

ESTONIAN QUALITY AGENCY FOR HIGHER AND VOCATIONAL EDUCATION

# Assessment Report

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Study Programme Group of Transport Services

**Tallinn University of Technology**

**TTK University of Applied Sciences**



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## Introduction

The aim of the assessment team was the evaluation of the Study Programme Group (SPG) of Transport Services in two higher education institutions: Tallinn University of Technology, and TTK University of Applied Sciences.

The team was asked to assess the conformity of the study programmes belonging to the study programme group and the instruction provided on the basis thereof to legislation and to national and international standards and/or recommendations, including the assessment of the level of the corresponding theoretical and practical instruction, the research and pedagogical qualification of the teaching staff and research staff, and the sufficiency of resources for the provision of instruction.

The following persons formed the assessment team:

Kevin Cullinane ( <i>Chair</i> )	Professor of Logistics & Transport Economics, University of Gothenburg - Sweden
Hercules Haralambides	Professor of Maritime Economics and Logistics, Erasmus University Rotterdam - Netherlands
Trevor D. Heaver	Professor Emeritus, Professor of Transportation, Sauder School of Business, University of British Columbia - Canada
Gabriel Lodewijks	Delft University of Technology, Faculty of Mechanical, Marine and Materials Engineering, Sections of Transportation and Logistics - Netherlands
Janek Saareoks	Schenker Ltd., CEO - Estonia
Raivo Vare	Estonian Railways Ltd., member of the Management Board - Estonia
Olli Kauhanen	student member, Rauma University of Applied Sciences, Faculty of Technology and Maritime Management - Finland

After the preparation phase, the work of the assessment team in Estonia started on Monday, October 19, 2015, with an introduction to the Higher Education System as well as the assessment procedure by EKKA, the Estonian Quality assurance organization for higher and vocational education. The members of the team agreed the overall questions and areas to discuss with each group at the three institutions, who were part of the assessment process. The distribution of tasks between the members of the assessment team was organised and the detailed schedule of the site visits agreed.

During the following days, meetings were held with the representatives of Tallinn University of Technology (Tuesday the 20<sup>th</sup> and Wednesday the 21<sup>st</sup>) and TTK University of Applied Sciences (Thursday the 22<sup>nd</sup>). In all cases, the schedule for discussion on site for each of the various study programmes only allowed for short time slots to be available for team members to exchange information, discuss conclusions and implications for further questions.

On Friday, October 23, the team held an all-day meeting, during which both the structure of the final report was agreed and findings of team meetings were compiled in a first draft of

the assessment report. This work was executed in a cooperative way and the members of the team intensively discussed their individual views on the relevant topics.

In the following two sections, the assessment team summarise their general findings, conclusions and recommendations which are relevant across the whole SPG. In so doing, the team provides an external and objective perspective on the programmes and the contexts within which they are delivered. Ultimately, the intention is to provide constructive comment and critique which may form the basis upon which improvements in the quality of the programmes may be achieved. In formulating its recommendations, however, the assessment team has not evaluated the financial feasibility associated with their implementation.

## **Summary of Study Programme Group Findings**

In general, the panel is satisfied that all of the programmes evaluated across the two institutions visited meet the required standards. The teaching staff generally appear to be well-qualified to teach on these programmes and, in all cases, the supporting infrastructure is deemed to be sufficient. Some differences in the quality of programmes or teaching groups are apparent and these are specifically identified and discussed in detail within the programme-specific summaries. However, it is important to reiterate that whatever shortcomings may exist, they do not exert any significant influence on the overall judgment that appropriate standards are being met.

### **Strengths**

Both students and members of staff appear to be highly motivated. Despite what might appear to be a heavy workload in terms of class contact time, especially for those students that are both working and studying on a full-time basis, the students appear not to be stressed and are generally positive about their programmes, their teachers and the institutions in which they study. The teaching staff appear to be highly professional in expediting their duties and content with their role, contribution and recognition received within their respective institutions.

Innovation in teaching methodology is very apparent. Reflecting Estonia's ranking in terms of IT availability and use, as well as the proliferation of 'distance learners', teaching and learning is generally very well supported and facilitated by e-learning materials. The majority of these e-learning materials have been developed by individual lecturers themselves, though sometimes with the support of specific expertise in educational technology. A Student Information System (SIS) is also widely used.

Overall, there was significant evidence of excellent links with industry, no doubt aided by the prevalence of students (particularly at Masters level) holding down full-time jobs in addition to studying full-time. Alumni relations were generally valued very highly, as were links to employers and their professional/representative associations. This close relationship to key external stakeholders reaps many benefits in teaching and learning, including access to internships, visiting lecturers and field trips.

Prospective employers clearly appreciate the education which is delivered across the SPG and, specifically, the knowledge and skills provided to the students. At least currently, in a generally 'tight' labour market in Estonia, particularly among the young, the employment prospects of graduates in their respective fields are very good and there is clearly a strong demand for professionals with the competences obtained from the programmes offered within the SPG.

There is a good level of group work across all the programmes within the SPG. Individual teaching staff often implement peer group assessment in order to deter or recognise the underperformance of individual group members. As well as group work, real-life scenarios are also strongly emphasized in virtually all the programmes within the SPG. More specifically, the prevalence of Internships across the SPG is both notable and indicative of 'best practice'. Although these can be difficult to organise and administer, the efforts of both staff and students to secure suitable opportunities are laudable.

The physical environment which supports the SPG is generally of very high quality, particularly following the recent significant investment in the EMA. Teaching rooms appear to be adequately equipped and configured, the general quality of the wider study environment is appropriate, laboratory facilities are generally suited to teaching activities, student access to IT technology is very good and the library facilities are of high quality. Specific mention should be made of the central TUT library which is exceptional in its physical environment, holdings and digital access to e-resources. It is indeed a very valuable asset, from which all students within the SPG may benefit via access of one form or another. It should make a significant contribution to the education received by students.

### **Areas for improvement**

There is very little sharing of resources either between organisational units within the same institution or between institutions. There are obvious possibilities with respect to complementarity, efficiency gains and synergies which could be reaped, but these are largely not taken advantage of. This relates particularly to the design of curricula and the utilisation of both teaching staff and module content, in both generic and specialised areas of study. A notable and most welcome exception to this is the jointly negotiated continuous reduction in the progression requirements which apply to graduates from the Prof. HE in Transport & Logistics at TTK that wish to enrol on the MA in Logistics at TUT.

With only a few and relatively minor exceptions, the teaching within the SPG is generally not very well underpinned by research. Although pockets of real research activity do exist, particularly within the Department of Logistics and Transport at TUT, and there are 'green shoots' of early growth in research activity in other parts of the SPG, this very much revolves around individual interest and motivation in pursuing research. It is generally the case across the SPG that there is relatively little material institutional support for research, virtually no recognition that teaching should be informed by research and no real research culture. While the standard of premises and available laboratory equipment is undoubtedly high, it is clear that it is purely teaching which has driven the design and development of these resources and that the possibilities for the innovative use of laboratories etc. for research purposes remain largely unexplored.

Although the links to the external stakeholders (employers, alumni, professional associations, government etc.) are generally very strong, this appears to be heavily reliant upon the personal relationships and activities of individual members of the teaching staff to facilitate this.

Across the SPG, there is only a small amount of programme content which is delivered in English. Thus, the inward movement of international students is minimal. There are, however, some opportunities for outward student mobility, largely through the Erasmus programme, though the number and geographical diversity of such opportunities are somewhat limited. The general level of internationalization within the programmes is, therefore, rather low. Against a context where the local demand for student places is declining, there is an obvious need for greater internationalisation through the wider, systematic use of English within the programmes, particularly at Masters level.

The high number of student drop-outs appears to be a systematic problem, though little systematic has been done to improve the situation.

## **Summary of Conclusions and Recommendations**

The most striking conclusion and associated recommendation is that there is a need for greater collaboration and integration, not only within the two institutions but also between them. There is significant potential for the cross-fertilisation of both knowledge and skills via the application of innovative approaches to the building of educational programmes that integrate across multidisciplinary and organisational boundaries. Within such a context – where silo walls have been broken down – the most suitable and knowledgeable teachers will deliver the taught content. At the same time, efficiency gains will be made that will free up resources (especially time) to support other activities, particularly the development of a stronger research profile. As just one example, now that the EMA has become a structural unit of a University, there is significant potential for incorporating more maritime content into other programmes with a focus on transport and/or logistics. Similarly, why do non-specialists within the EMA deliver generic business content when the main expertise in these areas lies elsewhere within TUT?

A research strategy for the development of both pure and applied research needs to be instigated. The volume, quality and impact of research, as well as the number of PhDs, must increase in order that both universities can compete in an international context and so that they can continue to promote Estonian industrial development within the technical and scientific areas. In the short-term, research strategies can be implemented at the level of the programme, teaching group or department.

Quality Assurance Systems should be much more well-developed and consistent, not only within but also across institutions. These should be driven from within, but integrated with the required external evaluation process, of which this exercise is an example. There is a need, for example, to formalize the varied ways in which linkages to external stakeholders are established, sustained and developed. The collection of feedback from employers, professional associations, alumni etc. should be made more systematic and there should be

feedback on the feedback – i.e. feedback provided by the institution on the feedback received from external stakeholders.

Efforts should be made to incrementally develop both generic and specialised modules so that they are delivered in English. There needs to be a critical mass of English courses so that studying in Estonia becomes not only an attractive, but also a viable, option for overseas students. The cultural exposure this will bring will enhance the learning experience of Estonian students and increase the level of international collaboration of the two universities. This could lead to spin-off benefits, such as increased involvement in research consortia that bid for EU funding. This requirement is probably more germane for this SPG than for any other in that, as one alumni so eloquently put it when meeting with the Assessment Team, “English is the language of logistics”.

A specific strategy should be developed for reducing the drop-out rate. Most effective practices in other countries seem to rely upon giving students individual attention on their arrival at the University, so that they quickly feel part of a social system in which they are known and recognized. The establishment of a student support centre is one way forward or, if this already exists, then perhaps there is a need to strengthen it.

Already an area of strength across the SPG, e-learning should be further developed at a strategic level, rather than at the rather ad hoc level of individual staff that have an interest in developing such materials. These should become commonly applied learning materials and not just the reserve of the distance learners. As such, a strategy for e-learning should be developed and implemented.

Given the potential problems that can arise with group work and its assessment, each university should consider whether there should be a set of guidelines developed which would ensure a systematic institutional approach, rather than the ad-hoc (but, nevertheless, seemingly successful) approaches which are currently applied by individual members of the teaching staff.

## 1. Assessment report of SPG at Tallinn University of Technology

Study programme group	<i>Transport Services</i>
Higher education institution	Tallinn University of Technology
Study programmes	Logistics (BA) Logistics (MA) Maritime Studies (MA) Deck Officer (Prof HE) Port and Shipping Management (Prof HE) Waterways Safety Management (Prof HE)

### 1.1. Some characteristics of Tallinn University of Technology

The history of TUT dates back to 1918 when it started life as an engineering college. It became the Tallinn University of Technology in 1936 and was formally granted university status in public law under the Universities Act of 1995. TUT provides higher education at all cycles in natural sciences, engineering, manufacturing and technology, social sciences and related areas. It has about 14.500 students and 140 professors. The university also fosters research in these areas, at the same time creating a synergy between them. It is considered to be Estonia's leading institution for research and education in the engineering and technology domain and is highly successful in attracting third party funding for research, with about 50% of its financial resources coming from such sources.

The Transport Services Study Programme Group (SPG) consists of six programmes forming a medium-sized Study Programme Group within the TUT context. According to data from the Estonian Education Information System (EHIS), the students registered within the TUT Transport Services SPG represent 56% of all students included in this SPG in Estonian Higher Education Institutions (HEIs) in 2014/2015. TUT is the only HEI in Estonia providing higher education in this area both at Bachelors and Masters Level. Two programmes (one BA and one MA) are hosted by the Department of Logistics and Transport within TUT's Faculty of Civil Engineering and the other four programmes (three PHE and one MA) are hosted by the Estonian Maritime Academy (EMA) of TUT. The EMA joined TUT in August 2014 and it remains the only structural unit within any Estonian HEI providing professional higher education and Masters level education in the maritime field.

Both the Department of Logistics and Transport and the EMA are guided by 5-year visions, which do not appear to have been formally developed into working objectives and strategies. In the case of the former, the intention is to develop a focus on supply chain engineering and the use of IT applications. In the case of the EMA, the recent publication of a central government maritime strategy, incorporating elements relating to manpower planning for the maritime sector, provides a target requirement of 100 graduates per year for employment at sea and in the shore-based shipping sector.

The Department of Logistics and Transport and the EMA both face some current and short-term difficulties with their financial positions. The former is only three years old and has not yet fully progressed through its early transitional stage. Since the TUT internal funding model revolves around historical values of variables such as number of students, academic hours taught etc., it is only once the Department reaches steady state that its funding base will be flowing appropriately. At the same time, the Department has worked hard and quite successfully to supplement its teaching income with financial resources from research projects. The EMA are also in a period of transition and are in receipt of some internal transitional funding from TUT. This has been put to good use in terms of new investments in assets. However, in the near future, the EMA will also become dependent on the TUT internal funding model which is essentially based on student numbers. It is obviously vitally important, therefore, that the EMA ensures that the appropriate quality and market demand for its programmes is not only maintained, but developed. At the same time, it is highly likely that the EMA will experience a shortfall in funding due to inadequate research. Thus, it is also imperative that it nurtures all alternative funding streams, but particularly by securing the emergence of a much more vibrant research profile and activities. Moreover, progression and staff development at TUT in general is based on staff's research output. As part of TUT, the EMA will have to comply with the same standards and requirements, and this requires an immediate strategic re-orientation towards the facilitation and funding of research at the EMA.

## **1.2. Summary of Conclusions and Recommendations**

The merger with TUT was certainly a major development for the EMA, but also for TUT. From the perspective of the EMA, the benefits of the merger with TUT potentially include cooperation in lecturing, budgetary savings in administration due to centralisation, a stronger funding base for investments, greater visibility and marketing capacity, as well as improved opportunities for the development and promotion of staff. Disadvantages may include a loss of independence, increased bureaucracy and differences in organisational culture (e.g. the wearing of uniforms at the EMA) and regulatory control (e.g. the role of international and national agencies in prescribing curricula). Overall, once the transitional period of change is past, however, the benefits of the merger to both the EMA and other parts of TUT are likely to surmount the potential disadvantages and teething problems experienced. For example, positive trends were already observed with respect to investment in EMA infrastructure and the adoption and deployment of more structured organisational behaviour within the EMA (e.g. with respect to the evaluation of teaching by students). A major advantage of the merger is that it has been virtually universally welcomed by students and external stakeholders.

Generally, the Assessment Team perceived that cooperation between the EMA and other parts of TUT remains pretty weak. Some EMA graduates have progressed onto Masters Programmes at the wider TUT, but there is a much more systematic progression for TTK students from their Prof. HE onto the TUT Masters programme in Logistics

Similarly, there has only been limited research collaboration between the EMA and other parts of TUT; for example, in EU Interreg projects. There remains plenty of scope for enhanced collaboration, especially in teaching and the use of laboratories for experimental research. Although it is affirmed that the EMA intends to draw teaching resources from TUT, there

appears to be a certain reluctance in actually doing so, with an inclination to provide as much as possible from within the EMA's own teaching staff and other resources.

The EMA needs to engage in greater efforts towards effective integration with TUT by outsourcing its non-maritime related modules like logistics, transport, economics, management, marketing, mathematics, statistics etc. to other parts of TUT

Amongst a range of other benefits, not least the quality of the student learning experience, this will create the time the EMA teaching staff need to devote to research and publications. Now forming part of a university, the EMA will be required to take some major steps towards the development of its curricula and staff. For example, research is a dominant part of the activities of a university and the infrastructure needs to accommodate that. Since research and the dissemination of research outputs will inevitably become a formal requirement of the university and an integral element within TUT's internal funding model which the EMA will now be exposed to, it is vital that actions are taken to engender a much-enhanced research culture and environment. The University management needs to develop policies and resources which facilitate this enhanced collaboration between the EMA and other structural units within the institution. Such a strategy should also aim at eliminating the teaching-based mentality of many teaching staff.

The University exhibits good practice in terms of the way that the 'Post-Graduate School' (run jointly with the Estonian University of Life Sciences) provides support for a large number of doctoral students within the Faculty of Civil Engineering. The available resources for doctoral students to attend conferences, undertake field visits etc. is quite impressive and it is very sound practice that it is obligatory for doctoral students to teach and/or supervise student projects. Good practice is also exhibited in the provision of a business unit within each Faculty to support commercial research activities.

It is not clear if a staff development policy exists in terms of promotions, encouragement for research, conferences; etc. Although it is good that TUT does provide some courses for staff development, this does not seem to be linked to any sort of systematic staff development programme. Irrespective of this, more support should certainly be established for teaching staff with recent doctorates (e.g. last three years), so that they can more easily continue their research career and establish their own research funding streams, simultaneous with developing their teaching skills. Similar support should be provided to existing teaching staff that wish to register for a doctorate. With respect to initial staff recruitment, given the higher salary level which exists in the maritime industry, an increase in university salaries could be considered in order to attract high quality teaching staff into this field

As with every university in Estonia, a common challenge is faced in the form of a declining pool of potential students. This has brought about a general desire in universities to pursue an objective of internationalisation. As one might expect given the nature of the field covered by this SPG, the current level of International cooperation is reasonable with a limited number of student and staff exchanges, primarily with neighbouring countries. There is, however, only a limited amount of programme content which is currently delivered in English. The use of overseas professors is probably prohibitively expensive, but as TUT has shown, some possibilities for this can be made available through the funding received from collaborative

research projects. In fact, the further development of international contacts through increasing engagement in research networks is likely to lead to the greater involvement of overseas lecturers teaching in English on taught programmes. The argument was raised that if too much content was delivered in English, this would undermine the use and/or status of the Estonian language. Referencing numerous parallel examples from across the world, the Assessment Team remain unconvinced by this logic. In addition, all of this belies the observation of the Assessment Team that virtually all the students which they met exhibited excellent command of the English language.

Both the Department of Logistics and Transport and the EMA receive strong support from their alumni. The former has a very strong, well organised and structured alumni setup that includes a system of statistical follow-up of graduates. While the EMA does not possess the latter, it does have an impressive web presence which addresses alumni specifically, including a regular news bulletins and media publications profiling individual alumni and exemplar alumni practitioners. There exists clear potential for each to learn from the other with respect to developing an optimal system for managing alumni relations, especially since the stakeholder segments of each structural unit are overlapping to a large extent.

### **1.3. Strengths and Areas for Improvement of Study Programmes by assessment areas**

#### **1.3.1. Logistics (BA, MA)**

##### ***Study programme and study programme development***

###### Comments

These programmes are hosted by the Department of Logistics and Transport which is just three years old. The Department already possesses a good track record in applied research, with a reasonable involvement in EU projects. It also represents the University in a number of important networks.

Most of the senior management of the Department appeared to have 'visiting' appointments, but the panel was assured that this was merely a temporary transitional convenience and that their titles will become 'permanent' in due course.

The BA and MA programmes are structured on the basis of a 3+2 format, with the BA providing a solid and broad foundation in logistics and the MA enabling deeper learning and greater specialization, particularly in the thesis stage. The MA programme is designed for students that have full-time employment – i.e. with evening and weekend class contact time.

Estonia's national professional and vocational standards for logistics are established by the PROLOG organization, based on international requirements for specialists and managers in the fields of logistics and supply chain engineering/management. These educational standards very explicitly inform the design and development of these university programmes.

In addition, the programme curricula have also been vetted by a number of prominent industry players and regulators, as well as by the relevant Ministry.

### Strengths

- The Department is well managed, with a clear strategic vision for future development.
- The research culture within the Department is reasonably strong and there is clear evidence that this underpins and informs the teaching function.
- The Masters programme in logistics is the only one in Estonia.
- The curricula and teaching methods are generally perceived as being state-of-the-art and, partially as a consequence of this, the Department has an excellent reputation both outside and within the University.
- The content and structure of the study programmes were found to be consistent with programme objectives and expected learning outcomes. The different modules within the programmes meld together appropriately to form a coherent whole.
- The Department has very close collaboration with industry, as manifest in projects (e.g. relating to transport planning, supply chain engineering, the development of websites for logistics vocabulary etc.), participation in professional associations, field trips, popular summer schools, guest lectures and professional courses (such as those which are regularly provided for Ericsson: a major employer of graduates from the programmes).
- The Department has very well developed formal feedback systems in place. These exist for assessments (particularly the theses), staff appraisal, internships and curricula development, where the latter takes into account feedback from students, employers, alumni and other stakeholders, such as industry regulators.
- It is good practice that teaching staff are involved in programme development discussions and that stakeholder feedback is shared in regular staff meetings.

### Areas for improvement

- The panel gained the impression that the process of securing formal changes to programme curricula was administratively difficult and bureaucratic. This may prove to be a barrier to the future dynamic development of curricula and should be addressed at either Faculty or University level, whichever is appropriate.
- The current focus of the programmes emphasises the engineering of supply chains, rather than supply chain management.
- Only marginal success has been achieved in internationalising the programme. The student body was particularly enthusiastic about the fact that greater internationalisation would attract more foreign students, who would add to the diversity of knowledge in classes.
- There are opportunities for developing modal specialisations, possibly as electives or streams within the programmes.
- Linked to this, there are also opportunities to improve the programmes and the student learning experience by establishing better links between existing university programmes.
- Employers are satisfied with the programmes but, as is commonly the case with this type of stakeholder, they feel that some parts of the programme are too theoretical.

In contrast, the Panel feels that the current balance between theory and practice is appropriate.

- Although being generally very satisfied with their studies, students preferred to have more specialised, and less general, subjects. They also suggested that there was too little practical work in the first year of the undergraduate programme.
- Both students and employers would like to have greater IT content in the programmes. Programming and ERP systems were specifically mentioned as topics where more could be done but, with respect to the former in particular, it is important to bear in mind that the programme should be seeking to educate 'architects rather than builders'.
- When students graduate from the programmes, they still need to take the PROLOG exams to qualify as a professional logistician. Thus, there is no explicit accreditation or formal recognition by PROLOG of the education the programme provides.

### Recommendations

- The programme management should consider the possibility of providing more of a focus on managing or leading the supply chain, possibly through the availability of appropriate specialised electives or streams. This could help to build upon and reinforce the generic education students already receive in entrepreneurialism, by providing a deeper education in managerial and leadership skills. This would also fulfil the requirements of employers within Estonia's logistics sector.
- There is a demand among students, employers and staff for the greater internationalization of the programmes, as achieved through the wider adoption of English as the medium of instruction for certain modules. This is especially the case for the Masters programme, where a phased increase in English language delivery would inform any future decision on the likely success of a fully international Master's degree programme.
- There is great potential for utilising modules from other parts of TUT. In particular, programme managers have already recognised the need for more maritime content and the potential, therefore, for 'deeper' collaboration with the EMA should be pursued more fervently. By so doing, students could be provided with the possibility of specialising in port and shipping management
- Programme managers should give due consideration to the balance between theory and practice within the programmes, as well as address the feedback from the student body as previously described. As such, the potential for a greater emphasis on education acquired during internships should be investigated.
- Programme management should engage in discussions with PROLOG with a view to obtaining full or partial exemption from their professional logistician exams. This would represent, therefore, a formal accreditation of the programme by PROLOG.

### ***Resources***

### Comments

Programme managers expressed concerns about the effects of the limited resources (money) available which is based on student numbers and ECTS. This inhibits certain strategic

initiatives (e.g., opportunities for PhD students and, particularly, more research by the academic staff) that might help underpin and inform the teaching on the programme.

### Strengths

- A new and multifunctional library covers most needs, with all TUT students able to access it from anywhere through VPN. The library has an excellent physical environment and provides access to lots of e-books and e-journals etc.
- The Merkatory Lab is an impressive resource which provides a strong incentive for industry-academia collaboration.
- Teaching facilities are also used for corporate training programmes.

### Areas for improvement

- The research activities of staff are not as well funded as doctoral candidates, who are funded centrally by a doctoral school. This compromises not only the Department's research outputs and culture, but also the ability of staff to attend overseas conferences and to remain up-to-date with the field. All of this will eventually have adverse consequences for the teaching function.

### Recommendation

- A system of core funding to support the research activities of staff needs to be developed, preferably one which recognises research performance.

## ***Teaching and learning***

### Strengths

- The Department has a dedicated manager assigned to relationships with companies. This includes responsibility for arranging regular company visits and internships, even though students are very proactive in arranging their own internships. Relationships with industry seem to work well, including network connections through PROLOG and others.
- Based on a comprehensive and impressive list of Masters and bachelors theses provided by the Department, it was clear to the Panel that many had been done in close collaboration with particular companies, some of which are major multinationals – e.g. Ericsson. Some employers (e.g. Columbus IT and DSV) had actually implemented in practice some of the ideas, research or innovation that had originally been produced as part of a thesis.
- A lot of study materials are already in English and some theses are written in English.
- Many simulation and modelling programs are used. These are useful teaching tools, especially for aspects such as visualizing supply chains.
- There is good use of Moodle as a platform for developing e-learning materials.

- Both programmes place significant emphasis on group work, but particularly at Masters level. This works really well, with students making imaginative use of a variety of digital tools to support their group work – e.g. Skype, Doodle, Google docs and calendars. The students are highly appreciative of how this engenders collaborative skills and reflects a real-life work environment. In an effort to deter 'free-riding', some of the teaching staff make use of peer group assessment to different degrees of formality.
- The Masters programme is delivered in the evenings and weekends so that students can continue in full-time employment. This is facilitated by a 'flexible learning' educational philosophy, the existence of impressive distance learning materials developed on Moodle and by the supportive approach of employers that allows students to organise their studies in and around adjusted working times. The students feel that the emphasis on group work and the timetabling of classes works very well within this context.

#### Areas for improvement

- Students recognise the importance of both hard and soft elements in the BA and particular value is attached to the projects which are undertaken as part of the MA. They would like to see more use made of IT and while accepting the need for general subject content, they would also like to see some effort to bring some logistics into these subjects, e.g., by case studies or example problems.
- Students would like more practitioners brought in as teaching staff to provide real life cases and inspiration.

#### Recommendations

- The Department should build upon its already impressive record in securing student exchange partners (both inward and outward) by taking strategic steps to further internationalize the programme.
- The Programme management should encourage teaching staff to make more use of IT in their teaching, either as direct content (the use of logistics software etc.) or in support of their delivery of content (e-learning materials etc.). As recommended by employers, the inclusion of more content related to ERP systems would represent a good starting point.
- Programme management should negotiate with the teaching staff delivering more generic content in the programme (who are largely external to the Department) in order to increase the use of logistics-based examples or case-studies. Alternatively, assessments could be made more individualised (or student-centred), so as to cater for areas of application which are directly relevant to the student.
- Programme managers should take greater advantage of the goodwill which exists amongst the external stakeholder community, by increasing the involvement of that community more directly in the teaching and grading of curriculum elements and thesis supervision. For this, some training and/or mentoring may be required. There is also scope for increasing the number of ad hoc guest lectures delivered by such stakeholders, either as part of the curriculum or as an extra-curricular activity. The

motivation certainly exists amongst practitioners to become more involved, not least as they can use this opportunity to scout for recruits into their companies, either as interns or employees.

## ***Teaching staff***

### Strengths

- The Department has flexibility in the planning of teaching hours and other activities, such that teaching workloads can vary depending on teaching and project interests; i.e. there is a division of labour within the Department.
- The Department's teaching staff are perceived by their students as highly competent, up-to-date with disciplinary knowledge and modern teaching methods and the most innovative in TUT.
- In terms of internationalisation, the Department provides support for staff that are interested in developing their English language skills and is considering the future launch of an English language Masters programme. 4 members of the teaching staff have delivered lectures in 11 overseas universities since the inauguration of the Department. In general terms, the experience gained by teaching abroad is supported by the Department. Since 2013, staff have participated in, or delivered papers at, 65 different conferences. The Department has received 25 guest lecturers from 13 different universities.

### Areas for improvement

- Students perceive that lecturers from other parts of TUT are somewhat old-fashioned in their approach to teaching.
- Teaching workloads appear to be quite high and it is very difficult for teaching staff to find time for self-development or research. Although discussions take place between teaching staff and their managers about workload volumes and plans for the future, there is no real formal staff development process in place.
- Funding support for the research of teaching staff is not as generous as for PhD students. This means that staff are largely reliant on project-based funding from companies. This not only undermines the pursuit of independent and 'blue-skies' theoretical research, it also results in research outputs that may be very specific to a single organisation and/or possibly confidential. Obviously, this impacts adversely on the potential for publishing research outputs and may compromise the future career prospects of staff, at least in an international arena if not within Estonia.

### Recommendations

- Greater bilateral collaboration with university partners overseas will facilitate participation in joint projects and EU consortia, as well as providing staff with the

potential to gain experience from teaching abroad and promoting the participation of foreign teaching staff in delivering programme content.

- A better and more formal strategy is required for managing staff workloads and the activities in which they engage.

## ***Students***

### Strengths

- The level of English language skills of students is very high.
- The international exchange of students into and out from the programme has been very successful. 37 students of the programmes have participated in exchange programmes with 24 different European universities. The Department also has the possibility of receiving additional scholarships for their students with universities in 11 non-EU countries within the framework of TUT bilateral agreements. Since 2013, the Department has hosted 47 students (1 BA, 38 MA and 7 PhD) from 15 different countries.
- 100% of students get jobs even before they graduate.

### Area for improvement

- The drop-out rate is quite high, but is largely due to financial pressures and an ability to cope with the level of mathematics required.

### Recommendation

- Efforts should be taken to minimise the drop-out rate as far as possible.

## **1.3.2. Maritime Studies (MA)**

Study programme and study programme development

### Comments

The curriculum has been jointly developed and delivered with staff from TUT since 2006, with approximately 25% of the content delivered by TUT and 75% by the Estonian Maritime Academy.

Having gained some experience, the MA is clearly valued as an opportunity for graduates from the Prof HE in Port and Shipping Management, as well as other maritime-related programmes, to come back into education and gain a further qualification.

The merger with TUT is perceived by employers as having improved the image of the programme in the marketplace.

An interest was expressed in advancing the use of English within the programme, but no concrete plans have been put in place.

### Strengths

- The programme is held in high regard by students, alumni and employers. This provides a sound platform for the future development of the programme, particularly after the wider resources of TUT are more fully utilized.

### Areas for improvement

- A closer and more formal dialogue with future potential employers is required as part of the process of curriculum design and development.
- The programme is too focused on mainstream maritime content. In a world where a supply chains perspective and multimodal possibilities are prevalent, it is important to also take advantage of the expanding market for all sorts of onshore activities.
- Greater emphasis should be placed upon business-related content within the curriculum.
- The marketing of the programme was perceived by employers to be poorly performed and should be much more intensive and targeted.

### Recommendations

- Currently, there is an understandable focus on the independence of the Estonian Maritime Academy as a structural unit of TUT. However, there is a need for a better elaboration of the potential advantages arising from the merger with TUT and how these might impact upon programme design.
- There is a general need for staff, students and the programmes to become more outward-looking in their perspectives.
- A formal mechanism by which employers can inform curriculum design should be developed.
- More 'Management' topics are required in the curriculum.
- Meetings of the Programme Committee should be properly minuted.

## ***Resources***

### Strengths

- It is evident that the EMA conducts extensive vocational and specialised professional courses which not only directly supplements the resources available, but also forges closer contact with the maritime sector.
- There is close cooperation across a range of different activities with Tallink, the largest ferry and logistics provider in Estonia
- The programme now has a significant number of alumni employed within local industry.
- The merger with TUT is seen as very positive for the finances of the Academy

### Areas for improvement

- There appears to be limited financial support for academic staff to engage in research.
- The EMA library that supports the programme needs to become better integrated into the wider TUT library system. For example, it did not seem that integration had progressed to the level where a TUT student studying on a Logistics programme could

utilise the standard TUT library database and access a maritime-related item from the EMA library. Do TUT students have the same borrowing rights on the EMA library holdings as the EMA now enjoy within the main TUT library? It is assumed that the EMA library has its own subscriptions to maritime databases, journals etc. Does the wider TUT student body have the same access to this as the EMA students? Can members of other universities access the maritime holdings at the EMA in the same way they can at the main TUT library; for example, by personally visiting the EMA library?

#### Recommendation

- The option of attracting additional funding from the private sector needs to be investigated

### ***Teaching and learning***

#### Comments

No courses are given in English, but the use of English materials is quite prevalent.

There is strong interest among the students for much greater internationalization of the programme, to facilitate students from other countries participating and for students in this programme studying elsewhere. This has implications for the language of instruction.

#### Strengths

- The merger with TUT is having a positive effect on teaching quality and improving quality assurance processes.
- There are regular field visits to companies working in the field.
- A fairly significant proportion of the programme is currently delivered in English.
- A number of the elective modules are offered by other parts of TUT, often delivered in English. The greater diversity of student interests and nationality in these modules is perceived as attractive by students.

#### Areas for improvement

- Some study materials and lectures are perceived to be a little old-fashioned.
- Students stress the importance of greater internationalization for both lecturers and students. Both students and alumni regret that there is limited international outlook and that, apart from in Finland, Latvia and Russia; there are few international institutional links to facilitate student exchange.
- The staff delivers basic disciplines by themselves and the potential synergy with other parts of TUT is not being taken advantage of.
- Students are generally satisfied with the interaction with the teaching staff. The latter are accessible, inform students well on what is coming up in forthcoming classes and in general there is a good 'family spirit' between the two parties.
- Although representatives of the business community are invited to give lectures and often host students in internships, they find the interaction between staff and the

business community as lacking. They find the programme and the teaching material used rather 'old-fashioned' and something that could explain the high degree of dropouts.

- The high drop-out rate was also attributed to the number of Russian speakers entering the programme and to the level of mathematical ability required for the programme
- Students were critical of the low number of guest lecturers.

### Recommendations

- Student evaluations needs to be analyzed and shared. This is done twice a year on a centralized (university) level but what happens after this is not very clear.
- A more programmed approach to internships needs to be implemented.
- Efforts should be made to increase the amount of 'learning from experience' in the programme, so that students are better prepared for entering a wide range of employment when they graduate. Even though students are mainly already employed, there is a desire to be exposed to other work and other work environments within the same broad field.
- Top-performers from industry and institutions should be invited to deliver guest lectures to provide inspiration to the student body.
- More international inter-institutional links should be forged, so that student exchange and other collaborations might be facilitated.

### ***Teaching staff***

#### Comments

The difference in salary between academic staff and industry representatives makes it difficult to attract the latter into the University as full-time staff or even visiting lecturers.

Lecturing workloads have changed since the merger with TUT.

The capacity for teaching in English is limited.

The staff have only limited experience of teaching or of delivering conference papers abroad.

What research goals/industry studies/publication goals are realistic? Clearly, the teaching staff as a whole needs to develop a much stronger research profile. It is important, however, to determine which teaching staff have the potential to deliver on different types of research activity. Not only will this impact upon the division of labour and specialisation within the teaching group, it also has implications for the criteria to be applied for future staff recruitment and for the assessment of performance across the various forms of research engagement.

#### Strengths

- Industry representatives deliver visiting lectures.

### Areas for improvement

- Only very few (if any) members of the teaching staff possess a PhD.
- There is a need for new blood lecturing staff that are capable of delivering in a modern lecturing style, but which also have practical experience.
- The business community finds that the teaching staff are reluctant to make the switch towards the 'dry' side of the business or to introduce more input from TUT in subjects such as economics; logistics; finance; etc.
- A formal system of teaching evaluation has only recently been implemented.
- The need to deliver research will pose a real challenge for some teaching staff and the effect of annual 'work plans' developed by individual members of teaching staff remains uncertain.

### Recommendations

- The level of diversity in teaching quality indicates a need for some 'renewal'.
- In general, there is a need to upgrade the teaching and research skills of academic staff.

## ***Students***

### Comments

Surprisingly, although all students work, they find the workload reasonably manageable. In this respect, it is not clear how much independent study is undertaken. However, the students perceive that the MA programme is all about working independently.

On the one hand, students feel that the merger with TUT has decreased the uniqueness of the Estonian Maritime Academy. On the other hand, however, they appreciate the additional resources and new systems that have come with the merger. This includes the new system of student evaluation of teaching, where after each module an evaluation form is handed out to students to reflect on the module content and delivery. In addition, the student union also organises formal evaluations of courses.

Students indicate that they would appreciate the opportunity to follow modules outside Estonia.

### Strengths

- Students are highly motivated. They have a clear picture of why they want to do this programme and what they expect from it.
- Employers appear to be generally satisfied with the quality of the graduates they recruit.

### Areas for improvement

- Employers suggest that they would prefer the programme to be more broadly-based, rather than so focussed on the maritime mode

- More possibilities for student exchange would be welcomed (e.g. through the Erasmus program)

#### Recommendations

- For greater employability, graduates from the programme need to have a wider perspective on the international shipping industry. To this end, students should receive some part of their education in relevant fields such as general management, law, logistics and supply chain management.
- Teaching staff need to provide more help in organising internships.

### **1.3.3. Deck Officer (Prof HE)**

#### ***Study programme and study programme development***

##### Comments

The major objective of the programme is to produce high quality deck officers. The specific objectives and outcomes of this programme's curriculum have been developed on the basis of what has been prescribed by the International Maritime Organisation (IMO) in its International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW). This international convention has been ratified by Estonia's national government which also has further, more specific, mandatory requirements, which affect curriculum content. Thus, an extremely high proportion of programme content is legislatively prescribed and there is little scope, therefore, for any deviation from this prescribed content.

##### Strengths

- The deck officer programme has a clear focus and the curriculum is set by regulations. There is not much scope, therefore, for creativity and specialisation.
- This programme is unique in Estonia and highly appreciated by students and employers.
- The Maritime Administration of Estonia felt that the programme was fulfilling its statutory requirements and that there was no need for any change to the curriculum.
- Exclusively from the perspective of programme development, the merger with TUT was perceived by all stakeholders as an extremely positive development.

##### Areas for improvement

- The recent change of name for the programme is perplexing. The curriculum did not change and the name 'Navigation' is confusing as it may also refer, for example, to air traffic control and other aspects of navigation beyond the remit of the education required by a deck officer. The title 'Deck Officer' succinctly informs potential applicants of the purpose of the curriculum, while 'Navigation' leaves many questions open as to what is the real purpose of the educational offering. Internationally, there has been a move to encompass wider aspects into programmes such as this to facilitate education in maritime-related shore-based careers (e.g. see <https://www.plymouth.ac.uk/courses/undergraduate/bsc-navigation-and-maritime->

science), but this would require a change in the curriculum as well as a change in the title.

- It is not obvious how to move to a research-oriented approach, especially since the current staff are largely inappropriate to such a remit.
- On-board training currently takes place after the completion of Year 2 (2 months) and Year 3 (12 months). It would be better if students have some on-board training earlier in the programme, for example in the second semester. If basic safety training and other material that is required to undertake some basic work on-board is taught in the first semester, students would be ready for such an experience. As recognised by the students themselves, such early experience on-board is important for making students aware of the nature of life at sea and could reduce the drop-out rate. This will involve shifting generic material that is taught on the programme out of the first semester to free up time for more specialised content. This will reduce the deterrent effect that such generic material has on first year students and will help with the drop-out rate.
- Feedback from stakeholders suggested that while the use of technology is obviously an important aspect of a seafaring career, it is equally important that students develop an understanding of the basic principles which underpin these aids. Thus, there could be more programme content devoted to basic navigation (fixing positions etc.), rather than relying exclusively on electronic charts etc.
- Alumni and employers felt that the programme prepared students well for their future careers, but could be improved still further. The programme could, for example, supplement the statutory requirements for a deck officer with more education relating to the commercial aspects of the international shipping industry in relation to international trade (e.g. incoterms etc.) or maritime law (e.g. bills of lading etc.).

### Recommendations

- Retain the title of 'Deck Officer' for the programme.
- Develop research to underpin teaching.
- Ensure that fundamental principles are taught, rather than focussing on the use of technology. In other words, theory is just as important as practice to the role of 'Deck Officer'.
- Assess the demand for shore-based employment for people with seafaring skills and consider expanding the programme to cater for this.

### ***Resources***

### Comments

It is very clear that the merger of the Estonian Maritime Academy into TUT has resulted in a significant investment in physical resources. At the time of the Panel's site visit, there was a lot of ongoing construction work. However, sufficient progress has been made to allow the panel to draw conclusions as to the physical environment and resources.

Within the new set-up, the resources seem to be in order. New laboratories have been built and equipped with state-of-the-art facilities for students. These give students a great opportunity to put into practice what they have learned. However, there appears to have been no investment in any form of research infrastructure.

### Strengths

- The resources in the new set-up are up-to-date and fit for the future.
- The primary needs for study literature and equipment required for fulfilling the goals of the study programme have been covered.
- Comprising four NAVI-TRAINER PROFESSIONAL 5000 bridge simulators and including facilities for learning ECDIS and GMDSS, the simulator Centre is a very impressive resource.
- All the information required by teaching staff, administrative staff and students has been brought together into one Study Information System (SIS).
- The laboratories and other teaching facilities have recently been expanded and developed as a consequence of the merger with TUT.
- The merger with TUT has also brought great opportunities to share resources and to adopt more effective procedures and processes from TUT. This is recognised and has begun to be implemented. In particular, the provision of internet access for students to the holdings of the main library of TUT and the adoption of student evaluations of the quality of teaching are just two examples of such positive developments.

### Areas for improvement

- The statutory requirement for on-board training is quite difficult to deliver in a context where there are so few commercial vessels registered under the Estonian flag. Students are forced, therefore, to vigorously pursue their own internship possibilities.
- An important resource which is missing is a training vessel. Students now have to rely on internships for practical training, but the availability of a training vessel could alleviate some of the difficulties faced. It was clear, however, that the EMA was doing everything it could to secure on-board training places.
- The availability of printed study materials is limited since foreign-language materials are expensive. However, since the merger with TUT, the availability of e-resources through the main TUT library represents a significant improvement in access to learning material. Staff now have the right (and responsibility) to order appropriate books, journal subscriptions etc. through the central TUT library. Unfortunately, there was little evidence that this was happening.
- There is a distinct absence of any research culture.

### Recommendations

- The potential procurement of a training vessel should be investigated, covering the use to which it could be put and possible financing alternatives. Is there, for example, the possibility of obtaining funding from the Maritime Administration as part of their remit to support and promote the national register of shipping? What about industry sponsorship? Does the potential exist for sharing the vessel and its cost with other maritime schools?
- In the absence of purchasing a training vessel outright, the potential for sharing or hiring time on a training vessel elsewhere should be investigated.

- There needs to be better liaison and engagement between the teaching staff and relevant subject librarians at the central TUT library, so that this impressive resource can be better utilised.
- Efforts should be put into developing a research culture that can underpin and inform the teaching function.

## ***Teaching and learning***

### Strengths

- Students are of the opinion that the quality of their education has risen since the merger with TUT
- E-learning facilities are used where possible and required.
- A good mix of assessment methods are utilised, including group work.

### Areas for improvement

- Despite the availability of e-learning materials, most learning activities take place at the university. In theory, student workload outside class contact hours should be twice as much as that in class. In practice, this is not the case, with students indicating that the workload outside class is low.
- The university is doing everything they can to help students secure on-board training places, but quite a few require the help of an on-board training coordinator.
- There is some interest to study abroad but this is difficult to arrange because of the financial implications.

### Recommendations

- Given the current balance of student workload inside and outside class contact hours, the weight of the curriculum should be reconsidered.
- Securing and coordinating internships is likely to become increasingly difficult in the future, so this task may need to be bolstered with additional support.
- The requirement for continuous development of teaching skills should be made compulsory for new and recent appointees to the teaching staff.
- In order to enable foreign students to join the programme, more English language content should be introduced.

## ***Teaching staff***

### Comments

Being part of a university, research is becoming important. However, research is only conducted under the remit of a special unit. It is up to individual staff members whether or not to be engaged in research. This will not introduce the required scientific approach.

### Strengths

- Teaching staff must pass a test before they can start teaching on the programme. Hence, a minimum quality standard applies to all teaching staff engaged within the EMA.
- Although the average age of the staff members is high, this also ensures a wealth of experience amongst the teaching staff, which is highly appreciated by the students.
- Students said that teachers made good use of Moodle.
- Given the low proportion of females employed as deck officers within the maritime industry, the Assessment Team perceived it as very positive that the teaching staff expressed great support for the notion that more females should be encouraged into the maritime industry.

### Areas for improvement

- The average age of staff is currently quite high, though the EMA has set a strategic target to lower this to 54 years of age.
- Teaching staff are not very much involved in research and, therefore, a scientific approach is not embedded within the teaching function.
- The teaching staff generally appear to be quite traditional in their views and approach. There is some need to modernise these aspects.
- There is a certain resistance to change, especially with respect to the merger with TUT.
- The majority of teaching staff do not have the language ability to deliver taught content in English.

### Recommendations

- The organisational culture within which the programme is embedded needs to take more account of the contemporary position and role of seafaring within the international shipping industry and the wider global business arena.
- There is a need to accept that the Estonian Maritime Academy is now a part of a University and that this means that things must change.
- Irrespective of student perceptions, there needs to be more and better use made of e-learning materials. Teaching staff were unconvincing about their use of e-learning materials, with the impression given that Moodle was used only in limited ways and, even then, not by many of the staff.
- There is a need for a strategy to help existing staff initiate and develop research activities as part of their career progression.
- Recruitment policy should reflect the objectives of reducing the average age of staff and increasing the potential for research outputs.

## ***Students***

### Strengths

- Students are highly motivated. They have a clear picture of why they want to do this programme and what they expect from it.
- On the one hand students feel that the merger with TUT has decreased the prestige of the Estonian Maritime Academy but, on the other hand, they appreciate the

resources and new processes that have come with it, such as student evaluation of programme content and teaching.

- Students and alumni believe that, despite the small number of seafaring jobs available in Estonia, there is strong international demand for their knowledge and skills.
- The position of females in the industry is good and they face little or no discrimination in seeking jobs within the sector. Employers are proactive in motivating females towards a career in the maritime industry.

#### Areas for improvement

- In the past there was an international exchange program. This was discontinued. Students indicate, however, that they would appreciate the opportunity to pursue their studies outside Estonia.
- The drop-out rate is quite high. However, this is not really related to the curriculum or to staff support, but is often the result of financial pressures or medical and language issues.

#### Recommendations

- Relationships with partner institutions in other countries should be developed so as to facilitate student exchange. Given the large number of institutional partnerships in which the Department of Logistics and Transport at TUT is involved and the prevalence of student exchange on their programmes, this may be another advantage to accrue from the merger of the Estonian Maritime Academy with TUT. A specific liaison role should be established to pursue this and other possibilities.
- In order to reduce the drop-out rate, passing a medical test should become a formal entrance requirement for the programme. As is currently the case, however, applicants that do not pass the medical test should continue to be provided with the opportunity to change their application from deck officer to marine engineer.

### **1.3.4. Port and Shipping Management (Prof HE)**

#### ***Study programme and study programme development***

##### Comments

The Ports and Shipping Management programme is consistent with the government's 2012 policy document setting out a 5-year development plan for the maritime sector.

The majority of the graduates from the Prof. HE in Port and Shipping Management continue on to take the MA in Maritime Studies. This is an important consideration in curriculum design.

##### Strengths

- The programme is supported by employers and provides students with a good base from which to continue their studies and careers.
- Parallel learning in three languages (Estonian, English and Russian) is perceived as a very positive aspect of the programme.

- The programme provides a sound base for students to progress to the MA in Maritime Studies, as evidenced by the fact that the majority of the graduates from this programme continue on to take the MA in Maritime Studies.

#### Areas for improvement

- Despite its name, the programme contains only very little 'management' in its curriculum.
- There is a need for greater practicality within the curriculum, especially within the earlier years of the programme, since content appears to students and employers to be overly 'theoretical'. This may be because modules dealing with basic subjects are devoid of examples or applications to the maritime sector.

#### Recommendations

- The programme title may be too narrow. More 'management' and logistics content needs to be incorporated into the programme. This may be best achieved by leveraging on the teaching capacity available in other parts of TUT
- Better marketing and student recruitment may result from a redesign of the content and change of name to encompass more supply chain management and logistics content.

#### ***Resources***

#### Comments

The merger with TUT has benefited this programme but less than the Deck Officer programme.

#### Strengths

- The merger with TUT has benefited the programme budget with new investments made in the physical environment, including new laboratories etc.
- The merger with TUT has provided students with the major benefit that they now have VPN access to e-resources through the TUT library. This represents a significant improvement compared to relying solely on the library within the Estonian Maritime Academy.

#### Areas for improvement

- Since the merger with TUT, staff now have the right (and responsibility) to propose orders for appropriate books, journal subscriptions etc. through the central TUT library. There was little evidence that this was happening.

Despite of different structural units of EMA and TUT library the user interface is integrated into the systems of TUT library enabling for the clients to use all TUT e-resources (including VPN access to e-resources) and other services of the TUT library

### Recommendations

- There needs to be better liaison and engagement between the teaching staff and relevant subject librarians at the central TUT library, so that this impressive resource can be better utilised.
- Efforts should be made to incorporate the library within the Estonian Maritime Academy, and other college libraries, within the electronic system of the TUT library.

### ***Teaching and learning***

#### Comments

The students and employers reported on a significant variation in teaching quality and knowledge of instructors about current industry conditions.

It would be highly beneficial if the basic generic modules could incorporate some applications in the maritime sector.

#### Strengths

- Students and employers were strongly supportive of the programme while noting areas for improvement.
- Students reported feeling more confident about the value of the programme once they were in it. This implies good overall content but weak information about the content and purpose of the programme.

#### Areas for improvement

- The drop-out rate is high. Reported reasons for this were that Russian-speaking students found it difficult to follow material delivered in Estonian and the level of mathematical ability amongst some students was not sufficient to succeed on the programme.
- Students were generally satisfied with the programme, but expressed an undefined desire for improvements to the quality of teaching
- More practice-based work (i.e. case studies, practical exercises etc.) would better prepare students for the challenges they will face in their jobs.
- It was reported that the amount of independent work undertaken by students depends on the individual member of teaching staff.
- The integration of module content and teaching responsibilities between the EMA and other parts of the wider TUT needs further attention.

#### Recommendations

- A more appropriate entrance requirement for mathematical qualifications needs to be specified.
- The amount of independent work undertaken by students needs to be made more systematic across the delivered modules.
- Exploration should be undertaken jointly by the Estonian Maritime Academy and other relevant parts of TUT to realise greater integration of the maritime and wider logistics modules offered.

## ***Teaching staff***

### Comments

It is very difficult to hire new teaching staff, as salaries are much lower than people who are working in private companies.

### Strengths

- A systematic approach to the evaluation of teaching effectiveness has been commenced and should continue to be developed.

### Areas for improvement

- There are some staff development discussions and target setting, but no clear staff evaluation process and routines  
It appears that the implementation of TUT systems for this would be beneficial but are only in the planning phase.
- Development of strategies to encourage and enable academic staff to undertake research.
- It appears that there were Professors associated with the programme prior to the merger with TUT. Currently, however, there are no Professors teaching on the programme.
- There is limited contact between teaching staff and employers  
This undermines the ability of teaching staff to keep abreast of the latest developments in the workplace (regulations, industrial practices, technologies etc.).

### Recommendations

- Teaching staff should be urged to take advantage of the staff development courses available in-house for improving teaching skills and making best use of educational technology.
- Mechanisms by which systematic contact between teaching staff and employers need to be established, in order that staff may stay up-to-date and, therefore, provide informed input into curricula and syllabi design.

## ***Students***

### Comments

Students expressed interest in the programme having more visible links with Logistics management.

### Strengths

- Employers confirmed that the education and training students receive within the programme is quite sufficient for someone to work in both the port and shipping sectors.

- Business representatives stated that although they consider graduates from the programme as competent, they would nevertheless prefer to employ university graduates if they have a choice.
- Students in this programme already have aspirations for the relevance of their studies internationally and in the broader logistics context.

#### Areas for improvement

- The mathematical ability of some incoming students is an ongoing issue.
- Students have to identify their own internship opportunities and then there is a process in place for the approval of the internship by teaching staff, performance review by the employer and the production of a final report by the student. The process is perceived by students as acceptable, though some help with identifying internship opportunities would be beneficial.
- During the internship, there is no channel between teaching staff and internship host. The only thing that happens is that the host writes a letter at the end of the internship (i.e. fills in a form).
- Given the merger with TUT, there now exists an opportunity for improving the image of the programme and the employability of graduates.

#### Recommendations

- Greater attention needs to be given to identifying the mathematical capability of applicants and to implement remedial activities.
- A change of the programme name to reflect the general management and logistics content would communicate more effectively with potential applicants to the programme.

### **1.3.5. Waterways Safety Management (Prof HE)**

#### ***Study programme and study programme development***

#### Comments

This is an excellent programme, albeit with very few students (6 in the first year and 2 in the third). The core content really relates to cartography, hydrographic surveying and coastal engineering; thus, very little content concerns 'safety' specifically. The programme title is not only misleading in this respect, it possesses very little (if any) marketing value.

The market for hydrographers/cartographers in Estonia is very limited (for example, only 13 people work at the maritime administration, a major potential employer of graduates from the programme) and in the sense that the potential employment market is very small, in its current form, it would be very difficult to sustain this programme in the future.

Students are critical of the more generic courses in the programme, such as economics, investment, finance etc. In consequence, programme management is considering reducing the generic content in the programme.

### Strengths

- Programme management is highly competent.
- The Director of the programme is an associate professor with good international contacts. She has a clear view of the future development of the programme, including research opportunities. This will create the possibility of moving to a more scientific approach, which is expected of the programme.
- The efforts which have been made to communicate information about this specialization and to market the programme to schools and society are commendable.
- The program receives excellent support from the Maritime Administration.
- Prospective employers are very supportive of the programme, even to the extent of briefing the students about the sector and job possibilities.

### Areas for improvement

- Students do not have a clear picture of what the programme will lead to in terms of career progression.
- Students expressed a desire for more professional English to be incorporated within the programme.
- It is not currently mandatory to collect feedback from students following every module.
- The course on 'ship construction' really relates to navigation and stability characteristics of ships and could be delivered by other parts of TUT.

### Recommendations

- Change the title of the programme to 'coastal (port) engineering', link up with a foreign university that has a good reputation in 'coastal engineering' and place the emphasis of the curriculum on port planning and construction.
- International recognition, in the form of achieving Cat. A accreditation from the IHO, is required in order to increase student numbers
- Reducing the generic content of the programme would be a mistake, particularly if the programme is to make the switch towards coastal engineering, port development and such like, since this will require some basic economics knowledge.
- The curriculum needs to be adjusted so that more fundamental content can be included, particularly in the light of seeking to achieve IHO Cat. A accreditation. Some existing content (e.g. qualifying for a small boat license) can be relegated to become extra-curricular.
- Students' lack of awareness of the field and career opportunities can be partially addressed by shifting some specialist modules to the first year of the programme in order to introduce the field to the students.
- The collection of student feedback following the completion of every module should be made mandatory and a generic system applied for ensuring this is done.
- Introducing more content which is delivered in English will attract international students.
- Both students and employers identified the need to internationalize the programme as pivotal to its future success, in terms not only of recruiting sufficient intake but also expanding the potential employment market.

- The good practice of employers briefing the students on the sector and job possibilities should be made more formal and timetabled appropriately.
- There needs to be better marketing of the programme for student recruitment.

### ***Resources***

#### Comments

Resources for the programme are expensive but adequate.

#### Recommendations

- Utilising qualified staff resource from other parts of TUT, teaching staff on the programme should be encouraged to engage in the joint supervision of PhD students.

### ***Teaching and learning.***

#### Comments

The programme management appears to have the objective to deliver all programme content utilising solely teaching staff from within the Estonian Maritime Academy, However, this does not seem to be necessary, since other parts of TUT can contribute the basic generic content of the programme.

Programme workload is quite large. Students recognised, however, that with the appropriate attitude and approach, it was possible to cope.

In hydrography in general, internships are extremely important, as equipment (hardware and software) is very expensive and theory alone is not enough. This problem could also be solved with the use of a lot of external experts in hands-on instruction.

#### Strengths

- E-learning is used but it is recognised that it is difficult to deliver technical material via the internet.

#### Areas for improvement

- Students criticised instances of duplicated taught content.
- Student feedback suggested that the gaps between modules of linked content (i.e. where the knowledge and skills acquired in an earlier module are a pre-requisite for a later module) are sometimes too long.
- Both students and employers emphasised the need for more practical training to be incorporated within the programme.

#### Recommendations

- Do not reduce the number of basic modules (e.g. economics; finance etc.) but, rather, cooperate with the School of Economics at TUT to deliver these elements of the curriculum.

- Communication between teaching staff needs to improve, so that there are no misunderstandings about what the students have been taught and when.
- More practice-based learning should be embedded within the programme via internships. Since employers support the concept of more practical training being incorporated within the programme, their agreement for hosting internships, study visits, collaborative projects etc. should be solicited and secured.
- More delivery in English is required.

### ***Teaching staff***

#### Comments

There appears to be a lack of staff supporting the programme. The Programme Director mentioned that she has a team of 6 full-time staff and quite a few part-time staff (actually external experts rather than part-timers) that support the delivery of the programme.

#### Strengths

- The programme exhibits strong academic content, making it highly suitable for integration into the TUT portfolio.
- Students very much appreciate the experience of the teaching staff.

#### Areas for improvement

- There is no research culture among the teaching staff, even though the panel was informed that there now exists significant pressure on teaching staff to produce research outputs. There is some interest in becoming research-active, but available time is a major constraint and only a minority of staff could successfully engage in research activities.
- The programme management makes plans with staff members about their future development. However, these are not documented and checked because there are formal regulations about promotion.

#### Recommendations

- Staff appraisal processes need to be much more rigorous, particularly now the staff are subject to TUT's research assessment system.

### ***Students***

#### Comments

The number of students on the programme is small. This is partly caused by demographic developments but, for a variety of other reasons, is expected to change after 2017.

Students seem to be less willing to follow lectures from 'civilians'. This may hinder efficiency improvements and the utilisation of the teaching opportunities provided by other parts of TUT.

### Strengths

- The student intake possesses a very high level of mathematical ability.
- Graduates from the programme feel that it prepared them well for their work life.
- Graduates from the programme are appreciated abroad.

### Areas for improvement

- Prior to starting their studies, students have very little understanding of programme content or future career possibilities.

### Recommendations

- Incorporate information on future careers into marketing material, perhaps by providing alumni profiles.
- Use alumni and employers to provide guest lectures on future career opportunities.

## 2. Assessment report of SPG at TTK University of Applied Sciences

Study programme group	<i>Transport Services</i>
Higher education institution	TTK University of Applied Sciences
Study programmes	Railway Engineering (Prof HE) Transport and Logistics (Prof HE)

### 2.1. Some characteristics of TTK University of Applied Sciences

TTK University of Applied Sciences (TTK) is a state institution of professional higher education administered by the Estonian Ministry of Education and Research. It began life in 1992 when an institution of vocational secondary education was reorganised into an institution of professional higher education. It became TTK University of Applied Sciences in 1999. The university's main institutional objectives, as specified in its statutes, are to:

- provide both nationally and internationally recognised, competitive education in the broad areas of Engineering, Manufacturing and Construction, and Services, including the field of Transport Services;
- carry out research, primarily of an applied nature, and development in these areas;
- provide in-service training and retraining.

There are five Faculties within TTK, with a total complement of 217 academic staff members and 57 support staff. The total number of students enrolled at TTK in the academic year 2014/15 was 2,666 students, with 378 registered for the two programmes within the Transport Services SPG. These two programmes are both hosted within the Faculty of Transport.

In addition to the provision of teaching and learning, TTK is also engaged in research, development and creative activities, including the following: research and development, applied research, publication of the results, communication of expert knowledge at public events and the implementation of expert analyses. The effectiveness of the University's intellectual and creative activity is demonstrated by the patents and other recognition received. Core funding from government is restricted to supporting the teaching function, so the University's research activities are funded through the pursuit of company sponsored projects, as well as some EU-funded projects.

## 2.2. Summary of Conclusions and Recommendations

The two programmes within the SPG at TTK are unequivocal in addressing the needs of the relevant labour markets. It is extremely clear from the available statistics that graduates from the two programmes are attractive in the job market and, ultimately, have little problem in getting jobs. The relatively high number of applicants, particularly for the Prof. HE in Transport and Logistics, confirms this. As a result, TTK has an excellent reputation among employers and is recognised for both the theoretical knowledge and practical skills of its students and graduates.

TTK has implemented good practice in initiating Curriculum Councils with a Board of Advisers comprising representatives of alumni, employers, industry associations and the university. This is also the case for the defence of theses. The continuous involvement of external stakeholders in the process of curricula design, as well as in the teaching process itself (about 25% of the programme is delivered by guest lecturers), not only ensures curricula which are up-to-date and market-relevant, but also cements the University's excellent linkages with industry and its positive external reputation. The fact that a significant proportion of the programme is undertaken as an internship also reinforces this.

Greater collaboration and integration of curricula design is needed with other programmes and departments, both within and external to TTK. For example, the potential now exists for including a maritime specialisation within the Prof. HE in Transport and Logistics that is delivered by TUT's Estonian Maritime Academy. The fact that about 20% of graduates from the Prof. HE in Transport and Logistics continue on to register for a master's degree programme in Logistics at TUT can be regarded as very positive integration.

By virtue of the fact that no funding is received from central government to support it, there is currently only minimal research undertaken. What little is done, is funded almost exclusively by commercial organisations. This may have implications for the objectivity of the research outputs, but will almost certainly undermine the possibility of their successful publication. The research culture and environment is limited to the extent that the study materials of some of the teaching staff are considered to constitute research 'publications'. Perhaps fortuitously, due to a number of concurrent retirements, there is a current need for TTK to move expediently to recruit senior staff that can provide the much-needed leadership in research.

There have been some early initiatives with respect to the internationalisation of the programmes, with some instances of incoming and outgoing students, as well as some of the teaching staff having gained some experience in participating in international projects and networks. However, the number of modules taught in English is very small and proficiency in English stands at quite a low level. For financial reasons and also because of inadequate linkages internationally, the use of foreign guest or visiting lecturers is very limited. If the university is serious in its intentions to internationalise, it will need to invest in staff development to improve English language proficiency, make overseas sabbaticals feasible and to prompt the development of international collaborative partnerships or consortia. A major advantage in implementing a fully-fledged strategy for internationalisation is that it will have the wholehearted support of both the student body and external stakeholders.

Drop-outs would appear to be quite a significant problem. These are most likely connected to financial and/or personal problems, but also potentially to the fact that students often attempt to work full-time while studying. Although a mentoring and student counselling system is in place, perhaps this needs strengthening in order to help students adjust to the differences between TTK and their previous educational environment. There might also be the need to support a move away from the family home or to a new location. The early exposure of students to group work not only inculcates this into the assessment regime from the start, it may also succeed in providing students with an early basis for social interaction and cohesion with their peers. In addition, distance learning options and the greater use of e-learning material (which are already of excellent quality) should be expanded upon to imbue greater flexibility in learning so as to facilitate as many work-study combinations as possible. Another important cause of students dropping-out is the level of mathematical ability required. This can be helped by early identification that this may be a problem for some students (e.g. through early tests of mathematical competence) and the early implementation of targeted remedial teaching.

The available evidence suggests that the staff, students and graduates are in general very pleased with the programmes. There is an open culture allowing feedback and communication. A formal feedback system for teaching evaluation is in place and well documented. Students are evaluating both lecturers and curricula through the completion of a special form. There is also an obligatory internship feedback form, which is completed after each individual internship by the respective employee. There exists, however, only an informal network and follow-up for alumni and key external stakeholders. There is a need for a more structured and formalized approach. A strategy should be developed for building a community of alumni and key stakeholders such as companies and governmental bodies and to use their feedback on programmes and their content in a structured and formalized way.

### **2.3. Strengths and Areas for Improvement of Study Programmes by assessment areas**

#### **2.3.1. Railway Engineering (Prof HE)**

##### ***Study programme and study programme development***

###### Comments

The Railway Engineering programme is a Distance Learning programme, which makes it different from all the other programmes. The study of railways is quite new in Estonia and this has contributed to the challenges faced in setting-up the programme. In most cases, students have a job and study at the same time. In many cases, the jobs are with railway-related companies and in some cases students already have another qualification or degree. Twenty-five percent of entrants are directly from school, rather than having work experience; these students may require remedial bridging courses, particularly in the basics of the rail industry.

Looking at the curriculum, either the name of the programme or the contents of the curriculum should be reconsidered. This echoes one of the recommendations made in the 2010 Estonian internal evaluation of this programme. There is not much engineering content in the curriculum, which makes the name confusing. Also, the fact that the programme is positioned in the services faculty suggests that it is more about Railway Management than Engineering.

Students recognise the Russian language as a distinctive requirement of this programme.

### Strengths

- The Railway Engineering programme is unique in Estonia from the point of view that TTK is the only institute that offers a programme in Railway Engineering.
- There are enough job opportunities for students and the industry is very supportive towards the program.
- The opportunity exists for the joint development of programmes with the construction group within the university.
- Successful completion of the programme permits progression onto relevant Masters Programmes at TUT.

### Areas for improvement

- The programme is quite broad. Even though electives already comprise 25% of the curriculum, both students and employers indicated that they would appreciate the opportunity to specialize in the second half of the programme.
- The number of students is currently small and the potential pool of railway employees that might become students in the future is both limited and finite. This may hinder future development of the programme. Options to increase the number of students may include the setting-up of a competence centre and the introduction of English courses.
- Students indicate that they would appreciate an increase in the amount of specialized railway engineering content in the programme and a reduction in the number of general modules they need to follow.
- Students should be provided with the possibility of specialising in a certain direction by freeing up some ECTS in the 3<sup>rd</sup> and/or the 4<sup>th</sup> year.
- Both the student body and employers representatives acknowledge that the programme needs to provide greater skills in the use of ICT.
- Student feedback suggests that they were not attracted to the programme or the rail industry by the information they were provided with before they joined the programme. They are generally satisfied with the programme, however, once they are in it.

### Recommendations

- Either the title of the programme or the contents of the curriculum should be reconsidered. To accord with the current title of the programme, there needs to be a substantial increase in engineering content. However, changing the title to 'Railway Technology' may provide a good alternative in that less additional engineering content will then be required than might otherwise be the case.

- Once due consideration has been given to potential changes to the title of the programme and its content, the position of the programme with respect to Study Programme Group also needs to be decided upon.
- Specialisations should be introduced into the last two years of the programme.
- There is a need to investigate whether a change to an English curriculum or the setting-up of a competence centre can generate more students. Establishing a competence centre has the potential to bring in vocational trainees from the railway business and provide remedial (bridging) courses for school entrants that wish to progress to the Railway Engineering programme. It will also enable resources within TTK to be combined, bring in know-how through joint management and help identify the best candidates for studentships on the programme. If the competence centre is to go ahead, some consideration should be given to delivery of content in the Russian language.
- The scope for collaboration with other parts of TTK, particularly in the area of construction, should be investigated.
- Steps should be taken to improve the marketing of the programme.

## ***Resources***

### Comments

In general, resources appeared to have been inadequate in the past. However, today additional resources are being introduced. New facilities are under construction, such as a miniature railway system laboratory and a simulation laboratory. However, no infrastructure or direct financial resources are available to support research.

### Strength

- In the future, there will be ample facilities to train students.

### Area for improvement

- Establish a research infrastructure.

### Recommendation

- Establish an environment more supportive of research.

## ***Teaching and learning***

### Comments

In general, the teaching infrastructure is in order. Good use is made of e-learning facilities and support is available in-house in the form of two supporting staff members. A good student feedback infrastructure is available, enabling students to reflect on the curriculum.

### Strengths

- Employers very much valued the thesis element of the programme. Theses relating to railway traffic management at the Narva and Tartu-Orava border stations, organisational changes in the placement of dispatch personnel and the national regulator's technical inspection service were all specifically identified as having a direct and beneficial impact on railway organisations.
- Together with partner universities in Latvia and Finland, TTK led the EDURail project which was funded by the EU INTERREG programme. As a railway education harmonisation project, 5 modules were developed which can be utilised by TTK for delivery to students and for 'teaching the teachers'. This project provides a potential platform from which further international collaborations may be launched.
- A dedicated person has been appointed with responsibility for assuring the quality of teaching.
- Student feedback suggests that the distance learning material and process works very well within the programme.

### Area for improvement

- Both students and employers are very supportive of the fact that internships are included as part of the programme curriculum. However, with the small number of available employers within the sector (even internationally), this will likely prove either very easy to organise or extremely difficult, depending on the level of cooperation which pervades the market.

### Recommendation

- The possibility of including more internships within the programme needs to be investigated.

### ***Teaching staff***

#### Comments

It appears that all members of the teaching staff are newly appointed within the last three years. Most staff members are alumni of the programme and, after having found a job in the field, have returned to TTK, largely on a part-time basis. On the one hand this ensures that current developments find their way into the curriculum. On the other hand, the still-existing association with a company may hinder independent research.

The only research opportunities that the staff members have is through student projects or through consultancy projects paid for by industry. The latter is questionable. First of all it is not the task of a university to act as a consultancy and, second, the industry should not set the research agenda of a university or its departments. A general problem is that staff members can hardly publish the results of research projects since it is industry-based and generally confidential.

Staff members would like to have the opportunity to develop themselves, but not only is there no MSc programme in Railway Engineering, there is also not much time to work on self-development.

Since the Railway Engineering programme is delivered in distance-learning mode and the staff members are not all fully-employed by TTK, there are no regular staff meetings. Discussions happen through the internet, but there is no structured discussion of the curriculum or student feedback.

### Strengths

- Good relations with industry ensures feedback on current issues and developments.

### Areas for improvement

- Teaching staff are busy with, and very much focussed on, delivering their own modules. Little attention is being given, therefore, to their own personal and career development.
- Only limited use is made of e-learning materials.
- The capacity for delivering learning in English is somewhat questionable and, of course, this limits the potential for internationalisation.
- The teaching staff are delivering even the basic generic disciplines, without much recourse to other parts of TTK or TUT.

### Recommendations

Potential synergies with teaching staff in other parts of TTK or in TUT should be sought out in order to deliver the generic material within the programme.

- Opportunities need to be created for the staff to develop themselves, particularly in terms of enhanced research opportunities.
- Better use needs to be made of the e-learning environment. There are technical ways to better follow and interact with the students.

## ***Students***

### Comments

Fifty percent of the students have a job while studying. Another 25% find a job during their studies. Therefore, there is a strong relationship between the knowledge that students have from their employment and the knowledge that students gain during their studies.

### Strengths

- There is a clear target group of students.
- Students are generally satisfied with the programme.
- There are enough job opportunities for students. Therefore, the programme really fulfils one of industry's major needs. The curriculum is quite broad. This is actually what is required, given the variety of jobs that the curriculum prepares students for.

- Students enjoy group assignments. Although the program is delivered as distance-learning, they are able to organize groups and work well on assignments together.

#### Areas for improvement

- The level of English language skills of students is lower than in the other programmes evaluated. However, it is recognised that for this programme specifically, Russian language skills are likely to be more of a requirement.
- The number of students is very small. This may hinder the future development of the programme.
- The drop-out rate is considerable. There are a number of reasons for this. One is that students whose mother-tongue is Russian may have some difficulty with content delivered in Estonian. Another reason is that some students may be ill-prepared for the level of mathematical and scientific knowledge which the programme requires. However, drop-out most often occurs because of a change in a student's life (e.g. a different job) or because of financial reasons. In the past 10 years, the Estonian railway sector has experienced extensive and continuous reorganisation which has influenced the likelihood of this happening. It is difficult for TTK to address this and reduce the drop-out rate.

#### Recommendations

- One suggestion for increasing the number of students is to establish a centre of competence that fulfils the roles of an educational body for vocational level jobs, continuing education and preparing new entrant students with no work experience. Another thought is to introduce more English courses that opens the door for the entrance of international students.
- A targeted reduction of the drop-out rate to 11% seems unrealistic since there is no mechanism for TTK to control this.

### **3.3.2. Transport and Logistics (Prof HE)**

#### ***Study programme and study programme development***

##### Comments

Estonia's national professional and vocational standards for logistics are established by the PROLOG organization, based on international requirements for specialists and managers in the fields of logistics and supply chain engineering/management. Despite the fact that the University has unitary authority over programme design, the design and development of this programme is explicitly and very closely aligned to these professional and vocational standards. In fact, this process of alignment with PROLOG's standards accounts for approximately 95% of the programme curriculum.

##### Strengths

- Programme development meetings are held on a regular and systematic basis, each spring.

- Programme development is undertaken in close consultation with the business community, as well as by reference to similar benchmark programmes in Finland and Sweden.
- There are excellent links with the business community, particularly with respect to the continuous development of the programme curriculum. This is not only a major benefit for the programme, but is also something that is very much appreciated by the business community.
- Cooperation with TUT is good. This benefits the students by virtue of the fact that, following graduation from this programme, they can enrol on the Masters programme in logistics which is offered by TUT. They need some extra credits to meet the entrance requirements, but the number of required additional credits has been falling over the years thanks to the coordination of curriculum content which also takes place between the logistics programme managers at TTK and TUT.
- The annual logistics 'fair' (Logistikaseminar) which is organised by the students themselves is extremely highly valued by all stakeholders and represents significant 'best practice' in educational provision.

#### Areas for improvement

- The programme is very focussed on road transport and logistics. As explicitly supported by employers, greater emphasis needs to be placed on transport (all modes) and ports, as well as on modules that enhance innovation and creativity (e.g. marketing and other 'business' modules).
- The programme is very much focused on preparing qualified and certified logisticians. To some extent, this belies the more generic title of the programme.

#### Recommendations

- The programme should be developed in order to allow for modal and other specialisations, possibly through the availability of electives or streams. This will also better reflect (than currently) the learning content implied by the title of the programme. To this end, the 'maritime' offerings of the Estonian Maritime Academy were specifically identified by students as a favoured option.
- The possibility of a formal articulation agreement between TTK and TUT for the progression of this programme's students to the TUT Masters Programme should be considered. It may be beneficial for marketing the programme.
- Plans to diversify the programme into production management represents a good move and should be supported.

#### ***Resources***

##### Strengths

- There are some dedicated logistics laboratories which support the programme.
- Support for the teaching staff in the use of educational technology is very impressive.

##### Areas for improvement

- Network connectivity is limited in some parts of the campus.
- Students were critical of the speed of the computers in the library. This poses a problem when printing out materials.

- It is sometimes difficult to find a suitable study space in the library.
- There are insufficient copies of some key texts in the library.
- The University appears not to be a member of the 'Eduroam' network community (<https://www.eduroam.org/>).
- In order to enhance the quality of teaching, staff have identified the need for both hardware (labs) and software to support the use of visualization materials in class.

#### Recommendations

- IT infrastructure needs to be upgraded.
- The feasibility of expanding the library needs to be investigated.
- Access to the 'Eduroam' network should be acquired.

### ***Teaching and learning***

#### Strengths

- The programme exhibits a very well-considered educational strategy.
- Approximately 15% of the curriculum consists of internships. The internship program is supported by dedicated staff and is administered very efficiently. There is a long list of about 100 companies that have agreed to host students, but if any student should experience difficulty in securing an internship, the placement officer will provide help in finding something suitable. The internship programme can be cited as 'best practice' and is highly appreciated by both students and employers. As such, it represents one of the strongest aspects of the programme.
- The invitation of business executives to teach in the programme is much appreciated by students and employers. It is good practice that their delivery is evaluated by students and that the knowledge and skills acquired by students as an outcome of this learning material is assessed in exams and other summative forms of assessment.
- Students explicitly expressed how much they like how they are taught and also how much they like and respect the teaching staff.

#### Areas for improvement

- Employers, alumni and current students all acknowledged that English is the language of logistics, but felt that there was not enough content delivered in English on the programme.
- Students on the programme expressed the concern that there was no final feedback seminar relating to the final outcome of their thesis.

#### Recommendations

- Business executives are already very much involved in the programme. However, the panel gained a distinct impression that this group were eager to involve themselves even more across a range of activities – teaching, thesis supervision, mentoring etc.
- The potential exists to systematically involve business executives in thesis defense panels.
- Although there are plans to incorporate into years 2-4 of the programme some modules (marketing, logistics system management and freight management) that will

be delivered in English (to begin in 2017), this is felt to be insufficient. More mainstream modules and teaching materials should be delivered in English.

- A thesis feedback seminar should be organized, even if it follows graduation.

### ***Teaching staff***

#### Comments

The research undertaken by the teaching staff is applied contract research or, in other words, research that someone is willing to underwrite. This research, including EU projects, provides additional income for the university as well as for individual staff. A special 'contract research centre' exists, which manages projects and distributes monies to the university, faculty and staff.

#### Strengths

- The teaching staff declare that they receive full support from management for their personal professional development.
- Comprehensive use is made of modern teaching techniques, including in-class use of the internet and online assignments and examinations.
- Most of the staff appear to be adept in utilizing the Student Information System (SIS) and Moodle as a platform for e-learning. Comprehensive training and support in the use of both is available within the University. This is pivotal to the teaching of distance learning students in particular, but appears to be working very well with all student groups.
- The teaching staff are outward-oriented with good business links and involvement in what is going on in the business community.
- There is evidence to suggest that many of the younger staff recruits are academically ambitious and willing to engage in research, for example by enrolling on a PhD. This will inevitably enhance the research culture which surrounds the programme.
- New staff are much younger than the average member of teaching staff and possess academic ambitions that should be encouraged.
- The staff are evaluated by their peers and on the basis of student evaluations which are collected through a centralized university wide electronic platform.
- Annual agreements are made between supervisor and staff member every year and they are followed up in the ensuing year. These meetings are well documented and encompass personal development plans, targets and improving English language skills.
- There is a good system in place to train practitioners to teach and to develop further. Use is made of special educational programme at Tartu University and also other courses in other places. All staff take pedagogical courses at some point in time and there is a mentoring system in place for new staff which works well.
- The efforts of the teaching staff are very much appreciated by the students.

#### Areas for improvement

- There appears to be a considerable turnover of staff with retirements and new recruitment. This may pose a risk in terms of continuity.

- At present there is no Professor amongst the teaching staff, with all staff being lecturers.
- The English language ability of teaching staff is not very high at the moment, but the staff seem motivated to upgrade their English language skills to a level where it could be deployed as the medium of instruction in the future.

### Recommendations

- Succession planning should be instigated at a strategic level.
- Efforts should be made to internationalise the programme and this requires more use of English as the medium of instruction, particularly in specialised modules.
- The University should encourage and support teaching staff in their efforts to upgrade their English language ability. This might include supporting time spent abroad.
- More visiting faculty from overseas should be deployed on the programme.

### ***Students***

#### Comments

The student body comprises 2/3 day-time students and 1/3 distance learning students.

Perhaps as a result of a fairly tight graduate labour market in Estonia, the vast majority of graduates from this programme experience very little difficulty in finding work, even before graduation. Quite often, students are employed by the company in which they had their internship.

#### Strengths

- Employers are highly appreciative of the graduates produced by the programme, stating that this level of education is sufficient for their needs (although some would welcome the introduction of a Master's programme by TTK).
- The main motivation for students to apply for the programme lies with its emphasis on practical education, intertwined with the high employment rate of graduates. Providing a practical education is perceived by students and employers as one of the significant strengths of TTK as opposed to other universities.
- While acknowledging that it would be a challenge to them, the student body expressed a real willingness and desire to study in English.

#### Areas for improvement

- When students graduate from the programme, they still need to take the PROLOG exams to qualify as a professional logistician. Thus, there is no explicit accreditation or formal recognition by PROLOG of the education the programme provides.
- The opportunities for student mobility are not that great. Students would very much value the chance of going abroad for part of their education. They are also keen to receive more foreign students into their modules.

### Recommendations

- Programme management should engage in discussions with PROLOG with a view to obtaining full or partial exemption from their professional logistician exams. This would represent, therefore, a formal accreditation of the programme by PROLOG. This was a proposal of the panel that was supported by employers.
- In order to increase the possibilities for inward and outward international student exchange, there will need to be more modules available in English. Full engagement with the Erasmus programme would also be an advantage, as would engaging in student exchange agreements on a bilateral basis with selected partner institutions which offer similar programmes.