTED EXAPLES OF R&D LINKAGES WITH THE CURRICULUM

Project	**Duration**	**Specialities**
IUT21-4: The carbon dynamics in Estonian forests affected by sustainable management[4]	2014–2019	Silviculture. Theory and field practice (6 ECTS) Forest soil science (5 ECTS)
8T160148MIMK: The impact of different cutting time and practices to pathogens distribution and biodiversity in spruce stands on fertile site types[5]	2016–2019	Wood biodegradation and conservation. Theory and field practice (4 ECTS) Forest design and management planning (5 ECTS)
T170242MIMP: Satisfaction with the private forestry support system[6]	2017–2018	Forest policy and history of forestry (4 ECTS) Private forestry in Estonia (4 ECTS)
T180054MIMP: The repeated measurement of the permanent sample plots in 2018-2019[7]	2018–2020	Forest design and management planning (5 ECTS) Forest measurement and evaluation. Theory and field practice (5 ECTS) Research and data analysis in forestry (8 ECTS) Database of nature resources (3 ECTS)

[1] https://www.emu.ee/userfiles/emu2015/Oppimine/Statutes%20of%20Curriculum_2018.pdf

[2] https://www.riigiteataja.ee/en/eli/524092014013/consolide

[3] Teder, M. 2018. Metsandusliku kõrghariduse õppekavades ja täiendõppes vajalike muudatuste küsitlus Eesti metsasektori konkurentsivõime parandamiseks. EMÜ arengufondi projekt.

[4] https://www.etis.ee/Portal/Projects/Display/42c3dc47-4d9e-4817-967b-611b7e0181c1

[5] https://www.etis.ee/Portal/Projects/Display/99174be1-380e-40cf-956f-7ccc18ed9c5a

[6] https://www.etis.ee/Portal/Projects/Display/ad714409-fc6f-4e2e-9b02-d9a97a5f9b47

[7] https://www.etis.ee/Portal/Projects/Display/9e3894c0-5cd1-413f-a3c0-6787263c94e5

External partners are not systematically involved in developing or implementing study programmes. This has been more frequently done at the MSc level (e.g. Jari Hynynen, Natural Resources Institute Finland, and Bo Dahlin, University of Helsinki). However, international teaching staff has been involved in teaching specific issues/specialities. For example, since 2016 there have been several international lecturers: 2016 – Rafael Rubilar P. (University of Concepción); 2017 – Paolo Capretti (University of Firenze), Alexander V. Shpatov (Novosibirsk State University), Vilis Brukas (Swedish University of Agricultural Sciences) and Iryna Matsiakh (Ukrainian National Forestry University); in 2018 – Alan Crivellaro (University of Padova), Heimo Karppinen (University of Helsinki) and Marcin Klisz (Polish Forest Research Institute). Mostly, such international cooperation is based on pre-existing professional scientific relationships between EMÜ and external lecturers.

Coherence of subjects in the curriculum is ensured by careful analysis of the learning outcomes and discussions within the curriculum committee, academic staff and students. Before the renewal process initiated in 2017 lack of coherence and logical connections between the courses was reported by students (average score 0.67 of the range -2 to +2). As the updating process has been quite recent and it has been approved and acknowledged by the representatives of the sector, the curriculum is currently found to be relevant and adequately reflecting the developments in the sector and society. The process had the learning outcome based approach, i.e. the committee identified the most important outcomes (skills, attitudes, etc.) and based these on the structural set-up (general module, speciality module, elective speciality subjects, optional subjects, thesis) of the curriculum, and decided the distribution and approximate volume of the outcomes between the modules. This procedure formed the general programme which later (together with the expected learning outcomes) was sent back to the academic staff responsible for each area. Thus it was possible to produce updated contents for each course. These, with proposals for students' individual work, practical training courses, field trips, excursions, etc. has been evaluated by the curriculum committee and the academic staff. The structure has helped to arrange the courses in a more coherent way. For example, forest measurement and evaluation is followed by the statistical analysis course enabling the students to analyse the data they collected during the field practice. Many generic competences (e.g. speaking, teamwork, presentation skills) are obtained through the teaching methods (i.e. individual or group work, etc.), others are directly part of the curriculum (e.g. entrepreneurship).

Since 2014/2015 some courses have been prepared in English in order to attract more foreign students and engage foreign teachers, for example, *MI.0663 Forest certification* and *MI.0662 World forestry,* and since 2015/2016 *MI.1750 Dendrochronology*. There are altogether at least 26 courses foreign students can choose from and if they do, depending on the course, they will have individual lessons or English-taught classes together with Estonian students.

Internationally IFRE is a member of SILVA network[8] (Network of European Forestry Faculties), which stimulates and facilitates educational co-operation in the field of Forestry in Europe. The representatives of IFRE, including the manager of the forestry curriculum and the director of academic affairs, participate in the annual conferences (presentations and analytical articles). In September 2016, EMÜ hosted the SILVA network conference. IFRA is also a member of the Erasmus Forestry Network, which is an informal ERASMUS+ cooperation among institutions who offer higher forestry education.

[8] http://www.silva-network.eu/

Since 2013 investments for renovating classrooms and updating hardware (computer classes) have been made; updated tools and presentation devices are available. Classrooms vary in size for flexible use according to the size of groups. Usage is not limited to course schedules. Spaces for students to learn and socialize have been created outside classrooms. Procedures for periodic evaluations of learning environment have not been established yet, student feedback and staff suggestions are to be given to the administration. The supporting services (availability of information, advice) have been highly rated by the students (average score of 1.83 from the range of -2 to +2).

There has been a decrease in admission (Table 4.1.2) to the curriculum, partly due to the overall demographic changes, therefore financing decrease is to be expected, but not felt yet. Financing has been based on the contract between EMÜ and the Ministry of Education and Research. It is based on specific criteria (admission, number of graduates, etc.). Therefore, more focus has to be put on combining R&D and teaching both in terms of using finances and providing up-to-date knowledge/input to the implementation of the curriculum (table 4.1.1).

TABLE 4.1.2 FORESTRY (BSC) CURRICULUM IN NUMBERS

Curriculum	Academic year	Admission	Graduates	Dropout cases	Dropout during the first year of studies	Total number of students as of 01.01.18	Outgoing mobility
Forestry (401) IFRE	2017/2018	32	24	31	13	145	3
	2016/2017	43	22	33	11	166	2
	2015/2016	68	38	56	17	209	4
	2014/2015	57	26	50	20	211	1
	2013/2014	68	35	74	21	255	1
	2012/2013	75	38	45	12	262	3
	2011/2012	92	36	64	16	264	1

The principles of environmental protection and sustainable development are well tied with the content of the curriculum. To date, there have been several specific courses: *PK.0052 Fundamentals of ecology and environmental protection* (4 ECTS) and *MI.0268 Silviculture. Theory and field practice* (6 ECTS). The planned changes within the curriculum will introduce a speciality course on forest biodiversity. In addition, there will be a special ecology course within the bioeconomy sub-module in the general module of the curriculum. Many other courses within the curriculum have specific learning outcomes reflecting the concept of sustainability and environmental protection.

Stengths:

- The curriculum has been recently reviewed and updated in order to reflect the needs of the labour market;
- The development and evaluation process for the curriculum involves students, employers and EMÜ representatives in order to ensure the suitability of the content for all interested stakeholders and its consistency with internal and external regulations;
- Quality criteria have been set for the curriculum, students feedback is collected and considered for specific courses and the curriculum as a whole;
- Students are involved in R&D; R&D helps to improve the curriculum;
- External and foreign teaching staff is involved;
- Students' mobility is encouraged, IFRE is internationally active – SILVA and the Erasmus Forestry Network;
- The learning environment has improved, rooms for study and socialising are available for students outside the course programmes;

- Students' satisfaction with the supporting services of IFRE is high.

Areas of improvement:

- The coherence and logical set-up of individual courses needs further monitoring, especially in the light of recent curriculum changes;
- The teaching of generic skills within the general module needs further and constant monitoring;
- ICT facilities should be improved outside the classrooms;
- Further marketing activities of the study program is needed, a more strategic approach should be taken to improve the admission numbers.

Planned improvement activities:

- At the end of each semester, the teaching staff and administration discuss any raised problems related to teaching (methods, contents, coherence of courses, etc.);
- Cooperation will continue with the represenatatives of the field of real-estate management to ensure the development of suitable working areas for both individuals and groups.

Learning, teaching and assessment

The admission process at EMÜ is described on the web[9] and it can be done electronically in the Admission Information System (SAIS[10]) or directly at EMÜ. The admission requirements to the study programme include a minimum of a secondary education or a foreign qualification equal thereto. The admission requirements[11] allow evaluating the candidates' readiness for completing the programme. The EMÜ Board may apply additional admission requirements. The opportunities to enrol to the programme are widely addressed and presented in a variety of exhibitions (by EMÜ). The field of forestry is also highlighted often by the stakeholder groups themselves[12][13] and by the Estonian Qualifications Authority[14]. Academic staff frequently visit schools to introduce the field of forestry and the opportunities that the sector provides in terms of future careers. However, strategic planning, communication and marketing could be further improved. The latter (i.e. strategically planned marketing activities) could potentially be one solution to increase interest towards the study program and thus the number of enrolment. The choice of specialisation will be supported in the renewed curriculum by specific courses (e.g. *Adaptation course*, 1 ECTS; *Introduction to forest management and wood processing*, 2 ECTS) that explain the study program, its possibilities, the needs of the sector.

The courses within the study program vary in approaches. There are courses with only an indoor approach (*Research and data analysis in forestry,* 8 ECTS). Some courses include field excursions (*Private forestry in Estonia,* 4 ECTS) and many courses have field practice (*Theory and field practice*). Teaching methods include lectures, seminars (group work, individual presentations contributing to the development of generic skills), and practical training (individual exercises).

[9] https://www.emu.ee/en/admissions/

[10] https://www.sais.ee/ (choose the language)

[11] http://www.emu.ee/userfiles/emu2015/Oppimine/Vastuvott/EMU_2018_VVE_taistekst_muut.docx (*in Estonian*)

[12] https://www.eramets.ee/metsandusuudised/tudengid-koguvad-teadmisi-erametsandusest/ (*in Estonian*)

[13] https://www.rmk.ee/teemad/metsakool/metsandusharidus (*in Estonian*)

[14] https://www.youtube.com/watch?v=vLfoiQv2eQA (*in Estonian*)

Some courses (*Database of natural resources*, 3 ECTS) are web-based (HITSA Moodle[15]), some courses include teaching specific software (R; FoxPro; Mapinfo) and sector-specific applications (Deskis[16]). The students' possible special needs are considered by the teaching staff individually; if needed, adjustments are made during the course (e.g. a more individual approach). The amount of credit points and workload ratio were analysed in 2018 and changes were made; suggestions put forward by students were taken into account (e.g. increase of credits for *Dendrology. Theory and field practice*, from 3 to 4 ECTS). The course feedback form for the students includes a question related to the ratio between the credit points and actual work done. Even more, EMÜ has set an aim that the average overall assessment score of the courses should be equal or more than 4.0 (out of 5). Any feedback related to the course workload and content can be given to either to the chairs, director of academic affairs or the Curriculum Committee. Supervision and feedback to independent work is organised by the teaching staff. The feedback might be organized individually (e.g. via Moodle, e-mail) or in a seminar (e.g. seminar presentations). The feedback, however, varies in terms of quantity and quality and is dependent on the individual task and course. Supervision of final theses is encouraged by organizing joint seminars (usually 4-5 months before the submission deadline) for students to describe their work status.

Currently the students have to decide on the choice for specialization (13-14 ECTS) i.e. forest management or forest industry. This choice is complemented by the elective subjects (7-8 ECTS) and at least 8 ECTS for optional subjects. After the planned changes in the curriculum, the students will not have to decide on the specialisation. Instead, they can choose more elective subjects based on their individual interests and perspectives to continue studies at the master's level. The speciality elective subjects have to count for at least 23 ECTS (out of available 69 ECTS). The amount of optional subjects will remain at the level of 8 ECTS.

Students mostly participate in RDC activities through current R&D projects. The teaching staff and/or project leaders usually involve students, providing possible topics for theses[17], also their courses are related to specific projects (Table 4.1.1.).

The ways of evaluating the students' performance depend on the course and the teacher. Both grading and non-differentiated evaluation is used. These could include exams and tests, written and oral. More flexible evaluation methods are used as well, when the final result is comprised partly by the results of individual assignments during the course. At the beginning of each course the particular details on assignment methods and criteria are explained to the students. Depending on the course there could be one or several teachers evaluating the performance. Prior and experiential learning and work experience of students is taken into account on request. All the information is available[18] and the institute has a special commission dealing with the applications. Developing and implementing evaluation methods that would increase and support the development of generic skills should be improved and made more coherent throughout the study programme. There is zero tolerance towards academic fraud i.e. all the steps, measures and procedures are described in the Regulation of Studies[19]. Rules in drafting students

[15] https://moodle.hitsa.ee/?lang=en

[16] http://www.deskis.ee/en/

[17] http://mi.emu.ee/oppeinfo/lopetajatele/loputoo-teemad-metsanduse-ning-loodusvarade-kasutamise-ja-kaitse-uliopilastele/

[18] https://www.emu.ee/userfiles/emu2015/V%C3%95TA%20ENG.pdf

[19] https://www.emu.ee/userfiles/emu2015/%C3%95KE_2018_EMU_ENG.pdf

individual work is also described in a special set of guidelines[20] and there is the possibility to use a fully automated search system to detect plagiarism[21].

The setup of the studies is as coherent as possible considering the subjects within the whole programme. In addition, in many subjects the theoretical learning part is followed by a practical field course. Practical training helps to relate the theoretical knowledge with practical life and to adapt to working environment. The importance of this has been highlighted by the alumni (Teder 2018[22]) and by the students. IFRE is unique in Estonia in having a practical training base – Järvselja Training and Experimental Forest Centre[23]. The Centre is equipped with the required infrastructure for student instruction – hostel, dining hall, rooms for seminars, computer class, etc. In addition, the renewed curriculum will introduce a subject *Introductory internship* (3 ECTS) which enables the students to see and experience work in a forestry-related company or organisation. It is also the responsibility and freedom of the student to find a place for the internship, but the tutor from EMÜ will closely assist them. The internship has specific guidelines and it ends with both the student and the representative of the host institution submitting an evaluation report. In order to implement the internship course, a special training course for tutors of host institutions was organized in 2017. In addition, the hosts can always be in contact with EMÜ tutors. Taking internships abroad is rare, although possibilities are introduced to students annually[24]. Mobility on the national scale is also rare, as it involves mostly taking optional subjects. This is because there are no other HEIs in Estonia that provide forestry-related courses. Mobility as a whole is very much favoured and encouraged. Information about the possibilities is given to students on an annual basis during informational seminars and via e-mail, based on specific measures and approaching deadlines. Experience is shared among students within the Estonian Forestry Students Association. There is a general agreement between the study program manager, director of academic affairs of the IFRE and the committee for recognition of prior learning and experience that if students want to study and take e.g. speciality subjects from abroad, they can use the RPL process to replace the taken elective subject(s) with courses from EMÜ study program. The substitution, of course, has to be suitable in terms of contents as well – there has to be a corresponding speciality subject within the EMÜ programme. The possibilities to study abroad or use exchange is more frequently used at the MSc level; however, bachelor students use it as well. For example, within the past three years nine students have used various mobility possibilities within the forestry study programme (Table 4.1.2.).

The students can turn to the administration of the institute in whatever case related to the studies, progress, problems, etc. For the first year students to get a general overview of the field of forestry, an information day has been held since 2016. This takes place during the first week of studies. In addition, the *Adaptation course* (1 ECTS) is focused on providing all the information related to their future studies and possibilities. On EMÜ level, the students have the possibility to get free psychological counselling. Overall, the supporting services (availability of information, advice) have been highly rated by the students (average score of 1.83 from the range of -2 to +2). Monitoring students' progress is organized on the administration level of IFRE.

[20] https://www.emu.ee/userfiles/emu2015/final%20thesis_formating_22.01.2018.pdf

[21] https://www.urkund.com/

[22] Teder, M. 2018. Metsandusliku kõrghariduse õppekavades ja täiendõppes vajalike muudatuste küsitlus Eesti metsasektori konkurentsivõime parandamiseks. EMÜ arengufondi projekt.

[23] http://jarvselja.ee/ *(in Estonian)*

[24] https://www.emu.ee/en/studies/study-information/exchange-studies-and-traineeships-abroad/erasmus/erasmus-placement

Due to the overall demographic situation in Estonia, EMÜ has decreased the number of study places available. The number of possible students (i.e. mostly graduates from secondary education) has decreased during the past 5-year period and it will remain on a relatively low level in the forthcoming years. Students (usually through the Forestry Students Association) and IFRE staff have visited schools and education fairs in order to introduce the learning possibilities in forestry. Dropout reasons during the first year, however, are still mostly related to students' realization that the field is not suitable or attractive for them. During the later stages, dropout reasons mostly include economic issues. In addition to these, it is also possible that a negative influence to admission has been due to the increased public debates on the sustainability of current forestry practices in the country. It is, however, very difficult to assess the importance of the latter. In order to support the students economically, various schemes for stipends and grants are available. For example the scholarship related to study performance is 100 € a month. The students can also apply for a need-based study allowance, which takes into account the income of the student's household, which also includes the income of the parents. In addition to the previous two measures, EMÜ has supported (100 € monthly) internally the forestry curriculum students since 2017. Namely, the students who do not fulfil the criteria of the scholarship related to the study performance. All this is done in order to decrease the number of dropouts related to economic reasons.

A regular monitoring system is not in place to follow the employment of the alumni. However there are studies from the Ministry of Education and Research[25] which have found that a year after graduating from higher forestry education approximately 80% work in the same field. In 2005–2015 it has been slightly higher (86%), but generally these rates correspond to the overall average in Estonia. Lately some feedback for the study programmes has been collected from both the alumni and employees' representatives[12]. Such feedback was used in the reorganising process initiated in 2017/2018 of the study programme.

Strengths:

- Admission requirements ensure equal access to the curriculum for all interested persons and persons with special needs.
- The students are introduced immediately to the forestry sector, to the forestry curriculum and its subjects – their specifics, its activities and importance are explained.
- Students' satisfaction with the supporting services of IFRE are highly valued.
- Changes have been introduced to the curriculum in order to increase the students responsibility for planning their studies and career, and supporting the development of key competencies in forestry.
- IFRE has its own practical working base in Järvselja and a network of companies and organisations willing to host students' internships.
- The Procedure for Recognition of Prior Learning and Work Experience is well arranged, it is simple, understandable and quite well used by the students.
- Practical training is well arranged – in addition to practical training within selected subjects there will be also an institutional internship subject introduced to the curriculum.
- The percentage of graduates working in the field of forestry is 86%.

Areas of improvement:

- Students' involvement in R&D projects could be more consistent/planned.
- The international mobility of students could be improved.

- The use of modern teaching methods and tools should be constantly evaluated and improved.
- Decrease in students' dropout rates is needed.

Planned improvement activities:

- The applicants of R&D projects are more encouraged to plan student involvement in the planning stages of projects.
- Encouragement and introduction of best practices of student mobility.
- Evaluation and monitoring students' feedback to individual subjects. Curriculum manager meets students face-to-face.
- Structural changes are made for the *Adaptation course* (1 ECTS) and the information events in order to even more tie the students with the field.

Developement, cooperation and internationalisation of teaching staff

The academic staff is well qualified; lecturers are well qualified with high research levels. The age distribution of the staff (Fig. 4.1.1.) is adequate in terms of ensuring the sustainable shift of generations. At the Bachelor´s level the average age of lecturers teaching obligatory courses is 46.4 years with most of them (65,5%) having a PhD degree. There are some lecturers without a PhD degree yet, but the schedule for their dissertation defence has been established. According to the Job Descriptions of the Teaching and Research Staff Members, from January 2020 a doctoral degree or its equivalent is required for the position of the lecturer. 27.6% of teachers responsible for the courses are female. Top specialists, professionals and PhD students are also engaged in teaching. All of the research staff are involved in teaching, they are either responsible for a whole course or a part of it.

Young teachers (defended their thesis in the past ten years) pass the courses *DK.0005 Higher education didactics* and *DK.0006 Practice learning in university* teaching during their PhD studies. Course supervisors of PhD students provide support. The chairs make development interviews with the staff members. The employees' wishes for training courses are taken into consideration. For example, in 2018 there were courses for staff members in developing evaluation methods in an output-based learning environment, developing learning skills of adults and using e-learning approaches. The staff members' involvement in such training courses could be better. Once every five years teachers can use a teaching-free semester (sabbatical leave).

Feedback given to teachers and courses via the study system is mainly followed by teachers. The managers of curricula, heads of chairs and the administration of the institute follow the feedback as well. The chairs discuss the potential issues or problems and feedback is given at internal meetings and seminars. Curriculum managers and administrative officers take feedback very seriously when problems occur. We see the need and benefits of regular feedback analysis.

[25] https://www.hm.ee/sites/default/files/uuringud/edukus_tooturul_marianne_leppik.pdf (*in Estonian*)

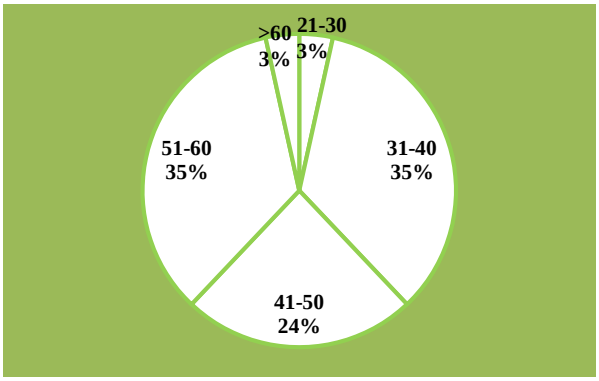

FIG. 4.1.1 AGE STRUCTURE OF THE LECTURERS OF FORESTRY CURRICULUM

From the 2015/2016 spring semester to 2017/2018 spring semester the overall average satisfaction with all the subjects in the forestry curriculum was 4.0; the general module 4.1, speciality module 3.9, specialization module (will be reorganized from the admission 2019/2020) 3.9 and the elective module 4.2. Out of the 49 different subjects 33 (67%) correspond to the internal EMÜ requirements. However, the rest of the subjects are not far from the threshold with 26% of them having scores between 3.2 and 3.9. Problematic issues are being dealt with in cooperation with the administration and the heads of chairs.

Any possible cases of academic fraud, cheating or plagiarism are treated very seriously. E-applications and automatic detection solutions for detecting plagiarism are available[26]. The teaching staff does not tolerate cheating or academic fraud in taking exams or other work. The students are informed about plagiarism in several courses (*Adaptation course* 1 ECTS, in the renewed curriculum also *Fundamentals of scientific research* 3 ECTS). In addition, there have been training courses for staff members about detecting and treating the cases of cheating or plagiarism in theses (the latest in spring 2017).

EMÜ has not set specific aims for mobility of the teaching staff. However, there is the aim that by 2020 all the lecturers should have a PhD degree. In addition, teaching staff can take a free semester to improve one's skills in research and/or teaching. Although the possibility is not often used, most recently in 2018, Professor Henn Korjus visited Buckinghamshire New University and the Transilvania University of Brașov. Some members of the staff have used alternative solutions for international mobility. For example, Priit Põllumäe visited University of Natural Resources and Life Sciences, Vienna (BOKU) for two weeks in August 2018 with the European Forest Institute SSV (short-term scientific visit) grant. The staff is widely engaged in COST networks and other international projects.

The cooperation of EMÜ (in terms of implementing the study program) with the national representatives of the sector could be improved and enhanced. In recent years most of such inclusion has involved three specific courses – *Private forestry in Estonia; Management of state forests in Estonia; Introduction to Estonian forest and timber industry*. In addition, there have been some reviewers from outside EMÜ. The aim is to enhance and improve the involvement of other specialists from other universities and the sector. International participation of representatives of other universities is sufficient and has had positive feedback from the students (e.g. *Forest policy and history of forestry*, 4 ECTS).

[26] https://www.urkund.com/

The workload of the teaching staff is quite heavy (teaching, supervising, keeping the content of courses updated, scientific performance, i.e. requirements to publish). Hence, there is limited time available for developing skills or adapting new approaches and methods in teaching. There is not enough systematic approach to improving the teaching skills of the staff yet; it depends largely on the person's time availability, willingness and interest to develop. The PhD students have the possibility to pass courses such as *Higher education didactics* (3 ECTS) and *Practice learning in university teaching* (2 ECTS). In recent years, many of the staff members have taken additional courses related to improving teaching skills (e.g. Diana Laarmann, Risto Mitt) and skills related to various methods (Priit Põllumäe – qualitative methods course, Paavo Kaimre – statistical analysis). These courses have included on public presentations, project management, leadership, etc. The acquired skills and competences are not individually evaluated or assessed directly. It is expected that the staff use these competences in their daily work including the development of one's courses (contents, methods) and that this would reflect in the students' satisfaction. The most recent internal training course focused on the use of ICT technology in supporting learning in EMÜ.

Strengths:

- Teachers have strong scientific background.
- Academic staff numbers are sufficient, there are enough young researchers and lecturers involved in the study process, generation continuity is ensured.
- The development and quality of teaching has clearly defined aims.
- The students' feedback is taken into consideration on different levels – firstly by the course teachers, curriculum manager, chairs, both IFRE and EMÜ administration.
- The academic staff have means and possibilities to participate in additional training courses.

Areas of improvement:

- Teaching skills (choice of methods, evaluation) of lecturers could be improved, taking time for professional development should be encouraged.
- Based on students feedback, there are subjects that need improvement.
- Teaching staff mobility used for teaching in other universities is low.

Planned improvement activities:

- Assessment of teaching methods used by teachers.
- Further improvement of development interviews of the staff.
- Encouraging the use of mobility opportunities by the staff.

4.2 Production and marketing of agricultural products, MSc

Name(s) of the study programme(s), studies	PRODUCTION AND MARKETING OF AGRICULTURAL PRODUCTS. MSc.
Structural unit responsible for conducting the study programme	Institute of Agricultural and Environmental Sciences (IAES)
Principal compiler of the self-evaluation of the study programme, study programme manager/programme manager	Evelin Loit Senior researcher Evelin.loit@emu.ee Phone: +372 5912 5549
A brief description of the process of self-evaluation of the study programme and the drafting of the report (time frame, who was involved, distribution of work, approval)	The draft was initially prepared by the curriculum leader and then discussed and improved by curriculum development committee (Katrin Jõgar, Kadri Karp, Marika Mänd, Alar Astover), student's representation and departmental staff.

Plannig and management of studies

EMÜ has aimed at being an internationally recognized university in the field of bioeconomy, where the internationally competitive R&D work forms a basis for teaching at all levels of higher education.

The MSc program of Production and Marketing of Agricultural Products was given a **positive evaluation** for **seven years** (the maximum time) in March, 2017. Therefore, the strengths and activites after each section include the recommendations from the evaluation panel as well. The aim of the MSc curriculum is to provide in-depth knowledge and skills in the production of field crops, their postharvest treatment and marketing that includes the main terms, theories and methods for the scientific study in the given specialty. The knowledge and skill-set obtained will provide the competences needed for agriculture-related jobs in private and public sectors and enable to continue the studies at the PhD level. It is the **only higher-level agronomy curriculum** in Estonia.

Developing research-based education in the area of agriculture is emphasized at all aspects of teaching. Results from the research projects are shared and discussed in lectures/seminars and most master's thesis research is done within the research projects.

The head of curricula and the development committee initiate the improvements to the curriculum according to students' feedback, changes in labour market and University Law. Suggestions can be made by the students' and employers' representatives. The curriculum is led by senior researcher Evelin Loit, the curriculum-related duties have been added to her employment contract since 01.06.2015. The curriculum development committee consisting of heads of the chairs involved in the curricula (Crop Science and Plant Biology, Horticulture, Soil Science, Plant Health), students' and employers' representatives meets at least once a semester. The questions discussed include the design of the curriculum, cooperation opportunities, guidance for students thesis writing, arrangements for thesis topics and defence. A very active student organization Association of Agricultural Enthusiasts of

Estonia (http://npk.emu.ee/) is also closely working with the curriculum head and committees to further improve the curriculum. The club regularly organizes discussion-evenings or excursions to farms with various experts and producers and these events complement the curriculum very well.

The board of governors, led by an active agricultural producer Madis Ajaots (alumnus of EMÜ), was formed in 2015. They are standing firmly for the research-based education and their suggestions have already initiated a special fund to support inviting foreign professors to teach and the amortization fund to keep the high-end technology running.

The content and structure of the curricula are in line with their aims and learning outcomes and different parts of the curricula make up an integral whole. The logical sequence and coherence of subjects are secured through distribution into semesters (Fig. 4.2.1). The curriculum has the speciality module of subjects that include agronomy-related topics complemented by economy and animal husbandry subjects. Elective subjects are arranged so that students with various interests of crop production can find relevant options. There is no speciality module to enable more flexibility to students. The head of the curricula and the curriculum development committee manage the content and structure. In addition, staff seminars have been organized to discuss the content in courses to increase the logical order and harmonization.

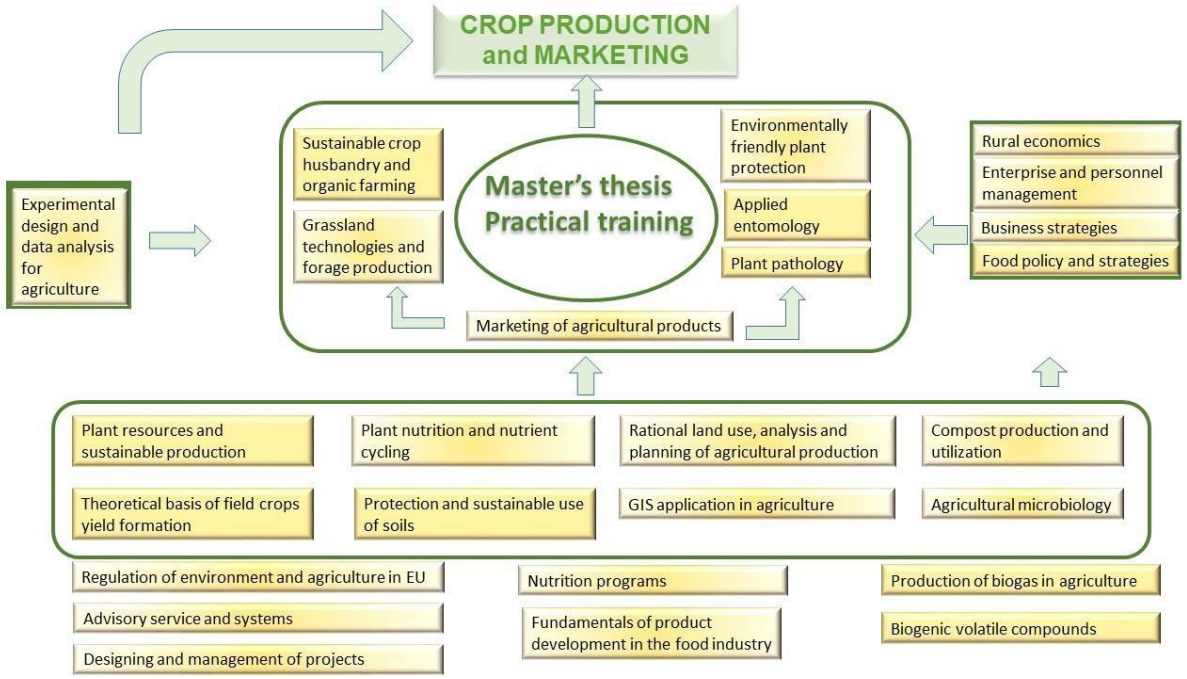

FIG. 4.2.1 ORGANISATION OF SUBJECT IN THE CURRICULUM OF PRODUCTION AND MARKETING OF AGRICULTURAL PRODUCTS

To follow the changes in the society, the curricula have been improved during the recent years due to the need for more environmentally friendly production methods and integrated production regulations. Much more attention is paid to organic technologies. As climate change has become an important issue in the society, most of our courses have integrated the topics accordingly. For example, two lectures and a practical work are devoted to modelling climate change and its impact on agricultural production. Digital farming methods are also introduced (yield modelling, precision agriculture with GIS, etc.). We have introduced new courses, such as *Marketing and Feeding programs*. Both changes were initiated by the student feedback discussion with the institute staff and supported by the curriculum evaluators in 2016–2017. The latest addition to the MSc elective module was *Production of biogas in agriculture*

in 2018, as alternative energy sources are increasingly important in the society. Practical training was added to the MSc curriculum in 2018, as the students and employers have indicated the need for more practice. Field training validates the acquired theoretical knowledge in practice and through practicing managerial functions, the students are more prepared for the job market. Joining the entire Bioeconomy modul in cooperation with the Forestry and Economy is considered, to improve this sector in Estonia.

Due to the changes in job market demands (more communication, team work, etc.) more emphasis on interpersonal skills has been added, e.g. group presentations and field tests made in groups train the skills of time planning, personnel management, cooperation, and communication. In addition to the courses, students can present their knowledge and train different organizational skills at the Agronomy conference, Plant protection conference, Soil day, field demonstration days at Rõhu Experimental Centre arranged by agricultural and horticultural companies, Researchers' Night, Agricultural fair *Maamess*. Students learn personal time management and prioritization during several individual course projects and presentations. Creativity and entrepreneurship is encouraged in the curriculum, as our aim is to train people to start with their own company.

Students give feedback on the courses via ÕIS after the completion of the course. The curriculum leader keeps an eye on the feedback and feedback is discussed with the lecturers in person, if necessary. However, e-feedback system has its flaws: students have to grade only 4–5 courses. Thus, the results are scarce and they are not always reliable. Lecturers of more difficult subjects get lower scores. However, if there are some problems with a lecturer's attitude or study materials, the feedback is reliable. According to the students' feedback the most favoured courses were *Sustainable crop husbandry and organic farming* and *Advisory service and systems* at the MSc level. In general, the feedback for most courses is positive (average credit more than 4 from 5). The students appreciate lecturers' professional teaching skills and expertise, as well as personal contact, clearness of study process and feedback on their studies. Excursions to farms and on-site learning are also highly appreciated.

To complement the e-feedback, students collected in-depth feedback on all courses in the autumn of 2015 and 2017. The results were shared and discussed with the curriculum staff in several seminars (including two 2-day seminars) and solutions were proposed for the concerns raised. At the MSc level we replaced modules with elective subjects to increase flexibility. Cycle learning and distance learning options are used.

The entire curriculum is discussed with students in yearly seminars led by the curricula head. One outcome of the discussions is the shortened study-period from October to April. The students have preferred the stationary study, but due to the nature of crop production, they can start attending the courses in October and in May the students can mind their own farms or work elsewhere. However, some students would prefer distance learning. It is planned (the idea is approved by the curriculum evaluators) to have yearly discussions with all of the involved lecturers as well.

The curriculum has been compared to other curricula at the University of Helsinki, Swedish University of Agricultural Sciences, and Wageningen UR. The plan is to share the experience with these universities, and as the next step the curriculum head is going to WUR to discuss the curricula and the potential collaboration in December 2018.

To accommodate ERASMUS+ students we opened an entire module in 2016 – *Agroecosystem*

management, worth 30+30 credits – in English, that includes, for example, *Integrated crop protection*, *Compost production and utilization*, *Principles of ecological agriculture and Organic farming*, to encourage more foreign students to participate. As for foreign students, our toughest competitor is the University of Copenhagen as their MSc studies in agriculture are fully conducted in English.

There has been a cooperation agreement between EMÜ, Ulm University, University of South Bohemia and University of Marseille since 2012 to organize an international intensive two-week summer school *Soil and Water*, firstly supported by DAAD, and since 2014 by ERASMUS+ project EduSapMan, led by Ulm University. Five students (15 from Ulm) and three lecturers from each university participate in the course. The course is organized in a different partner country each year. It was held in Estonia in 2013 and in 2017. Teachers are selected according to their expertise, competences and professional skills in the required topic. For example, Estonia is responsible for teaching degradation, the sustainable use of soils and plant stress physiology. All partners have signed the agreement for student and staff exchange. Another outcome of the project shall be the development of a joint MSc module between the partner universities to set up a regular student and teacher exchange for regular teaching and supervision.

We are encouraging lecturers to use digital means in teaching to facilitate individual learning. This is to cope with the smaller number of students. Since the curriculum has the practical compound, we use for studies the research stations in Eerika and Rõhu, where the experimental fields are located.

Teaching facilities have been significantly improved and modernized recently, as a new building (Fr. R. Kreutzwaldi 5 D) was finished in 2014 and all departments of the IAES moved to the same location (previously they were scattered throughout the city). Now all lecture and seminar rooms, laboratories, scientific collections and offices are located in the same complex. This enables better collaboration between lecturers, also more social learning among students.

Lecture rooms are equipped with data projectors, most have a computer. In the spring of 2016 two lecture rooms were equipped with modern interactive boards. Fifty clickers are available in the institute and in total 200 EMÜ to make lectures with a large number of participants more interactive. There are well-equipped laboratories accessible by students involved in thesis research. This enables early introduction of research to the students. In addition, there are two experimental field stations: Rõhu Experimental Station (13 km from Tartu, 60 ha) that supports the study processes with its modern technical equipment and agricultural land, and Polli Horticultural Research Centre (105 km from Tartu, 283 ha) with its renewed equipment that is used in teaching MSc students. Several long, mid and short term field experiments are in progress for demonstrations and thesis work.

The Institute pays attention to making the use of rooms more effective. There are no borders between EMÜ institutes, lectures with more attendants are scheduled for bigger lecture halls, etc. The priority for specific facilities (labs) is the specific classes, but other courses may be run in these rooms as well, if available. In response to decreasing student numbers we plan to combine students from similar or related curricula to one classroom and offer them elective courses every other year.

Stenghts:

- Competence in agronomy, animal husbandry, and agro-economy is aggregated in EMÜ and curricula are unique in Estonia, giving broad-based knowledge by well-recognized experts.

- The curriculum is very interdisciplinary as the students learn about the entire production chain from the field to the supermarket.
- There is close collaboration with employers and the programmes emphasize a degree of practical involvement in the curriculum, which is unique compared to many other universities; the curriculum has a wide selection of companies on each topic, where to conduct the practical training.
- Curricula have a well-balanced theoretical and practical part that complement each other.
- Curricula development is in constant progress according to the changes in the society and in the agronomical/horticultural production.
- Environmentally friendly methods are adopted, developed and included in the curriculum.
- The curriculum encourages awareness of wider environmental and societal issues and is effectively linked with research activity.
- The resources currently available are clearly at least equal to, and in some respects superior to, international standards (as per curriculum evaluation report).

Areas for improvement:

- The curriculum is mostly focused on the local needs, but should include more global issues, such as irrigation and C-sequestration, so that our graduates would be more competitive at the European job market and better prepared for the potential climate change issues. It would also attract more foreign students.
- Increasing the cross-talk between different courses to further integrate the knowledge from different fields and also to improve the interpersonal skills;
- Feedback from students in e-ÕIS and its analysis.

Activities:

- To continue to have yearly round-table discussions with the MSc students in their final year to get their feedback on the curriculum for further improvement.
- Arrange regular round-table discussions with all of the curriculum staff to further improve the curriculum.
- Have regular round-table discussions with the alumni as well as agricultural employers to get their feedback.
- Include globally relevant agronomic issues in the curricula.
- Start using on-the-spot questionnaires upon the completion of the course to get feedback that is more detailed.

Learning, teaching and assessment

In admission to the MSc studies the graduates of agriculture-related specialties are admitted on the basis of their average grade on the diploma and the grade for their BSc examination or BSc thesis. All other applicants have to take an entrance examination, the results of which equate the results of the BSc examination. The DAA and the Department of Marketing and Communication are engaged with admission. The latter organizes information events and introduces study opportunities to prospective candidates outside Tartu. The set-up, development and the study process of agricultural curricula are in accordance with the regulations of higher education in Estonia, EMÜ and IAES development plans and

regulations coordinating the study process and curricula development in EMÜ. Due to flexible curriculum and small number of accepted students (Table 4.2.1) there is a possibility for each student to discuss their interest with the curriculum head to get guidance (advice on extra courses, research topic, etc.). As the curriculum is closely linked to horticulture, and to a certain degree linked to animal production and food technologies, it is possible to put more emphasis on these specialisations along the study process.

TABLE 4.2.1. PRODUCTION AND MARKETING OF AGRICULTURE PRODUCTS (MSc) CURRICULUM IN NUMBERS

Curriculum	Academic year	Admission	Graduates	Dropout cases	Dropout during the first year of studies	Total number of students as of 01.01	Outgoing mobility
Production and Marketing of Agriculture Products (463)	2017/2018	20	4	11	4	35	4
	2016/2017	8	20	9	2	40	5
	2015/2016	21	17	14	2	63	2
	2014/2015	16	14	7	3	61	6
	2013/2014	25	14	7	3	66	2
	2012/2013	14	11	15	1	68	8
	2011/2012	33	13	7	-	71	7

Usually common rules apply for all students. However, if students have special needs (health, active in sports) an individual programme is fixed between the student and the teachers to pass the courses. During the renovation process, wheelchair access to classrooms was improved. At any time it is possible to discuss issues with the curriculum head, when students look for an advice or support. When students have informed EMÜ about the anxiety or attention deficiency problems, it is possible to arrange some more time for the student for learning and examinations.

Teaching and learning process is conducted via contact classes (minimum 50% of the credit points; lectures, labs, and seminars), practical work and independent work. Students have to collect the credit points planned in the curriculum, but if they have interest and time they can further plan their studies according to their choice. There is no upper limit as to how many credit points students can pass during their studies free of charge at EMÜ and partner universities, as long as they fulfil their compulsory studies. ERASMUS+ programme enables to study or do practical training abroad.

Prior learning and experience is regulated by Council regulation No. 1-5/3 Tartu, 17 March 2016, *Requirements and Procedure for Accreditation of Prior and Experiential Learning* (RPL) in EMÜ. There is a specific RPL committee that makes decisions about the prior learning and work experience for agricultural curricula at the Institute. The committee meets regularly once per month or upon need. The courses taken abroad during the ERASMUS+ Exchange are discussed before the start of the semester to make sure the student gets at least 15 ECTS converted towards compulsory studies. The advice is provided by ERASMUS+ coordinator and the director of academic affairs. Courses taken during the studies from other Estonian universities will be counted as a part of the studies.

The topic of academic fraud is discussed with the MSc students in the course *Experimental design and data analysis for agriculture*. The guidelines for each written and oral work include the definition of fraud and some bad and good examples.

All courses have clear description of the content, the expected outcomes, and the methods of assessment. In addition to the grades students get personalized feedback. Usually at least 50% of the course is planned for individual work. Lecturers have the freedom to choose the teaching and the examination

method, but it has to comply with the scope of the course. The choice between the differentiated (graded) or non-differentiated assessment is decided by the curriculum development committee following the principle that specific specialty courses are usually graded and supporting courses are assessed as 'pass' or 'fail'. The curriculum leader, who has access to the curriculum, checks if the study materials are available in time. All courses have textbooks or e-notes (lecture notes, etc.) in ÕIS. The trend is to increase the use of e-opportunities that can be renewed easily and quickly, to complement the subjects (e-courses, e-modules). Students prefer combined courses, where e-solutions support acquiring new knowledge and enable smoother communication. E-solutions enable more discussions and support the involvement of producers and other scientists (see example programs).

Giving feedback is an important part of teaching. In addition, students can apply their obtained knowledge in writing or doing practical work and get feedback from producers. For example, the course *Sustainable crop husbandry and organic farming* uses problem based learning (i.e. the students need to make a plan suitable for moving from conventional to organic farming; crop rotation for organic farming; how to improve humus balance, etc.). Depending on the chosen research topic for thesis, the students can present their data at various conferences (Plant protection day, Soil Day, From Science to Organic farming; Agronomy conference).

Study process is closely linked to research. Each research project gives topics for MSc theses (e.g., ERA-NET BICOPOLL contributed to eigth MSc theses). MSc students need to choose the topic for their thesis at the end of the first semester. Lecturers involved in scientific projects or collaboration projects with producers propose the topics by writing a short annotation. Students can choose the topics they like and after the discussion with the supervisor they can make the decision. Typically, the research made for the BSc thesis continues during the MSc studies, but it is possible to choose a new topic. Sometimes co-supervisors outside EMÜ (e.g. Estonian Plant Production Institute) are used. Students work with their supervisors through the year. MSc students discuss their work at the course *Experimental design and data analysis* and the summary of the research is presented at scientific seminars. Each student must pass the preliminary defence, where they practice making the presentation and get final suggestions to further improve their thesis. Defence of the thesis is oral and it is presented to the thesis committee comprising seven members. Leading lecturers and scientists from different fields are represented. Each thesis is reviewed by an expert (sometimes experts from outside EMÜ are invited) and a public discussion of the results is held. Also, companies give prizes. For example, Baltic Agro awards stipends for the best research on fertilizers or plant protection.

The proportion of practical work is balanced with theory. Field trips are extensively used as a part of the teaching process. In addition, visits to farmers are organized in the course *Sustainable crop husbandry and organic farming;* and visits to research plots take place in *Experimental design and data analysis*. The students in MSc curriculum participate in the practical training at an agriculture-related company for four weeks after the second semester to apply their knowledge in practice and organize various jobs. There is a list of companies with a cooperation contract with EMÜ to supervise students, but students can find a place for their traineeship on their own as well. At the beginning of February an introductory seminar is organised, where the rules of practical training, schedules, guidelines for finding the place for traineeships, advice on signing contracts, compiling feedback reports and making a presentation will be introduced. Basic safety rules are also introduced. All the materials are available in ÕIS. There is one main practice coordinator and seven supervisors from EMÜ to guide students. Each student has to sign a three-site contract between the student, EMÜ and the company, where the detailed aim of the practical training and the duties of each partner are described. After finishing the training, the student needs to submit a report and defend it at an open seminar. Should any conflicts arise during

the training between the company and the student, they will be solved with the help of the EMÜ supervisor and sometimes a new place for training is found.

The producers are closely involved in teaching. All the field-trips require collaboration with farmers. In 2018 we had a senior scientist from Estonian Plant Production Institute as a member of the defence committee.

There are two full-time study specialists working at the Institute, who take care of scheduling courses, registration of thesis topics and helping students with everyday errands. Bigger problems and complaints by the students can be discussed with the head of the curriculum or the director of academic affairs. All lecturers are willing to help with problems, as well. There is an educational technologist working at the DAA who has been of great help giving guidance and advice on how to improve the teaching skills and materials and how to use more digital options.

The alumni are working at their own farms, at bigger farms as agronomists, at seed and chemical companies as agronomists or salespersons, at the Ministry of Rural Affairs or Agricultural Board as specialists.

Strengths:

- Theoretical and practical teaching is very well combined and they complement each other well.
- Practical work, especially at the companies, is well organized and it helps to achieve the aims of the curricula.
- Thesis research and practice of scientific work is conducted within scientific projects in experienced researcher groups.
- Subjects have e-modules to support the auditory teaching.
- Practical training and seminars are conducted in small groups, which enables more individual feedback.
- Good balance between theoretical lectures, practical training, laboratory work, seminars and excursions.
- Problem based education giving a good understanding and real life situations.
- Good reputation and attractive university, thanks to qualified lecturers and good vocational connection.
- Including alumni in the process of helping students with their career planning.
- Practical training and work provide useful good contacts and contribute to understanding the subject of study. This is particularly important for students with limited experience of agriculture.
- Bachelor's and Master's theses are linked to ongoing research projects.
- Students generally feel that they had adequate feedback on their assessed work.

Areas for improvement:

- Increase the number of longer excursions to the companies that are at present decreasing due to financial constraints;
- Optional courses offer great opportunities for extra knowledge, yet the time schedule does not always allow attendance;

- Students make little use of ERASMUS+ exchange opportunities due to their need to work full or part time.
- Documentation of assessment of learning outcomes could be improved.

Action plan:

- Seek financial aid opportunities to organize longer excursions;
- Make proposals and suggestions to improve schedule organisation and management;
- Create supportive means to encourage more students to use ERASMUS+ (i.e. additional funds for stipends, travel grants).

Developement, cooperation and internationalisation of teaching staff

According to the EMÜ Development Plan all lecturers should have a PhD degree in 2020, all academic positions should be completed by international competition (2025), at least 90% of the lecturers should have passed self-perfection periods abroad (short visits included). The number of lecturers with a PhD degree is increasing. Every lecturer visits at least one international conference, or goes on a study visit per year. Lecturers from three institutes — the Institute of Agricultural and Environmental Sciences (Chair of Crop Science, Soil Science, Plant Health, Horticulture), Institute of Economics and Social Sciences and Institute of Veterinary Medicine and Animal Sciences – are involved in teaching in the curriculum. The average age of the lecturers responsible for compulsory courses is 50 (22 lecturers). Most importantly, we have a balanced representation of all age classes. Approximately 80 per cent of the lecturers responsible for their courses have a PhD degree in MSc programs. 55 percent of the lecturers are female. We have close to 40 PhD students who contribute to the sustainability of staff. Most PhD students are actively involved in teaching, usually starting as seminar or lab assistants. All PhD students take didactics courses and practical teaching is required to implement their knowledge. New lecturers can get advice from the heads of chairs and curriculum leaders, as well from special mentor professors. The teaching staff is actively engaged in research and the scientific skills and knowledge is being used in the lectures. The staff has several means to improve their skills via attending courses, seminars, and conferences. There are several courses on teaching offered every year. The course in statistics is offered annually to improve the data analysis skills of all the thesis supervisors. We have organized some courses (*Statistics*, *Presentation skills*, *Teaching skills*; *Data modelling*) specifically for our staff via the PRIMUS program. The educational technologist at DAA helps lecturers with various questions: how to use different ways of teaching; how to use digital aids, etc. Innovative lecturers are rewarded at EMÜ and several lecturers have been credited for applying new methods. Lecturers also attend several councils, unions and they are active in production organizations. Lecturers lead collaboration projects and the results have been published in scientific and popular science papers. Several lecturers are well-known opinion leaders and experts in the field.

The teaching skills of the lecturers are evaluated according to the students' feedback. According to student feedback, the average result for the teachers has been 1.5 out of 2 (in the scale –2 to +2) in the past three years. Negative feedback and complaints are discussed with the head of the curriculum or the chair. If after discussions teaching will not be improved (after being officially reprimanded twice), the working contract with the lecturer will be cancelled. Student feedback is taken into consideration when a lecturer is elected or evaluated.

Academic fraud is discussed on info-seminars and the programs (URKUND) used to detect fraud are

introduced to the lecturers.

Regular and invited foreign professors are involved in teaching. Professor Anders Kvarnheden from SLU (Sweden) has been a regular visiting professor in *PK. 1214 Plant Pests and Their Control (viruses)* since 2007. Professor Indrikis Krams from Daugavpils University, Latvia, supervises insect immunology seminars/practicums in *PK.0421 Applied entomology*. There is a plan to invite lecturers from several partner universities to give lectures via ERASMUS+ staff exchange programme and from ASTRA Bioeconomy program. Lecturers participate in international educational projects and give lectures during international courses. Lecturers T. Tosens, A. Astover and E. Reintam are involved in the ERASMUS+ project EduSapMan international annual course *Soil & Water*, where students and teachers from four countries participate. The project FACES is aimed at improving soil classification skills (E. Reintam) and an international course is organized between eight partner counties. The most recent ERASMUS contract is with Jordan and 6 lecturers from EMÜ are invited to Jordan university for a week.

The number of graduated Master's students has been relatively stable, being 14 (in 2014), 14 (in 2015), 17 (in 2016), 20 (in 2017) and 4 (in 2018). The small number in 2018 reflects the small number of admitted students in 2016. The majority of students graduate in time. According to the study conducted among all alumni of Estonian universities, 70% of agricultural students graduated in time and 20% required one extra year (https://www.hm.ee/sites/default/files/uuringud/vil2015_aruanne.pdf *in Estonian, with an executive summary in English*).

Strengths:

- Great balance of age groups among lecturers – there are lecturers from each age group and the progeny is present as the number of PhD students and successful graduates is increasing, so there are more young and motivated lecturers.
- The lecturers are the experts on their field, knowing the theory and production, and they are highly motivated. They are also acknowledged by the society and they are opinion leaders.
- Lecturers attend training courses to improve their skills.
- PhD students are involved as assistant lecturers.
- Staff offices are located close together and the assessment panel in 2017 gained the impression that communication among colleagues was particularly strong and effective.

Areas for improvement:

- Increase the number of experts from abroad.
- Increase the number of lecturers with a PhD.

Action plan:

- Invite more lecturers via ERASMUS+ programme and the Development Fund.
- Encourage lecturers to get a PhD degree by 2020.
- Continue training PhD students to guarantee highly qualified staff for the future.

4.3 Landscape architecture, MSc

Name(s) of the study programme(s), studies	Landscape Architecture, MSc
Structural unit responsible for conducting the study programme	Institute of Agricultural and Environmental Studies (IAES), Chair of Landscape Architecture
Principal compiler of the self-evaluation of the study programme, study programme manager/programme manager	Simon Bell Professor of landscape architecture (curriculum leader since 1.09.2009) simon.bell@emu.ee Phone: +372 731 3136
A brief description of the process of self-evaluation of the study programme and the drafting of the report (time frame, who was involved, distribution of work, approval)	In compiling the report previous assessment results, processes and changes occurring in society as well as acts, regulations of the Republic of Estonia, EMÜ and the Institute have been taken into account. The report was prepared by the leader of the curriculum and then discussed and improved by the staff members of the department.

Planning and management studies

The design and development of study programme

The goal of the curriculum is to prepare professionals with a deep and extensive knowledge of landscape architecture, who can carry out planning and design projects from conception to implementation, taking into account technical, ecological, social and economic aspects. The graduate landscape architect is ready to take the final steps to become a professional accredited by EMAL (*Eesti Maastikuarhitektuuri Liit*, the Estonian Union of Landscape Architecture); or other national bodies which accept degrees following IFLA (International Federation of Landscape Architects) requirements e.g. the Landscape Institute in the UK, and thence to be able to work for a private consulting company, a municipality, government agency or on his or her own in private practice in Estonia or abroad, or is ready to continue his/her studies at the doctoral level, and values the professional and ethical aspects as well as the social role of the discipline.

There are currently two linked curricula giving higher education in landscape architecture at the Master's level, one in Estonian and one in English, sharing many courses but also with some differences. In summary, the English version enables students to follow the whole curricula in English, taking internationally versions of several courses and to carry out professional practical experience with an international or Estonian company. This self-assessment report treats both master curricula as mostly equivalent and describes all aspects jointly, as the international (Table 4.3.1) and Estonian students are taught together in the majority of courses.

According to EMAL and IFLA Europe, which regulates the profession, 4 years' minimum study is needed in order to be eligible to become a professional landscape architect and in Estonia, with a Bologna 3+2 system, this means a master's degree is necessary to be able to qualify. Thus, the bachelor's degree, called *Environmental Planning and Landscape Design* taught in the same department (but as part of a separate study group) is seen as the precursor degree for Estonian students, while for the English curriculum bachelor's degrees from other countries in landscape architecture or in

“neighbouring disciplines” such as architecture, ecology, planning or geography, are also accepted as base degrees to study.

The Chair is international and the master programme courses attract international students from a wide range of countries. Recent graduates and current students come from India, Iran, Iraq, UAE, Ukraine, Georgia, Armenia, Azerbaijan, Egypt, Turkey, Portugal, Spain, Latvia, Hungary, Japan, Vietnam, Bangladesh, Finland and the Czech Republic. Large numbers of ERASMUS students – the most and the widest variety of origins in the whole university – also find the Chair and programme interesting. The international students studying the entire programme have fluctuated in numbers (Table 4.3.1) since the programme opened in 2011 and there are several scholarships available via DoRA or an earlier programme, Infinity, which also funded students who graduated in 2017 and 2018.

Meetings are held at least once a semester with student representatives to review issues arising and to obtain feedback on the overall programme as well as courses provided by other departments in the university, but also courses taught by the staff members. These meetings frequently lead to ongoing improvements for the next academic year. This feedback is essential but limited and the feedback and comments on ÕIS are not as representative or as useful as they might be. EMÜ international department also collects and spreads annually feedback from Erasmus exchange programme students, supplementing other feedback from students.

Semester planning and feedback meetings with teaching staff members are held regularly at the end of each semester, to follow up the taught courses and to plan for the next semester. Need for curriculum and course content adjustments are also regular topics of these meetings. Main adjustments in the curriculum during the last three years have been concerning the elective specialisation subject courses, e.g. *Practical training in Landscape Architecture* and *Landscape architecture professional practice* as well as adjusting the *Modern landscape theory* course timing as students asked for more design tasks in the first spring semester.

The Chair has recently been successful in obtaining major H2020 and HERA research funding (two projects worth 879,000 and 200,000 € over 4.5 and 3 years respectively) and this has meant a realignment of the balance between teaching and research in favour of the latter for several key staff members which is putting pressure on the teaching side of staff workloads. This enables teaching and research to be strongly connected, but managing the balance needs constant monitoring. The outputs and results of the abovementioned research projects have been integrated to the study courses of master students by introducing the methods of the actual research activities (analysing character and content of bluespace) to the students as well as visiting and analysing the case study areas with master’s students (theory of landscape architecture).

During the last three years several intensive course modules, online international courses and summer schools have been provided for students together with number of European partners within ERASMUS+ (Coland and EUland21 projects) as well as within NORDPLUS cooperation framework.

The teaching and research staff is also very international and the departmental head is a very well-known British landscape architect, previous president of ECLAS (European Council of Landscape Architecture Schools). There are also teachers from Germany, Latvia and assistants (PhD students) from India, Poland and Ukraine as well as Estonian staff members. This international experience helps in keeping the curriculum aligned with those elsewhere in Europe.

The objectives of study programme, modules and their learning outcomes

There is only one active curriculum at master's level in Estonia in the field of landscape architecture. The curriculum has a leader (Professor Simon Bell) and the curriculum is under constant development to keep it relevant for Estonian as well as European context. The department has close cooperation with the representatives of students of students of Estonian Landscape Architecture Student Organization (ELASO) and regulatory professional body (EMAL). Partners of the department contribute to the curriculum development and help to carry out the practical training in enterprises.

The complete 3+2 programme as currently structured originated in a complete revision of the programme in 2005/2006, with a benchmarking project to align the programmes with the best in Europe (degree programmes from the UK, Germany and Norway were studied and used as the blueprint for the revised programme). Since then the master's programme has developed and been further refined as well as converted into an English-taught option aimed at international students. In addition to this development the Chair has made extensive use of the guidance on landscape architecture education issues by IFLA Europe and by ECLAS. The Chair has coordinated a regional group, EBANELAS (the Eastern Baltic Network of Landscape Architecture Schools) funded by Nordplus, where curriculum development featured in activities for 6 years. The staff members participated in a project on landscape architecture educational development led by Vilnius Gediminas Technical University, called EULand21 from 2016-2018. This project led to further developments and the introduction of new teaching modes such as online courses (there are plans to share courses also with EBANELAS partners). In addition, EMAL has started a project to review the professional educational requirements and we will be working closely to seek further improvements.

To analyse and adjust the curriculum, a landscape architecture educational programme tuning tool (created by an ECLAS organisation Le:Notre project partners and tested and used within the EBANELAS and EUland21 projects) is used to ensure, that necessary generic and subject specific competences are covered and suitable teaching methods for landscape architecture teaching are used throughout the curriculum. A majority of the staff members have been involved in compiling and discussing of these curriculum analysis sessions.

Teaching staff have a good scientific level and potential although most are yet to complete their PhDs. Course leaders are internationally acknowledged in their field. Lecturers have opportunities for in-service training and for improving their teaching skills. The teaching process also involves top specialists, people from practice and PhD students. All research staff are involved in teaching, either as a course leader or the lecturer of a specific topic.The elective module of the curriculum is designed to offer two routes to a degree: for students wishing to focus on design rather than research there is an option based around a practical semester and a research-by-design thesis while those interested in research will follow the path of a large design project followed by a research-based thesis. This reflects the professional nature of the degree. Several English master's programme students have had their first contact with our study environment as Erasmus exchange students during their Bachelor's studies.

The administration of material and financial resources

The department has its own floor of the building where it is housed and a set of studio spaces (4 rooms)

equipped with large moveable tables for project work and mounted digital presentation equipment (projectors and TV screens – all new in autumn of 2018). In addition, there is a computer lab equipped with new computers (replaced in 2018). The department also possesses a Virtual Landscape Theatre (the only one in the Baltics) which, while used mainly for research, is also available for use in certain courses.

A social room (with kitchen adjacent) provides a comfortable space for students to meet and interact, which helps to assimilate the foreign and Erasmus students and keeps them in the department. Staff have their offices in the same corridor. However, some rooms need some small improvements.

The campus also serves very well as a learning environment and one course uses the trees there for practising tree management skills. The students have use of the IAES library located in the Metsamaja (Forestry Building) as well as the main library. The book collection is in the process of being upgraded (the department is able to secure a 30% discount on books from the leading landscape publisher Routledge).
All students can aquire their personal door chips to enter to the chair's common rooms, studio spaces and computer class 24/7.

There are enough resources to deliver the curriculum, but some teachers are overloaded, especially at certain times of the year. The learning environment is well set up with an identifiable departmental space and facilities. Modern teaching methods are used and cooperation with other universities helps to maintain this. A lot of field trips are used and several courses include practical training. Sufficient financial sources for updating rooms are available from the institute's as well as from the Chair's own budget, e.g. 21 PCs for replacing the computer lab computers; two TV-screens and two projectors (bought in 2018).

Strengths:

- International students are taught together with local students of the only active curriculum in Estonia at master's level teaching landscape architecture (in English as well as in Estonian).
- A wide range of nationalities among the student body who share experiences.
- A curriculum which equips graduates to become accredited professionals able to work at home or abroad.
- A strong mix of internationally experienced teachers.
- Research outputs are forwarded to students in teaching process.
- Financial resources enabling the staff to do research work, research-based teaching and master's theses.
- High research potential owing to the large projects.
- Good studio spaces.
- The virtual landscape theatre.
- Upgraded computer laboratory.

Areas for improvement:

- To improve and keep the proportion of foreign students and to promote the programme more widely.
- To strengthen the course content offered by other departments or outside teachers.

- To balance the tension between teaching and research.
- To improve the lighting and colour on the floor and to fix hangers for displaying project work more effectively.

Action plan:

- Arrange meetings with the teaching staff from other departments at the end of each semester.
- Identify the shortages in course content or teaching methods and take necessary action.
- Follow and analyse the feedback given via ÕIS, via Erasmus students' surveys as well as via the Chair's feedback meetings with students and, if necessary, make changes in the curriculum.
- Motivate more graduating students to give feedback on the curricula via ÕIS.
- Look at ways of using staff more efficiently to meet both teaching and research objectives.

Learning, teaching and assessment

Admission

The information about study possibilities is spread by DAA of EMÜ within the electronic marketing channels for higher education as well as introduced by the staff members in different educational affairs and promotional visits to the target areas. Information is spread also by alumni and ERASMUS exchange students.

The enrolment of students is regulated by EMÜ. As recruitment to the Estonian programme is from graduating bachelor students (from the programme *Environmental Planning and Landscape Design*) or from the bachelor programme at Tallinn Technical University, while the English language programme recruits foreign students directly. Student candidates are expected to present a portfolio of previous works in digital form and take an online interview with leading staff members.

TABLE 4.3.1. LANDSCAPE ARCHITECTURE (MSc) CURRICULUM IN NUMBERS

Curriculum	Academic year	Admission	Graduates	Dropout cases	Dropout during the first year of studies	Total number of students as of 01.01	Outgoing mobility
Landscape Architecture (119359)	2017/2018	4	2	1	-	9	6
	2016/2017	4	9	-	-	14	7
	2015/2016	9	5	-	-	15	6
	2014/2015	6	-	-	-	6	8
	2013/2014	1	-	1	1	-	-

The take up of places has varied over the years (Table 4.3.1). The English-taught course attracts foreign students and large numbers of Erasmus students, which improves the atmosphere in the department. With the mix of students we achieve, the classes are generally full and we have no more capacity if the Erasmus student numbers hold at current levels.

Supporting students' choices

The elective module of the curriculum is designed to offer two routes to a degree: for students wishing to focus on design rather than research there is an option based around a practical semester and a research-by-design thesis while those interested in research will follow the path of a large design project followed by a research-based thesis.The Estonian bachelor's degree in *Environmental Planning and*

Landscape Design was designed to provide the basis to proceed to the master's level for the Estonian students, as an integrated programme in practice – the build-up of subjects was planned in this way and foreign master's students (and Erasmus students) can take some special bachelor's courses to fill gaps in their learning needs (normally as optional courses). In addition to the moderate amount of optional courses taught in English by the other chairs of EMÜ, there are also optional courses specially designed for landscape architecture master's students and all master's students can participate in the jointly organized intensive course modules and summer schools. There are different possibilities to become a visiting student abroad, e.g. ERASMUS+, DoRa, BOVA-NOVA network and others. Students are active in using such opportunities. To go abroad the students are assisted by the departmental ERASMUS+ coordinator as well as the one in the DAA, as well as by study specialists.

Contemporary teaching methods are used in teaching, with many being studio-based courses organised around projects of various scales which often have a real client such as a municipality, mining companies or the RMK (Estonian State Forest Management Centre). We also consider practical training an important part of the study process in ensuring the achievement of learning outcomes. This can be achieved in part by the large number of field trips and site visits but also, significantly through the compulsory and optional practical experience courses. At the MSc level the total amount of practical training is up to 18 ECTS which may account for 15% of the volume of the curriculum for students who take this route. Practical training is primarily carried out as internships (paid or unpaid) in consultancy companies or municipalities both in Estonia and abroad. In addition, design competitions can be used as learning opportunities and credit points awarded for them.

The international experience of the teaching staff helps to bring fresh ideas and experiences and the networks, such as EBANELAS, EUland21 and Coland also provide opportunities for students to take e-courses from partner universities (and vice versa) and also a series of online lectures offered by the LE:NOTRE Institute and Coland network. Other possibilities include Erasmus and Erasmus+ intensive courses plus others such as BOVA or NOVA courses offered by partners where students can study to get optional credits. The department has made some use of the opportunities offered by Fulbright to recruit visiting professors and there is a link with the University of West Virginia which may bring staff and students over for a period of a week to several weeks. Erasmus teaching exchanges are also used from time to time.

As large numbers of Erasmus students come into the department, significant numbers of home students as well as some of the foreign ones undertake Erasmus study semesters or a year abroad in one of many partner universities. It is usually no problem to align their credits from foreign universities with the home programme.

Requirements and Procedure for the Awarding of Bachelor's and Master's Degrees and Diplomas of Professional Higher Education sets the procedure at the university level, regulating the formation of defence boards, supervising, reviewing and general requirements for the final thesis, and from 2015 unified requirements for the thesis were set for EMÜ *in* *Guidelines for Writing and Formatting Final Theses*. Potential topics for the final theses are available at the departmental web page, although many students select their own topics. The topic should be chosen in the spring semester of the first year. Before the defence the graduates have to pass a preliminary defence, where the students receive constructive criticism from their supervisors and two professors who oversee the whole process.

Supervising students takes place individually or in groups within studio projects process by the course teachers or invited practicioners. At the end of the courses feedback to students about their practical work or written assignments are given orally (during final presentations or one-by-one discussions) or sometimes also in written form. For most of the students, the supervision and feedback they get is sufficient, though some students prefer to get more feedback on their work assignments. Due to the character of studio projects, the amont of supervision time needed per student is very often biggerthan proposed according to calculated contact hours per credit point. This makes the work load and/or involved teaching staff numbers bigger than average at EMÜ. Frequently the course organiser is helped by a PhD student to supervise course projects and to give regular consultations, whether the project is a group or individual one. We keep a very open atmosphere. Problems tend to be only when some students do not come to programmed presentations, consultations or feedback sessions and are invisible to the supervisors: it is impossible to demand their attendance. We try wherever we can to avoid this by using various communication means including Facebook to keep in touch and to find out what the problems are and how we can help the students to overcome them.

Students can be involved into the RDC activities rather directly. The Chair offers substantial amount of smaller working tasks within the research projects (surveys, field observations, data entering, etc.) to the bachelor's and master's level students. We also include students in research by using them to test some project outcomes, to complete questionnaires, to pilot newly developed learning packages which were developed within Lifelong Learning Programme projects, for example. Increasing number of topics for final thesis are offered which align of for part of the large research projects. Students can also participate in design competitions and smaller landscape design projects assignments taken by the Chair.

As stated above, meetings are held at least once a semester with student representatives to review issues arising and to obtain feedback on the overall programme as well as courses provided by other departments in the university, but also courses taught by the staff members. During these meetings, students' representatives can propose changes and improvements to the courses they have undertaken. Sometimes the students's work load has been discussed during these meetings, yet the controlling system to ensure that the credit points awarded match the actual workload of students is not implemented sufficiently.

Student assessment

A wide range of assessment methods to evaluate students' achevements within the courses are used in landscape architecture study programme. Grading criteria are available to students at the beginning of the course. The programme includes a large design and planning component and therefore the use of studio-based design and planning projects as a core of the specialised courses within the programme is in line with good practice. We use the ECLAS guidance to help in ensuring that the core competences of landscape design are met and appropriate assessment methods are used. All courses taught by departmental staff have clear descriptions of the content and assessment methods – both formative and summative – and the balance of proportions of each, depending on the type of course. Defences of the final works are public and we often get professionals coming and giving feedback. There are also external members of commissions. We also bring outside teachers or tutors from the profession into certain design and planning project courses.

Students can transfer their prior experience from studies or work experience to replace the obligatory courses or obtain optional credit points through the RPL system used for all programmes at EMÜ.

In our design and planning focused programme it is more difficult for students to carry out academic fraud because it is not possible to copy another design or planning solutions from somewhere else, although this is easier for smaller design elements such as benches or lighting. The applied nature of the programme and the relatively small amount of academic writing also reduces the scope. We address this issue more in the master's thesis where it can be more of a problem. EMÜ has acquired access to the plagiarism checking software which students or teachers can use to control fraud elements in texts.

Student support services

There is a problem in maintaining a graduation rate where students graduate within 2 years – some take academic break, work, or sometimes have families and while many of these eventually graduate, some do not. The scholarship or fee-paying foreign students are better at graduating compared with the Estonian students. In addition, as noted above, there are also many incoming Erasmus students which may make up a majority of some courses and add to the teaching loads. The students who did not manage to graduate in time are followed up regularly and coaxed back to complete their master thesis, usually the main problem for not graduating.

The students have their own association, ELASO, which has a club room in the basement of the building in which the department is located and they hold various social events and integrate the foreign and Erasmus students into activities.

The Student Union and different student organisations, e.g. ELASO are active. In the Institute, students are assisted by study specialists, who help with the everyday running of the study process and communicate with the students. The department has its own Erasmus coordinator and the staff in the study office in the main building help in recruitment of foreign students. The relationship between the staff and the students is good and the students can easily approach all teachers and other staff members.

Graduates' level of competitiveness

The graduates of the master's programme have in majority found a job as landscape architects or a specialist of neighbouring area (mainly as a spatial planner or an architect or green space manager). However, as the number of graduates is small and the good direct contacts with students are established during their study period (phone contacts, FB contacts), this statement is based on personal contacts with the graduates. The evaluation system, to assess our graduates' level of competitiveness and employment status is under development since the autumn 2018 and we are compiling the database of graduates of the Estonian bachelor's and master's programmes as well as English language masters' programme graduates.

The Chair has initiated the contact with EMAL to start a professional study programme recognition process by the IFLA Europe (which the Chair had before but which has lapsed) and to acquire the right to issue the Estonian vocational certificate *Landscape Architecture Graduate* (level 7) to the graduates together with their master's diploma.

We expect to proceed with these above-mentioned processes during the coming spring semester.

Strengths:

- Effective Erasmus+ system ensuring student mobility.
- Field trips complement theoretical lectures.
- Good opportunities for practical training.
- In several courses the learning process in the natural environment.
- Potential to join courses offered by partner universities and BOVA.
- Most of the master theses connected to research projects.
- Estonian Landscape Architecture Students' Association.
- MSc students having ample opportunities for mobility.
- High number of foreign students in the department.

Areas for improvement:

- Making more of the Fulbright and University of West Virginia connections to bring visiting staff over.
- Making more use of Erasmus teaching exchanges.
- Providing teaching staff with continuous training opportunities for professional training and self-improvement.
- Ensuring students graduate on time.
- Feedback from employers and alumni.

Action plan:

- Making more use of the e-learning courses offered by partner universities and other organisations.
- Developing a formal exchange plan with University of West Virginia.
- Improving the contact with students at risk of dropping out.
- Improving the recruitment methods for students by better promotion.
- Continuing with application of study programme recognition by IFLA Europe;
  continuing with the preparation to become issuer of vocational certificates *Landscape Architecture Graduate* (level 7).
- Continuing with creating the alumni database for alumny surveys.

Developement, cooperation and internationalisation of teaching staff

Teaching staff sufficiency

The academic/research staff of the department is well-qualified in general, of an optimal age range (Fig. 1.) and an equal balance between male and female (7 male and 7 female) persons.

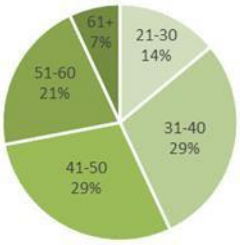

FIG. 4.3.1 AGE STRUCTURE OF THE TEACHING AND RESEARCH STAFF OF THE LANDSCAPE ARCHITECTURE DEPARTMENT

The professors and associate professors are well-qualified with PhD and one lecturer has completed a PhD. However, all other staff are registered on PhD programmes, although workloads make it difficult to progress quickly and some are more advanced towards completion than others. Senior and junior researchers and PhD students are engaged in teaching and in addition there are some studio tutors and specialists hired in from outside (e.g. from private practice). Some courses are taught by staff from other departments from the same or different institutes in EMÜ and also from outside organisations. Many of the staff are part-time, so workloads tend to be fairly high and work on the big research projects must be balanced with teaching. Individual staff have varying loading across the two semesters.

Feedback given to teachers and courses via ÕIS and the staff-student committee meetings is mainly followed by teachers. If problems occur, the head of department also follows up the feedback. During the last three years, one course teaching was rearranged due to the feedback given by the master's programme students, i.e. for *PK.0240 Advanced presentation graphic*.

Teaching staff's academic ethics

All staff members have participated in training courses and have been indivually instructed about the academic ethics and fraud prevention. Existing regulations within EMÜ as well as available software for plagiarism checking is introduced to the staff members and they use it in case of master's thesis supervisons.

Students are instructed about how they can avoid plagiarism in their course papers and final thesis reports within the course *PK.0754 Research methodology*.

Teaching staff's international mobility

Lecturers' mobility is mainly granted from Erasmus+ or from funds within research projects. Some staff members are very active and mobile, e.g. Professor Bell is a visiting professor in several universities including Harbin Institute of Technology in China and presents courses in Finland and Latvia on a regular basis. Other members have not carried out so much mobility to date. According to the Terms and procedure for the professional review of the teaching and research staff members of EMÜ such interviews are carried out regularly.

Development of the teaching and research staff

Teachers pursuing their PhD pass the courses *DK.0005 Pedagogy of higher education* and *DK.0006*

Practice learning in university teaching during their PhD studies. In preparing and realising the latter course supervisors of PhD students provide support.

Staff members can take part of the different training courses, necessary for them according to their self evaluation. Several teachers have been using the offers for personal development as a university teacher provided by the Tartu University or EMÜ. Teaching techniques and experiences of different staff members are also often a topic of discussion during the regular staff meetings or the staff meetings taking place at the end of each semester. Some featured training seminars have been carried out by Professors Simon Bell and and Mart Külvik, e.g. about supervision of master's thesis. Longer jointly organised staff trainings to improve the teaching abilities within the design and planning courses, have been taken place more than five years ago and some younger staff members haven't been able to participate in this training. Staff members are mostly teaching within the professional area, they also carry out the research activites.

The most recent staff training for all staff members about communication and team development took place less than 12 months ago and a follow up training is being planned. Staff members have several joint social events, some more regular and some in extraordinary cases.

A more systematic staff development system (monitoring and training) should be implemented.

Strengths:

- Teachers have a strong scientific and/or professional practice background.
- Academic staff numbers are sufficient to guarantee academic succession, there are enough young researchers and lecturers involved in the study process.
- Well-balanced age and gender structure.
- Research work and teaching are generally balanced, while scientific research is valued.

Areas for improvement:

- Reducing stress from overloaded staff members.
- The time management skills of all staff can be improved more actively.
- Incoming and outgoing staff mobility could be better for some staff members.
- Staff training system needs to be developed and implemented.

Action plan:

- Include the application of modern teaching methods as one of the indicators in the evaluation of teaching staff;
- Increase teachers' mobility for teaching in other universities;
- Encourage teachers to make use of the available mobility opportunities and financing;
- Develop and implement the systematic staff training system.

Units out of Tartu