



CENTER FOR QUALITY ASSESSMENT IN HIGHER EDUCATION

EVALUATION REPORT

STUDY FIELD

MECHANICAL ENGINEERING

At Vilnius Gediminas Technical University

Expert panel:

1. Prof. dr. Oluremi Ayotunde Olatunbosun (team leader) *academic*
2. Prof. dr. Jasmina Casals-Terré, *academic*
3. Prof. dr. Mikael Enelund, *academic*
4. Dr. Vaidas Liesionis, *representative of social partners'*
5. Mr. Marijus Ambrozus, *students' representative*

Evaluation coordinator – Ms. Evelina Keturakytė

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Study Field Data*

Title of the study programme	<i>Mechanical Engineering</i>	<i>Mechanical Engineering</i>
State code	6121EX040	6211EX047
Type of studies	University studies	University studies
Cycle of studies	First	Second
Mode of study and duration (in years)	Full-time (4 years) Part-time, distance learning (6 years)	Full-time (2 years)
Credit volume	240	120
Qualification degree and (or) professional qualification	Bachelor's Degree in Engineering Sciences	Master's Degree in Engineering Sciences
Language of instruction	Lithuanian	Lithuanian
Minimum education required	Secondary education	University requirements
Registration date of the study programme	14-06-2002	14-06-2002

** if there are **joint / two-fields / interdisciplinary** study programmes in the study field, please designate it in the foot-note*

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I. INTRODUCTION

1.1. BACKGROUND OF THE EVALUATION PROCESS

The evaluation of study fields is based on the Methodology of External Evaluation of Study Fields approved by the Director of Centre for Quality Assessment in Higher Education (hereafter – SKVC) 31 December 2019 [Order No. V-149](#).

The evaluation is intended to help higher education institutions to constantly improve their study process and to inform the public about the quality of studies.

The evaluation process consists of the main following stages: 1) *self-evaluation and self-evaluation report prepared by Higher Education Institution (hereafter – HEI)*; 2) *visit of the review team at the higher education institution*; 3) *production of the evaluation report by the review team and its publication*; 4) *follow-up activities*.

On the basis of external evaluation report of the study field SKVC takes a decision to accredit study field either for 7 years or for 3 years. If the field evaluation is negative such study field is not accredited.

The study field is **accredited for 7 years** if all evaluation areas are evaluated as “exceptional” (5 points), “very good” (4 points) or “good” (3 points).

The study field is **accredited for 3 years** if one of the evaluation areas was evaluated as “satisfactory” (2 points).

The study field **is not accredited** if at least one of evaluation areas was evaluated as “unsatisfactory” (1 point).

1.2. THE REVIEW TEAM

The review team was completed according the Experts Selection Procedure (hereinafter referred to as the Procedure) approved by the Director of Centre for Quality Assessment in Higher Education on 31 December 2019 [Order No. V-149](#). The Review Visit to HEI was conducted by the team on *November 26, 2020*. Due to the coronavirus pandemic, the Review Visit was organised online using video-conferencing tool (Zoom).

1. **Prof. dr. Oluremi Ayotunde Olatunbosun**, Honorary Senior Fellow in the Department of Mechanical Engineering at the University of Birmingham, UK.
2. **Prof. dr. Jasmina Casals-Terré**, Associate Professor (Accredited as FULL PROFESSOR by AQU), Department of Mechanical Engineering, Universitat Politècnica de Catalunya (UPCBarcelonaTech, Spain).
3. **Prof. dr. Mikael Enelund**, Dean of Education, School of MATS (Mechanical, Automation & Mechatronics, Design, Marine and Shipping), Chalmers Tekniska Högskola, Sweden.
4. **Dr. Vaidas Liesionis** LT AB Astra general Manager, Lithuania.
5. **Mr. Marijus Ambrozus**, graduate of Vilnius university second cycle study programme Theoretical physics and astrophysics, Lithuania.

1.3. GENERAL INFORMATION

The documentation submitted by the HEI follows the outline recommended by the SKVC. Along with the self-evaluation report and annexes, the following additional documents have been provided by the HEI before the site-visit:

No.	Name of the document
1.	Course cards for the first cycle studies (Programming C, Automatic Control, Cognitive Practice, Production Technology of Machines and Instruments, Materials Science 1, Materials Science 2, Theory of Mechanisms and Machines (with course project), Machine Elements (with course project), Engineering Mechanics, Mechanics of Materials 1, Mechanics of Materials 2)
2.	Course cards for the second cycle studies (Dynamics of Mechanical Systems (with course work), Fundamental of Research and Innovation, Engineering Ecology, Environment Protection Systems (with course work), Master Graduation Thesis 4, Experimental Mechanics, Diagnostic and Monitoring).

1.4. BACKGROUND OF STUDY FIELD/STUDY FIELD PLACE AND SIGNIFICANCE IN HEI

Vilnius Gediminas Technical University (hereafter – VGTU, university) is a state higher education institution. It is one of the biggest higher education institutions in Lithuania and it strives to be a leader of studies in technologies & engineering and research activities in the Baltic States. According to QS World University Rankings by Subject is QS Top 101-150 in the subject area of Civil Engineering and Building Construction and the best in Lithuania is the subject areas of Architecture/built environment (QS Top 101-150), Business and Management (QS Top 201-250) and Economics and Econometrics (QS Top 301–350).

But mostly, VGTU is a university of a technical profile, so study programmes of engineering study fields predominate, mainly in Engineering, Computer Science, Mathematics, Technologies, Social Sciences, The Humanities, Business and Public Management, Arts.

The University has 9 faculties and different institutes. The Faculty of Mechanics, founded in 1956, is one of the oldest in the university. The Faculty of Mechanics has 5 departments: department of Biomechanics, Material Science and Welding, Mechanical Engineering, Mechatronics and Robotics, Printing Machines and three research subdivisions, the Welding Research and Diagnostics Scientific Laboratory, the Research Laboratory of Vibroacoustics and Diagnostics, and the Institute of Mechanical Science.

In the Faculty of Mechanics, there are two study programmes focused on Mechanical Engineering (hereafter – ME): the first cycle study programme *Mechanical Engineering* (state code - 6121EX040) (hereafter - study programme, the first cycle study programme) and the second cycle study programme *Mechanical Engineering* (state code – 6211EX047) (hereafter – study programme, the second cycle study programme). Recently, 209 students, i.e., approximately 40 percent, are of the total number of students of VGTU Faculty of Mechanics. In 2016, The Faculty of Mechanics had 1049 students and 798 were undergraduates. The Faculty employs 76 lecturers, including 12 professors.

The previous external evaluation was carried out in 2015. After the external evaluation significant improvements of the study programmes have been carried out and all recommendations of the previous evaluation have been implemented carefully according to the self-evaluation report (hereafter – SER). The quality of the study programmes would benefit from continuing working along the same philosophy.

The self-evaluation report for the present external evaluation was carried out by a self-evaluation team appointed by the order of the Rector. The self-evaluation group consisted of the four professors, five docent, three lectures, one service administrator, three students and one social partner and was headed by the Head of the Mechanical Engineering Department.

II. GENERAL ASSESSMENT

Mechanical Engineering study field and **first cycle** at Vilnius Gediminas Technical University is given **positive** evaluation.

Study field and cycle assessment in points by evaluation areas.

No.	Evaluation Area	Evaluation of an area in points*
1.	Study aims, outcomes and content	3
2.	Links between science (art) and study activities	3
3.	Student admission and support	3
4.	Studying, student performance and graduate employment	4
5.	Teaching staff	3
6.	Learning facilities and resources	3
7.	Study quality management and publicity	3
	Total:	22

*1 (unsatisfactory) - there are essential shortcomings that must be eliminated;

2 (satisfactory) - meets the established minimum requirements, needs improvement;

3 (good) - the field develops systematically, has distinctive features;

4 (very good) - the field is evaluated very well in the national and international context, without any deficiencies;

5 (exceptional) - the field is exceptionally good in the national and international context/environment.

Mechanical Engineering study field and **second cycle** at Vilnius Gediminas Technical University is given **positive** evaluation.

Study field and cycle assessment in points by evaluation areas.

No.	Evaluation Area	Evaluation of an area in points*
1.	Study aims, outcomes and content	3
2.	Links between science (art) and study activities	4
3.	Student admission and support	4
4.	Studying, student performance and graduate employment	4
5.	Teaching staff	4
6.	Learning facilities and resources	3
7.	Study quality management and publicity	3
	Total:	25

*1 (unsatisfactory) - there are essential shortcomings that must be eliminated;

2 (satisfactory) - meets the established minimum requirements, needs improvement;

3 (good) - the field develops systematically, has distinctive features;

4 (very good) - the field is evaluated very well in the national and international context, without any deficiencies;

5 (exceptional) - the field is exceptionally good in the national and international context/environment.

III. STUDY FIELD ANALYSIS

3.1. STUDY AIMS, OUTCOMES AND CONTENT

Study aims, outcomes and content shall be assessed in accordance with the following indicators:

3.1.1. Evaluation of the conformity of the aims and outcomes of the field and cycle study programmes to the needs of the society and/or the labour market (not applicable to HEIs operating in exile conditions).

(1) Factual situation

The first cycle and second cycle study programmes aims to facilitate the training of Mechanical Engineers required to meet the scientific and labour manpower needs of the long-term strategy of Lithuanian economy until 2030 which requires highly trained professionals for the industry in this region.

The aims and learning outcomes are defined in terms of both the academic content and scientific and professional requirements for Bachelors' and Master level studies in Mechanical Engineering which conforms with the high-level manpower needs of the labour market in the country and specifically in the Vilnius region.

And according to the SER there is a huge demand for professionals in this area (*"Graduates from study programme of the direction are employed at various enterprises of Lithuanian industry. In Vilnius Region, enterprises to be mentioned include UAB "Intersurgical" (where 40 graduates are employed at present), UAB "AbplanalpEngineering", UAB "Arginta", UAB "Precizika Metrology", UAB TMT, AB "Vingriai", UAB "Ekspla", UAB "Standa", UAB "Vilniaus lokomotyvų remonto depas", UAB "Metec", UAB "Belvista", UAB "Optolita", UAB "Altechna", UAB "Sargasas", UAB "Šviesos konversija" and UAB "Švytėjimas". One or two graduates are employed at other enterprises in Vilnius and other towns. The above mentioned enterprises almost permanently need professionals and provide their wishes for employing graduates from Mechanical Engineering study programme. According to the trends of changes of needs in professionals at the above-mentioned and other enterprises, the Study Programme Committees (SPC) annually corrects aims and expected outcomes of the programmes"*).

(2) Expert judgement/indicator analysis

The first cycle and second cycle study programmes aims and learning outcomes conform with the manpower needs of the Vilnius region Industry.

It is noted the high demand of Mechanical Engineering specialists in Lithuania. Hence these study programmes can contribute to meeting the needs of the industry, especially in the Vilnius region.

3.1.2. Evaluation of the conformity of the field and cycle study programme aims and outcomes with the mission, objectives of activities and strategy of the HEI.

(1) Factual situation

The aim of the first cycle ME study programme is: "To understand the fundamental principles and processes of Mechanical Engineering, and to be capable to apply up-to-date novel technologies and key engineering principles and analytic methods for identification, formulation and solution of problems in the Mechanical Engineering field. Moreover, the

graduates should be capable of independent decision-making based on critical and constructive thinking, flexible to the market needs and with attitudes based on sustainable development and self-improvement.” While the aim of the second cycle ME study programme is: “To be capable to analyse, create, explore and produce mechanism and machines upon applying advanced research methods, to plan self-guided research and carry out qualified mathematical processing of the results. Besides, a Master in Mechanical Engineering should communicate effectively with professionals of other sectors and with consumers as well as maintain the professional competence through lifelong learning”. These aims are in line with the VGTU mission: “To train mechanical engineers who have high professional level, creative and community-minded capability to anchor themselves in science and labour markets of Lithuania and foreign states. This conforms with the general goal of VGTU to produce future specialists and creative personalities, with advanced research skills, able to develop scientific activities of international standard that promote scientific progress and cultural education of the society. As it is stated in the self-evaluation report: *“The mission of VGTU Faculty of Mechanics is to train engineers of particularly high professional level, creative and community-minded capable to anchor themselves in science and labour markets of Lithuania and foreign states and contribute to economic prosperity of the country, social concord and preservation of the distinction of the national culture. The tasks set for accomplishing the mission and objectives of VGTU Faculty of Mechanics are described in annual and strategic development plans.”*

(2) Expert judgement/indicator analysis

The overall study field aim is perfectly in line with the vision and mission of Vilnius Gediminas Technical University (VGTU).

3.1.3. Evaluation of the compliance of the field and cycle study programme with legal requirements.

(1) Factual situation

The first cycle study programme scope is 240 credits while the scope of full time study is 30 credits per semester. 207 Credits are used to accomplish the study field aims. Preparation for final thesis and examination is 18 credits and internship is 15 credits. All of these comply with the legal requirements for the field and first cycle of study. The contact hours for each course module are at least 40%. Over 71,4% of academic staff are scientists.

The second cycle study programme scope is 120 credits while the scope of full time study is 30 credits per semester. Credits to accomplish the study results of the study field (Higher quality or scientific level compared to bachelor) amount to 51 credits and 18 credits are of general topics related to basic research or innovations. Preparation for final thesis and examination is 39 credits and internship is 15 credits. All of these comply with the legal requirements for the field and second cycle of study. The contact hours for each course module are at least 18%. 100% of academic staff has scholastic degrees and 40% are professors.

As stated in the self-evaluation report: Table 2.1 summarizes the requirements for first cycle studies and Table 2.2 for second cycle studies.

(2) Expert judgement/indicator analysis

The first cycle and second cycle study programmes are in compliance with the legal requirements.

3.1.4. Evaluation of compatibility of aims, learning outcomes, teaching/learning and assessment methods of the field and cycle study programmes.

(1) Factual situation

The aims and learning outcomes of the first cycle study programme are expressed in six categories, aligned with European Accredited Engineer (EUR-ACE) standards.

The learning outcomes are in line with the aims of the study field and the needs of the Lithuania and EU labor market. However, they are not defined according to the students' expected skills, and attitudes upon graduation. For instance, learning outcome Z2.3: "The knowledge of computer-aided designing of machines and mechanisms, their control systems as well as the key principles of organization of designing and production".

The card modules do not provide all the information. A need for revision is mentioned in the self-evaluation report: "*in some cards, the competences to be acquired by a student prior to studying a certain course unit (module) are not specified. In addition, there are some other inconsiderable inadequacies in descriptions of course units; however, they will be eliminated on targeted consultations for university teachers*".

In the second cycle study programme the number of learning outcomes is limited and they are not focused on expected knowledge, skills, and attitudes upon graduation.

One example can be found in the website: "*The special knowledge of application of modern high technologies in designing, investigation and improvement of mechanical systems and environmental protection equipment.*"

There is a good mix of teaching and learning methods that are used to deliver the courses which are appropriate for achieving the desired learning outcomes such as lectures, practice, laboratory work and projects (applied and research oriented). Assessment is also based on a mixture of coursework, presentations and examinations which is appropriate.

(2) Expert judgement/indicator analysis

The teaching/learning and assessment methods are compatible with the aims and learning outcomes of the field and cycle of the study programmes. But the learning outcomes of all individual subjects should be revised, especially in the module cards, since some module cards do not have the learning outcomes and especially according to the information available on the web-site.

Moreover, the learning outcomes should be more expressed in terms of what the students are able to do after graduation. Avoid formulations like: "have knowledge", "understands", "awareness", etc.

3.1.5. Evaluation of the totality of the field and cycle study programme subjects/modules, which ensures consistent development of competences of students.

(1) Factual situation

In the first cycle study programme, the order of the study subjects is logical, starting with general science and engineering subjects in the first year, necessary for the student to develop basic knowledge and cognitive skills in mathematics, physical sciences and humanities. In the second, third and fourth years, the subjects of mechanical engineering are taught in a logical sequence to enable the competences to be developed in a gradual manner, also providing the necessary knowledge and skills for the final thesis work. The learning outcomes of individual subjects map well into the study programme aims and objectives.

However, the study plan is traditional and based on fundamental mechanical engineering subjects. There is no subjects related to the new technologies, such as smart industry, communications, additive manufacturing (and new programming languages, such as Python).

In the second cycle study programme, the research focus is introduced from the first semester, combining subjects at a higher level than in Bachelor', with the knowledge on the basics of research as well as the recent knowledge of the study field of Mechanical Engineering. The study programme is project-oriented and from the first semester the research skills are developed applying some credits to the master thesis. The last semester is fully devoted to the Master thesis.

(2) Expert judgement/indicator analysis

In the first cycle study programme, the totality and sequence of the study subjects, including the internship and final thesis enable the student to develop the competences required of a graduate of the field and cycle of study.

In the second cycle study programme, the focus on research and the combination with higher level topics in ME enable the student to develop abilities to analyze non-standard situations and pursue research and self-guided activities, which are required of a graduate of the field and second cycle studies.

3.1.6. Evaluation of opportunities for students to personalise the structure of field study programmes according to their personal learning objectives and intended learning outcomes.

(1) Factual situation

In the first cycle study programme, students have the opportunities to personalise the structure of their field of study programme by free choice of up to 9 credits (languages and world view) + 45 credits (specialization excluding Final Thesis), so 21.25%. This includes general university study subjects, final works, internship and electives. Students may also choose full-time or part-time studies to suit their particular circumstances.

In the second cycle study programme, two specializations are offered to students, in each specialization they have an elective to choose between two options in both specializations: Design and Manufacture of Environmental protection equipment and Design and Manufacture of Mechanical system. Therefore, students have the opportunities to personalise the structure of their field study programme by free choice specialization and free option subjects in the 3rd semester. In each specialization, during semesters 2 and 3, two alternatives are provided. The students can also decide on their final works.

However, according to the self-evaluation report, not all the specializations are offered due to the low numbers of students: *"A low number of students in groups prevents from further individualisation of studies (unfortunately, only two of four specialisations of bachelor studies are accomplished recently, so there is a choice of two ones only). However, the executors of the programme meanwhile expect to maintain all the specialisations, they hope that the number of students will grow. Social partners also advise to avoid decreasing the number of specialisations"*.

(2) Expert judgement/indicator analysis

The first cycle study programme provides the ability for personalization of their study programme by free choice of around 20% of total credits, which is good.

For the second cycle study programme, the choice of specialization in itself allows to personalize the master, according to the specialization.

3.1.7. Evaluation of compliance of final theses with the field and cycle requirements.

(1) Factual situation

According to the list of final projects presented, the topics presented for the first cycle studies are all for the area of ME and some of them are related to nearby industry relevant topics. From the second cycle studies they are mostly related to research-oriented thesis.

According to the self-evaluation report, there is a lack of final degree project topics coming from nearby industry. SER *“In the opinion of the members of the self-assessment group, subjects for Final Works brought by the students from business are not abundant (although their number grows gradually, we think that a direct link between problems arising in industry and their solving in Final Works does not exist).”*

The master thesis and final degree projects are regulated by a regulation for the preparation, defence and storage of the Final degree projects (SER “Description of the Procedure for Preparation and Defence of the Final Works“ approved by the Order No. 10.8-575 of VGTU Rector, as of 12 June 2019).

No mention in the SER about any specific training on how to prepare the report and if the plagiarism is checked.

(2) Expert judgement/indicator analysis

The Bachelor theses are relevant topics in ME study field, and some of them are linked to industry related topics. However, there is room for improvement involving more actively the social partners and local industry to propose more bachelor thesis topics.

The Master’s thesis shows a good combination of analysis, simulation and experimental work for research-oriented topics.

Recommendations for this evaluation area:

- 1. The learning outcomes of all individual subjects should be revised, especially in the module cards, since some module cards do not have the learning outcomes and especially according to the information available on the website.*
- 2. The learning outcomes should be more expressed in terms of what the students are able to do after graduation. Avoid formulations like: “have knowledge”, “understands”, “awareness”, etcetera.*
- 3. The study plan is traditional and there is room to introduce more new technologies, such as smart industry, Communications, Additive manufacturing (and new programming languages, such as Python).*
- 4. More Topics for Master and Bachelor Thesis could be proposed by the social partners and local industry.*

3.2. LINKS BETWEEN SCIENCE (ART) AND STUDY ACTIVITIES

Links between science (art) and study activities shall be assessed in accordance with the following indicators:

3.2.1. Evaluation of the sufficiency of the science (applied science, art) activities implemented by the HEI for the field of research (art) related to the field of study.

(1) Factual situation

Teachers in first cycle studies are more focused to teaching activities than research, while those who teach in second cycle studies are more actively linked to research, which is then derived in the works developed in subjects such as “fundamentals of research and innovation”.

Therefore, the professors in the ME study field, but mainly involved in the second cycle studies, are actively involved in research activities, in particular at national and at some extent at international level and mostly in industry driven research projects. The research projects are mostly oriented to tribology and environmentally friendly equipment design. Even though the number of publications is suitable for the area.

The impact of the publications can be limited according to the self-evaluation report, since almost half of the publications are not indexed in the web of Science Database. *“For example, employees of the Department of Mechanics and Material Engineering in 2017-2019 published 69 scientific papers with high impact factor that meet the provisions of Clarivate Analytics Web of Science database. In other sources of international databases, our scientists published 52 papers. Total within 3 recent years, there were 137 publications (according to the number of publications quoted in International databases for one member of staff, the university teachers and scientists of the Department hold very high positions in VGTU).”*

The involvement with local industry is important with 15 projects from 2017 up to 2020.

Even though the SER does not specify any particular Plan for scientific activities in the field related to the study field of Mechanical Engineering, the activities described are a proof of the continuous scientific activities developed by the Mechanical Engineering professors, who are capable to attract funding mainly from local industry, national project and few international project to ensure the financial viability of the research.

(2) Expert judgement/indicator analysis

The industrial projects are an important contribution to the economy and industrial development of the Vilnius region and strengthen the collaboration between academia and industry, however, they do not have a strong international impact. Publication of researches at international scientific journals position the researchers and the university at the international level, however the volume publications needs to improve as 137 publications over a period of 3 years is not sufficient for a staff strength of 100 (at Bachelor) and 23 (Master Level).

3.2.2. Evaluation of the link between the content of studies and the latest developments in science, art and technology.

(1) Factual situation

The Study Programme Committee reviews annually the structure of the study programmes, paying special attention to the titles of courses units/modules and in its content.

The link between the studies and latest developments is mainly established through the strong collaboration with industry. Therefore, the contents are more linked to applied research than to state-of-art developments.

The self-evaluation report reflects examples of the link between the content of the studies and mainly the local industry: *“In cooperation with industry, various environmentally-friendly and precise mechatronic equipments are optimised. On the base of the performed research works, the participants prepared over 30 publications and were involved in 7 projects. All the said scientific works are closely related to four specialisation of the bachelor study programme and two specialisations of the master study programme.”*

(2) Expert judgement/indicator analysis

The contents of some of the taught subjects include recent developments in Mechanical Engineering science and technology, however it relies on the decision of the professor and there are no electives tackling developments such as additive manufacturing or Industry 4.0.

3.2.3. Evaluation of conditions for students to get involved in scientific (applied science, art) activities consistent with their study cycle.

(1) Factual situation

In the first cycle study programme, students have the opportunity to do their internship in the local industrial companies where they can be involved in the research activities developed by the local companies. Moreover, the Faculty of Mechanics has a laboratory for informal engineering activities where students can implement their designs and this is encouraged in the Module "Introduction to the Specialty". In the second cycle study programme, there is the module "Basics of Research and Innovations" and the students are incentivized to present their work in national conferences, however the impact of their research internationally is limited.

According to the self-evaluation report, the Master students are sometimes involved in ongoing research projects, mainly developing their Master Thesis, however the number of motivated students in this direction is limited: "Research works carried out by university teachers and other researchers are closely related to Final Works of bachelors and masters. So, students are frequently involved in ongoing projects. In 2017-2019, 57 % of the best students of the direction of Mechanical Engineering (3-4 year of bachelor studies and 1-2 year of master study) were involved in such activities." SER "Although students willingly join the applied scientific activities (in course of preparation of their term papers and Final Works as well as on their practices), it should be noted that the number of students involved in informal activities became lower within the recent years."

(2) Expert judgement/indicator analysis

There is no evidence that scientific activities are an integral part of the studies through the modules of developing research competences in the first cycle studies. It depends on the student's interest since it relies only on the individual projects or semester projects.

In the second cycle studies, the students are incentivized to be involved with research activities from the first semester and there are examples of students presenting their work at national conferences. The programme itself in the first semester it has a 3-credit course "Fundamentals of research and innovation", which introduces the students to the research in the area of specialization. In the second semester, a 6-credit course "Engineering experiment theory (with term paper)" introduces the students to the research activity and includes the preparation of a research report. From the second semester Master students are already involved in the development of their master thesis. The Master thesis has 3 Credits in the second semester, 3 Credits in the third semester and 30 Credits the fourth semester. So, the second cycle studies are clearly oriented to research activity from the beginning.

Recommendations for this evaluation area:

- 1. Increase the volume and quality of publications resulting from scientific research projects and R&D projects with local industry.*
- 2. Increase the activities to involve students in research activities.*

3.3. STUDENT ADMISSION AND SUPPORT

Student admission and support shall be evaluated according to the following indicators:

3.3.1. Evaluation of the suitability and publicity of student selection and admission criteria and process.

(1) Factual situation

The first cycle admission is arranged by Republic of Lithuania Ministry of Education, Science and Sports and it is based on the competition score for Nationals (information is only in Lithuanian: <https://www.vgtu.lt/stojantiesiems/bakalauro-ir-vientisosios-studijos/konkursiniai-balai/konkursinio-balo-sandara/348>).

Table 4.1 of the SER shows the competition scores and the number of admitted students, there is a positive trend in the maximum and minimum competition score and the number of admitted students remains constant.

For the second cycle studies, a similar webpage gives a general overview (<https://www.vgtu.lt/for-international-students/admission/admission-requirements-for-international-students/51029#tab-for-masters-programmes>)

Table 4.2 of the SER (page 24) shows the number of admitted students and the Competition scores. The number of admitted students in the last three years has decreased considerably being 22 in 2017 and 9 in 2019.

According to the SER the competition score for the second cycle studies is obtained from the average of weighted subjects from the Bachelor Diploma. See self-evaluation report: “*The enrollment is arranged according to the competition score that consists of weighted average of the assessments of subjects in Bachelor Diploma Supplement and the additional scores.*” However, this information is only available in Lithuanian. (<https://www.vgtu.lt/stojantiesiems/magistranturos-studijos/stojimo-tvarka/388>).

For international students, there is a general website for all the programmes of the University: (<https://www.vgtu.lt/for-international-students/admission/admission-requirements-for-international-students/51029>).

(2) Expert judgement/indicator analysis

The web page gives enough information for the admission procedure to Bachelor and Master study programmes for nationals. However, limited information is provided about the admission procedure to Bachelor’s and Master’s study programmes for foreigners and the criteria are not related to the study field. There is no clear indication about the weight that each part of candidate CV has on the entry mark.

3.3.2. Evaluation of the procedure of recognition of foreign qualifications, partial studies and prior non-formal and informal learning and its application.

(1) Factual situation

There is a general procedure for recognition of prior, non-formal, informal or partial studies. The procedures establish that a maximum of 75 % of credits can be achieved in this way. And the overlap between study programmes should be of at least 2/3.

The Center of International Studies is in charge of the recognition of Learning outcomes (hereafter – LO) obtained in foreign Universities.

The University has not provided Data of the last 3 years on accredited and non-accredited cases of recognition of results. During the interviews, the students and alumni were asked if there were problems with recognition after coming back from an Erasmus abroad and students did not mention problems with course recognition after the stage. The number of students that come from abroad to study in the first cycle study programme has increased 17 in 2019 compared to 9 in 2017.

(2) Expert judgement/indicator analysis

The procedure for recognition of foreign qualifications, partial studies and prior non-formal and informal learning appears to be fair.

3.3.3. Evaluation of conditions for ensuring academic mobility of students.

(1) Factual situation

The SER does not provide evidence about mobility for the second cycle studies nor the number of ERASMUS+ mobility agreements for this study field in particular.

According to the SER, the number of incoming foreign students has increased (doubled compared to 2017) in the first cycle studies. See the Self-evaluation report that mentions: *In 2018, total 18 foreign students came to the 1-cycle study programme of the direction of Mechanical Engineering; in 2019 – 17 students. It was a great increase, as compared to 9 foreign students 3 years ago, in 2017.*

(2) Expert judgement/indicator analysis

While, in first cycle studies, the students have a limited set of opportunities to participate in international mobility programmes, and the activity is not compatible with the study programme design, since in all the semesters there are courses that need to be taken. The Bachelor thesis credit load is 18 credits, therefore if the students would like to go abroad, they need to find always some equivalent subjects in the foreign University. This fact can unmotivated the students to go abroad.

In the opposite direction, second-cycle study programme has 39 credits devoted to the final work. This fact offers more opportunities to find a suitable topic in a foreign University and spend a semester abroad without the need to worry about further recognition of courses. Therefore, even though the number of students who has been abroad can improve, the programme itself is designed to be compatible with ERASMUS+ mobility opportunities.

3.3.4. Assessment of the suitability, adequacy and effectiveness of the academic, financial, social, psychological and personal support provided to the students of the field.

(1) Factual situation

Apart from state funding of some students, students at VGTU have the opportunity to receive an incentive, social, nominal or one-time scholarship. Some scholarships are for academic performance while scholarships are also available for socially disadvantaged students and disabled students.

Student counselling services are available to help students deal with academic and social and psychological problems. Free psychological counselling is available for students who ask for it.

According to the SER, there is a general email and website information available.

SER “All students involved in I and II cycle programmes of the direction of Mechanical Engineering can find the needed information in <https://www.vgtu.lt/mechanikos-fakultetas/> ir <https://www.vgtu.lt/> or put questions to the Representative Student Board of the Faculty of Mechanics (e-mail: mf@vgtusa.lt).”

SER “VGTU student’s grants are of the following types: incentive, social, nominal and one-time. For students involved in the I and II cycle study programme of the direction of Mechanical Engineering, nominal grants were provided as follows: in 2016 – 3 grants, in 2017 – 2019 – 1 grant per year.”

(2) Expert judgement/indicator analysis

VGTU provides sufficient financial, academic, social and physiological support to the students of Mechanical engineering study field.

3.3.5. Evaluation of the sufficiency of study information and student counselling.

(1) Factual situation

First-year students in first cycle study programme have a course titled “Introduction to the Speciality” in which they are introduced to the study programme and to the department staff to whom they can seek assistance on relevant issues and the services such as library or “Linkmenu fabrikas”.

In general, either in first cycle or in second cycle study programmes, students undergo a comprehensive presentation of each course in the module card, where the organisation of the study subject – content, assignments, assessment methods and deadlines, etc. are summarized. Besides, students of first and second cycles if desired once per week can consult their professors individually for 2 hours. Information useful for students is provided via Moodle. Each year in March-April VGTU organizes the Career Days, where career opportunities are presented by local industries and research departments as well. Career counselling is also available for both first and second cycle students including help with writing CVs. However, during interviews alumni said there was still room for improvement.

Regarding academic issues, professors have assigned time for individual consultations. According to the Self-evaluation report and the student’s opinion during the interview the consultations are suitable. See SER: *“university teachers in the run of a semester during their on-call time consult students individually for 2 hours twice a week”*.

According to the self-evaluation report more information should be provided to prospective students: *“In addition, school leavers should be informed better of the advantages of this study direction and the perspectives of professional career. Pg 27”*

(2) Expert judgement/indicator analysis

There are no specific tutors to mentor the students in the study field.

The student counselling and support is focused on academic issues and few on professional careers.

Recommendations for this evaluation area:

- 1. More participation in exchange programmes should be encouraged.*
- 2. Implement a broad student counselling providing different types of mentoring: not only academic but also research, professional career tutor.*
- 3. Improve the look and the content of the university website, especially for foreigners.*

3.4. STUDYING, STUDENT PERFORMANCE AND GRADUATE EMPLOYMENT

Studying, student performance and graduate employment shall be evaluated according to the following indicators:

- 3.4.1. Evaluation of the teaching and learning process that enables to take into account the needs of the students and enable them to achieve the intended learning outcomes.*

(1) Factual situation

Currently both first cycle and second cycle studies are offered as full-time studies. On the other hand, first cycle studies can be followed as part-time with duration of 6 years.

The VGTU grading system, described in “An approval of the system for assessment of outcomes of studies” uses a 10-grade scale with 1 to 4 for fail and 5 to 10 for pass.

Information about the teaching methods and assessment methods are given in the first lecture in a course unit.

A variety of study methods are provided for including individual study (homework, laboratory work, module test) and team working (presentations and discussions).

Methods of active learning are applied and a methodology for assessment of these activities is in place. This methodology establishes a final assessment after each course unit. This partial assessment is weighted between 30% to 70% of the final grade.

Once per year, VGTU organizes the career days. During this event the student can interact with the local enterprises which are offering further opportunities to them either as contracts or internships. Besides, the members of staff departments and the Dean’s Office also consult students on the further opportunities for graduate studies.

(2) Expert judgement/indicator analysis

According to the SER and the opinion of students and alumni, details of course subjects in terms of teaching and learning methods, assessment methods given to students enable them to plan their study.

3.4.2. Evaluation of conditions ensuring access to study for socially vulnerable groups and students with special needs.

(1) Factual situation

Flexible forms of the achievement assessment are applied for students with special needs according to SERs. SER “apply an individual flexible schedule of studies and tests to such a student; in addition, such a student is completely or partially exempted from payment of the tuition fee”.

The University was involved in a Project to ensure the accessibility for students with special needs (SER “In 2015, the State Studies Foundation implemented the project “Ensuring the accessibility of studies for students with special needs”). Therefore, the University is adapted for students with special needs for mobility and has paid attention to train the Professors on how to adapt their teaching strategies to handle such needs.

(2) Expert judgement/indicator analysis

VGTU has made considerable effort to ensure that socially vulnerable groups and students with special needs have access to study at the university.

3.4.3. Evaluation of the systematic nature of the monitoring of student study progress and feedback to students to promote self-assessment and subsequent planning of study progress.

(1) Factual situation

The methods of achievement assessment are chosen by the coordinators of the study modules. The professor defines the number of intermediate assessments and their values in percentage. They establish in each module card a formula for calculating the achievements of

the students. Each of the deliverables is assessed and there is consultation that the students can attend.

Once per semester, the Department of Mechanical Engineering and Study Programme Committee (SPC) in a round table meeting try to clear up the imperfections (weaknesses) of the contents and realisation of certain course units; in addition, their causes are analysed.

(2) Expert judgement/indicator analysis

VGTU provides enough intermediate assessments to support the students to evaluate their progress.

3.4.4. Evaluation of the feedback provided to students in the course of the studies to promote self-assessment and subsequent planning of study progress.

(1) Factual situation

Feedback is provided regularly in all activities done along the semester.

As it is described in the SER and was validated during the interviews: *“The mark for assessment of outcomes of studies consists of: the accumulated within the semester assessment of the compulsory tasks provided in the relevant module cards; the interim assessment of the theoretical knowledge; and the assessment of the examination during the session. In module cards, the weighting factors for all the components are specified. The criteria for assessment are announced in the beginning of studying any course unit, they are known and accessible to students. Pg 29”*

(2) Expert judgement/indicator analysis

VGTU provides timely feedback to students to promote self-assessment and promote their progress.

3.4.5. Evaluation of employability of graduates and graduate career tracking in the study field.

(1) Factual situation

Employability of graduates is evaluated using the assessment of the employers and through the data of the Employment Agency under Republic of Lithuania and foreign states. According to the latest assessment there is a lack of ME graduates, therefore local companies do already hire 3rd or 4th year bachelor students. The same trend is seen in the second cycle graduates where due to the introduction of innovative technologies in the local industries there is also a growing need for second cycle graduates. After 18 months from graduation only 1%-2% graduates were registered in the database. 60% of graduates 12 months after graduation were holding important positions in their companies.

SER Table 5.1 presents the ratio of graduated versus enrolled students in 1st cycle for the last three school years (62%, 60% and 57%). The ratio is stable around 60%.

SER Table 5.2 presents the ratio of graduated versus enrolled students in 2nd cycle for the last three school years (77%, 72% and 70%). The ratio is more or less stable around 70%.

According to the SER, VGTU regularly analyses the employment of first cycle and second cycle graduates.

For the first cycle studies, between 2013-2019 Lithuanian economy was growing and there was a lack of mechanical engineers, therefore the companies were hiring even 3rd and 4th year students. VGTU also gathers information about the valued skills of these graduates from the company point of view. According to Table 5.3 of the SER most of the graduates have communicability, initiative and engineering analysis, however they lack creativity.

For the second cycle studies, the situation regarding the labour market was similar, with a high demand of these graduates. Table 5.4 of the SER describes their most valued skills: communicability and self-improving skills and lack of creativity but less pronounced than in first cycle studies.

(2) Expert judgement/indicator analysis

The outcomes for graduates are excellent. Their employability is excellent and they are satisfying the need for mechanical engineering specialists in the Vilnius region.

The strong network of industry that relates with the University provides information about the acquired competences after graduation or any detected needs of improvement.

3.4.6. Evaluation of the implementation of policies to ensure academic integrity, tolerance and non-discrimination.

(1) Factual situation

The University has The Academic Ethics Code of Vilnius Gediminas Technical University (the resolution No.81-2.5, as of 05 May 2015), which defines the principles and means of ensuring academic integrity, tolerance and non-discrimination.

During the period under review, according to the SER, there were no appeals and complaints in both the first and second study cycles, even though the university has approved during this period a general appeals procedure.

During the interviews first cycle and second cycle students were aware of the appeals procedure, which starts with the assessment of the exam or mark of the subject directly with the professors. According to the students, at this stage most of the misunderstandings were solved. However, as mentioned, there is a further process defined which involves the Head of the Department and the Appeal Board (3 teachers), who will take the decision about pass or fail the subject following the principles of academic honesty defined in the Academic Code of Conduct of VGTU.

(2) Expert judgement/indicator analysis

Policies to ensure academic integrity are well defined and the processes put in place for enforcing the codes of ethics are transparent.

3.4.7. Evaluation of the effectiveness of the application of procedures for the submission and examination of appeals and complaints regarding the study process within the field studies.

(1) Factual situation

Students have the right to appeal against assessment results.

There is an established methodology, which starts in trying to sort out the doubts of their assessment with the professor orally. If the student does not agree with the answer, he can write a request according to Appeals Procedure.

According to the SER there have not been complaints in both study cycles.

SER (general appeals procedure in Lithuanian):

https://www.vgtu.lt/files/3003/150/7/18_0/Student%C5%B3%20apeliacij%C5%B3%20%C4%97l%20%C5%BEini%C5%B3%20vertinimo%20pateikimo%20ir%20nagrin%C4%97jimo%20tvarka-489%20NAUJA%202016.pdf.)

(2) Expert judgement/indicator analysis

VGTU properly provides for the submission of appeals and complaints regarding the study process which is well defined in the study regulations.

Recommendations for this evaluation area:

Establish a method to track the career of their alumni and take advantage of the contacts with employers.

3.5. TEACHING STAFF

Study field teaching shall be evaluated in accordance with the following indicators:

3.5.1. Evaluation of the adequacy of the number, qualification and competence (scientific, didactic, professional) of teaching staff within a field study programme(s) at the HEI in order to achieve the learning outcomes.

(1) Factual situation

The description in SER Section 6.1 about Teaching staff is very extensive and well described in detail. The academic staff meets the legal requirement in both first cycle and second cycle studies in terms of scientific degrees and professional experience.

According to Table 6.1 of the SER in the first cycle study programme in the course 2019/2020 there were 12 Professors, 34 Docents, 46 lecturers and 5 Assistants. The total number of teaching staff has decreased a bit from 105 (2017/2018) to 97 (2019/2020), but due to the reduction in students it is sufficient.

According to Table 6.1 of the SER in the second cycle study programme in the course 2019/2020 there were 10 Professors, 10 Docents, 9 lecturers and 1 Assistants. The total number of teaching staff has decreased from 68 (2017/2018) to 47 (2019/2020), but due to the reduction in students it is sufficient.

According to SER most of them are proficient in English, however, according to students' opinion gathered during the visit, some of the professors were not proficient enough to teach in English.

The ratio of teacher/students is similar to the whole university and reasonable for the study field. In the first cycle study programme the ratio of teachers /students has been 0.31, 0.33 and 0.49 during the years 2017/2018, 2018/2019 and 2019/2020. For second cycle study programme, the ratio teachers/students has been 0.33, 0.43 and 0.64 during the years 2017/2018, 2018/2019 and 2019/2020.

There is no information about how committed and engaged they are, and according to first cycle student comments some of them were not very committed. However, second cycle students were satisfied with professor engagement with the studies. From the interviews with the second cycle study programme teachers, review team captured that they work together with students, which benefits the student's learning process. Nevertheless, most of them are involved in R&D projects with industrial companies.

The Annex 9.4 provides a list of teachers, separated in two levels (Level I and Level II). Level I have 76 teachers, who are teaching subjects in first-cycle study programme. Level II has 20, who are teaching subjects in second-cycle study programme. 100% of second-cycle study programme teachers are doctorate and their publications are mostly in international journals and conferences. 71.4% of first-cycle study programme teachers are doctorate and their publications are more nationally oriented.

Their age distribution shows that a large proportion belong to the middle age groups (30 to 60) but there are also older lecturers with lots experience to pass on to the younger ones.

Doctoral students are involved in teaching of the study modules: SER “At present, 7 doctoral students study at the Department of Mechanical Engineering; after a defence of their doctoral theses, a majority of them will be university teachers. Some of them are full-time or part-time teachers of the Department already.” There is information about the professors, however it is not linked to the module card.

In the university website there is a homepage for each individual staff.

<https://www.vgtu.lt/research-and-innovation/scientists/4317>

(2) Expert judgement/indicator analysis

There are sufficient number of well qualified and experienced lecturers who are also involved in scientific research to deliver the first cycle and the second cycle study programmes. However, a part of the lecturers do not have sufficient English level to teach.

They are capable of ensuring the quality of the study programme and achieving the learning outcomes, however, according to the interviews with students, the time to implement the changes is long compared to the time students stay in the University.

3.5.2. Evaluation of conditions for ensuring teaching staff' academic mobility (not applicable to studies carried out by HEIs operating under the conditions of exile).

(1) Factual situation

The professors are encouraged to mobility programmes for teaching and training.

The University has established measures for promotion of mobility that besides maintaining the salary while abroad and the position when coming back, a variable salary is appointed.

According to the SER Tables 6.5 31, 40, and 25 teaching visits were performed each year for professors from both study cycles.

According to the SER, during the period of assessment 24 university teachers from foreign universities came to deliver lectures at the University, therefore, benefiting both first and second cycle studies.

(2) Expert judgement/indicator analysis

Opportunities exist for teaching staff to participate in academic mobility programmes and the university promotes the exchange, but the participation of the professors is still limited compared to the overall teaching staff.

3.5.3. Evaluation of the conditions to improve the competences of the teaching staff.

(1) Factual situation

VGTU had established a special subdivision – the Group of Educational Competences. The professors are provided the opportunity to enrol in teaching training once per year. Besides, in the first five years of contract, the professors can decrease their teaching load for a semester to improve their skills.

(SER In addition, in one semester of the 5-year term, a teacher (at the own request) can be provided an unplanned number of contact hours and use such a semester exceptionally for improving the own competences – research works, scientific internships, official trips, design activities, improvement of practical skills and so on.)

(2) Expert judgement/indicator analysis

Few opportunities are provided for teaching staff to attend professional development courses to improve their competences, however, according to students' opinion (especially first cycle ones), first cycle professors do not upgrade fast enough to be competent in current technologies (especially software and language skills).

Recommendations for this evaluation area:

- 1. Consider developing programmes to decrease the time devoted to bureaucratic load and increase the time for professional training: new technologies (software in design and modelling), English and Didactic skills.*
- 2. Participation in mobility programmes should be increased – the aim should be for every teacher to participate at least once every 3 to 4 years.*

3.6. LEARNING FACILITIES AND RESOURCES

Study field learning facilities and resources should be evaluated according to the following criteria:

3.6.1. Evaluation of the suitability and adequacy of the physical, informational and financial resources of the field studies to ensure an effective learning process.

(1) Factual situation

The lecture theatres and rooms, which are used either in first cycle and in second cycle studies, are adequately equipped for lecture delivery and with a variety of capacities to accommodate the number of students in each study subject.

Even Though all laboratories can be used for first cycle and second cycle study programmes, laboratories related to more fundamental mechanical areas such as the Laboratory of machine elements, the Laboratory of machinery technology, the Laboratory of systems dynamics and vibroacoustics are equipped with rather obsolete equipment. Second cycle laboratories more closely related to research activities are well equipped for the study of Mechanical Engineering subjects (especially regarding welding and machining areas, such as Laboratory of science welding, Laboratory of CNC from HAAS or Research laboratory of materials). The capacities of the laboratories are enough for the small numbers of students in the classes.

The videos of the facilities show the variety of laboratory equipment available for the study of Mechanical Engineering.

On the basis of charity agreements, industrial enterprises provide some specimens of materials usable in manufacturing processes and the products for laboratory works, practical training and research works of students of the study field of Mechanical Engineering.

The VGTU libraries are well stocked with textbooks as well as databases of various branches of science, 3 archives and 1 bibliographic information management tool. The library also subscribes to scientific journals and bibliographic databases.

The University introduced VPN (Virtual Private Network) to allow students and employees to have access to databases and software) and most of the software is updated annually.

(2) Expert judgement/indicator analysis

The physical infrastructure available for the study of Mechanical Engineering consists of laboratory and equipment appropriate and adequate for welding and machining, there is room for improvement in the rest of ME disciplines.

The volume and quality of equipment including IT equipment and most engineering software is adequate for the needs of the students. Library facilities provide adequate resources for the students to access a wide variety of learning materials including books journals etc. A wide variety of scientific journals and bibliographic databases are available for research purposes.

3.6.2. Evaluation of the planning and upgrading of resources needed to carry out the field studies.

(1) Factual situation

The University pays special attention to obtain funding sources to update the infrastructure and equipment, mainly through the support from EU structural funds, charity agreements with industrial enterprises and their own funds.

The University has presented some current activities that are going on to upgrade the infrastructures, such as the implementation of the project (financed by funds of European Union structural funds) "Renewal of the first-cycle study programmes in engineering by improving the quality & transnationality of studies and introducing innovative teaching methods" (No. VP1-2.2-ŠMM-07-051).

Besides, a new building for the Faculty of Mechanics is being constructed and there is the aim to update the laboratories when moving to the new building as well.

There is a strategic plan to equip it with new facilities, according to the SER: *"The strategic plan of the University specifies financing (up to 2 million. EUR) which shall be provided for acquiring new laboratory equipment instead of the existing equipment that is worn-out and obsolete."*

(2) Expert judgement/indicator analysis

The University pays special attention to obtain funding sources to update the infrastructure and equipment. The University has presented some current activities that are going on to upgrade the infrastructures.

Recommendations for this evaluation area:

There is no regular plan to update infrastructure or software licenses, it depends on teacher initiative and may take too long. Establish a Faculty plan to upgrade software and obsolete equipment.

3.7. STUDY QUALITY MANAGEMENT AND PUBLICITY

Study quality management and publicity shall be evaluated according to the following indicators:

3.7.1. Evaluation of the effectiveness of the internal quality assurance system of the studies.

(1) Factual situation

Programme management is very well described in the SER. The University system for internal assurance of the quality of studies is based on regulations and landmarks of the Standards and Guidelines for Quality Assurance in European Higher Education Area (ESG).

There are a number of levels of decision-making. The major responsibility for quality of the study programme is assumed by Study Programme Committee (SPC) of study programmes of the study field and members of the Study Committee of the Faculty. The responsibilities for the implementation and monitoring the quality of the study programme are clearly allocated

and can be taken at SPC level. The general required quality of studies is ensured by observance of the resolutions of VGTU Senate.

The University has implemented an internal assurance quality system, with all the procedures. For instance, there are procedures that relate to quality assessments surveys and its analysis and publication via mano.vgtu.lt. However, the web site mano.vgtu.lt is only accessible via password, therefore future students cannot access the information of the quality assessments.

(2) Expert judgement/indicator analysis

There is a well-defined internal quality assurance system of the studies. However, the time to implement the changes is excessively long to impact on students who have promoted the changes.

The first cycle study programme does not take responsibility for subjects that are common to other study programmes in the first and second years of Bachelor level.

3.7.2. Evaluation of the effectiveness of the involvement of stakeholders (students and other stakeholders) in internal quality assurance.

(1) Factual situation

The University collects the opinions and assessment from students, lecturers, administrative employees, alumni, employers and social partners.

The University interviews social partners to evaluate the skills that students acquired after graduating in first cycle(See Table 5.3 for first cycle studies) and second cycle(See Table 5.4 for second cycle studies)study programmes.

According to the SER, the valued skills of these graduates from the company point of view are: For the first cycle study programme (Table 5.3 of the SER) most of the graduates has communicability, initiative and engineering analysis, however they lack creativity. For the second cycle study programme (Table 5.4 of the SER), most graduates are communicative and have self-improving skills and lack creativity but in less pronounced manner than in first cycle studies.

For external evaluation a university wide stakeholder feedback system is in use. The system with Social Partners is quite active and good for the development of the study programme and the placement. There seems to be an even greater potential to raise the quality of the study programme, if Social Partners can actively contribute to the learning process by providing real engineering problems to solve and resources to facilitate it.

Students are involved in the evaluation of the content of study subjects and quality of teaching through questionnaires at the end of the semester.

SER *“The assessment of skills of graduates acquired in the period of their studies is provided in the Table 5.3 below. Among the mostly lacking skills of graduates, the employers identify creativeness and skills in analytic activities. Although students are encouraged to carry out various tasks individually in the period of their studies and are taught to analyse the obtained results, the employers notice that professionals of engineering directions lack the said skills.”*

SER *“The assessment of skills of graduates acquired in the period of the II cycle of studies is provided in the Table 5.4 below. After completion of the II cycle study programme of the direction of Mechanical Engineering, the graduates become more creative, self-supporting and initiative; however, their curiosity becomes somewhat less.”*

(2) Expert judgement/indicator analysis

Therefore, a good use of stakeholder's knowledge is done to improve the first cycle and second cycle study programmes.

3.7.3. Evaluation of the collection, use and publication of information on studies, their evaluation and improvement processes and outcomes.

(1) Factual situation

The University has implemented an internal assurance quality system with all the procedures. For instance, there are procedures that relate to quality assessments surveys and its analysis and publication via mano.vgtu.lt.

There is a procedure (6) to gather information from the students and other stakeholders (procedure for organization of surveys of the participants of VGTU study process specifies compulsory surveys).

This procedure gathers information about: 1) interviewing the students on the quality of studies; 2) interviewing the students on execution of the study programme; 3) interviewing the university teachers on the quality of studies; 4) interviewing members of the staff of the Administration; 5) interviewing the students on selection of studies; 6) interviewing the students having come for studies under the exchange programme; 7) interviewing the students having willingly terminated their studies; 8) interviewing the graduates on career opportunities; 9) interviewing the social partners/employers.

The results are analyzed by the Dean of the Faculty to take actions if required and then the results are available for current students via intranet.

The website mano.vgtu.lt is only accessible via password, therefore future students cannot have access to the information of the quality assessments.

SER "In 2019, the feedback to the results of surveys was provided in mano.vgtu.lt accounts where the students, in addition to summarized results of surveys on their Faculty and the study programme, can read the comments of Deans of Faculties on the actions performed upon taking into account the results of the surveys."

(2) Expert judgement/indicator analysis

There is a well-defined and implemented internal quality assurance system of the studies. However, future students do not benefit from it since the results are not public.

The information on the web-site is limited and it should be revised extensively.

3.7.4. Evaluation of the opinion of the field students (collected in the ways and by the means chosen by the SKVC or the HEI) about the quality of the studies at the HEI.

(1) Factual situation

Since 2012, VGTU runs student surveys of three types, currently this is done automatically twice per year:

- A survey of all university students on the taught course units and the teachers involved in their teaching.
- An exploration of the opinions of the first cycle first-year students on the selection of university studies.
- A survey of the second cycle first-year students on the quality of bachelor studies.

The results are discussed with the student's representative, academic subdivision and rectors' office.

According to the survey results and it was confirmed during the interviews, second cycle study programme students are very satisfied with their study programme and think their teachers are very helpful and act on their feedback. First cycle study programme students share the same opinion, however they have the opinion that some of the teaching staff should improve their English level to teach in the English.

(2) Expert judgement/indicator analysis

There is a defined procedure to collect the students' opinion and it can result in changes of module cards, methods of lectures delivery or even change of professor. According to students' opinions in the meetings, these changes are done slowly.

Recommendations for this evaluation area:

- 1. The system of quality management is implemented, the path to implement the changes should be minimized so it can have a real impact in the timeline of the students time.*
- 2. Publish the results of the quality management surveys, so future students can benefit from this information.*
- 3. The information on the web-site is limited and it should be revised extensively.*

IV. EXAMPLES OF EXCELLENCE

Second cycle students are encouraged to participate, annually, in the Conference for Young Scientists of Lithuania “Science – the Future of Lithuania” organized by the University, in which students from different disciplines participate. This enables them to develop additional skills and competences especially in the field of research and innovation.

V. RECOMMENDATIONS*

1. Learning outcomes of all individual subjects should be revised and the table which maps the learning outcomes of individual subjects to the Study Programme learning outcomes should be updated. Learning outcomes should be more expressed in terms of what the students are able to do after graduation. Avoid formulations like “have knowledge”, “understands”, “awareness”, etc.
2. A revision of the curriculum should be carried out with a consideration to include the following in the curriculum:
 - Smart industry, Communications, Additive manufacturing.
 - Update the computer programming (including latest programming languages such as python)
3. Use the ongoing collaboration with social partners and local industry to develop research activities and science in order to increase the volume and quality of publications.
4. Encourage more participation in international exchange programmes by both staff and students and implement conditions which encourage incoming exchange students. This should include improving the look and information available in English of the VGTU website.

From the academic staff side, increase the time devoted to professional training specifically to English language.

5. Ensure that adequate provision is provided for in the VGTU budget for software license maintenance so that students and staff continue to have access to upgraded learning softwares.
6. The internal quality assurance system should be audited periodically to ensure that:
 - all stakeholders are notified of changes made to the study programme after each review.
 - summary results of all surveys carried out are published on the website and made accessible to all stakeholders.

*If the study field is going to be given negative evaluation (non-accreditation) instead of RECOMMENDATIONS main **arguments for negative evaluation** (non-accreditation) must be provided together with a **list of “must do” actions** in order to assure that students admitted before study field’s non-accreditation will gain knowledge and skills at least on minimum level.

VI. SUMMARY

The following is a summary of the findings of the review team based on the Self-Evaluation Report and the interviews with the university administration (senior management and faculty administration staff), staff responsible for the preparation of the SER, teaching staff and stakeholders (students, alumni, employers, social partners).

The review team gives a positive evaluation to the implementation of the Mechanical Engineering study field and first cycle and second cycle at Vilnius Gediminas Technical University with all areas of evaluation assessed as good or very good.

The following are the key strengths of the Mechanical Engineering study field and first cycle and second cycle as assessed by the review team:

- The study programmes are crucial to meet the manpower needs of the Vilnius region and Lithuania in general, which requires highly trained professionals to man the rapidly expanding industry in Lithuania.
- The Staff, Alumni and Social Partners are highly committed and very supportive of the first cycle and the second cycle study programmes, the university and its management.
- Lecturers are in general, well qualified, and have both pedagogic and practical experience and motivation to successfully deliver the first cycle and the second cycle study programmes.
- International Projects such as :
 - “Interdisciplinary project based learning of space science and technology for university students” (ESA ContractNo. 4000115705/15/NL/NDe). 2016–2018).
 - Scientific projects under International programmes Educational partnership between Haas Technical Education Center and Gene Haas Foundation(HAAS). 2015–2020.
 - International competitions of engineering ideas “Global Cooling Prize”– international competition of engineering ideas in conditioning.
 - The organizing committee (RockyMountain Institute (RMI), Conservation X Labs (CXL), Alliance for an Energy Efficient Economy (AEEE), and CEPT University) 2018-2019 presents a great opportunity for collaboration with international and local partners to develop joint degree, research and science programmes.
- In general, students are satisfied with the first cycle and the second cycle study programme and think their teachers are very helpful and act on their feedback, especially Second Cycle students.

The review team would like to highlight the following examples of good practice of the Mechanical Engineering study field and second cycle:

- Second Cycle students are encouraged to participate, annually, in the "Conference for Young Scientists of Lithuania “Science – the Future of Lithuania” Conference organized by the University, in which students from different disciplines participate. This enables

them to develop additional skills and competences especially in the field of research and innovation.

The review team would also like to highlight some areas for possible development of the Mechanical Engineering study field and first cycle and second cycle, none of which are critical enough for lower grade of evaluation:

- Learning outcomes of all individual subjects should be revised and the table which maps the learning outcomes of individual subjects to the Study Programme learning outcomes should be updated. Learning outcomes should be more expressed in terms of what the students are able to do after graduation. Avoid formulations like: “have knowledge”, “understands”, “awareness”, etc.
- A revision of the curriculum should be carried out with a consideration to include the following in the curriculum:
 - Smart industry, Communications, Additive manufacturing.
 - Update the computer programming (including latest programming languages such as python)
- Participation in international exchange programmes by both staff and students is still low. Continue to encourage participation and implement conditions which encourage incoming exchange students. This should include improving the look and content of the VGTU website, especially the English version.
- The number of students in Second Cycle is too small for the study programme to be sustainable on a long-term basis, especially to sustain two specializations. There is a need to improve publicity for the study programme improving the website and presenting the master to Bachelor students from other Universities around Lithuania.
- A robust quality assurance has been implemented but the internal quality assurance system should be audited periodically to ensure that:
 - all stakeholders are notified of changes made to the study programme after each review.
 - summary results of all surveys carried out are published and made accessible to all stakeholders.

Expert panel signatures:

Prof. dr. Oluremi Ayotunde Olatunbosun (team leader) *academic*

Prof. dr. Jasmina Casals-Terré, *academic*

Prof. dr. Mikael Enelund, *academic*

Dr. Vaidas Liesionis, *representative of social partners'*

Mr. Marijus Ambrozas, *students' representative*